M.I.T. ANNUAL CATALOGUES AND BULLETINS
1897/98 01 OF 04

MASSACHUSETTS INSTITUTE OF TECHNOLOGY,

BOSTON.



ANNUAL CATALOGUE.

1897–1898.

PUBLICATIONS

OF

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

ANNUAL CATALOGUE, issued in December, containing lists of Officers and Students; a full statement of the Courses of Instruction, a Register of Graduates with their professional positions, and an account of the Lowell School of Design.

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Massachusetts Institute of Technology.

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DECEMBER 29, 1920

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BOSTON.

THIRTY-THIRD ANNUAL CATALOGUE

OF THE

Officers and Students,

WITH

A STATEMENT OF THE COURSES OF INSTRUCTION AND A REGISTER OF THE ALUMNI.

WITHDRAWN FROM
CALIF. ACAD. SCI.

1897–1898.

BOSTON:
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1898.

CALENDAR FOR 1897-98.

School Year began	Wednesday, Sept. 29, 1897.
Semi-annual Examinations begin	Tuesday, Jan. 18, 1898.
Second Term begins	Tuesday, Feb. 8, 1898.
Annual Examinations begin	Tuesday, May 24, 1898.
Degrees conferred. — School Year ends	Tuesday, June 7, 1898.
First Entrance Examinations	Thursday, June 30, 1898, and Friday, July 1, 1898.
Examinations for Advanced Standing begin	Monday, Sept. 19, 1898.
Second Entrance Examinations [1]	Tuesday, Sept. 20, 1898, and Wednesday, Sept. 21, 1898.
School Year of 1897–98 begins	Wednesday, Sept. 28, 1898.

CALENDAR FOR 1898-99.

School Year begins	Wednesday, Sept. 28, 1898.
Semi-annual Examinations begin	Tuesday, Jan. 17, 1899.
Second Term begins	Tuesday, Feb. 7, 1899.
Annual Examinations begin	Tuesday, May 23, 1899.
Degrees conferred. — School Year ends	Tuesday, June 6, 1899.
First Entrance Examinations	Thursday, June 29, 1899, and Friday, June 30, 1899.
Examinations for Advanced Standing begin	Monday, Sept. 18, 1899.
Second Entrance Examinations [1]	Tuesday, Sept. 19, 1899, and Wednesday, Sept. 20, 1899.
School Year of 1898–99 begins	Wednesday, Sept. 27, 1899.

Stated Meetings of the Corporation	Oct. 13 and Dec 8, 1897. March 9 and June 3, 1898.
Stated Meetings of the Executive Committee of the Corporation	First and third Tuesdays of every month.

[1] See page 61.

TABLE OF CONTENTS

PAGE

CALENDAR 2

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

GENERAL INFORMATION:

Historical Sketch 7
Charter and Government 8
Corporation 9
School of Industrial Science 10
Society of Arts 10
Technology Quarterly 10
Location 11
Buildings 12
Equipment 12

OFFICERS:

Members of the Corporation 13
Executive and Visiting Committees 14
Officers of Administration 16
Officers of Instruction 16
Faculty 24

COURSES OF INSTRUCTION:

General Statement 25
Statements and Schedules of Studies 29
Five-year Regular Courses 56
Graduate Courses 56
Special Students 58
Summer Courses 59

PAGE

REQUIREMENTS FOR ADMISSION:
- Time of Examination 61
- First Year 62
- Advanced Standing 73
- Special Students 74

REQUIREMENTS FOR GRADUATION 76

SUBJECTS AND METHODS OF INSTRUCTION:
- Mathematics 77
- Theoretical and Applied Mechanics 79
- Drawing and Descriptive Geometry 80
- Shopwork 81
- Chemistry 82
- The Kidder Laboratories of Chemistry 85
- Chemical Engineering 86
- Physics 87
- The Rogers Laboratory of Physics 89
- Electrical Engineering 90
- Civil Engineering 93
- Mechanical Engineering 97
- Naval Architecture 100
- The Engineering Laboratories 102
- Mining Engineering and Metallurgy 106
- The John Cummings Laboratories of Mining and Metallurgy . 106
- Architecture 110
- Biology 112
- The Biological Laboratory 114
- Geology and Mineralogy 114
- The Geological Laboratory 117
- Modern Languages 118
- English 119
- History and Political Science 120
- Economics 121
- Military Science and Tactics 123
- Gymnastics 124
- Libraries 124

SCHEDULE OF TOPICS 125

PAGE

REGULATIONS OF THE SCHOOL:

School Year 157
Calendar 157
Status of Students 157
Examinations 158
Reports of Standing 159
Attendance Card 159
Bond or Deposit 159
Fees 159
Payments 160
Scholarships 160
Conditions governing Award of Scholarships 162
Graduate Scholarships and Fellowships 163
Residence and Expenses 163
Attendance 164
Conduct 164

REGISTER OF STUDENTS:

Regular Students 165
Special Students 188
Summary 201

LOWELL FREE COURSES OF INSTRUCTION:

Objects and Scope 202
Conditions of Attendance 202
Subjects for 1897–1898 203

LOWELL FREE SCHOOL OF PRACTICAL DESIGN:

Brief Account of the School 205
Course of Study 205
Requirements for Admission 206
Regulations of the School 206
Register of Students 207

ASSOCIATIONS OF ALUMNI 209

GRADUATES AND THEIR OCCUPATIONS:

Register by Classes 211
Alphabetical Register 299
Titles of Theses of Class of 1897 315

Massachusetts Institute of Technology.

GENERAL INFORMATION.

Historical Sketch. — The foundation of the Massachusetts Institute of Technology was laid in a "Memorial" prepared in 1859 by Professor William Barton Rogers, and presented, by a Committee, to the Legislature of 1860. In this Memorial "reference is made to the expected early establishment of a comprehensive Polytechnic College, furnishing a complete system of industrial education supplementary to the general training of other institutions, and fitted to equip its students with every scientific and technical principle applicable to the industrial pursuits of the age."

On May 28, 1860, a sub-committee, consisting of Professor Rogers and Messrs. E. B. Bigelow and J. M. Beebe, was appointed to "mature a plan for a polytechnic institution." To this sub-committee Messrs. M. D. Ross and C. H. Dalton were subsequently added, and for it Professor Rogers, during the summer of 1860, prepared an elaborate report entitled, "OBJECTS AND PLAN OF AN INSTITUTE OF TECHNOLOGY."

On Jan. 11, 1861, a public meeting of persons interested in the proposed institution was held in Mercantile Hall, and a preliminary organization was effected. Professor Rogers was chairman of this meeting, and John D. Runkle secretary. The first meeting of the Institute for organization was held April 8, 1862. The civil war led to the postponement of the opening of the School of Industrial Science until 1865; but the Society of Arts was organized, began its meetings on Dec. 17, 1862, and has maintained them ever since. A preliminary session of the School of Industrial Science was opened, fifteen students attending, on Feb. 20, 1865. The regular courses of instruction began Oct. 2, 1865.

Charter and Government. — On April 10, 1861, a legislative act was passed to incorporate the Massachusetts Institute of Technology, and to grant aid to said Institute and to the Boston Society of Natural History. William B. Rogers, together with twenty other members, were named in the act. They, with their associates and successors, were made a body corporate under the above title, "for the purpose of instituting and maintaining a society of arts, a museum of arts, and a school of industrial science, and aiding generally by suitable means the advancement, development, and practical application of science in connection with arts, agriculture, manufactures, and commerce."

A square of State land on Back Bay in Boston was set apart as an open space, and the corporation was allowed upon certain conditions to erect buildings covering not more than one-third part of the westerly two-thirds of this square.

The corporation was authorized to hold property to an amount not exceeding two hundred thousand dollars.

May 30, 1865, an additional act authorized holding property yielding an annual income of thirty thousand dollars.

Feb. 29, 1888, an additional act raised the limit to property yielding an income of one hundred thousand dollars.

April 27, 1863, an additional act allotted to the Institute one-third of the interest received by the State from the United States Land Grant, to support colleges of agriculture and the mechanic arts, under the condition that instruction in military tactics should be provided, and that the Governor, the Chief Justice of the Supreme Court, and the Secretary of the State Board of Education should be each a member *ex-officio* of the government of the Institute.

The control of the Institute was exercised by a body called the Government, elected from among its members. The form of the Government at first constituted proved inconvenient, a change was made in the mode of selection of the governing body, and the present Government of the Institute derives its powers from the following charter, of March 20, 1869:

AN ACT IN ADDITION TO THE SEVERAL ACTS INCORPORATING THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

Be it enacted, etc., as follows :

SECTION 1. All the powers and privileges now vested by law in the Massachusetts Institute of Technology shall hereafter be exercised and enjoyed by the government of said Institute, as the same is now constituted; *provided, however*, that the governor of the Commonwealth, the chief justice of the Supreme Judicial Court, and the secretary of the Board of Education shall continue to be members of said government, as is now provided by law.

SECT. 2. Said government shall have power to establish any by-laws which they may deem expedient for the regulation of the affairs of said corporation; *provided*, the same are not repugnant to the general laws of this Commonwealth.

SECT. 3. All persons who are now associate members of said Institute, or who hereafter shall become such, shall be entitled to be members of the Society of Arts, with the rights and privileges thereof, as the same are or hereafter may be established by the by-laws.

SECT. 4. This act shall take effect upon its passage.

The Corporation. — The government of the school is vested under this charter in the Corporation. Its by-laws prescribe that the Corporation shall consist of not more than fifty members, to hold office for life, and to be chosen by votes of the Corporation by ballot. The *ex officiis* members are included in the total number.

The Corporation confirms appointments, confers degrees, authorizes the purchase and sale of land and the erection of buildings. It receives reports from the President, the Treasurer, and the Visiting Committees, and acts upon them. The President of the Institute presides at its meetings, as well as at those of the Society of Arts.

The Executive Committee of the Corporation consists of the President and Treasurer and of five members, who are chosen by the Corporation from among its members for a term of five years. This Committee has power to appoint the

President and Treasurer, also the professors and teachers and all other persons to be employed in any department of the Institute, subject to confirmation by the Corporation. It fixes the salaries and prescribes the duties of all officers so appointed, and has power to remove them. It has charge of the buildings and other property of the Institute, exercises control over the Faculty, and has the general superintendence of all matters relating to the school of industrial science. The Corporation appoints other committees whose functions and membership are stated on pages 14 and 15.

The School of Industrial Science has become the prominent feature of the Institute; and, indeed, nearly all persons know this, and this alone, as the Institute. It is devoted to investigation and the teaching of science as applied to the various engineering professions; namely, civil, mechanical, mining, electrical, chemical, and sanitary engineering, and naval architecture, as well as to architecture, chemistry, metallurgy, biology, physics, and geology. A course of a less technical nature, designed as a preparation for business callings, is also provided.

A subsidiary school, known as the LOWELL SCHOOL OF PRACTICAL DESIGN, is maintained by the Corporation of the Institute. A statement of its scope and organization will be found on page 205.

The Society of Arts aims to awaken and maintain an interest in the practical applications of the sciences, and to aid in their advancement. Meetings are held semi-monthly from October to May, at which reports of inventions, discoveries, and matters of scientific and technical interest are presented.

Graduates of the Institute and other persons interested in the aims of the Society are eligible to membership, and its meetings are open to students.

The "Technology Quarterly" contains the proceedings of the Society of Arts and papers presented at its meetings. It is

issued at regular intervals, and affords a medium for the publication of the results of original investigation carried on in the laboratories of the Institute. It has recently added a review of American chemical research, including abstracts of all important articles on pure or industrial chemistry published in this country.

All communications concerning the Society of Arts, or the "Technology Quarterly," should be addressed to the Secretary of the Society of Arts, Massachusetts Institute of Technology.

Location. — The buildings of the Institute are not only favorably located for accessibility and convenience of students and instructors, but are in close proximity to the chief collections and libraries of Boston, in particular to the Museum of Fine Arts, the new Public Library, and the Museum of the Boston Society of Natural History. The free lecture courses of the Lowell Institute are held in the main building of the school. Several railroad stations and many street-car lines afford convenient access from the southern and western suburbs. Moreover, the advantages of location in a great manufacturing district, with which the school maintains close relations, are of the greatest value to technological students. Frequent short excursions enable them to make immediate connection between what they learn in the school and what they observe in the industrial establishments. The relations between principles and their applications are much better appreciated than if such excursions were reserved for vacation or some subsequent period. The location in a large city brings the school in close contact with men of various professions. The architectural student, for example, not only has at his hand conspicuous examples of the best design and construction, but regularly receives suggestive criticism from eminent men in active practice. To the student in economics and political science the various State and city institutions afford ample opportunities for individual investigation.

Buildings. — The buildings now occupied are the Rogers Building, on Boylston street, devoted to instruction in mathematics, literature, history, political science, geology, mineralogy, and biology; the Walker Building, at the corner of Boylston and Clarendon streets, mainly devoted to the departments of chemistry, physics and electricity, and to instruction in language; the Engineering Building, on Trinity place, devoted to the engineering laboratories and to instruction in mechanics and hydraulics, and in mechanical and civil engineering; the Architectural Building, immediately adjoining the Engineering Building; a series of workshops, on Garrison street, with a room devoted to the Lowell School of Design; and a Gymnasium and Drill-hall, on Exeter street.

Equipment. — The foundation of all sound technological education requires not only thorough theoretical training, but also prolonged, well-directed laboratory drill which shall first give the student the power of close and accurate observation, and then bring him into direct contact with the material problems of his future profession.

The laboratories of the Institute are numerous and extensive; their equipment is correspondingly ample, and is kept well up to the rapid advances in technical practice. Provision is made, not only for general exact training in the problems of physics and chemistry, but also, on the one hand, for highly specialized work in these and other sciences, and, on the other, for engineering tests and processes on a practical scale. Descriptions of the different laboratories and some account of their equipment, as well as of the libraries of the Institute, will be found on pages 77 to 124.

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(See page 16.)

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Assistant in Oil and Gas Analysis.

LEWIS PAUL CHAPIN, CH.E.,
Assistant in General Chemistry.

FREDERICK L. EDMANDS, S.B.,
Assistant in Mechanical Drawing.

MYRON L. FULLER, S.B.,
Assistant in Geology.

CHARLES N. HASKINS, S.B.,
Assistant in Physics.

NATHAN HAYWARD, A.B., S.B.,
Assistant in Physics.

GEORGE L. HOSMER,
Assistant in Civil Engineering.

ELBRIDGE C. JACOBS, S.B.,
Assistant in Mining Engineering.

HERMAN W. MARSHALL, S.B.,
Assistant in Biology.

WALTER B. RUSSELL, S.B.,
Assistant in Mechanical Engineering.

JAMES W. SMITH, S.B.,
Assistant in Mechanical Engineering.

PERCY G. STILES, S.B.,
Assistant in Biology.

ROBERT G. VALENTINE, A.B.,
Assistant in English.

FRANCIS H. WATTS, S.B.,
Assistant in Civil Engineering.

ALPHEUS G. WOODMAN, S.B.,
Assistant in Sanitary Chemistry.

INSTRUCTORS AND ASSISTANTS IN THE MECHANIC ARTS.

THEODORE B. MERRICK,
Instructor in Woodwork and Foundry-work.

JAMES R. LAMBIRTH,
Instructor in Forging.

ROBERT H. SMITH,
Instructor in Machine-Tool Work.

MINOT A. BRIDGHAM,
Assistant in Woodwork.

IRA G. STUDLEY,
Assistant in Machine-Tool Work.

WILLIAM F. HYDE,
Assistant in Forging.

INSTRUCTOR IN GYMNASTICS.

HERMAN BOOS.

TEACHERS AND LECTURERS FOR THE CURRENT YEAR.

TRUMAN H. BARTLETT, *on Modelling.*

LOUIS BELL, PH.D., *on the Electrical Transmission and Utilization of Power.*

GEORGE W. BLODGETT, S.B., *on the Applications of Electricity to Railway Signalling.*

JOHN BALCH BLOOD, S.B., *on the Design of Alternating Current Machinery.*

HENRY CARMICHAEL, PH.D., *on Electrolysis of Brine.*

S. EVERETT DOANE, *on Incandescent Lamps.*

HOWARD C. FORBES, S.B., *on Commercial Electrical Testing.*

JOHN R. FREEMAN, S.B., *on the Hydraulics of Fire Protection, and on Fireproof Construction.*

HOLLIS FRENCH, S.B., *on Electrical Engineering Practice and Specifications.*

DAVID A. GREGG, *on Pen and Ink Drawing.*

HAMMOND V. HAYES, PH.D., *on Telephone Engineering.*

ERNEST F. HENDERSON, PH.D., *on German History.*

GEORGE M. HOLMAN, M.D., *on Sanitary Bacteriology.*

CHARLES D. JENKINS, S.B., *on Illuminating Gas, and on Pottery and Tiles.*

SIMEON C. KEITH, JR., S.B., *on Industrial Biology.*

ERNEST A. LE SUEUR, S.B., *on the Industrial Applications of Electro-Chemistry.*

ARTHUR D. LITTLE, *on Paper.*

JAMES W. LOVELAND, S.B., *on Manufacture of Soaps.*

SILAS M. MACVANE, PH.D., *on History.*

SAMUEL W. MEAD, *on Architectural Design.*

HORATIO N. PARKER, *on the Microscopical Examination of Water Supplies.*

ODIN B. ROBERTS, S.B., A.M., LL.B., *on the Nature and Function of Patents for Inventions.*

LOUIS J. SCHILLER, *on Sugar and Sugar Refining.*

FRANK G. STANTIAL, S.B., *on Sulphuric Acid.*

ELIHU THOMSON, *on Recent Developments in Applied Electricity.*

ROSS TURNER, *on Water Color.*

C. HOWARD WALKER, *on the History of Ornament.*

C. J. H. WOODBURY, A.M., *on Electricity in its Relation to Fire Risks.*

N. B. — For additional occasional lectures on special subjects, see pages 91 to 100.

Faculty.

JAMES M. CRAFTS, *President.*

JOHN D. RUNKLE.
GEORGE A. OSBORNE.
ROBERT H. RICHARDS.
WILLIAM H. NILES.
CHARLES R. CROSS.
GAETANO LANZA.
GEORGE F. SWAIN.
FRANCIS W. CHANDLER.
ALPHONSE N. VAN DAELL.
WILLIAM T. SEDGWICK.
DAVIS R. DEWEY.
SILAS W. HOLMAN.
WEBSTER WELLS.
CECIL H. PEABODY.
HARRY W. TYLER, *Secretary.*
ARLO BATES.
JOHN BIGELOW, JR.
D. DESPRADELLE.
PETER SCHWAMB.
C. FRANK ALLEN.
ALFRED E. BURTON.
DWIGHT PORTER.
HEINRICH O. HOFMAN.
THOMAS E. POPE.
ELEAZER B. HOMER.
GEORGE T. DIPPOLD.

HENRY P. TALBOT.
CHARLES F. A. CURRIER.
LINUS FAUNCE.
WILLIAM O. CROSBY.
JEROME SONDERICKER.
ALLYNE L. MERRILL.
DANA P. BARTLETT.
EDWARD F. MILLER.
FRANK VOGEL.
WILLIAM L. PUFFER.
FREDERICK H. BAILEY.
FRED L. BARDWELL.
AUGUSTUS H. GILL.
ARTHUR A. NOYES.
S. HOMER WOODBRIDGE.
HARRY E. CLIFFORD.
RICHARD W. LODGE.
FREDERICK S. WOODS.
THEODORE HOUGH.
WILLIAM Z. RIPLEY.
JOSEPH J. SKINNER.
GEORGE H. BARTON.
ARTHUR G. ROBBINS.
WILLIAM H. LAWRENCE.
FRANK A. LAWS.
HENRY M. GOODWIN.

JOHN O. SUMNER.

Courses of Instruction.

The Massachusetts Institute of Technology provides instruction in the sciences and their applications to the arts, combined with such other general studies as are essential for a liberal education.

The fundamental elements in the curriculum of the school are mathematics, chemistry, and physics. The general training acquired in these introductory courses prepares the student, on the one hand, for more advanced and specialized scientific work, and it constitutes, on the other hand, the foundation for the technical courses in engineering, chemistry, and architecture. Instruction in technical methods is subordinated to the acquisition of principles, and these principles are studied with the predominant purpose to exercise the powers and train the faculties.

The Institute offers thirteen distinct courses, each of four years' duration, as follows:

I. Civil Engineering.
II. Mechanical Engineering.
III. Mining Engineering and Metallurgy.
IV. Architecture.
V. Chemistry.
VI. Electrical Engineering.
VII. Biology.
VIII. Physics.
IX. General Studies.
X. Chemical Engineering.
XI. Sanitary Engineering.
XII. Geology.
XIII. Naval Architecture.

For the satisfactory completion of any one of these, the degree of Bachelor of Science is conferred by the Institute. Of the thirteen courses, eight give their students scientific and practical training for the various engineering professions; four others, namely, those in Chemistry, Physics, Biology, and Geology, with a larger proportion of pure science, afford preparation either for professional practice, for teaching, or for scientific investigation. The Course in General Studies combines thorough general scientific training with a wide range of philosophic studies. While the Institute of Technology is primarily and essentially a school of applied science, its curriculum has always comprised a certain, not inconsiderable, amount of literary, historical, and economic study. There has been no time since the foundation of the Institute when its degree could be attained without studies in these lines carried through at least three years.

The value attached to such studies has led the Faculty to require also of regular students a substantial amount of reading of a general character during the summer vacation.

Women are admitted to any of the courses of the school.

Descriptions and Schedules of the Professional Courses. — The following pages 29 to 55 contain schedules showing the distribution of studies throughout each of the regular four-year courses. Each schedule is preceded by a brief description of the course as a whole, while more detailed information is given for each department of instruction in the following pages 77 to 124.

Choice of Courses.[1] — At the end of the first half-year, which is the same for all courses, the student selects, subject to the approval of the Faculty, the course which he will thenceforth pursue, and his work becomes more specialized thereafter as it progresses.

An idea of the nature and amount of the work to be done in any one of the regular courses may be obtained by con-

[1] A special circular in regard to the choice of courses will be sent on application.

sidering, in connection with the schedule of that course (pages 29 to 55), the statements made in regard to the various branches of study (for example, Mathematics, Language, Chemistry, Physics, etc.) in the paragraphs descriptive of the "Subjects and Methods of Instruction," pages 77 to 124.

Options. — Within most of the regular courses the student is given, by means of options, a considerable latitude in the selection of the branch of his intended profession to which he shall specially devote his energies in the later years of his study. Thus in Civil Engineering, page 31, he may elect sanitary and hydraulic engineering, geodesy, or an advanced course in railroad engineering and management; in Mechanical Engineering, page 33, he may choose either marine engineering, locomotive construction, or mill engineering; and similarly for other courses. Inspection of the descriptions, and schedules of the courses, pages 29 to 55, will show the nature and effect of the options. In cases where numbers are prefixed the selection of later options is positively determined by that of earlier ones, owing to the requirement of certain subjects as preparation for the former; in others, a wide choice is offered throughout all the years, the difference in this respect arising chiefly from the nature of the topics involved.

Graduate Courses of study may be pursued, either with or without reference to advanced degrees, by graduates of the Institute or by other persons of equivalent training. (See page 56.)

Five-Year Courses. — Students purposing to take the degree of the Institute, but for exceptional reasons finding it advantageous to undertake at once fewer studies than are prescribed in the schedules for the regular four-year courses, may arrange to distribute the entire work over five instead of four years. A further statement of the five-year courses may be found on page 56. The arrangement of five-year courses

is in charge of a standing Committee of the Faculty (Prof. Bartlett, chairman).

Subjects and Methods of Instruction. — The statements on pages 77 to 124 supply a general outline of the character and methods of instruction given, and of the equipment of the laboratories, museums, and libraries, which form conspicuous features in the work of the Institute.

SCHEDULES OF THE COURSES.

FIRST YEAR.

FIRST TERM.

(Common to all Courses.)

Algebra, or Solid Geometry . 20, 21
Plane Trigonometry 22
General Chemistry; Chemical Laboratory 290
Mechanical Drawing 100
Freehand Drawing 115
French [1] (or German [2]) . . 191 (201)
Rhetoric and English Composition 160
Military Tactics.

SECOND TERM.

COURSES I., II., III. (2), VI., X., XI., XIII.

Plane Trigonometry 22
Analytic Geometry 27
General Chemistry; Qualitative Analysis; Chemical Laboratory 291
Mechanical Drawing and Descriptive Geometry 101, 102
Freehand Drawing 116
French [1] (or German [2]) . . 191–(201)
United States History 220
Military Tactics.

COURSES III. (1), V., VIII., XII.

Plane Trigonometry 22
Analytic Geometry [3] 27
General Chemistry; Qualitative Analysis; Chemical Laboratory 291
Mechanical Drawing 104
Freehand Drawing 116
French [1] (or German [2]) . . 191–(201)
United States History 220
Military Tactics.

COURSE IV.

Plane Trigonometry 22
Analytic Geometry 27
Mechanical Drawing and Descriptive Geometry 101, 103
Freehand Drawing 117
French [1] (or German [2]) . . 191–(201)
French [1] sight-reading 192
United States History 220
Military Tactics.

COURSE VII.

Plane Trigonometry; Elements of Plane Analytic Geometry . 22, 23
General Chemistry; Qualitative Analysis; Chemical Laboratory 291
Microscopy 710
Mechanical Drawing 105
Freehand Drawing 116
French [1] (or German [2]) . . 191–(201)
United States History 220
Military Tactics.

COURSE IX.

Plane Trigonometry; Elements of Analytic Geometry 22, 23
Mechanical Drawing; Chart and Map Making 105
Freehand Drawing 116
United States History 220
Logic and Argumentative Composition 161
French [1] (or German [2]) . . 191–(201)
French [1] sight-reading 192
Military Tactics.

For descriptions of the methods, etc., used in the above instruction, see the corresponding pages under Subjects and Methods of Instruction, pages 77 to 124. Numbers at the right refer to the first column of the Schedule of Topics (of the Catalogue), where details are given as to the methods of instruction, etc.

[1] Students entering on French take German in their second and third years.
[2] Students entering on German take French in their second and third years.
[3] For V. and XII., briefer course, 23.

I. — CIVIL ENGINEERING.

This course is designed to give the student sound training, both theoretical and practical, in the sciences and principles upon which the practice of civil engineering is based. Particular care is taken to enforce the practical application of the principles taught, and the student is made familiar with the use of engineering instruments and with the usual problems of practice.

To meet the rapid specialization now going on in the various branches of civil engineering, the department offers, in the fourth year, which is devoted entirely to professional work, three options or lines of study; namely, a general option in civil engineering; an option in which more than usual attention is devoted to highways, railroads, and railroad management; and an option giving special attention to geodesy and topography.

Aside from the courses in mathematics, physics, and mechanics, the more purely professional work is divided as follows: In the second year a course is given in surveying and topographical drawing, embracing the use of the more common instruments, with practice in the field and in the drawing-room. In the third year, instruction and field practice are given in railroad surveying, and in advanced surveying; also courses in railroad and highway engineering, stereotomy, strength of materials, and the elements of structures. In the fourth year the instruction includes the theory of structures, graphical statics, theoretical hydraulics, sanitary, hydraulic, and railroad engineering, railroad management, and geodesy. Practice is given in hydraulic measurements and in testing materials of construction in the engineering laboratory. Students in this course also receive instruction in mechanism, and in steam engineering, extending through three terms.

In the summer vacation following the third year, four weeks are devoted to a course of field-work in geodesy, topography, hydraulics, and geology, open to all students, and required of those taking the geodetic option. (See pages 93 to 97.)

I.—CIVIL ENGINEERING.

FIRST YEAR. SEE PAGE 29.

SECOND YEAR.

FIRST TERM.

Surveying and Plotting	440
Topographical Drawing	442
Elements of Astronomy	443
Differential Calculus; Spherical Trigonometry	33
Physics: Mechanics, Wave Motion, Electricity (lectures)	360
Descriptive Geometry	110
German (or French)	200 (190)
English Literature	165
European History	221

SECOND TERM.

Surveying and Plotting	440
Mechanism	520
Dynamical Geology	665
Integral Calculus	38
Physics: Electricity, Optics (lectures)	360
German (or French)	200 (190)
English Literature and Composition	165

THIRD YEAR.

FIRST TERM.

Railroad & Highway Engineering; Field-work and Drawing	452, 453
Advanced Surveying	450
Stereotomy	455
Structural Geology	670
Physics: Heat	370
Physical Laboratory	373
General Statics; Stresses in Frames; Strength of Materials	70
German (or French)	201 (191)
Political Economy	245
Business Law	275

SECOND TERM.

Railroad & Highway Engineering; Field-work and Drawing	452, 453
Advanced Surveying	450
Theory of Structures	460
Stratigraphic Geology	675
Physical Laboratory	373
Strength of Materials; Kinematics and Dynamics; Theory of Elasticity	70
German (or French)	201 (191)
Political Economy and Industrial History	245
Business Law	275

FOURTH YEAR.

FIRST TERM.

Theory of Structures: Bridges and similar Structures	474, 476 (or 477)
Hydraulics	470
Industrial Electricity	379

Options.

1.	Sanitary and Hydraulic Eng.	472
	Bridge Design	478
	Hydraulic Measurements	473
	Practical Astronomy	468
	Steam Engineering	541
	Metallurgy of Iron	587
2.	Railroad Engineering	403, 465
	Railroad and Highway Design	493
	Railroad Management	466
	Bridge Design	478
	Steam Engineering	541
	Metallurgy of Iron	587
3.	Bridge Design	479
	Geodesy and Astronomy	467, 468
	Hydraulic Measurements	473
	Method of Least Squares	57
	Physical Laboratory	397

SECOND TERM.

Theory of Structures: Bridges and similar Structures	474, 476 (or 477)
Thesis.	

Options.

1.	Hydraulic Engineering	491
	Elements of Geodesy	497
	Bridge & Sanitary Design	478, 494
	Foundations	499
	Sanitary Science and the Public Health	750
	Steam Engineering	541
	Engineering Laboratory	480
2.	Railroad Engineering	465
	Railroad and Highway Design	493
	Bridge Design	478
	Building Construction	649
	Foundations	499
	Steam Engineering	541
	Engineering Laboratory	480
3.	Hydraulic Engineering	491
	Geodesy	467
	Differential Equations	58
	Physical Laboratory	397

II.—MECHANICAL ENGINEERING.

The course aims to equip the student with such training in pure and applied mathematics as shall qualify him to deal with the engineering problems of his profession from the most favorable standpoint. It attempts by instruction, both theoretical and practical, to acquaint him with engineering practice, and to give him a proper groundwork upon which to base a professional career. The more strictly professional work of the course may be classified as follows:

Mathematics, physics, and applied mechanics are given outside the department, the last including the study of and practice in testing the strength of materials.

Recitation-room work of the department proper begins with the study of mechanism, the construction of gear-teeth, etc., and is continued by courses on machine tools and cotton machinery. Courses are given on valve gears, thermodynamics, theory of the steam-engine, and on steam-boilers. The fourth-year instruction includes applied dynamics, further study of steam engineering, hydraulics and hydraulic motors, and in machine design a course combining study and drawing. The option is given of courses in locomotive construction, mill engineering, and marine engineering.

Drawing-room work begins in the second year. The students make working drawings from measurements, and the drawings necessary in connection with the course in mechanism and gear construction. In the third year they make detail and assembly drawings from machinery, and this is followed by mechanism designs and boiler drawings.

Shop-work includes carpentry, pattern-making, forging, chipping, filing, and machine-tool work.

Engineering laboratory work begins with drill in steam-engine tests in the second term of the third year, and is continued throughout the fourth year, including tests of boilers, pumps, power, etc., and a large amount of investigation. (See pages 97 and 100.)

II.—MECHANICAL ENGINEERING.

FIRST YEAR. SEE PAGE 29.

SECOND YEAR.

FIRST TERM.		SECOND TERM.	
Principles of Mechanism	510	Mechanism: Gear-Teeth; Machine Tools; Cotton Machinery	517
Drawing	512	Drawing	515
Carpentry and Wood-turning	138	Pattern Work	141
Differential Calculus	33	Foundry (elective)	147
Physics: Mechanics, Wave Motion, Electricity (lectures)	360	Integral Calculus	38
Descriptive Geometry	110	Physics: Electricity, Optics (lectures)	360
German (or French)	200 (190)	German (or French)	200 (190)
English Literature	165	English Literature and Composition	165
European History	221		

THIRD YEAR.

FIRST TERM.		SECOND TERM.	
Steam Engineering: Valve Gear; Thermodynamics	525	Steam Engineering; Boilers	525
Drawing	526	Drawing, Design, and use of Surveying Instruments	526, 451
Industrial Electricity	379	Engineering Laboratory	530
Dynamo-Electric Measurements	380	Forging; Clipping and Filing	142, 143
Forging	142	Physical Laboratory	373
Elements of Differential Equations	46	Strength of Materials; Kinematics and Dynamics	75
Physics: Heat	370	German (or French)	201 (191)
Physical Laboratory	373	Political Economy and Industrial History	245
General Statics	71	Business Law	275
German (or French)	201 (191)		
Political Economy	245		
Business Law	275		

FOURTH YEAR.

FIRST TERM.		SECOND TERM.	
Steam Engineering	540	Hydraulic Motors	490
Machine Design	544	Engineering Laboratory	545
Hydraulics	471	Machine-Tool Work	146
Dynamics of Machines	542	Strength and Stability of Structures; Theory of Elasticity	88
Engineering Laboratory	545	Foundations	555
Chipping and Filing; Machine-Tool Work	145, 146	Shop Management	556
Strength of Material; Friction	86	Thesis.	
Heating and Ventilation	396		
Metallurgy of Iron	587		
Options.		*Options.*	
1. Marine Engineering	551	1. Marine Engineering	551
2. Locomotive Construction	550	2. Locomotive Construction	550
3. Mill Engineering	552	3. Mill Engineering	552

III.—MINING ENGINEERING AND METALLURGY.

The mining and metallurgical engineer has of necessity demands made upon him in a great variety of lines. The policy of the school is to give him the underlying principles of mathematics, physics, chemistry, mineralogy, geology, mining engineering, and metallurgy, as well as some practical knowledge of mechanical, civil, and electrical engineering. Thus equipped, he can after graduation take up specialized work, with the expectation of carrying it on successfully.

The first option is such a general course, adapted to the needs of students who prefer not to make an immediate choice between professional specialties. Students who have not a serious reason for doing otherwise are advised to take this option.

The second option is arranged with reference to mechanism and the steam engine, the time necessary being taken from surveying, geology, and mining engineering. This course is adapted especially for the iron and steel metallurgist.

In each option valuable opportunities are offered for observation and field-work in the summer schools of mining and metallurgy, and in mineralogical excursions, as well as in the ample laboratories of the Institute. (See pages 106 to 110.)

For students able to devote an additional year to the course, valuable collateral instruction in other engineering branches, or a combination of the two options, may be arranged. In view of the exceedingly varied demands likely to be made upon the professional mining engineer, such an extension of the course offers particular advantages.

III. — MINING ENGINEERING AND METALLURGY.

FIRST YEAR. SEE PAGE 29.

SECOND YEAR.

FIRST TERM.

Mineralogy and Blowpipe Analysis [1] 661, 662
Differential Calculus 33
Physics: Mechanics, Wave Motion, Electricity (lectures) 360
German (or French) . . 200 (190)
English Literature 165
European History 221

Options.

1. { Surveying and Plotting . . 440
   { Topographical Drawing . . 442
2. { Descriptive Geometry . . . 110
   { Principles of Mechanism . . 510

SECOND TERM.

Blowpipe Silver Assay [1] 580
Integral Calculus 38
Physics: Electricity, Optics (lectures) 360
German (or French) . . . 200 (190)
English Literature and Composition 165

Options.

1. { Surveying and Plotting . . 440
   { Structural & Chemical Geology [2] 668
   { Dynamical Geology . . . 665
2. { Mechanism: Gear-Teeth; Machine Tools 518
   { Theoretical Chemistry . . 295
   { Drawing 515

SUMMER COURSE IN PRACTICAL MINING OR METALLURGY (ELECTIVE).
FIELD-WORK IN MINERALOGY (ELECTIVE).

THIRD YEAR.

FIRST TERM.

Assaying 582
Qualitative Analysis (lectures and laboratory) 300
Physics: Heat 370
Physical Laboratory 375
General Statics 71
German (or French . . . 201 (191)
Political Economy 245
Business Law 275

Options.

1. { Mining Engineering . . . 581
   { Structural&Chemical Geology [3] 668
   { Historical Geology [2] . . . 669
   { Industrial Electricity . . . 379
   { Dynamo-Electric Measurements 380
2. { Steam Engineering; Thermodynamics; Valve-Gears 525
   { Drawing 526

SECOND TERM.

Quantitative Analysis (lectures and laboratory) 305
Physical Laboratory 375
Strength of Materials; Kinematics and Dynamics 75
German (or French) . . . 201 (191)
Political Economy and Industrial History 245
Business Law 275

Options.

1. { Mining Engineering . . . 581
   { Historical Geology [3] . . . 669
   { Theoretical Chemistry [2] . . 295
2. { Steam Engineering; Boilers 525
   { Engineering Laboratory . . 530

SUMMER COURSE IN PRACTICAL METALLURGY OR MINING (ELECTIVE).

FOURTH YEAR.

FIRST TERM.

Mining Engineering 593
Memoirs, Laboratory Reports . 595, 596
Metallurgy (non-ferrous) . . . 588
Metallurgy of Iron 587
Metallurgical Laboratory . . . 592
Quantitative Analysis (lectures and laboratory) 319, 320
Heat Measurements 398
Strength of Materials; Friction . 86

Options.

1. Quantitative Analysis . . . 320
2. Hydraulics 471

SECOND TERM.

Mining Engineering 593
Memoirs, Laboratory Reports . 595, 596
Metallurgy (non-ferrous) . . . 599
Metallurgical Laboratory . . . 592
Quantitative Analysis (lectures and laboratory) 319, 320
Thesis.

Options.

1. { Quantitative Analysis (additional) 320
2. Engineering Laboratory . . 553

[1] Students in Option 2 are required to take *either* Blowpipe Analysis or Blowpipe Silver Assay.

[2] For classes entering after 1895.

[3] For classes entering before 1896.

IV. — ARCHITECTURE.

The architectural course aims to prepare its members not only for their years of work as subordinates, when accuracy, rapidity, and taste in drawing and design, with knowledge of detail, will be the most useful qualifications, but also for their subsequent independent career when the value of technical knowledge will become most important.

The professional work of the course begins in the second year, with the study of the five orders and their applications. The student is made familiar with the materials and principles of construction by lectures and visits to buildings.

In the third year the time devoted to architectural history is much increased, specifications are discussed, and sufficient practice in working drawings is given to enable the student to be of immediate service on entering an architect's office.

A technical course in heating and ventilation is given in the third year, illustrated by the study of the principal public buildings in the city. In the fourth year applied mechanics and graphical statics are applied to general practice, and exercise is given in designing trusses and in the various problems occurring in modern construction.

Practice in architectural design is continued throughout the course, also instruction in drawing from the cast and from life. Facility in rendering is gained by a course in water-color and pen and ink drawing.

Throughout this course, as well as those in engineering, extends a full course in mathematics, pure and applied, to serve as a basis for professional work. Regular students pursue also courses in German, French, English, history, physics, etc.

Persons applying for admission as special students in architecture must be college graduates, or twenty-one years of age, with not less than two years' office experience. They will be required to pass, before entrance, examinations [1] in plane geometry, and freehand and mechanical drawing (including projections, isometric and the elements of descriptive geometry); and must include in their work at the Institute the regular courses in freehand drawing, solid geometry, and descriptive geometry, unless already proficient in these subjects. (See pages 110 to 112.)

[1] See "Advanced Standing Examinations," Calendar, page 2.

IV. — ARCHITECTURE.

First Year. See page 29.

SECOND YEAR.

FIRST TERM.		SECOND TERM.	
Elementary Design	610	Design	618
Materials	612	Perspective	619
Shades and Shadows	611	Stereotomy	620
Freehand Drawing	118	Freehand Drawing	118
Differential Calculus	33	Integral Calculus	38
Physics: Mechanics, Wave Motion, Electricity (lectures)	360	Physics: Electricity, Optics (lectures)	360
German (or French)	200 (190)	German (or French)	200 (190)
English Literature	165	English Literature and Composition	165
European History	221		

THIRD YEAR.

FIRST TERM.		SECOND TERM.	
Design	625	Design	625
Ancient and Romanesque Architecture	626	Gothic and Renaissance Architecture	626
Specifications and Working Drawings	627	Freehand Drawing	119
Freehand Drawing	119	Pen and Ink	628
Heating and Ventilation	372	Building Stones	676
General Statics	71	Strength of Materials	76
German (or French)	201 (191)	German (or French)	201 (191)
Political Economy	245	Political Economy and Industrial History	245
Business Law	275	Business Law	275

FOURTH YEAR.

FIRST TERM.		SECOND TERM.	
Design	635	Design: Thesis	635
History of Painting and Sculpture	232	History of Painting and Sculpture	232
Constructive Design	638	Business Relations, Contracts, etc.	647
History of Construction	636	History of Ornament	637
Color and Acoustics	391	Modelling	648
History of Ornament	637	Water Color	640
Water Color	640	Pen and Ink	639
Pen and Ink	639	Life Class	641
Life Class	641	Sanitary Science and the Public Health	750
Strength of Materials	87	History and Literature of the Renaissance and the Reformation	228
History and Literature of the Renaissance and the Reformation	228		

V. — CHEMISTRY.

The course in Chemistry is primarily designed to prepare students for actual work in connection with manufactures based on chemical principles. It is also adapted to the needs of persons who intend to become teachers of chemistry.

The class-room work consists of courses of lectures on general chemistry, and on theoretical, analytical, industrial, and organic chemistry. The non-chemical studies, such as mathematics, physics, biology, mineralogy, English, history, political economy, and language are selected with reference to their bearing on chemical work, or for their general educational value.

The student spends a large part of the four years in the laboratories, the work being arranged as follows: In the first year there is general laboratory practice, in which the student is taught the nature of chemical processes and the use of chemical apparatus, and is drilled in accurate habits of observation. Qualitative chemical analysis is begun in the second term of the first year, and is continued through the first term of the second year. Quantitative analysis follows in the second term of the second year, and continues throughout the course. Practice in the industrial, sanitary, organic, and physico-chemical laboratories follows in the third and fourth years.

While there is a certain prescribed course of study and work in the separate departments of chemistry, which all regular students must pursue, great latitude in the choice of subjects is allowed in the third and fourth years.

Effort is made to develop self-reliance in the student, so that he may be fitted to make his way without assistance. To this end he is required to make investigations, involving original research and reference to the appropriate literature in English, French, and German.

The details of instruction in this course, both for regular and special students, and the description of the Kidder laboratories, are given on pages 82 to 86.

V. — CHEMISTRY.

FIRST YEAR. SEE PAGE 29.

SECOND YEAR.

FIRST TERM.

Qualitative Analysis (lectures and laboratory) 300
Mineralogy and Blowpipe Analysis 661, 662
Physics: Mechanics, Wave Motion, Electricity (lectures) . . 360
German (or French) . . . 200 (190)
English Literature 165
European History 221

Options.

1. Differential Calculus . . . 33
2. { Elements of Differential and Integral Calculus . . . 34

SECOND TERM.

Quantitative Analysis (lectures and laboratory) 305
Physics: Electricity, Optics (lectures) 360
Physical Laboratory 366
Physical Measurements (lectures) 365
German (or French) . . . 200 (190)
English Literature and Composition 165

Options.

1. Integral Calculus 38
2. { Dynamical Geology . . . 665 / General Biology . . . . 715 / Microscopy 710

THIRD YEAR.

FIRST TERM.

Quantitative Analysis (lectures and laboratory) 319, 320
Industrial Chemistry 312
Sugar Analysis 311
Physics: Heat 370
Physical Laboratory 373
Industrial Electricity 379
German (or French) . . . 201 (191)
Political Economy 245
Business Law 275

Options.

Sanitary Chemistry 316
Industrial Chemical Laboratory . 314

SECOND TERM.

Quantitative Analysis (lectures and laboratory) 319, 320
Theoretical Chemistry[1] 303
Organic Chemistry (brief course) 315
Industrial Chemistry 312
Assaying 583
Physical Laboratory[2] 373
German (or French) . . . 201 (191)
Political Economy and Industrial History 245
Business Law 275

Options.

Structural and Chemical Geology . 668
Sanitary Chemistry 316
Industrial Chemical Laboratory . 314

FOURTH YEAR.

FIRST TERM.

Organic Chemistry (lectures) . . 332
Organic Analysis 329
Organic Preparations and Reactions 335
Molecular Weight Determinations[3] 328
Theoretical Chemistry 313
Elements of Non-Ferrous Metallurgy[3] 589
Metallurgy of Iron 587
Testing of Oils 336

Options.

Proximate Technical Analysis . . 337
Textile Coloring 338
Bacteriology; Industrial Biology 743, 740
Historical Geology 669
Non-Ferrous Metallurgy, Ore Dressing, and Metallurgical Laboratory 590, 592, 596

SECOND TERM.

Organic Chemistry (lectures) . . 332
Gas Analysis 340
Theoretical Chemistry 318
Electrical and Heat Measurements 421
History of Chemistry 342
Memoirs 344
Thesis.

Options.

Physico-Chemical Laboratory . . 384
Non-Ferrous Metallurgy . . 596, 599

[1] For classes entering after 1895.
[2] For classes entering before 1896.
[3] Omitted by students taking 490, 492.

VI. — ELECTRICAL ENGINEERING.

This course is designed to meet the needs of young men desirous of entering upon the practice of any of the various applications of electricity in the arts. Its leading studies are physics, especially theoretical and applied electricity, mechanical engineering, and mathematics.

The work in engineering runs parallel with the electrical subjects, since in all branches of electrical engineering a sound knowledge of mechanics and motors, of measurements of power and of the means of its transmission, etc., is essential. Thus, the second year includes the studies of mechanism, shopwork, and drawing, and the third year, applied mechanics, steam engineering, and hydraulics. Certain of these subjects are also continued in the fourth year.

An extended course in physics begins with the second year, and is continued, by lectures, recitations, and laboratory work, to the end of the third year. A portion of this is devoted to electricity; and at the middle of the second year special lectures, readings, and recitations on this topic are begun, by which the study of the theory of electricity is continued until the end of the fourth year. Work in the physical laboratory begins at the middle of the second year, and leads up to electrical measurements and testing. Extended courses on the technical applications of electricity to the telegraph, telephone, electric lighting, the electrical generation, transmission, and utilization of power, etc., are given in the third and fourth years. Electrical study and research occupy the greater portion of the fourth year. A series of advanced mathematical topics also forms an important part of the work. (See pages 87 and 90.)

A new course of lectures upon the industrial applications of electro-chemistry has been instituted, and also a course relating to the economics of corporations. Provision will be made for any who desire to pursue the study of chemistry to a greater extent than is provided for in the course scheme.

VI. — ELECTRICAL ENGINEERING.

FIRST YEAR. SEE PAGE 29.

SECOND YEAR.

FIRST TERM.		SECOND TERM.	
Physics: Mechanics, Wave Motion, Electricity (lectures)	360	Physics: Electricity, Optics (lect.)	360
Acoustics	362	Physical Laboratory: Mechanics, Optics	366
Principles of Mechanism	510	Physical Measurements (lectures)	365
Differential Calculus	33	Theoretical Electricity	363
Descriptive Geometry	110	Mechanism: Gear-Teeth; Machine Tools	518
Carpentry and Metal-turning	137, 139	Drawing	515
German (or French)	200 (190)	Integral Calculus	38
English Literature	165	Carpentry and Wood-turning	137
European History	221	German (or French)	200 (190)
		English Literature and Composition	165

THIRD YEAR.

FIRST TERM.		SECOND TERM.	
Physics: Heat (lectures)	370	Physical Laboratory: Electrical Measurements	375
Physical Laboratory: Optics, Heat	375	Theoretical Electricity	377
Theoretical Electricity	377	Electrical Measuring Instruments and Methods	383
Methods of Telegraphy	378	Steam Engineering: Boilers	525
Elements of Industrial Electricity	379	Engineering Laboratory	530
Steam Engineering: Valve-Gears; Thermodynamics	525	Drawing	526
Drawing	526	Strength of Materials; Kinematics and Dynamics	75
Differential Equations	45	German (or French)	201 (191)
General Statics	71	Political Economy and Industrial History	245
German (or French)	201 (191)	Business Law [1]	275
Political Economy	245		
Business Law [1]	275		

FOURTH YEAR.

FIRST TERM.		SECOND TERM.	
Technical Applications of Electricity to Telephony, Electric Lighting, Electrical Generation of Power, Railroad Signals, etc.	400, 403	Technical Applications of Electricity; Electric Motors; Alternating Current Machines	400, 416
Methods of Dynamo Testing (lectures)	402	Transmission and Distribution of Energy	417
General Electrical Testing	405	Methods of Dynamo Testing (lectures)	402
Electrical Engineering Laboratory; Testing of Dynamos, Electric Lamps, etc.	420	Principles of Dynamo Design	418
Electrical Measuring Instruments and Methods	406	Telephone Engineering	419
Theory of Periodic Currents	404	Electrical Engineering Laboratory; Measurements of Dynamo Electric Machinery, Special Methods	420
Photometry	392	Theory of Periodic Currents	404
Steam Engineering	540	Discussion of the Precision of Measurements	423
Dynamics of Machines	543	Engineering Laboratory	545
Hydraulics	471	Economics of Corporations	261
Engineering Laboratory	545	Thesis.	
Strength of Materials; Friction	86		
Method of Least Squares	57		

NOTE. — Students having the requisite preparation and ability may pursue more advanced courses in the mathematical theory of electricity and other subjects. With this end in view, competent students may take Fourier's Series and allied topics, also Energetics and Electro-Chemistry, as extra studies. The study of Advanced German is advised.

[1] Alternate years.

VII. — BIOLOGY.

The course in biology affords especially a training in those sciences which pertain to living things. Those who take it usually intend to become physicians or teachers, or to fill positions connected with public works or the civil service, or to engage in some of the various fermentation industries as experts in bacteriology or microscopy.

Some of the best medical schools are already requiring for admission special training such as this course affords, and it is generally conceded that for the scientific or professional study of medicine no preparation can equal a well-considered and liberal education in which the prominent features are chemistry, physics, and biology, comparative anatomy and embryology, comparative physiology and microscopic anatomy, bacteriology and sanitary science.

The need for thoroughly trained teachers of the natural sciences was never greater than to-day, and for several years a large number of teachers in actual service have resorted to the Institute for instruction in biology. There is good reason to believe that the public school service now offers an inviting career to educated teachers, and that the course in biology, owing to its broad and comprehensive character, affords a sound preparation for persons intending eventually to teach, or to direct teaching, in the so-called "nature studies," or the natural sciences.

The course in biology is also adapted for those who desire to enter the civil service with boards of health, water boards, or sewer departments on the sanitary side, as bacteriologists or microscopists, as well as for those who intend to devote themselves to processes connected with dairying, vinegar-making, pickling, canning, cold-storage, or other food-making, fermentation, or food-preserving industries.

The subjects of study and their sequence are shown on the opposite page. Abundant facilities for the regular practical work of the course are provided in the various laboratories of the Institute, especially the chemical, physical, geological, physiological, and bacteriological.

Opportunities are also provided for special advanced work in general bacteriology, industrial biology, and sanitary science; in physiology and hygiene; and, to some extent, in zoölogy and botany. (For more detailed information see pp. 112 to 114, and the special circular on Biology.)

VII.—BIOLOGY.

First Year. See page 29.

SECOND YEAR.

First Term.		Second Term.	
General Biology	711	General Botany	717
Qualitative Analysis (lectures and laboratory)	300	General Zoölogy	716
Mineralogy and Blowpipe Analysis	661, 662	Quantitative Analysis (lectures and laboratory)	305
Physics: Mechanics, Wave Motion, Electricity (lectures)	360	Structural and Chemical Geology	668
German (or French)	200 (190)	Dynamical Geology	665
English Literature	165	Physics: Electricity, Optics (lectures)	360
European History	221	German (or French)	200 (190)
		English Literature and Composition	165

THIRD YEAR.

First Term.		Second Term.	
Comparative Anatomy	720	Comparative Anatomy and Embryology	720
Anthropology	722	Cryptogamic Botany	728
Quantitative Analysis (lectures and laboratory)	319, 320	Sanitary Chemistry	316
Organic Chemistry (brief course)	302	Theoretical Chemistry[1]	295
Historical Geology	669	Historical Geology[2]	569
Physics: Heat	370	Physical Laboratory	373
Physical Laboratory	373	German (or French)	201 (191)
German (or French)	201 (191)	Political Economy and Industrial History	245
Political Economy	245	Business Law	275
Business Law	275		

FOURTH YEAR.

First Term.		Second Term.	
Comparative Physiology	735	Comparative Physiology	735
Physiological Laboratory	736	Physiological Laboratory	736
Theoretical Biology	738	Theoretical Biology	738
Microscopic Anatomy	737	Microscopic Anatomy	737
Bacteriology	743	Sanitary Science and the Public Health	750
Industrial Biology	740	Journals	739
History of the Inductive Sciences	742	Thesis.	
Journals	739		
Options.		*Options.*	
1. Organic Chemistry	333	1. Sanitary Biology	751
		Organic Chemistry	333
2. History and Literature of the Renaissance and the Reformation	228	2. Sanitary Biology or Descriptive Sociology	751, 256
Climatology	685	History and Literature of the Renaissance and the Reformation	228

[1] For classes entering after 1895. [2] For classes entering before 1896.

VIII. — PHYSICS.

As distinguished from the professional or technical courses in engineering, architecture, etc., the Institute offers certain courses of a distinctly scientific nature. The course in Physics contains a series of studies adapted to the needs of those who wish to become teachers of physics, or who desire to enter upon a course in pure science, whether with a view to its further continuance, or wholly as a matter of training. Its leading features are a thorough and continuous study of the various branches of physics and a treatment of mathematics advanced considerably beyond the requirements of any of the technical courses. General, theoretical, analytical, and organic chemistry occupy a position next in prominence to mathematics, and of hardly less importance. Options are so arranged that choice may be made between the pursuit of more advanced mathematical and chemical topics.

Historical and other allied subjects and the modern languages are continued throughout the first three years; and the latter may be further prolonged, if desired. Chemistry may be continued to the end of the course, and mathematics, pure and applied, is required throughout the whole four years. Physics begins with the second year and, in lectures, readings, recitations, and laboratory exercises, extends to the close of the course. A large amount of experimental work is performed, and an experimental investigation is undertaken during the fourth year in connection with the preparation of the thesis. At all times it is sought to encourage the spirit of original research, and to impart an understanding of the principles upon which scientific investigation, especially in quantitative measurement, should be conducted. (See pages 87 to 90.)

Beyond the particular alternative studies set forth in the course scheme, a certain further liberty of substitution may be allowed by the Faculty in the case of students in Course VIII. who are fitting themselves for some special line of work.

VIII. — PHYSICS.

First Year. See page 29.

SECOND YEAR.

FIRST TERM.

Physics: Mechanics, Wave Motion, Electricity (lectures) . . 360
Acoustics 362
Qualitative Analysis (lectures and laboratory) 300
Descriptive Astronomy 361
Microscopy 710
Differential Calculus 33
German (or French) . . . 200 (190)
English Literature 165
European History 221

Options.

Qualitative Analysis (additional) 300
Determinants 35

SECOND TERM.

Physics: Electricity, Optics (lectures) 360
Physical Laboratory: Mechanics, Optics 366
Physical Measurements (lectures) 365
Theoretical Electricity 363
Quantitative Analysis (lectures and laboratory) 305
Theoretical Chemistry 303
Integral Calculus 38
German (or French) . . . 200 (190)
English Literature and Composition 165

THIRD YEAR.

FIRST TERM.

Physics: Heat (lectures) . . . 370
Physical Laboratory: Optics, Heat 374
Theoretical Electricity 377
Elements of Industrial Electricity 379
Photometry 371
Organic Chemistry (brief course) 302
Theoretical Chemistry . . 313, 328
Differential Equations 45
German (or French) . . . 201 (191)
Political Economy 245
Business Law[1] 275

Options.

Quantitative Analysis . 319, 320
Shopwork 138
Quaternions 47
or Quantitative Analysis 319, 320
General Theory of Equations 43

SECOND TERM.

Physical Laboratory: Heat and Electrical Measurements . . . 374
Physico-Chemical Laboratory . . 384
Theoretical Electricity 377
Electrical Measuring Instruments and Methods 383
Theoretical Chemistry 318
Analytical Mechanics 77
German (or French) . . . 201 (191)
Political Economy and Industrial History 245
Business Law[1] 275

Options.

Quantitative Analysis 319, 320
Advanced Analytic Geometry of Three Dimensions; Advanced Calculus and Definite Integrals. 49

FOURTH YEAR.

FIRST TERM.

Electrical Testing: Heat Measurements 405, 398
Theory of Periodic Currents . . 404
Electrical Measuring Instruments and Methods 406
Optics 390
Kinetic Theory of Gases . . . 394
Energetics 393
Physical Colloquium 395
Fourier's Series; Laplace's Coefficients 56
Method of Least Squares . . . 57
History of Science 742

Options.

Organic Chemistry 333
Analytical Mechanics 85

SECOND TERM.

Theory of Periodic Currents . . 404
or Theory of Potential . . . 412
Optics 390
Electro-Chemistry 411
Fourier's Series; Laplace's Coefficients 56
Discussion of the Precision of Measurements 423
Principles of Scientific Investigation 414
Physical Colloquium 395
Physical Research: Thesis.

Options.

Special Work; Chemistry or Physics 415
Analytical Mechanics 85

[1] Alternate years.

IX. — GENERAL STUDIES.

This course is designed especially for those students who wish to secure an education based upon scientific study and experiment, but including a larger amount of history, economics, language, and literature than is possible in technical courses. It is adapted to the needs of those who expect to engage in trade, banking, manufacturing, or journalism, or in the teaching of social or political science. For administrative positions in business, a careful knowledge of political and social relations is essential; and it is believed that the origin, growth, and laws of political and industrial society can best be approached through the methods used in natural science. The uniform requirement of the Institute in physics and a considerable share of the general training in chemistry are preserved in this course. From the study of biology, including botany and zoölogy, as a basis, the student is prepared to proceed to the study of man in society, and to consider the history and significance of social institutions, such as the family, the state, and the church. Physical science, biology, anthropology, social science and history, political and industrial history, and international law thus present, throughout the course, a definite, progressive relationship.

This course keeps in view the fact that in practical life, as in intellectual, success must depend largely upon breadth and flexibility of mind; and that intelligent and appreciative study of literature contributes to the fullest development of these qualities. The study of the history and development of the English language is made to lead the way to a careful survey of English literature, the effort being to make the work not mechanical, but sympathetic and vital.

Other special features of the department of General Studies are: More extended study of modern languages; a continuous course of historical study, directed especially toward the political and social history of England and the United States; drill in the essential principles of English composition; an orderly study of economics, including its theory and history, with courses in industrial and commercial history and geography, finance, and statistics. The student may be permitted to substitute certain subjects in other courses, as biology or mathematics, provided his individual aptitudes justify such a liberty. (See pages 118 to 123.)

IX. — GENERAL STUDIES.

First Year. See page 29.

SECOND YEAR.

FIRST TERM.

European History since 1815 . . 221
History of England 222
Political Economy 240
Economic Problems 241
English Literature 165
French; German 193, 200
General Biology 711
Physics: Mechanics, Wave Motion, Electricity (lectures) 360

SECOND TERM.

History of England 220
English Literature and Composition 165
French; German 193, 200
Zoölogy and Botany 716, 717
Dynamical Geology 665
Physics: Electricity, Optics (lectures) 360
Physical Laboratory 367

THIRD YEAR.

FIRST TERM.

History and Literature of the Renaissance and the Reformation 228
English Composition (advanced course) 167
Financial History of United States 250
Statistics 246
Commercial Geography [1] . . . 251
Anthropology 722
Business Law 275
German, with sight-reading . 201, 202
Physics: Heat 370

Options.

History of England in the 16th and 17th Centuries 227
Theories and Methods of Social Reform 247
English Literature to 1560 . . . 169

SECOND TERM.

History and Literature of the Renaissance and the Reformation 228
History of Commerce [1] 252
Descriptive Sociology 256
Geology 678
Business Law 275
German, with sight-reading . 201, 202

Options.

History of England in the 16th and 17th Centuries 227
Theories and Methods of Social Reform 247
English Literature: 1560–1660 . 169
French 195

FOURTH YEAR.

FIRST TERM.

Comparative Politics 266
International Law 258
Taxation and Administration . . 255
English Literature: 1660–1780 . 175
Physiology 741
Climatology 685

Options.

History of Era of French Revolution 230
Local United States History . . 231
Statistics of Sociology 257
Argumentation 176
Language: Special Work in French or German, or Elements of Spanish or Italian . . 207, 208

SECOND TERM.

Comparative Politics 266
History of Industry [1] 253
History and Elements of Philosophy 234
English Literature: 1780–1860 . 177
Sanitary Science and the Public Health 750
Thesis.

Options.

History of Era of French Revolution 230
Local United States History . . 231
Banking and Finance 270
History of Economic Theory . . 260
Contemporary Literature . . . 178
Journalism 179
Language: First Term continued 207, 208

[1] Alternating studies.

X. — CHEMICAL ENGINEERING.

This course is arranged to meet the needs of students who desire, in addition to a general training in mechanical engineering, a good knowledge of the applications of chemistry to the arts. The instruction in the fourth year has been so arranged that the student can exercise a certain choice as to the topics to which he wishes to devote special attention. Thus he may receive instruction in textile coloring in case he expects to find employment in the textile industries; in heat measurements and metallurgy, to fit him for operations involving the use of furnaces; or in organic chemistry, if he intends to engage in the manufacture of dyes or other organic products. Graduates in this course find employment as engineers, having to deal with problems of construction and administration in connection with dye-works and bleacheries, oil refineries, gas-works, sugar refineries, paper and pulp mills, the manufacture of fertilizers, soap, heavy chemicals, and various other branches of industry where such special training is demanded.

The general engineering studies in the course in Chemical Engineering coincide for the most part with the work of the students in Mechanical Engineering. A course of instruction in the fourth year is devoted to a discussion of the appliances used in manufacturing and applied chemistry, considered from an engineering point of view.

The instruction in industrial and applied chemistry is arranged with reference to the needs of this course, and attention is directed to the methods of conducting the mechanical operations in various manufacturing processes. At the same time the chemical principles upon which operations rest are thoroughly taught. (See page 86.)

X. – CHEMICAL ENGINEERING.

FIRST YEAR. SEE PAGE 29.

SECOND YEAR.

FIRST TERM.		SECOND TERM.	
Qualitative Analysis (lectures and laboratory)	300	Quantitative Analysis (lectures and laboratory)	305
Principles of Mechanism	510	Mechanism: Cotton Machinery; Machine Tools; Gear-Teeth	517
Differential Calculus	33	Drawing	515
Physics: Mechanics, Wave Motion, Electricity (lectures)	360	Integral Calculus	38
Descriptive Geometry	110	Physics: Electricity, Optics (lectures)	360
German (or French)	200 (190)	German (or French)	200 (190)

THIRD YEAR.

FIRST TERM.		SECOND TERM.	
Industrial Chemistry	312	Industrial Chemistry	312
Organic Chemistry (brief course)	302	Industrial Chemical Laboratory	314
Steam Engineering; Thermodynamics; Valve-Gears	525	*Steam Engineering*: Boilers	525
Drawing	526	Drawing	526
Elements of Differential Equations	46	Engineering Laboratory	530
Industrial Electricity	379	Physical Laboratory	373
Physics: Heat	370	Strength of Materials; Kinematics and Dynamics	75
Physical Laboratory	373	German (or French)	201 (191)
General Statics	71	English Literature and Composition	165
German (or French)	201 (191)		
English Literature	165		
European History	221		

FOURTH YEAR.

FIRST TERM.		SECOND TERM.	
Applied Chemistry	339	Applied Chemistry: Memoirs	339
Testing of Oils	336	Technical Machinery	554
Gas Analysis	340	Engineering Laboratory	545
Steam Engineering	540	*Strength and Stability of Structures*; Theory of Elasticity	88
Engineering Laboratory	545	Shopwork	143, 147
Metallurgy	587, 589	Political Economy and Industrial History	245
Strength of Materials: Friction	86	Business Law	275
Dynamics of Machines	543	Thesis.	
Shopwork	138		
Political Economy	245		
Business Law	275		
Options.		*Options.*	
Textile Coloring	338	Metallurgy	599
Heat Measurements	398	Organic Chemistry	332
Organic Chemistry	332	Hydraulic Motors	490
Hydraulics and Hydraulic Measurements	471, 473	Applied Chemistry (additional)	339

XI.—SANITARY ENGINEERING.

This course is essentially one in civil engineering, but is designed for students who wish to pay particular attention to those engineering branches which are concerned with problems of the public health, and who, therefore, desire to gain a better knowledge of the subjects of chemistry and biology, and of their relations to engineering problems, than can be obtained in the course in Civil Engineering.

The line of study offered differs from the regular course in Civil Engineering, page 31, in the following particulars:

There is a reduction in the time devoted to railroads and bridges, and an entire omission of the mechanical engineering subjects of mechanism and steam engineering, and of astronomy and historical geology.

The time thus gained is devoted principally to courses in chemistry and biology. In these it is designed to give the students such training as shall fit them to interpret properly the results of researches in sanitary chemistry and sanitary biology, and to coöperate with chemists and biologists in professional work. Practice is given in the chemical and biological laboratories, and the student is instructed in the methods of water and air analysis, and is taught to observe and identify the various animal and vegetable organisms present in natural waters and sewage. The course devotes particular attention to the sanitary side of questions of water supply and drainage, and discusses, among other things, the principles of filtration and the methods of purifying water and sewage, the relation between drinking waters and disease, the methods of disposing of sewage, and other questions relating to the health of communities. In the fourth year courses of instruction are also given in heating and ventilation and hydraulic machinery.

The entire instruction in sanitary and hydraulic engineering now given in the course in Civil Engineering, a portion of which is there optional, is required in the course in Sanitary Engineering. (See page 95.)

XI. — SANITARY ENGINEERING.

FIRST YEAR. SEE PAGE 29.

SECOND YEAR.

FIRST TERM.		SECOND TERM.	
Surveying and Plotting	440	Surveying and Plotting	440
Topographical Drawing	442	Qualitative Analysis (lectures and laboratory)	300
Organic Chemistry (brief course)	302	Dynamical Geology	665
Differential Calculus	33	Integral Calculus	38
Physics: Mechanics, Wave Motion, Electricity (lectures)	360	Physics: Electricity, Optics (lectures)	360
Descriptive Geometry	110	German (or French)	200 (190)
German (or French)	200 (190)	English Literature and Composition	165
English Literature	165		
European History	221		

THIRD YEAR.

FIRST TERM.		SECOND TERM.	
R. R. & Highway Engineering: Field-work and Drawing	452, 453	R. R. & Highway Engineering: Field-work and Drawing	452, 453
Stereotomy	455	Advanced Surveying	450
Advanced Surveying	450	Theory of Structures	460
Quantitative Analysis (lectures and laboratory)	305	Water Analysis	317
General Biology	712	General Zoölogy and Botany	716, 717
Structural Geology	670	Physical Laboratory	373
Physics: Heat	370	Strength of Materials: Kinematics and Dynamics; Theory of Elasticity	70
Physical Laboratory	373	German (or French)	201 (191)
General Statics; Stresses in Frames; Strength of Materials	70	Political Economy and Industrial History	245
German (or French)	201 (191)	Business Law	275
Political Economy	245		
Business Law	275		

FOURTH YEAR.

FIRST TERM.		SECOND TERM.	
Theory of Structures; Bridges and Similar Structures	477	Theory of Structures; Bridges and Similar Structures	477
Hydraulics	470	Hydraulic Engineering	491
Hydraulic Measurements	473	Hydraulic Machinery	495
Sanitary and Hydraulic Engineering	472	Design	494
Bridge Design	479	Chemistry of Water Purification and Sewage Disposal	341
Air Analysis	334	Sanitary Science and the Public Health	750
Bacteriology	743	Sanitary Biology	751
Metallurgy of Iron	587	Building Construction	649
Industrial Electricity	379	Engineering Laboratory	480
Heating and Ventilation	396	Thesis.	
Shopwork	149		

XII. — GEOLOGY.

The course affords an opportunity to obtain a general education in natural science with special training in geological work and studies. The occupations which its students may naturally have in view include employment in responsible positions upon local, state, or national surveys, practice as professional geologists in any of the economic or technical relations of the science, or in connection with collegiate or other institutions.

The demand for men who have united topographic with physiographic and geologic studies has been increased by the modern methods of conducting governmental and other surveys. That the students may be better prepared for such work, the amount of topographic, geodetic, and hydrographic surveying is larger than has been common in geological courses. Such students are further qualified by the addition of physiographic geology and hydrography with field practice, and by the construction of geologic maps and sections.

Option 1 provides for the education of students who may wish to apply geological science in connection with the examination or the development of any of the various mineral resources of a country. To the studies of chemistry and assaying they may add mining and metallurgy if they so elect, while the schedule of the course provides for economic geology and the study of ore deposits.

Option 2 of the course affords an opportunity for students to extend their studies in chemistry, to add comparative anatomy, and in the fourth year to work in experimental geology.

Option 3 gives a larger proportion of time to topographic and other surveying studies, and is offered for the benefit of those who desire to be prepared for work in physiographic geology.

It is recognized that some students, especially those who contemplate teaching, may for good reasons wish for a different selection of studies, for example, the substitution of natural history studies for those of civil engineering. Applications for such substitution may be submitted to the Faculty. For details of instruction and equipment see pages 114 to 118.

XII. — GEOLOGY.

FIRST YEAR. SEE PAGE 29.

SECOND YEAR.

FIRST TERM.

Physiography 660
Mineralogy and Blowpipe Analysis 661, 662
General Biology 711
Physics: Mechanics, Wave Motion, Electricity (lectures) 360
German (or French) . . . 200 (190)
English Literature 165
European History 221

Options.

1, 2. Qualitative Analysis (lectures and laboratory) . . 300
3. { Surveying and Plotting . . . 440 / Topographical Drawing . . 442

SECOND TERM.

Structural and Chemical Geology . 668
Geological Field-work and Laboratory 666
Dynamical Geology 665
Zoölogy and Botany . . . 716, 717
Physics: Electricity, Optics (lectures) 360
German (or French) . . . 200 (190)
English Literature and Composition 165

Options.

1, 2. Quantitative Analysis (lectures and laboratory) . . 305
3. Surveying and Plotting . . 440

FIELD-WORK IN MINERALOGY (ELECTIVE).

THIRD YEAR.

FIRST TERM.

Historical Geology 669
Geological Maps and Sections . . 671
Structural Palæontology 672
Geological Fieldwork 673
Anthropology 722
Physics: Heat 370
Physical Laboratory 373
German (or French) . . . 201 (191)
Political Economy 245
Business Law 275

Options.

1. Quantitative Analysis (lectures and laboratory) . . 319, 320
2. Comparative Anatomy . . . 720
3. { Advanced Surveying . . . 450 / Experimental Geology . . . 692

SECOND TERM.

Mineralogy 677
Stratigraphic Palæontology . . . 689
Glacial Geology 679
Assaying 583
Physical Laboratory 373
German (or French) . . . 201 (191)
Political Economy and Industrial History 245
Business Law 275

Options.

1. { Quantitative Analysis (lectures and laboratory) . 319, 320 / Theoretical Chemistry . . . 295
2. { Comparative Anatomy . . . 720 / Freehand Drawing 120
3. { Advanced Surveying . . . 450 / Applied Geology . . . . 681 / Freehand Drawing 120

SUMMER COURSE IN GEOLOGY AND TOPOGRAPHY.

FOURTH YEAR.

FIRST TERM.

Physiographic Geology 687
Ore Deposits 691
Micro-Lithology 690
Geological Field-work and Laboratory 686
Geological Memoirs 688
Climatology 685
Stratigraphic Correlation . . . 689

Options.

1. Mining Engineering and Metallurgy 581, 587, 589
2. Experimental Geology . . . 692
3. { Mining Engineering . . . 581 / Hydraulic Measurements . . 473

SECOND TERM.

Economic Geology 695
Micro-Lithology 690
Geological Field-work and Laboratory 686
Geological Memoirs 688
Hydrography 696
Thesis.

XIII. — NAVAL ARCHITECTURE.

This course offers instruction in the theory and methods of designing and building ships, together with a study of the properties requisite for the safety and good behavior of a ship at sea.

While attention is given mainly to the construction of merchant steamships, the methods used are as thorough and complete as those employed in designing government vessels, and due attention is given to problems that arise only in the design of a man-of-war, or which are more conveniently treated in connection therewith. Some attention also is given to sailing vessels.

In addition to the literary, mathematical, and general scientific studies requisite for a well-rounded education and for proper preparation for the special work of the course, thorough training is given in mechanism, thermodynamics, applied mechanics, hydraulics, steam engineering, and marine engineering. It is believed that the best coördination of the design of a steamship and its propelling machinery is attained by a naval constructor who is familiar with both branches of his profession.

In the third year of the course, lectures are given on the methods of building ships in iron and steel, on the general properties of floating bodies, on statical and dynamical stability of ships, and on such special problems as launching and docking. In the fourth year the lectures treat of the strength of ships, resistance and propulsion, rolling of ships, theory of oscillating waves and waves of translation, and the steering and manœuvring of ships; also of ventilation and drainage and of adjustment of compasses. The lectures are accompanied by two or three exercises a week in drawing, in which the students make the calculations and constructions described in the lectures, and thus gain a proper appreciation of the principles learned and some facility in applying them.

The work in applied mechanics and steam engineering is accompanied by a full course in the laboratories of engineering and applied mechanics. Instruction is given in the shops, in forging, chipping and filing, and machine-tool work. (See also page 100.)

XIII. — NAVAL ARCHITECTURE.

First Year. See page 29.

SECOND YEAR.

FIRST TERM.		SECOND TERM.	
Principles of Mechanism	510	Mechanism: Gear-Teeth; Machine Tools	518
Drawing	512	Drawing	515
Forging	142	Forging, Chipping and Filing	142, 144
Differential Calculus	33	Integral Calculus	38
Physics: Mechanics, Wave Motion, Electricity (lectures)	360	Physics: Electricity, Optics (lectures)	360
Descriptive Geometry	110	German (or French)	200 (190)
German (or French)	200 (190)	English Literature and Composition	165
English Literature	165		
European History	221		

THIRD YEAR.

FIRST TERM.		SECOND TERM.	
Naval Architecture	570	Naval Architecture	570
Naval Architectural Drawing	571	Naval Architectural Drawing	571
Mechanism Design	526	Steam Engineering; Boilers	525
Steam Engineering; Valve-Gears; Thermodynamics	525	Engineering Laboratory	530
Elements of Differential Equations	46	Physical Laboratory	373
Physics: Heat	370	Strength of Materials: Kinematics and Dynamics	75
Physical Laboratory	373	German (or French)	201 (191)
General Statics	71	Political Economy and Industrial History	245
German (or French)	201 (191)	Business Law	275
Political Economy	245		
Business Law	275		

FOURTH YEAR.

FIRST TERM.		SECOND TERM.	
Naval Architecture	572	Naval Architecture	572
Naval Architectural Drawing	573	Naval Architectural Drawing	573
Marine Engineering	551	Marine Engineering	551
Steam Engineering	540	Engineering Laboratory	545
Hydraulics	471	Strength and Stability of Structures; Theory of Elasticity	88
Engineering Laboratory	545	Machine-Tool Work	146
Dynamics of Machines	542	Thesis.	
Strength of Materials; Friction	86		
Chipping and Filing; Machine-Tool Work	145, 146		
Metallurgy of Iron	587		

FIVE-YEAR REGULAR COURSES.

The foregoing schedules of the regular courses are arranged for the completion of the work in four years. A student who can devote five years to his course will, however, often find it advantageous to do so. He is thus enabled to master it more thoroughly, and, on the other hand, to accomplish certain valuable work which has been necessarily omitted from the schedule of the four-year course. Moreover, considerations of health, lack of opportunities for thorough preparation, or other causes, may render it advisable for a student to extend the work over five years. To meet such cases, there have been arranged, in most departments, five-year courses which contain the same subjects as the corresponding four-year courses, and differ from them only in the time over which the work is distributed, and, to a slight extent, in the sequence of studies. They lead respectively to the same degrees as the corresponding four-year courses. The standard of scholarship required of the student is in every way the same, and he is classed as a regular student so long as he maintains his standing in the course which he is pursuing.

Further information may be had upon application to the Secretary of the Institute.[1]

GRADUATE COURSES.

The degree of Master of Science is awarded for proficiency in complete graduate courses of study of at least one year's duration.

Except in cases of unusual attainment the applicant for the degree of Master of Science must have taken his first degree in science in some science school, college, or university of good standing; and his attainments must in general be equivalent to those required for the corresponding Bachelor's degree of the Institute. He must file with the Secretary, before being accepted as a candidate, a statement of his pre-

[1] A special circular will be sent on application.

vious work and present attainments, and of the advanced work which he proposes to do at the Institute. The candidate, if a graduate of the Institute, may offer either more advanced work in his own department or undergraduate professional work of an allied department; but, in general, his subjects must not be all of the latter class, and he will be expected to present a thesis of higher grade than is required for the Bachelor's degree. He must pursue his course of study continuously under the direction and oversight of the Faculty for at least one full school year after filing his application, exhibiting during that time ability to conduct original investigations, and passing creditable examinations at such times and on such subjects as may be designated, and must finally present an acceptable thesis.

In making a choice between the two methods of planning a course leading to the Master's degree as outlined above, it should be remembered that the continually increasing specialization of the various engineering professions and the upward tendency of the standards of professional attainment render it difficult in a four-year course to give much more than a thorough training in the student's chosen specialty. Hence it is frequently of great advantage to the graduate from one of the engineering courses to devote an additional year to the professional work of another closely related course, with or without reference to obtaining the Master's degree. For example, a student who has received a degree in Mechanical Engineering, by devoting a year to the study of theoretical and practical electricity, may complete the professional subjects of the course in Electrical Engineering; a graduate in Chemical Engineering may do the same; or a graduate in Electrical Engineering or Chemical Engineering, by a year of additional study, may complete the professional work of Mechanical Engineering.

The student who completes such a double course has obtained a broader scientific and professional education, is enabled to investigate a given problem on more than a single side, and is thus more efficient and independent in engineering practice.

The candidate for the Master's degree following a plan of this kind will not in general be required to complete all the prescribed studies of the second department; thus, for example, a graduate in Electrical Engineering desiring to spend an additional year in the department of Mechanical Engineering may be excused from a certain amount of Shopwork and Drawing.

A circular giving additional details in regard to requirements for the Master's degree will be mailed on application to the Secretary of the Faculty.

The degrees Doctor of Philosophy and Doctor of Science are awarded for proficiency in graduate courses of study of at least two years' duration. The particular courses of study which candidates for these degrees wish to pursue must be submitted in writing to the Faculty, and must meet its approval. Occasional short absences, when the time is spent upon professional work by advice of the Faculty, will not be considered as interruptions of the student's residence.

Advanced courses in chosen lines of study, and without reference to degrees, may be pursued by graduates of the Institute without preliminary examination, or by graduates of other institutions who satisfy the Faculty, by examination or otherwise, that they are qualified to take with advantage the courses proposed.

SPECIAL STUDENTS.

In general, no definite schedules for special courses of study are laid down; but special courses may be planned by students with due reference to the requirements for admission to the work desired, as stated in the Schedule of Topics of the Catalogue, subject, however, in all cases, to the approval of the Faculty.

All special students in Chemistry who do not come under the two classes to be mentioned in the following paragraph must pass the full entrance examinations. For requirements regarding special students in Architecture, see page 36.

Persons of mature years who are engaged in technical pursuits will be afforded opportunities for the pursuit of laboratory and lecture courses without the exaction of the usual requirements for admission. Moreover, the attention of teachers who desire to qualify themselves for a higher degree of advancement in their profession is called to the opportunities which are offered at the Institute for afternoon and Saturday laboratory work. Persons actually engaged in the work of instruction, whether in public or in private schools, will be admitted to the Institute without formal examination, and the Faculty will take every occasion, consistent with the necessary general conduct of the school, to arrange courses for such special students which shall suit their individual needs, alike as to days and hours and as to the nature of the work to be done. Persons having but a few hours a week at their disposal can find opportunities at the Institute to extend and perfect their knowledge, especially in the departments of Chemistry, Physics, Biology, Geology, Drawing, and Mathematics.

A special circular in regard to Opportunities for Teachers will be mailed on application to the Secretary of the Faculty.

SUMMER COURSES.

During the summer vacation, after the close of the school-year, formal instruction in a considerable range of studies is given in the lecture-rooms and laboratories of the Institute by members of the instructing staff. The courses offered in the summer of 1897 were as follows: Mechanical Drawing and Descriptive Geometry; Analytic Geometry; Shades and Shadows, and Elementary Design; Analytical Chemistry, Organic Analysis, Reactions, and Preparations, Principles of Organic Chemistry, Water and Air Analysis, Gas, Oil, and Sugar Analysis; General Zoölogy, Bacteriology, and the Micro-Organisms of Fermentations, Physiology and Hygiene; Physics, including Mechanics, Light, Electricity, Heat, Physical Measurements, and Electrical Testing; Mechanism; Woodwork, Forging, Chipping and Filing, and Machine-

Tool Work; European History; French and German. The work offered is planned with particular reference to subsequent study at the Institute. Students taking these courses have an opportunity to anticipate portions of the work of the succeeding year, and thus to include a wider range of subjects, or to make greater advancement along a particular line. Again, students who, through sickness, or other cause, have failed to complete the work of the previous year at the proper time are enabled to obtain clear records before the opening of the fall term. Finally, persons desiring to enter with advanced standing — in particular, college graduates — may make up in the summer school deficiencies which might otherwise cause serious embarrassment in their choice of studies and arrangement of hours for the year.

A special circular, giving full details in regard to dates and subjects, will be sent on application after March 1.

For information in regard to professional summer schools devoted mainly to "field-work" in Mining Engineering, in Surveying, Geology, and Hydraulic Engineering, and in Architecture, which have for a long time been maintained by the Institute with valuable results to the departments concerned, see pages 97, 109, 111, and 118.

Requirements for Admission.

Time of Examinations for Admission. — Examinations for admission to the first-year class are held on the first Thursday and Friday after June 24, in the Rogers Building, 491 Boylston Street, Boston. A second series of examinations for admission, and for applicants conditioned at the first examinations, is held on the first Tuesday and Wednesday after September 17. (See Calendar, page 2.) Attendance on both days, either in June or in September, is required.

The examinations begin at 9 A.M., and a schedule of hours will be mailed on application during the month preceding the examinations.

Applicants are advised to attend the June entrance examinations, if practicable, in order that any deficiencies then existing may be made up before entrance.

Entrance examinations are held *in June only* in New York, Philadelphia, Chicago, and other important cities. A circular, giving times and places, is issued in April, and will be mailed on application.

Candidates who intend to be examined in any other place than Boston are requested to send their names to the Secretary in time for him to receive them by June 15. A fee of five dollars is to be paid in advance by every candidate who is examined at any other place than Boston. The whole fee of a candidate who proposes to divide his examination between two years is payable in the year when he begins his examination. The fee should be sent by check, postal order, or registered letter to Albert M. Knight, Bursar, when the candidate sends his name to the Secretary.

Applicants who intend to take their entrance examinations in September are requested to notify the Secretary of such intention not later than September 10.

Applicants for *advanced standing* — that is, for admission to classes above the first year — must pass the entrance examinations, exception being made in favor of applicants from other colleges (see page 73), and must present themselves at the examinations for advanced standing. These examinations are held on the Monday and following days preceding the September entrance examination. A schedule of dates of these examinations will be mailed after June 1 on application. (See Calendar, page 2.)

Applications for admission at other times will be received only when some good cause, such as illness, has prevented attendance on the days prescribed. A fee of five dollars, payable to the Bursar, may be charged for special examinations if required in such cases.

ADMISSION TO THE FIRST YEAR.

In general, the training given in the best high schools (including manual training high schools) and academies will afford suitable preparation. To the student the importance of thorough preparation is great, since the character and amount of instruction given in the Institute from the outset leave little opportunity for one imperfectly fitted to make up deficiencies, and render it impossible for him to derive the full benefit from his course, or perhaps even to maintain his standing.

It should be borne in mind by the student purposing to enter the Institute that the broader his intellectual training in any direction, and the more extensive his general acquirements, the greater are the advantages he may expect to gain from his future course.

It is desired that every applicant present from the principal of the school last attended a statement of the duration and extent of his work there. While the Faculty accepts no certificates of preparatory schools in place of entrance examinations, the value of the opinion of previous teachers is fully recognized, and great weight will be attached to statements from them.

The requirements of age and scholarship specified are regarded as a minimum in all ordinary cases, and only exceptional circumstances will justify any relaxation. Parents and guardians are advised that it is generally for the ultimate advantage of the student not to enter under the age of eighteen years.

To be admitted as a regular student in the first-year class, the applicant must have attained the age of seventeen years, and must have passed satisfactory examinations in the following subjects:

Algebra,
Plane Geometry,
Solid Geometry (or **Advanced Algebra**[1]),
French or **German,**
English,
History.

He must also present satisfactory evidence of preparation in one of the following **Electives**:

French or **German** (additional),
Latin,
English (additional),
History (additional),
Physics,
Chemistry,
Mechanical Drawing and **Shopwork.**

For change of requirements taking effect in 1899 see page 71.

The detailed requirements in the various subjects are as follows:

Algebra. — Definitions; fundamental operations; use of parentheses; factoring; highest common factor; lowest common multiple; fractions, simple and complex; simple equations, with one or more unknown quantities; involution of monomials and polynomials; evolution of monomials and polynomials and the square and cube root of numbers; the theory of exponents, with applications; radicals, including rationalization, imaginary quantities, properties of quadratic surds, square root of a binomial surd, and solution of equations

[1] Until 1898, inclusive.

containing radicals; quadratic equations; equations in the quadratic form; simultaneous quadratic equations; ratio and proportion; arithmetical progression; geometrical progression. A satisfactory treatment of the topics in Algebra may be found in any of the following text-books: Wells' Essentials of Algebra, Wentworth's School Algebra, or Bradbury and Emery's Academic Algebra.

Plane Geometry. — As much as is contained in the first five books of Wells' (revised edition), Chauvenet's, or Wentworth's Geometry. Much importance will be attached to the applicant's ability to demonstrate original exercises.

Advanced Algebra.[1] — Inequalities; solution of equations by factoring; theory of quadratic equations; factoring of quadratic expressions; proofs of the binomial theorem for positive integral exponents; expansion of positive or negative integral or fractional powers of a binomial; the theorem of undetermined coefficients, with applications to the expansion of fractions, to the expansion of radicals, and to the separation of a fraction into partial fractions when the denominator can be expressed as the product of factors of the first or second degree; permutations and combinations; the principles and use of logarithms.

Solid Geometry.[2] — The usual theorems contained in text-books on solid geometry, with the exception of theorems relating to similar polyedrons and regular polyedrons. The application of the above to numerical examples in mensuration as follows — lateral areas and volumes of regular prisms; surfaces and volumes of rectangular parallelopipeds; lateral edges, lateral areas and volumes of regular pyramids, and of frustums of regular pyramids; volumes of truncated triangular prisms; areas of spherical polygons; volumes of spherical pyramids; lateral areas, total areas and volumes of cylinders, cones, and frustums of cones; areas of zones; volumes of spherical sectors; areas and volumes of spheres;

[1] Until 1898.

[2] Solid geometry will be required of all candidates for admission after 1898.

volumes of spherical segments. The applicant should also be able to solve simple original exercises.

Importance will be attached to accuracy in the numerical work of the papers in Algebra and Geometry. Familiarity with the Metric System is essential.

The attention of teachers and applicants is particularly called to the necessity of thorough preparation in mathematics, not merely as to the extent and amount of work done, but as to its quality. Candidates should be thoroughly grounded in fundamental principles and definitions, and should be carefully guarded against the tendency to become mechanical in their algebraic work from giving disproportionate attention to mere dexterity in the solution of problems.

French. — 1. Proficiency in elementary grammar, to be tested by translation of easy English into French, or by direct questioning on the following topics: Inflection of nouns and adjectives for gender and number, excepting unusual cases; "pronominal adjectives;" the forms and positions of pronouns, especially the personals; the partitive constructions; the inflection of the regular and of the more usual irregular verbs, such as *aller*, *dire*, *faire*, and of the classes represented by *ouvrir*, *sentir*, *venir*, *paraître*, *conduire*, and *craindre*.

2. Ability to translate simple prose at sight, to be acquired by the reading of not less than two hundred and fifty duodecimo pages from at least two works of dissimilar character.

The above requirement corresponds with the course in elementary French taken in the second year by students who have passed German at entrance.

German. — 1. Proficiency, to be tested as for French, in the following topics of elementary grammar; declension of readily classified nouns, of adjectives, and of pronouns; conjugation of the weak and of the more usual strong verbs; simple cases of word order.

2. Ability to translate simple prose, to be acquired by the reading of not less than two hundred duodecimo pages from at least two works of dissimilar character.

The above requirement corresponds with the course in elementary German taken in the second year by students who have passed French at entrance.

NOTE. — Although a correct pronunciation in modern languages is not one of the requirements for admission, it is desired that teachers give this important subject all due attention. Candidates prepared to pass both elementary French and German at the entrance examination will find it advantageous for their subsequent work at the Institute to do so.

English.[1] — The examination in English is based on the requirements adopted by the Commission of Colleges in New England.

1. The candidate will be required to write upon subjects familiar to him. It is expected that his composition will be correct in spelling, punctuation, grammar, idiom, and division into paragraphs, and plain and natural in style. He will be judged by how well he writes, rather than by how much he writes.

2. The candidate is required to have some acquaintance with good literature, and the following works will serve as a basis both for the examination in this and for the test in the writing of English. With these books the applicant must be familiar.[2] They are, however, divided into two classes. Those marked (*a*) are to be read, and the candidate will be required to show a general knowledge of their subject-matter, and of the lives of the authors. Those marked (*b*) are to be thoroughly studied, so that the candidate shall be able to pass an examination upon their subject-matter and structure.

For 1898: (*a*) Milton's Paradise Lost, Books I. and II.; Pope's Iliad, Books I. and XXII.; the Sir Roger de Coverley Papers in the Spectator; Goldsmith's The Vicar of

[1] For alternative requirement in English see page 67.

[2] These books may all be had in an inexpensive form. A list of publishers and prices will be sent upon application to the Secretary of the Institute.

Wakefield; Coleridge's The Rime of the Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's The Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

(*b*) Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's Flight of a Tartar Tribe; Tennyson's The Princess.

For 1899: (*a*) Dryden's Palamon and Arcite; Pope's Iliad, Books I., VI., XXII., and XXIV.; the Sir Roger de Coverley Papers in the Spectator; Goldsmith's The Vicar of Wakefield; Coleridge's The Rime of the Ancient Mariner; De Quincey's Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Lowell's The Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

(*b*) Shakespeare's Macbeth; Milton's Paradise Lost, Books I. and II.; Burke's Speech on Conciliation with America; Carlyle's Essay on Burns.

For 1900: (*a*) Dryden's Palamon and Arcite; Pope's Iliad, Books I., VI., XXII., and XXIV.; the Sir Roger de Coverley Papers in the Spectator; Goldsmith's The Vicar of Wakefield; Scott's Ivanhoe; De Quincey's Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Tennyson's The Princess; Lowell's The Vision of Sir Launfal.

(*b*) Shakespeare's Macbeth; Milton's Paradise Lost, Books I. and II.; Burke's Speech on Conciliation with America; Macaulay's Essays on Milton and Addison.

As an alternative in English there may be offered any systematic course in combined rhetoric and literature which in amount is practically equivalent to the requirement specified. Such an alternative, however, will be accepted only upon special application not less than two weeks prior to the examination in each case.

NOTE. — The standing in English will not be determined solely by the rank attained in the examination in that subject, but, in addition to this, it is expected that the paper in History and the translations from French and German will be written in correct and expressive English.

History. — Preparation in either United States History or Ancient History may be offered. In the former subject a thorough acquaintance with the history of the Thirteen Colonies and of the United States down to the present time is required. In the latter subject the requirement covers the history of the early world down to the fall of the Roman Empire in the West.

For United States History, either Johnston's History of the United States for Schools, or Fiske's History of the United States for Schools, together with Thomas's History of the United States, will suggest a satisfactory amount of preparation; for the study of Ancient History, Myers and Allen's Outlines of Ancient History is recommended, but not prescribed.

It is not enough for the candidate to know merely the facts of history; he must show an understanding of the meaning of the facts, and some knowledge of the relation of cause and effect in historical events.

Candidates expecting to take the course in Architecture are advised, should it be equally convenient, to prepare in Ancient History.

ELECTIVE REQUIREMENTS.

The object of the elective requirements is to secure greater breadth of preparatory training in subjects which have heretofore been recommended by the Faculty, and one or more of which are usually studied by applicants preparing for the Institute.

In general, these requirements are expected to be met by the presentation of certificates, note-books, drawings, etc., and not by examination. All certificates must be made out on forms supplied by the Institute. The Faculty reserves the right to require examinations in the case of applicants desiring excuse from some of the work in the Institute on the ground of electives offered at entrance.

The subjects in which such excuse may be granted are French, German, Drawing, or Shopwork. Applicants offering

Chemistry may take a more advanced course than otherwise during their first year. Further information in regard to substitutes for work thus anticipated may be found in the special circular on Alternative Studies, which will be mailed on application to the Secretary of the Institute.

French and German.[1] — An applicant presenting Elementary French (see page 65) may offer in addition (*a*) Advanced French. Review of Grammar, with special reference to the syntax of verbs (modes and tenses); additional and more varied reading. (*b*) Elementary German (see page 65).

An applicant presenting Elementary German may offer (*c*) Advanced German. Translation from English into German; review of Grammar; additional and more varied reading; or (*d*) Elementary French (see page 65).

Appropriate works for the advanced reading may be selected from such standard prose writers as Thierry, Guizot, Thiers, Henri Martin, Michelet, Chateaubriand, Hugo, Goethe, Schiller, Heine, Freytag. Preparation in the elementary requirements of both languages is advised rather than in the more advanced work.

Latin. — Satisfactory evidence should be presented that the applicant has acquired the elements of Latin Grammar, and that he has read four books of Cæsar or an equivalent.

English and History.[2] — The work of secondary schools differs so much in these branches that no definite requirement is formulated at present. Any school in which work in English or History is carried materially beyond the requirements stated on pages 66 to 68 may submit a statement of the kind and amount of work done by its applicants for approval as their elective.

The course offered should have been at least equivalent in time to the requirement in Latin.

[1] In addition to the uniform requirements stated on pages 65 and 66.
[2] In addition to the uniform requirements stated on pages 66 to 68.

Physics. — Applicants may come prepared in either class-room or laboratory work. The latter is recommended when practicable.

It is important that the student should have learned the fundamental facts of Physics. A knowledge of hypotheses is not material at this stage of his training. If his preparation has been solely in the class-room, he should have completed some one of the text-books in Physics ordinarily used in high-school instruction of this kind. If laboratory work is presented, the course should be substantially equivalent to that laid out in such manuals as Hall and Bergen's "Text-book of Physics" or Chute's "Physical Laboratory Manual." In this case the applicant will be expected to present his original notes for examination.

Chemistry. — Applicants must present evidence of familiarity with the elements of chemistry. The amount required is somewhat less than that represented by Remsen's Briefer Course. Little importance is attached to a knowledge of the theoretical conceptions relating to the determination of atomic and molecular weights and to molecular structure, but a practical acquaintance with the composition, methods of preparation, and reactions of the common chemical substances, and a thorough understanding of the fundamental laws of chemical combination, are essential. The subject should be attempted only in schools having adequate laboratory equipment, and the laboratory work should be carried out with great care and close attention. The applicant should present for examination his original notes with any annotations which may have been made by the instructor.

Mechanical Drawing and Shopwork. — The applicant must be familiar with the projections of points, lines, planes, and simple solids. Special attention is called to the importance of neatness and accuracy in making the drawings, and considerable practice in securing these qualities is advised. Plates should

be presented showing the ground covered. (Faunce's Mechanical Drawing, chapters 1 to 4, represents the requirement.)

In **Shopwork** the applicant should be thoroughly familiar with, and know when and how to use, the different tools and materials; he should be able to adjust and sharpen all edge-tools, and should be capable of executing work from "working drawings." The preparatory exercises should have had systematic instruction in the correct use of the various tools as their main object rather than construction.

Carpentry: The exercises should include systematic instruction in sawing; planing; chiselling, including chamfering, grooving, and plain moulding work; framing, including tenoning, mortising, and fitting in braces; use of the ordinary moulding-planes and the making of simple mouldings; the making and use of the mitre-box in fitting mouldings; nailing; dovetailing; gluing, and the proper use of sand-paper.

At least seventy-five hours should be allowed, exclusive of any time that may be used in making working drawings.

Wood-Turning: The applicant should have had systematic instruction and experience in the use of the wood-lathe; should understand the adjustment of speeds for the work in hand, and how to use properly the turning tools, such as gouges, turning chisels, nosing tools, right and left side tools, parting tool, calipers, and dividers. The exercises should also include systematic instruction in centre and chuck turning, particular attention being paid to the production of smooth work by the cutting action of the tools, and not through excessive use of sand-paper.

At least forty-five hours should be allowed, exclusive of any time that may be used in making drawings.

CHANGE OF REQUIREMENTS TAKING EFFECT IN 1899.

In 1899 *and thereafter Solid Geometry will be made an absolute requirement, replacing the present alternative requirement of Solid Geometry or Advanced Algebra.*

It is the intention of the Faculty to increase the present requirements whenever it shall appear practicable for the schools to meet such an increase without raising the present age at entrance, by additional work

in modern languages. An alternative in Plane Trigonometry may be offered.

DIVIDED ENTRANCE EXAMINATIONS.

Candidates for admission will be allowed, at their option, to divide their entrance examinations between two successive years. The first divided examination will be held *only in June;* the second, in either June or September of the *following* year, at the dates named on page 2. To be admitted to the first divided examination the candidate must be at least sixteen years of age, and must present a certificate from his teacher, stating that he is qualified in the subjects in which he applies to be examined.

For the first divided examination the candidate will be allowed the choice of any of the following five subjects, but no credit will be allowed on any of these unless at least three of the five (or two in addition to the elective) are satisfactorily passed. At the second examination those subjects not passed at the first must be taken, as well as the Advanced Algebra or Solid Geometry, which cannot be taken at the first examination.

Algebra.	French (or German).	History.
Plane Geometry.	English.	

Details of the above requirements are given on pages 63 to 68.

No provision is made for division of entrance examinations between June and September of the same year.

While previous knowledge of chemistry and physics is neither required nor assumed for admission, students will find their progress greatly promoted by making themselves thoroughly familiar with the elements of these subjects, as set forth in any of the text-books ordinarily used in high schools, or, preferably, by pursuing an elementary course in chemical or physical laboratory work.[1]

A knowledge of the Latin language is not required for admission; but the study of Latin is strongly recommended to persons who purpose to enter the Institute, since in addition to its disciplinary value it gives a better understanding of the various terms used in science, and greatly facilitates the acquisition of the modern languages.[1]

In view of the increasing number of applicants taking examinations for advanced standing, the Faculty have

[1] See also statement under Elective Requirements, pages 68 to 71.

arranged alternative studies for students able to pass off some of their first-year subjects: thus, for example, applicants passing more than the required work in modern languages may arrange to complete these at an earlier stage in their courses; those passing both Advanced Algebra and Solid Geometry may substitute second-year European History or Shopwork, or special work in English or Chemistry; those anticipating Mechanical Drawing may do the same, or, if prepared, may take second-year Descriptive Geometry. Graduates of Manual Training Schools may often be excused from the first-term work in Mechanical Drawing, as well as the Shopwork required in some of the engineering courses.

A special circular giving detailed information in regard to such alternative studies will be mailed on application.

ADMISSION TO ADVANCED STANDING.

To be admitted as a regular student in the second, third, or fourth year, the applicant must have attained the corresponding age (eighteen, nineteen, or twenty years, respectively), and must in general pass satisfactorily the examination for admission to the first-year class, and examinations on all of the subjects given in the earlier years of the course which he desires to enter. The examinations for advanced standing are held at the time stated on page 2. (See pages 63 to 71 and pages 29 to 55.)

Graduates of colleges are admitted to the Institute without the usual entrance examination, and will be permitted to enter any of the courses at such a point as their previous range of studies will allow. If prepared to enter upon most of the studies of a certain year, they may be afforded opportunity to make up any studies of the earlier years in which they are deficient; they will, in general, be credited with all subjects in earlier or later years in which they can show, by examination or otherwise, a standing satisfactory to the Faculty, and may be received provisionally as regular students. The attention of such applicants is particularly called to the schedules of courses on pages 29 to 55, and to the Schedule of Topics of

the Catalogue. It is highly desirable that students contemplating professional courses after graduation from college should arrange their college electives to cover the earlier subjects of the courses chosen, in order that the number of deficiencies to be made up may be as small as possible. Such students are advised to communicate with the Secretary of the Faculty, from whom detailed information may be obtained as to the requirements for entering a particular year of any course. In order to enter any of the engineering courses in the second year, it is essential for applicants to have preparation in Analytic Geometry. For admission to third-year engineering work they must be prepared in mathematics through the Calculus. It is important that students applying for advanced standing in these courses shall have had considerable practice in Mechanical Drawing, and be familiar with the elements, at least, of Descriptive Geometry. Summer courses of appropriate scope are offered in these subjects. See page 59. Applicants desiring excuse from Mechanical or Freehand Drawing should present their plates. (A special circular in regard to Opportunities for College Graduates will be mailed on application.)

ADMISSION OF SPECIAL STUDENTS.

To be admitted to one or more selected subjects in any of the regular courses, — that is, to a partial or special course, — the applicant must have attained the age of seventeen years, and must give satisfactory evidence, by examination or otherwise, that he is qualified to pursue to advantage the subjects chosen.

By means of the Schedule of Topics of the Catalogue, the applicant may ascertain what the various subjects of study are, how when, and by whom they are given, in what regular courses they are included, and the preparation required for each; but admission to special courses is dependent in all cases upon the approval of the Faculty. In general, no student will be allowed to take any one of these subjects

until he has proved his satisfactory knowledge of all subjects required as preparation for it.

All special students desiring to take Chemistry of the first year must pass the full entrance examinations, except that an equivalent in some other subject may be substituted for Geometry. Communications in regard to such substitution should be addressed to the Secretary of the Faculty.

To Teachers and to Persons of mature age engaged in Technical Pursuits, wishing to devote some time to scientific study, the Institute desires to offer the amplest opportunities in its lecture-rooms and laboratories. Such persons may in general be admitted without formal examination, on satisfying the Faculty that they are qualified to undertake the work proposed. They will be expected after admission to attend the same exercises and examinations as other students. (For additional details, see circular on Opportunities for Teachers.)

Requirements for Graduation.

THE degree of Bachelor of Science, in the course pursued, is given for the satisfactory completion of any of the regular courses of study.

To be entitled to a degree the student must have attended the Institute for not less than one year next preceding, must have completed the prescribed studies and exercises of the four years, and must, in addition, pass final examinations, if required, on subjects relating particularly to his course. He must, moreover, prepare a dissertation on some subject included in his course of study; or an account of some research made by himself; or an original report upon some machine, work of engineering, industrial works, mine or mineral survey; or an original design accompanied by an explanatory memoir. This thesis or design must be approved by the Faculty. Theses are to be written on one side only of paper of good quality, 8 × 10½ inches in size, with an inch margin on the inner edge, and a half-inch margin on the outer edges. Theses must be handed to the Secretary of the Faculty, not later than the first annual examinations.

No degree can be conferred until all dues to the Institute are discharged.

Students leaving the Institute of their own motion before graduation are entitled to receive a statement of attendance from the Secretary.

Subjects and Methods of Instruction.

INSTRUCTION is given by lectures and recitations, and by practical exercises in the field, the laboratories, and the drawing-rooms. A high value is set upon the educational effect of these exercises, and they form the foundation of each of the thirteen courses. Text-books are used in many subjects, but not in all. In many branches the instruction given differs widely from available text-books; and, in such cases, notes on the lectures and laboratory work have been printed, either privately or by the Institute, and are furnished to the students at cost. Besides oral examinations in connection with the ordinary exercises, written examinations are held from time to time. Near the close of the months of January and May general examinations are held. After the examinations the standing of the student in each distinct subject is reported to his parent or guardian. Reports of standing are based to a very large extent upon the quality of daily class-work. The January and May reports form the basis of admonition or advice from the Faculty in the case of students who are not profiting sufficiently by their connection with the school.

Mathematics. — Great importance is attached to the study of mathematics, both as a means of mental discipline and as affording a necessary basis for further instruction in the engineering and other courses.

The three topics following are taken by all regular students: Solid and Spherical Geometry or Higher Algebra;[1]

[1] See page 64.

Plane Trigonometry; Plane and Solid Analytic Geometry,[1] including the equations and properties of the point, right line, and circle; of the parabola, ellipse, and hyperbola, and of the plane, sphere, cylinder, cone, paraboloids, ellipsoids, and hyperboloids.

Students in all the engineering courses receive instruction in the Differential and Integral Calculus, including the following topics: Expansion of functions, evaluation of indeterminate forms, maxima and minima, general properties of plane curves, application of both single and double integration to the rectification and quadrature of curves, and to the determination of volumes and moments of inertia.

In addition to the above, the following topics are given in some courses: Differential Equations, with applications to problems in geometry, mechanics, and physics; the Theory of Probability and Method of Least Squares, including the adjustment of observations and the precision of measurements; Fourier's Series, Spherical Harmonics, and Bessel's Functions; a study of their properties and their application to the solution of such problems in Physics as can be expressed by certain partial differential equations.

As elective work, opportunities are afforded for the study of Higher Algebra and Trigonometry, including De Moivre's theorem and its applications; the General Theory of Equations, with the solution of higher equations by methods of approximation; Determinants; additional work in Analytic Geometry of three dimensions, an advanced course in the Calculus, including the theory of definite integrals; Quaternions, being an introduction to the fundamental principles of vector addition, subtraction, division, and multiplication, and their application to problems of Plane and Solid Geometry.[2] General Theory of Surfaces; General Theory of Functions.

[1] A shorter course in Plane Analytic Geometry is given to students in certain non-mathematical courses.

[2] Upon application a second course treating the surfaces of the second degree by Quaternion methods may be given.

The Mathematical Library contains a carefully selected collection of works in all branches of Mathematics, and new publications of value are added as soon as issued. In addition, the more important journals devoted to the subject of Mathematics are regularly received.

The Department is also in possession of an extensive collection of models, which are of special interest and value in connection with the courses on analytic geometry of three dimensions, the theory of surfaces and the theory of functions.

Theoretical and Applied Mechanics. — In applied mechanics the subjects first treated are the composition and resolution of forces, the general laws of kinematics and dynamics mathematically discussed, the principles governing the determination of the stresses in the different members of trusses, centre of gravity, moment of inertia, and the ordinary principles of the strength of materials.

The more advanced instruction in this subject aims to familiarize the students with such data on the strength of materials used in construction as have been obtained by means of experiments, especially those made on a practical scale, in different parts of the world. Pains is taken to keep this work well up to date. This is followed in particular courses by the study of friction and lubrication, of continuous girders, of stone and iron arches, and of the theory of elasticity. Besides the above, the students have made during the school year 1896–97 the following tests in the laboratory: [1]

A test to determine the modulus of elasticity, the limit of elasticity, and tensile strength of a cast-iron, a wrought-iron, or steel rod or bar.

A test of the deflections and of the transverse strength of a full-size iron or steel I-beam, or of a wooden beam subjected to a transverse load.

A test to determine the modulus of elasticity and the tensile strength of annealed or bright iron wire.

A test to determine the shearing modulus of elasticity and torsional strength of 2-inch iron or steel bars.

[1] See page 102.

Tests of the tensile strength of hydraulic cement.
Tests of the compressive strength of hydraulic cement.
Tests of the tensile strength of compositions.
Torsional tests of composition bars; of iron, steel, brass, and copper wires.
Tests to determine the strength of full-size timber trusses.
Tests of the strength of cast-iron water pipe up to 48-inch diameter.
Tests of the compressive strength of wrought-iron pipe columns.
Tests of the tensile strength of bolted joints.
Tests of the strength of different kinds and sizes of ropes and of different knots used in fastening ropes.
Tests of the strength of twine, window cord, belting, and belt-lacing.

The instruction in Analytical Mechanics includes an advanced mathematical treatment of analytical statics, dynamics of a particle, dynamics of rigid bodies, etc., and requires acquaintance with considerable pure mathematics beyond the general courses in the calculus.

Drawing and Descriptive Geometry. — Instruction is given to all regular students in the principles of Geometrical, Mechanical, and Freehand Drawing; and a large amount of time is devoted to practice in the drawing-room, to enable the student to acquire the skill necessary for his future work. Drawing is also continued in connection with the professional studies. All engineering students learn the elements of Descriptive Geometry in connection with their mechanical drawing, the exercises including recitations by small sections.

The later exercises in descriptive geometry are of two kinds. In the lecture-room the instruction is given by means of models and diagrams, and also by the use of text-books. In the drawing-room the student is drilled in the solution of problems designed to illustrate the work of the class-room, and to make him thoroughly familiar with the subject.

The instruction in Freehand Drawing includes an elementary course taken by all regular students, and more advanced work in the departments of Architecture and Geology. For students in Architecture, the course includes the study of ornament and the human figure from the cast

and from life. Studies in charcoal are usually required, and opportunity is afforded for those who have made satisfactory progress to sketch in pencil, pen and ink, and with the brush. Importance is attached to drawing from memory and to rapidity of execution. For students in Geology, freehand drawing is taught with special reference to the representation of physical features and structure in field-work, and to the description of the specimens collected.

Besides the large and well-equipped freehand drawing-rooms of the Institute, the Museum of Fine Arts offers excellent opportunities for drawing from the cast, and regular exercises for advanced students are held in its galleries.

Shopwork. — Practical instruction in the nature of the materials of construction, and in the typical operations involved in the arts, is considered a very valuable adjunct to the theoretical treatment of professional subjects. Workshops have been provided with the more important hand and machine tools, so that the student may acquire a direct knowledge of the nature of metals and woods, some manual skill in the use of tools, and a thorough knowledge of what can be accomplished with them. The shops are located on Garrison street, and are equipped as follows:

The carpentry, wood-turning, and pattern-making departments contain forty carpenter's benches, two circular saw-benches, a swing-saw, two jig-saws, a buzz-planer, a mortising-machine, thirty-six wood-lathes, a large pattern-maker's lathe, and thirty-six pattern-maker's benches. The foundry contains a cupola furnace for melting iron, two brass furnaces, a core-oven, and thirty-two moulder's benches. The forge-shop contains a power hammer, thirty-two forges, seven blacksmith's vises, and one blacksmith's hand-drill. The machine-shop contains twenty-three engine-lathes and seventeen hand-lathes of approved patterns, two machine-drills, three planers, a shaping-machine, two universal milling-machines furnished with spiral and gear-cutting attachments, a universal grinding-machine, a cutter and reamer grinder,

thirty-two vise-benches arranged for instruction in vise-work, a twenty-four inch standard measuring-machine, and a fully equipped tool-room.

Chemistry. — All regular students attend a course of lectures on Inorganic Chemistry, illustrated by experiments, and perform experimental work in the laboratory of general chemistry The lectures are intended to prepare the student for his work in the laboratory, and to emphasize and coördinate the facts which he there learns. In the laboratory the student receives instruction in chemical manipulation, and performs a series of experiments designed to illustrate the properties of the more important elements and compounds and the laws of chemical action. In connection with the lectures on inorganic chemistry, the elements of qualitative analysis and of theoretical chemistry are taught, and the student is given practice in the solution of chemical problems. The study of theoretical chemistry is continued in the chemical and other related courses by more advanced lectures and recitations, in which are presented the general laws and theories relating to the constitution of chemical compounds and their transformations. A laboratory course in molecular weight determinations and one in physico-chemical measurements also form a part of the instruction in theoretical chemistry.

The instruction in Analytical Chemistry extends through two or three years of the chemical or other allied courses. Each student is assigned a desk in the laboratory for his sole use, and is allowed to supplement the regular work of his course by such additional practice as his time and energies will permit. General directions relating to the laboratory practice are given in the lecture-room, and these are supplemented by personal instruction at the student's desk. The assignment of work is made with due regard to the course which the student is pursuing, and is designed to combine a reasonable breadth of experience in methods and manipulation with such training as shall enable him to deal with technical problems intelligently and successfully.

A separate laboratory is fitted for volumetric analysis, and special attention is given to instruction in this branch of quantitative analysis, including the graduation and calibration of measuring instruments.

In addition to the lectures upon methods of analysis and manipulation, the current chemical literature in English, French, and German is reviewed by the students, and subsequently discussed in the class-room under the direction of an instructor.

The facilities for gas analysis have recently been increased by the enlargement of the rooms devoted to this work, and by the addition of much new apparatus. New laboratories have also been equipped for the chemical analysis of oils, and for the optical and chemical examination of sugars, starches, etc. The carefully arranged course of instruction in each of these subjects is designed to familiarize the student with the best methods of analysis, and to enable him to interpret intelligently the results of these analyses in their technical bearings.

The instruction in Sanitary Chemistry consists mainly of laboratory work, supplemented by occasional lectures, and special laboratories have been equipped for the purpose. A definite scheme of work is laid out, including practice in the methods commonly used in the chemical examination of air and water, of milk and of butter. For those who wish to take a more extended course, opportunity is afforded for the critical study of methods of analysis, and for the investigation of a variety of sanitary problems in which chemical questions are involved.

Industrial Chemistry is taught by a course of lectures and by work in the laboratory of industrial chemistry. A full description of the most important technical applications of chemistry is given in the lectures, a part of which are delivered by persons actively employed in carrying out the processes which they describe. In the industrial laboratory the students prepare chemical products from raw materials, and also under-

take the preparation of pure chemicals. They are taught fractionation and distillation; and particular attention is paid to the preparation of dyes and mordants.

Dyeing and coloring receive special attention. The course of instruction includes the bleaching and dyeing of silk, and of cotton and wool, in the piece and in yarn. The students are taught how to use mordants and to perform the common operations of the dyehouse. They become acquainted with the principles involved in cotton printing, and have some experience in mixing colors. The methods of detecting the nature of the dyestuffs present upon fibres are taught, together with many of the modern methods of commercial analysis. A special laboratory is used for this instruction; it contains a complete equipment for experimental dyeing and coloring. The laboratory instruction is supplemented by frequent excursions to manufacturing establishments, where the practical working of chemical industries can be examined.

There are two courses in Organic Chemistry, — an elementary course of fifteen lectures given in the third year, preparatory to an extended one of ninety lectures in the fourth year. This later course treats of the properties, composition, and mode of formation of the more important organic compounds, and also of the modern theories of chemical composition and structure. It is fully illustrated in the lecture-room by experiments.

The laboratory work in organic chemistry comprises practice in the methods of ultimate analysis, exercises in the preparation of a variety of typical organic substances, and a series of experiments illustrating the characteristic reactions of the different classes of substances and their identification and separation. In connection with their laboratory work students are required to consult original articles bearing upon the subjects they are studying, and thus to acquire familiarity with chemical literature. Ample opportunities are afforded for the prosecution of original investigations both in pure and applied chemistry.

The instruction in chemistry is designed primarily for those who are candidates for the several degrees of the Institute, and for such special students as are looking to chemistry as a profession, and are following, in the main, the courses laid out for the regular students. In order to secure the necessary command of chemical literature, these special students are required to study French and German as a part of their course.

(For further details, see the circular on Chemistry.)

The Kidder Laboratories of Chemistry afford accommodations for six hundred and twenty-five students. The chemical department occupies eighteen laboratories, four lecture-rooms, a reading-room and library, balance-room, offices, and supply-rooms, — in all thirty rooms. Three new laboratories have been recently added for advanced work and research. The laboratory for general chemistry has places for four hundred students, and is completely equipped for instruction in elementary chemistry. The analytical laboratory can accommodate one hundred and fifty students, and possesses every convenience for accurate and rapid analytical work. The organic laboratories have places for thirty students. The laboratories for sanitary chemistry contain places for sixteen students. They possess a complete outfit for the analysis of air and water, and for the investigation of sanitary problems. The laboratory of industrial chemistry accommodates thirty students. It consists of a series of rooms fitted with the needful apparatus for the preparation of chemicals on a considerable scale. The laboratory contains kettles of various patterns, stills, presses, tanks, centrifugal dryers, crystal dryers and filter-press, a furnace, and a variety of other apparatus. The laboratory devoted to textile coloring contains numerous jacketed kettles, baths, and dye-tubs, squeeze-rolls, steamer, ager and dryer. Kidder Hall has a seating capacity of one hundred and eighty, and is arranged with special reference to the delivery

of experimental lectures. In addition there are three smaller lecture-rooms, seating, respectively, seventy-five, thirty, and ten students. The lecture-rooms contain valuable cabinets of specimens for purposes of illustration. The balance-room is supplied with twenty-two analytical balances.

The William Ripley Nichols Chemical Library, numbering more than six thousand volumes and thirteen hundred pamphlets, is kept in the reading-room of the department. This library contains complete sets of most of the important chemical periodicals and a noteworthy collection of works upon sanitary science. The number of periodicals currently received is seventy. It is open to all persons who desire to consult it.

Chemical Engineering. — The special instruction upon this subject begins with an extended descriptive course of lectures giving a general view of Industrial Chemistry. Chemical questions connected with various industries are discussed and mechanical appliances described. Details of construction are reserved for a subsequent course dealing with materials, methods of transportation, evaporation and distillation, refrigeration, furnace construction, and similar topics. These topics are, so far as possible, taught by persons practically connected with the industries of which they treat. Special attention is paid to the discussion of the engineering problems of combustion, fuels, evaporation, boiler corrosion, etc., from a chemical point of view. The machinery and mechanical appliances used in manufacturing chemistry are also discussed at length from a purely engineering standpoint. Heat measurements and the economic use of fuels are considered in separate courses of lectures. A laboratory course of instruction is given in technical gas analysis, including the collection and analysis of furnace and illuminating gases, and another in the chemical and physical testing of oils. The instruction in applied chemistry of the fourth year of the course includes the use of text and reference books in both

French and German. The student gains thereby a working knowledge of the technical vocabulary, and is enabled to consult literature in these languages relating to patents. Students in this course have also practice in the preparation of chemicals on a semi-industrial scale in the laboratory of industrial chemistry. Excursions are frequently made to various manufacturing establishments in Boston and vicinity.

Physics. — The instruction in Physics begins with an extended series of lectures attended by all regular students. The various branches are treated both mathematically and experimentally. In all cases the theoretical discussion of a question is followed by an account of its practical applications. Recitations are held upon the subjects considered in the lectures.

Regular students, excepting those in Architecture, enter upon a general course of experimental work in the Rogers Laboratory of Physics, either upon the conclusion of the lecture course in physics or earlier. This work is designed to strengthen the student's understanding of the laws of physics, to impart a knowledge of the methods and instruments used in physical measurements, and to give practice in the mathematical discussion of experimental results. The laboratory work consists almost exclusively of quantitative measurement. The earlier and simpler work serves chiefly to train the student in the use of methods or instruments which are employed as accessories later. This is succeeded by experiments on the mechanics of solids, liquids, and gases, each illustrating a method by which some physical law or constant is determined. Work in optics follows, and heat and electrical measurements occupy the remaining and more difficult part of the course.

Accurate work is required throughout; and in connection with the use of instruments of precision, especially in the more advanced measurements, the student's attention is particularly directed to the study of possible sources of

error, and to the discussion of the effects of these upon the results obtained. A short lecture course is also devoted to this subject.

The particular line of work assigned to each person is determined, to some extent, by his department in the Institute; and the instruments which he studies are often such as he will be called upon to use in later technical work. In a number of courses, such as Physics, Chemistry, Electrical, Mechanical, Chemical, and Mining Engineering, work of a more advanced scientific or technical nature is undertaken. In such work, laboratory and lecture instruction are usually combined.

An extended course is provided in general electrical measurements and testing, and also one in the testing of dynamo-electric machinery. Lecture and laboratory instruction are given in heat measurements, including pyrometry and fuel tests. A course has also been instituted in modern physico-chemical methods, in which particular attention is given to the application of these methods to the various novel and important scientific problems of the present day in physical and electro-chemistry. A special laboratory is devoted to this purpose. Facilities are provided for original investigation in these branches of Physics. Instruction is also provided in photography and its applications, in photometry, microscopy, and the use of the lantern as an instrument of demonstration in the lecture-room.

Original investigation is encouraged, and the result has been a considerable number of published memoirs.

Further instruction in pure physics is also provided for the especial benefit of those who are candidates for a degree in physics. This includes special courses in acoustics, energetics, and the kinetic theory of gases, and a mathematical treatment of optics and electricity.

Opportunity will be offered for more advanced instruction in mathematical and experimental physics to students who are competent to pursue such courses. During the present year

a series of lectures of this character will be devoted to the electro-magnetic theory of light.

It is intended that students pursuing these courses shall gain a familiarity with standard works on the various branches of physics, both in their own and foreign languages. In connection with them, a physical colloquium is held, for which the students prepare and read before the class essays on assigned physical topics. These essays are written after a study of recently published papers and memoirs, and often embody also the results of experimental work by the student. They are intended to familiarize the class with current scientific literature, and to give experience in independent study and in the preparation and presentation of original scientific papers. This work is of particular advantage to those who intend to become teachers.

The Rogers Laboratory of Physics is located in the Walker Building and occupies seventeen rooms. Of these, two are lecture-rooms: the general physical lecture room, seating three hundred and fifty students, and a smaller lecture-room for special lectures in physics and chemistry, seating seventy. Both of these are fitted with appliances for physical experimentation and the use of the lantern. The laboratory of general physics is devoted to instruction in general physical measurements; the acoustic laboratory is especially designed for acoustic and telephonic research, and the optical room for the study of light. The laboratory of electrical measurements is furnished with special electric circuits for lighting and power, and for both direct and alternating currents. The laboratory of heat measurements and the laboratory of physical chemistry are devoted to advanced work in these subjects. Several dark-rooms are appropriated to photometry and photography.

The Laboratories of Electrical Engineering constitute a further important portion of the Rogers Laboratory. The dynamo-room contains a large plant of direct and alternating

current machinery, the driving power for which is furnished by a Westinghouse 90 horse-power simple engine and a Westinghouse 130 horse-power compound engine. A number of other rooms are fitted up for study and research in the various branches of technical electricity.

The Rogers Laboratory has an exceedingly extensive equipment of apparatus for both demonstration and physical measurements, and large additions are made to it every year. It is especially well furnished with instruments for electrical testing, and for heat and electro-chemical measurements.

The library of the department, numbering fifty-eight hundred volumes, contains the standard works upon various branches of physics, and new publications of value are added as they appear. It is especially complete in works relating to electricity. The leading scientific and technical periodicals devoted to physics and electrical engineering are regularly received, and are accessible to students. The study of special topics is greatly facilitated by several valuable libraries, to which the students have admission. (See also p. 124 and the circular on Electrical Engineering and Physics.)

Electrical Engineering. — As a foundation for subsequent work, instruction is given in the theory of electricity. An extended course of lectures is devoted to the detailed consideration of the various technical applications of electricity to land and submarine telegraphy, the telephone, electric lighting, electro-chemistry, the electrical generation, transmission, and utilization of power, and the design of dynamo-electric machinery. Instruction is given by lectures and laboratory exercises upon the processes of photometry, especially as applied to the measurement of electric lights.

A special course of lectures for students in Electrical Engineering has also been introduced, in which the transmission of power by mechanical as distinguished from electrical methods is treated.

Advanced instruction is provided in general electrical

measurements and testing, and in the Laboratories of Electrical Engineering an extended series of exercises is devoted to the experimental study of direct and alternating current generators and motors, transformers, and other forms of dynamo-electric machinery. The subjects of construction, specifications, and contracts also receive attention.

Besides the work done by the regular staff of the Institute, special instruction is given by gentlemen who are professionally engaged in various departments of electrical engineering, or especially conversant with certain branches of applied electricity. During the past year such instruction has been given by the following persons:

Mr. George W. Blodgett, Electrician of the Boston and Albany Railroad, on the Application of Electricity to Railway Signalling; Mr. Hammond V. Hayes, Electrical Engineer of the American Bell Telephone Co., on Telephone Engineering; Mr. C. J. H. Woodbury, of the American Bell Telephone Co., on Electricity in its Relation to Fire Risks; Mr. Ernest A. Le Sueur, on the Industrial Applications of Electro-Chemistry; Mr. Louis Bell, on the Electrical Transmission of Power and the Application of Electricity to Railway Transportation; Mr. S. Everett Doane, of the General Electric Co., on the Manufacture of Incandescent Lamps; Mr. Hollis French, on Electrical Engineering Practice and Specifications; Mr. Howard C. Forbes, on the Design and Testing of Electric Light and Power Plants; Professor Elihu Thomson on Recent Lines of Development in Applied Electricity; and Mr. Odin B. Roberts, on the Nature and Function of Patents for Inventions.

The equipment of the Laboratory of Electrical Engineering includes a large number of dynamo machines, both alternating and direct current, of various types and sizes, which are wholly available for purposes of instruction.

Among these are the following: An Edison shunt generator, having a capacity of 96 amperes at a pressure of 110 volts; a Thomson-Houstor inclined-coil constant potential generator,

having a capacity of 120 amperes at 110 volts; a Westinghouse multipolar compound generator, having a capacity of 180 amperes at 110 volts; a Weston shunt generator, having a capacity of 60 amperes at 70 volts; a Thomson-Houston alternating-current generator, having a capacity of 30 amperes at 1000 volts, with transformers of various patterns and sizes up to 15 kilowatts; a Brush arc-light generator, having a capacity of 10 amperes at 1500 volts; an experimental three-phase low-pressure alternating-current generator, having a capacity of about 15 kilowatts at 500 volts; a Westinghouse shunt generator for electrolytic work, having a capacity of 300 amperes at 15 volts; a General Electric compound bipolar generator, having a capacity of 25 amperes at 125 volts; a Westinghouse 10-horse-power machine arranged for use as a 120-volt direct-current generator or motor, a quarter-phase alternating-current generator or motor, or a rotary transformer; a 220-volt 7½-horse-power Thomson-Houston shunt motor; a 7-horse-power 500-volt three-phase alternating-current motor; several 15-horse-power 500-volt Thomson-Houston and Edison street-railway motors; and a large number of small direct and alternating-current generators and motors of various sizes up to 5-horse-power. A 500-light United States direct-current compound dynamo is used for lighting the Engineering Building, and is available for purposes of instruction. The laboratory possesses a 15-kilowatt Thomson welding coil, furnishing current up to 3000 amperes if required, and a set of 10-kilowatt phasing transformers for use in connection with the three-phase and quarter-phase machines.

During the past year a new and separate plant has been installed solely for use in regular laboratory instruction, in connection with the course in dynamo testing and dynamo-electric measurements. It consists of two similar four-pole moderate-speed 25-kilowatt direct-current compound generators made by the General Electric Co. They are belt-driven from a Westinghouse compound engine fitted with indicators,

and with a surface condenser discharging the condensed steam into weighing-tanks.

The switchboard is so designed that the dynamos can be put in series or parallel or connected in any special manner called for by the requirements of particular methods of testing the efficiency, or studying the losses, either of the dynamos alone or of these in connection with the engine. A number of Weston illuminated dial ammeters and voltmeters of suitable ranges constitute a part of the equipment. They are provided with flexible lead-wires, and so arranged as to be readily connected to meet the requirements of the ordinary commercial methods of testing efficiency as well as those of the more refined electrical methods.

For additional details see p. 89 (Rogers Laboratory) and also the circular on Electrical Engineering and Physics.

Civil Engineering. — The instruction is given by means of lectures and recitations, and by practice in the field and in the drawing-room.

In Surveying, besides the work in the class-room, the use of the various instruments is taught by actual work in the field, including the adjustments of the instruments and the principal operations involved in land, topographical, hydrographical, railroad, city, and underground surveying. The work in the drawing-room consists in representing upon paper the surveys made in the field, with practice in topographical and map drawing. The earlier field-work includes the use of the chain, tape, compass, transit, level, and solar compass, as well as of the various pocket instruments. This is followed by the use of the stadia, sextant, and plane table. The short course in practical astronomy includes a discussion of the methods of determining latitude, longitude, time, and azimuth, together with the theory of the usual astronomical instruments. The short course in geodesy includes a discussion of the figure of the earth and of the methods of measuring base-lines and of carrying on a geodetic survey.

Students electing the geodetic option pursue these subjects in detail, taking also the course in the method of least squares, and receiving instruction in the adjustment of observations.

The course in Railroad Engineering treats of the survey, location, construction, and equipment of railroads. In addition to the work in the class-room, an actual railroad survey and location, several miles in length, are made each year upon such ground as shall best illustrate the problems occurring in practice; and the necessary maps and profiles are prepared by the students. Advanced courses are given, in which the economics of railroad location are discussed; also the subjects of rolling-stock, motive power, train resistance, brakes, signals, yards, stations, tunnels, and street railways of various kinds. The work in the class-room is supplemented by designs, made in the drawing-room, and by visits to work in progress of construction. Railroad administration and management form the subject-matter of a distinct course.

The work in Road or Highway Engineering embraces the location, construction, and maintenance of town and country roads, and of city streets and pavements. The facilities for instruction in this branch are ample, and the equipment of the department, in books, models, apparatus, and drawings, is constantly increasing. The laboratory is equipped with apparatus by which the suitability of various materials for the purposes of road or pavement construction may be ascertained.

The course in Hydraulic Engineering embraces, first, a detailed study of the principles of hydraulics, including the laws of hydrostatics and of the flow of water through orifices, over weirs, and through pipes, with numerous problems illustrating the practical application of the principles discussed; second, practice in hydraulic measurements, in which the student is instructed in the methods of gauging the flow of streams, with work in the field, using instruments of various

kinds; third, practice in carrying out hydraulic experiments on the flow of water and on the loss of head under various conditions, with the aid of the tank and other apparatus in the hydraulic laboratory, as well as in the testing of motors, and other similar work; fourth, a course of exercises, given partly by text-book and partly by lectures, covering the subjects of hydrology, water-supply, water-power, hydraulic motors, and irrigation.

In the course in Sanitary Engineering the object sought is to prepare the student to deal intelligently with certain questions relating to the health of individuals and communities, and to plan works of sewerage and drainage. The course embraces the study in detail of the house, with its apparatus, the disposal of sewage for isolated buildings by surface or sub-surface irrigation, the collection and removal of sewage in the larger towns, and the sanitary drainage of cities. Frequent opportunities are given for the inspection of actual examples of sanitary engineering, and the work in the class-room is supplemented by exercises in designing. The students also attend lectures and demonstrations in sanitary science.

The course in the Strength and Stability of Structures embraces a study of the methods of proportioning beams, floors, columns, roofs, bridges, piers and abutments, arches, retaining walls, and similar structures. Both the analytical and graphical methods of investigating the strength and stability of structures are taught. The course in Bridges and Roofs involves an extended study of the different structures of this class, of wood, stone, and metal, with reference to economy of material, methods of proportioning parts, and the details of design. The subject of foundations is also included. In connection with these courses the student is required in the drawing-room to make complete designs and working drawings, with blue-prints, for several structures.

By the kindness of many active members of the profession, and especially during the past year through the

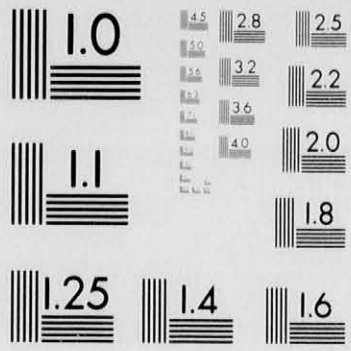
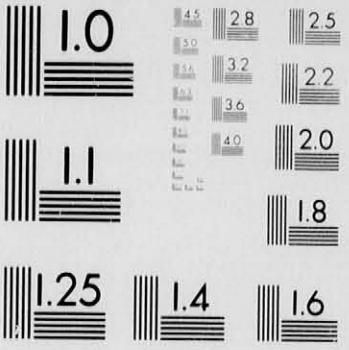
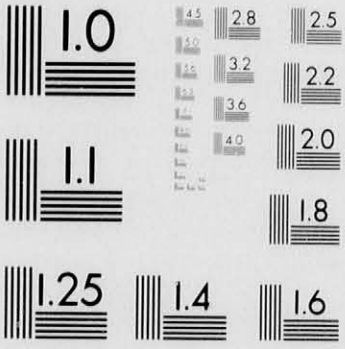
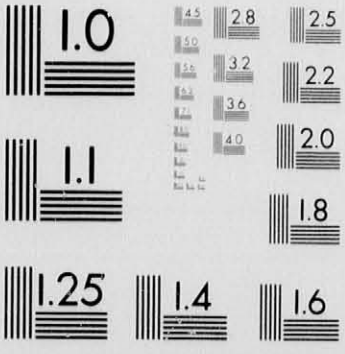
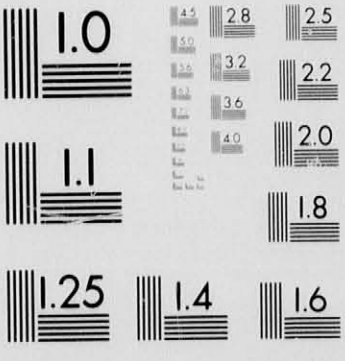
courtesy of Mr. Lucius Tuttle, President of the Boston and Maine Railroad, Mr. W. H. Barnes, General Manager of the Boston and Albany Railroad, and Mr. D. H. Andrews, proprietor of the Boston Bridge Works, the classes are frequently enabled to inspect engineering works of interest, and to carry on field operations in favorable localities.

In addition to the regular lectures of the school, occasional lectures are given by prominent engineers, in active practice in their profession, upon subjects with which they are especially familiar. During the past year lectures have been given by Mr. George W. Blodgett, Electrician of the Boston and Albany Railroad, on the Application of Electricity to Railway Working; and by Mr. F. H. Newell, on Irrigation in the Western States.

The instruments and apparatus of the department may be classified as follows: A full outfit of the instruments used in surveying and in the drawing-room; a collection of hydraulic apparatus for work in the field, comprising single and double floats of various patterns, loaded tubes, and five-current meters of different kinds; apparatus for comparing the wearing properties and other physical characteristics of the various road and pavement materials; and continuous-record instruments for measuring the strain in bridges and other structures of iron. The very complete hydraulic apparatus for the measurement of the flow of water through orifices and mouthpieces, over weirs, through pipes, etc., is described elsewhere, in connection with the engineering laboratories.

The department has also a collection of models illustrating bridge details, problems in stone cutting, etc., and a set of full-size models of various types of road and pavement construction, for use in connection with the work of instruction. It has also a large collection of blue-prints, drawings, and photographs, and a large number of lantern-slides.

In order to provide for the needs of students wishing to pursue graduate courses of study, leading, if desired, to ad-


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vanced degrees (see page 56), an advanced course has been laid out, which includes, besides original work in research and criticism, further instruction in the design and construction of bridges, buildings, and other structures, in theoretical hydraulics, and in the theory of elasticity, with special reference to its applications to the strength of materials, together with experimental work in the engineering laboratories.

(For additional details, see the circular on Civil Engineering.)

Summer Course in Topography, Geodesy, Hydraulics, and Geology. — In the vacation following the third year, students taking the geodetic option are required to attend a course in topography, geodesy, hydraulics, and geology, during four to six weeks in the early part of the summer. This is held at some convenient and suitable point in the country, and its object is to give the students opportunity for more extended and continuous field practice in these branches than is possible during the term. The work done consists of a topographical survey of a certain district, with field practice in geodesy and geology and in the measurement of the flow of streams and in tidal observations. The course is open, without extra charge for tuition, to all students in the department who have completed the third year, as well as to properly qualified students in other departments. Persons not connected with the Institute may also be permitted to attend, upon giving satisfactory evidence of being properly qualified, and upon payment of the tuition fee of $25.00.

In 1894 and 1895 this school was held in the Adirondack Mountains; in 1896 and 1897 it was held at Machias, on the coast of Maine.

Mechanical Engineering. — The instruction is given by means of lectures and recitations, and by practice in the drawing-rooms and in the engineering laboratories. Visits are made also to machine shops and manufacturing establishments, to

witness machinery in operation and manufacturing processes which cannot be seen at the Institute itself.

The course in the principles of Mechanism and in the construction of gear-teeth is followed by study of the mechanism of machine tools and of cotton machinery.

The course in Steam Engineering includes a detailed study of the principles of thermodynamics, mathematically treated; a discussion of the properties of gases and vapors, especially steam; of the flow of steam and other fluids, of the steam injector, of refrigerating machines, and of the hot-air engine. All of these topics are treated in such a way as to give the student a good foundation in the principles of thermodynamics, especially as they apply to the steam-engine. This is followed by a study of the steam-engine itself, of the compound and multiple-expansion engine, of the mode of testing steam-engines, and of steam-boilers. A careful study is made of such data as have been based on reliable tests made on large single, compound, and multiple-expansion engines. The gas-engine is studied, also air-compressors and refrigerating machines.

In Machine Design, each student is required to make a certain number of designs: the design of a boiler, of a large shaft with gears and pulleys, of a set of hangers, etc., to make all the necessary calculations and drawings, and to determine the strength of every part by means of the principles already learned.

The main principles of hydraulics and of hydraulic motors are studied with particular attention to the turbine.

The course in Locomotive Engineering begins with a careful study of the details of the more usual types of locomotives, and of the strength of the more important parts. The following topics, among others, are discussed, — train resistance, brakes, heating by steam from the locomotive, compound locomotives. The course in Marine Engineering includes a detailed study of the design and construction of single, compound, and multiple-expansion marine engines,

with a discussion of their form, proportions, and efficiency, as well as of the strength of the several parts. Mill Construction is studied together with the processes to be carried out in a cotton mill, so far as to enable the student to take up intelligently the laying-out of machinery to best advantage, including the planning of the power plant and the distribution of power, all leading up to the designing and building of the mill itself.

The laboratory work, in its earlier portions, is devoted to giving the student a drill in such experimental work as a mechanical engineer has constantly to perform, such as boiler and engine tests, etc. The later work takes very largely the form of original research; and it is intended that the students in these laboratories shall, under suitable direction, undertake the experimental investigation of a number of important engineering problems. (See page 102.)

In connection with the course in mechanism, practice is given in making working drawings of parts of machinery from measurements, and other drawings illustrating the class-room work. In the following year detail drawings are made from measurement of some machine, and, from these, assembly drawings. This is followed by practice in boiler drawing and in the working-out of valve gears and mechanism design.

Courses are given on Industrial Management and on Foundations.

Besides the teaching by the regular corps of instructors, lectures upon special subjects are given by gentlemen actively engaged in the profession. During the past school year, one or more lectures were given, by Mr. Everett Morss, on Insulation of Wire Cables and on Wire Work; Mr. J. N. Dunn, on Manufacturing Cost Accounts and Methods of Computation; and Mr. Franklin W. Hobbs, on Textile Mills in Europe. The students of the department were enabled to attend also a course of lectures by Mr. Odin

B. Roberts, on the Relation of Patent Law to Engineering. (For additional details, see the circular on Mechanical Engineering.)

Naval Architecture. — The special work of the course is given by lectures, recitations, and drawing. The subjects treated in the lectures and recitations are as follows:

An account is given of the methods of building ships in iron and steel, including transverse and longitudinal framing, and the fitting of ballast tanks and double bottoms; preparing the ground, laying blocks, and erecting scaffolding; the laying-out, bending, and erection of the framing and the application of the shell plating; the fitting of decks, hatches, and bulk-heads; launching and docking.

A general discussion follows of the properties of floating bodies, with special application to ships; statical and dynamical stability of ships and curves of statical and dynamical stability, with examples of such curves for special types of ships; of the effect of carrying fluids in tanks wholly or partially filled; and of the effect of filling compartments of a ship; of reserve of stability, or the effect of sudden forces — such as gusts or squalls of wind — on the safety of a ship when under sail.

Attention is given to methods of finding statical and dynamical stability by Barnes' method and by the method of cross-curves; to methods of finding the weight and centre of gravity of hull, equipment, and cargo; to the determination of the loads, shearing forces, and bending moments acting on the hull of a ship in still water and when borne by waves; to the determination of the equivalent girder and the stresses on the hull of a ship.

The rolling of a ship in an unresisting medium, in water, and among waves, the trochoidal theory of waves, and the theory of waves of translation, waves made by ships and the effect of such waves on the propulsion of ships are considered, also

resistance of ships due to friction, wave-making, eddy-making, and to the effect of the wind on hull and rigging; experiments on the resistance of ships by towing and otherwise; effect of the propeller on the resistance of a ship; propulsion of ships by steam or sails; steering and manœuvring a ship.

An explanation is given of methods of procedure for laying out the preliminary design of a ship for a given purpose; and of carrying out and completing a design.

Heating and ventilation, and drainage of ships and adjustment of compasses receive attention.

The drawing-room work is as follows:

Laying out and fairing the lines of a ship. Making a displacement sheet. Drawing curves of displacement, tons per inch of immersion, centre of buoyancy, and transverse metacentre, moment to trim ship, etc. In connection with lectures on ship construction, drawings are made of different construction details.

Calculation of statical and dynamical stability by Barnes' method and the method in use at the Bureau of Construction and Repair of the Navy Department. Calculation of the weight and centre of gravity of the hull, equipment, and cargo. Calculation of trim of a ship, with and without cargo. Calculation of the stresses on the hull in still water and when borne by waves.

Getting out lines, constructing the midship section, and general arrangement plans for a new design.

The drawing-room work is carried on progressively, as applied to some ship or ships of good modern design, and is of a scope to give familiarity with all the methods and processes used for the complete design of a ship and the determination of her properties. Finally, the design of a ship is begun and carried far enough to exhibit the methods of designing; calculations and processes which the student

has already mastered, and with which he must be familiar before a design can be intelligently begun, are carried only so far as is required to get the design into shape. Full advantage is taken of the use of mechanical integrators, of which the department has a good supply, to reduce the time and labor of calculations.

The department has a good collection of standard and recent works on naval architecture and marine engineering. There is, further, in the possession of the department a large number of drawings of modern ships and marine engines of various types for naval and merchant service; including complete sets of drawings of several steamships, with their propelling machinery, both naval and merchant, of large size and of the most recent and approved design and construction. Much of this material is worked up in such form that it can be used directly in the work of the classes; in fact, the work as detailed could be carried out only by aid of such material.

(For additional details, see the circular on Naval Architecture.)

The Engineering Laboratories. — The objects to be accomplished by these laboratories are the following: First, to give the students practice in such experimental work as engineers in the pursuit of their profession are called upon to perform; second, to afford some experience in carrying on original investigations in engineering subjects, with such care and accuracy as to render the results of real value to the engineering community; third, by publishing from time to time the results of such investigations, to add gradually to the common stock of knowledge.

These laboratories are situated in the Engineering Building, where they occupy the two lower floors, 50 × 150 feet each. The laboratory for testing the strength of materials is furnished with the following apparatus: A testing-machine of one hundred thousand pounds capacity and another of fifty

thousand pounds capacity for determining tensile strength, elasticity, and compressive strength; a testing machine of one hundred thousand pounds capacity for determining the transverse strength and stiffness of beams up to twenty-five feet in length, of framing-joints used in practice, and of other structures subjected to a transverse load; a testing-machine of eighteen thousand pounds capacity for determining the transverse strength and stiffness of beams up to fourteen feet in length; apparatus for testing the strength of full-size masonry arches, a machine for testing the torsional strength and stiffness of shafting up to three inches in diameter and to twenty-one feet in length; a small torsion-machine of six thousand inch-pounds capacity, for very delicate work; machinery for the measurement of the twist of shafting; for testing the tensile strength of mortars and cements, and of ropes; for testing the effect of repeated stresses upon the elasticity and strength of iron and steel; for determining the strength and elasticity of wire; for determining the strength and elasticity of cloth; for testing the strength of pipe and pipe-fittings under hydraulic pressure; also accessory apparatus for measuring stretch, deflection, and twist. Besides the above-stated apparatus, a horizontal Emery testing-machine of three hundred thousand pounds capacity forms a part of the equipment of this laboratory. It contains all the essential features of the eight hundred thousand pound testing-machine at the Watertown arsenal, built by Lieut. Albert H. Emery, and is suitable for testing a compression specimen eighteen feet long, and a tension specimen twelve feet long.

The Hydraulic Laboratory contains a closed steel tank five feet in diameter and over twenty-seven feet high, arranged for the insertion of orifices, mouthpieces, and other special pieces of apparatus, with gates for controlling the discharge, and with connections for supplying water, in experiments upon pipes and motors. This tank is connected with a ten-inch standpipe over seventy feet high, so arranged that a

constant head may be maintained at any desired level. Two steel tanks, each of about two hundred and eighty cubic feet capacity, give opportunity for the accurate measurement of larger quantities of water than can be weighed directly during experiments. A system of pipes connected both with the main tank and with the pumps is arranged for the insertion of diaphragms, branches, and other apparatus for studying loss of head and the laws of discharge. An attachment has been fitted to the main tank, containing a Pitot tube for studying the laws of velocity in jets, and adjustable points for accurate measurement of the cross-section of jets.

The laboratory is further equipped with a forty-eight-inch Pelton wheel, of thirty horse-power; a Venturi meter; an eight-inch, a twelve-inch, and two forty-eight-inch weirs for measuring water, also an orifice-tank for the same purpose; a centrifugal pump; a rotary pump; a plunger-pump; a pulsometer; a three-inch water meter and others of smaller size, and a variety of mercury gauges, standard orifices, mouthpieces, diaphragms, branches, nozzles, etc., for experiments with flowing water under all conditions. A six-inch turbine is arranged to be run under various conditions of head and gate opening in tests for efficiency. There is also a hydraulic ram with a two and one-half inch drive-pipe. The laboratory also contains a steel weir-box, the weir having a standard crest adjustable as to length from zero to five feet; and a seconds pendulum, with chronograph, for exact determination of time in experimental work. Water is directly supplied for experiments by the various pumps.

The Steam Laboratory contains a triple-expansion engine, with cylinders of nine inches, sixteen inches, and twenty-four inches diameter respectively, and thirty inches stroke, arranged in such a way as to be run single, compound, or triple, as desired for the purposes of experiment. This engine is of the Corliss type, and has a capacity of about one hundred and fifty horse-power when running triple, with an

initial pressure of one hundred and fifty pounds in the high-pressure cylinder. It is connected with a surface condenser and the other apparatus necessary to adapt it to the purposes of accurate experiment.

This laboratory also contains a sixteen horse-power engine, and an eight horse-power engine, used for giving instruction in valve setting, etc., also a thirty-six horse-power gas-engine and a small gas-engine. It is equipped with several surface condensers, steam-pumps, injectors and ejectors, calorimeters, mercurial pressure and vacuum columns; apparatus for determining the quantity of steam issuing from a given orifice or through a short tube under a given difference of pressure; apparatus for testing steam-engine indicators; apparatus for testing injectors; and with indicators, planimeters, gauges, thermometers, anemometers, and other accessory apparatus.

The engineering laboratories are provided with a number of friction brakes; with machinery for determining the tension required in a belt or rope to enable it to carry a given power, at a given speed, with no more than a given amount of slip; with four transmission dynamometers; with two machines for determining the coefficient of friction of lubricating oils; with a pendulum governor arranged for experimental purposes; with a complete set of Westinghouse air-brake apparatus, including the parts belonging to the car and to the locomotive; with the pump and engineer's valve of the New York air-brake; with a locomotive link model; with two hot-air engines; and with cotton machinery as follows, — two cards, a drawing-frame, a speeder, a fly-frame, a ring spinning-frame, and a mule, as well as accessory apparatus. There are available for the purposes of experiment in connection with the work of these laboratories two horizontal tubular boilers in a boiler-house near the Engineering Building, a wrought-iron stack, 3 feet in diameter and 100 feet high, fitted with the apparatus necessary to make experiments on the draughts of chimneys; two large sectional boilers situated

in the Rogers Building; with a masonry stack three feet square and 100 feet high; also another boiler, a forty horse-power engine, a number of looms, and other apparatus in the workshops on Garrison street.

The Engineering Library. — The libraries of the departments of Mechanical Engineering, Civil Engineering, and Naval Architecture are united into a single library under the direct charge of the Librarian. This library contains over six thousand volumes and twenty-seven hundred pamphlets. It is especially rich in journals and transactions of societies dealing with the various branches of engineering and ship building. One hundred and twenty-four publications of this kind are received annually.

Mining Engineering and Metallurgy. — Instruction is given by lectures and recitations, by laboratory work, and in the summer school. The introductory work begins with Plattner's blow-pipe assay of silver. This is followed by a course of lectures on methods of mining, including prospecting, sinking, stoping, hoisting, pumping, and ventilating, the location of mining claims, and mine surveying. Ore dressing is taught by lectures and by laboratory work illustrating the various forms of machinery, while the lectures on metallurgy are supplemented by an extended course in the use of the furnaces in the laboratory for the smelting of gold, silver, copper, and lead. By this laboratory work the student has experience in actual metallurgical work, and checks his results by assays and chemical analyses at the appropriate stages of the process. With such practical experience in immediate connection with class-room instruction, he acquires the best possible grasp of the subject-matter.

The department library contains over fifteen hundred volumes, and receives annually thirty-seven periodicals.

The John Cummings Laboratories of Mining Engineering and Metallurgy. — These laboratories are designed to furnish students the means for experimental study of the various proc-

esses of ore dressing and smelting, and at the same time to give them the mental training needful for professional practice. The apparatus has been chosen with a view to illustrating, as far as possible, the principles of the more important machines and furnaces actually used in mines, mills, and smelting works.

The crushing, concentration, and smelting of ores of lead, copper, gold, and silver furnish the best field for this laboratory work. The production of iron and steel in quantity is precluded by the size of the plant required, and by the large amount of ores and fluxes necessary to put this into operation.

The experimental work of the laboratory is carried on by the students, under the immediate charge of an instructor. A sufficiently large quantity of ore is assigned to each student, who first examines it for its component minerals, sorts and samples it, determines its character and value by analysis and assay, and makes such other preliminary examinations as serve to indicate the proper method of treatment. He then treats the given quantity, makes a careful examination of the products of each step of the process, ascertains, wherever practicable, the amount of power, water, chemicals, fuel, and labor expended, and thus learns approximately the effectiveness and economy of the method adopted. He learns also the value of chemistry as a check upon metallurgical work. Each student is assisted in working his ore, by his classmates, who have opportunity in turn to manage the machines and furnaces.

It is not considered that the instruction given in this laboratory is in any sense a substitute for the experience gained in large works. It is believed, however, that it prepares students to enter works and to be almost immediately useful in them. The spirit of investigation which is developed by the work, as well as the experience of comparing processes actually carried out with the same processes as described in books, is of great advantage.

Four laboratories are devoted respectively to concentra-

tion, lixiviation and pan amalgamation, smelting and assaying. The first two of these are for the present in the same room.

In the concentrating laboratory the effects of different combinations and adjustments of machines upon the saving of losses in slimes and included grains, in order to produce the best scientific result or the greatest commercial profit, can be tested under the very best conditions. Among these combinations are graded crushing, graded sizing, graded jigging; hydraulic classifying as preparation for jigging and the slime table; jigging with much or little suction; the variations of the slope, the quantity of water, and the roughness of the surfaces of slime tables; the adjustments of the gravity stamps, the amalgamated plates, and the Frue vanner.

In the lixiviating and amalgamating laboratory the effects of varying the sizes of grains, the strength of the cyanide solution, and the time of treatment may be tried; suitable variations also may be made in the hyposulphite process, in the gas chlorination process, either by vat or by revolving barrel; in the amalgamating pan the temperature, the chemicals, and the time of exposure can all be studied for production of the greatest results.

The smelting laboratory is provided with furnaces for roasting, smelting and refining copper; for roasting, smelting, and cupelling lead; for chloridizing roasting preparatory to pan amalgamation or lixiviation. The smelting of a ton or two of ore cannot in the nature of things produce results which approach as nearly to the economy of large scale practice as is done in the other experimental lines, but the experience which the students get throws more light upon the meaning of the lectures than any other work performed in these laboratories.

The assaying laboratory is provided with furnaces for crucible work, scorification, cupellation, and all the usual accompanying operations. Near by are rooms for fine balances and for supplies. This laboratory not only pro-

vides for the regular course in assaying which is taken by all the students in Mining Engineering and Chemistry, but it provides the means of testing and checking the work of the other three laboratories.

Summer Schools of Mining and Metallurgy. — To bring the mining students into closer acquaintance with their profession, summer schools are organized for the study of mines, mills, smelting works, and geological fields.

At the summer school of mines, the students with their instructors locate at a mine, and take up in succession systematic studies in methods of mining and ore dressing, of underground and surface surveying, doing actual work in all these lines.

At the summer school of metallurgy, the party visits a locality where a variety of smelting and refining operations are conducted, and makes a systematic study of the different operations, writing up the notes from day to day.

In 1894, the summer school of mining was held in Nova Scotia and Cape Breton. In the former district, the mining and milling of gold were studied; in the latter, the mining and shipping of coal.

In 1895, the summer school of metallurgy was held in New Jersey and Pennsylvania. The leading metallurgical works of Jersey City and Newark, N.J., and those at Lebanon, Steelton, Everett, and Johnstown, Pa., were made the objects of study. Coal and iron mines were visited in Everett and Lebanon, Pa.

In 1896, the summer school of mining was held in the Upper Peninsula of Michigan and in Minnesota. The leading iron mines of the Menominee, Gogebic, and Mesabi ranges were visited, and their geological features, as well as the surface and underground workings, carefully studied.

In 1897, the summer school of metallurgy was held in western New York and Ohio. The leading works of Syracuse, Buffalo, Niagara Falls, and Cleveland were visited, and

coking in by-product ovens and the metallurgy of iron, steel, and copper were studied, as well as some electrical and chemical processes.

The mining and metallurgical summer schools take place in alternate years.

Architecture. — The instruction in this department comprises the study of construction and materials, the study of building processes and of professional practice, as well as that of composition, design, and the history of architecture. It is arranged to meet the needs of those who are commencing their professional studies as well as of experienced draughtsmen who desire to make up deficiencies in their training, or to qualify themselves for undertaking the responsibilities of practice.

The more strictly professional work begins with the history and applications of the orders. During the entire course there is regular instruction in freehand drawing, the last year being from life. The students are familiarized with the material elements of their future work by courses in practical construction, including lectures, problems, and visits to buildings.

Architectural history is taught by lectures, illustrated with the stereopticon, by text-books, and by written themes.

For three years the students are continually engaged upon architectural design. Each student's work is examined and criticised before the classes by a jury from the Boston Society of Architects.

Advanced courses in design, history, and construction are offered to graduates of the regular course.

Several thousand photographs, prints, drawings, and casts were originally collected for the department, by means of a special fund raised for the purpose. To these collections large additions have been made by regular appropriations and by gifts. Models and illustrations of architectural detail and materials are arranged in the rooms of the department. The chief part of the collection of casts of architectural sculpt-

ure and detail belonging to the department has been deposited in the Museum of Fine Arts, and is arranged with the architectural collections belonging to the museum. The students of the department have free access to the museum at all times; as the building is close at hand, no inconvenience results from the change, and some of the advanced exercises in drawing are held there. The architectural library contains a carefully selected collection of nine thousand photographs, six thousand lantern slides, over eighteen hundred volumes of technical works, and the leading American and foreign periodicals. The publications of the Royal Institute of British Architects are presented by the institution, and a large number of richly illustrated and costly books have been added to the library recently as gifts from friends of the Institute.

The Boston Society of Architects has established prizes of the value of fifty dollars each in books for the two students who shall exhibit the best work at the completion of their courses. Messrs. W. R. Ware, R. D. Andrews, and C. H. Walker form the committee appointed this year to examine the work, make the award, and report at the next October meeting.

The two Rotch prizes of two hundred dollars each are now available, and, according to the will of Mr. Arthur Rotch, one is to be given to the student who shall be graduated highest in his class in the full regular course in architecture, and the other to the special student who shall rank highest at the end of a two-year course. For this special student prize only those applicants are eligible who enter in accordance with the requirements on page 36, on the basis of professional office experience or as college graduates.

Summer School of Architecture. — The first summer school was held in 1893 in Chicago, during the World's Fair. Since then schools have been held in Salem and Portsmouth for the study of colonial architecture, and in 1896 the Institute took the important initiative of sending the school abroad, and a

bicycle tour was made in England and France for the study of architectural styles. In 1897 the school made pencil and water-color sketches of the picturesque buildings in and about Quebec.

Biology. — Under this head is included instruction in a series of related subjects, beginning with microscopy and general biology, and extending to comparative physiology, zoölogy, bacteriology, and industrial and sanitary biology.

General Biology is taught partly as an introduction to the special branches of the subject, which depend more or less upon it, and partly for its own sake, as introducing the student to a new department of science. Beginning with a brief review of the familiar facts of common knowledge concerning living things and lifeless things, their likeness and their difference, and of organisms, organs, and tissues, the more recondite subjects of cells and protoplasm are considered; after which considerable time is spent upon a thorough examination and comparison, both macroscopic and microscopic, of selected plants and animals, chosen as representative forms.

Botany and Zoölogy. — General biology is succeeded and continued by brief courses in general zoölogy and general botany. These naturally introduce the student to cryptogamic botany, of which the outlines only are taught, and to more advanced zoölogy, in which larger opportunities are offered.

Comparative Anatomy and Embryology. — The student makes careful dissections and drawings of typical forms from most of the principal groups of the animal kingdom, the last six weeks of the course being devoted to the study of the embryology of vertebrates, with the embryo chick and the frog as types. This course is indispensable to those who intend to teach zoölogy, while those who intend to study medicine will find that a knowledge of the anatomy and development of vertebrates, together with the skill in dissection and

embryological methods acquired in this course, will give them a great advantage during their earlier years in the medical school.

Theoretical Biology. — The more philosophical questions connected with biology are brought forward and treated historically and critically. The facts and theories are examined in regard to such subjects as heredity, evolution, natural selection, variation, etc.

Comparative Physiology. — For those intending to study medicine, or to become science teachers in secondary schools, the course in physiology (and microscopic anatomy) is especially useful, emphasizing as it does the broader aspects of the subject without encumbering the student with the many details which must form part of a course in human physiology given with sole reference to the medical or other special applications of the science.

Bacteriology, Fermentation, Sanitary Science, etc. — Students who are preparing themselves for work in some one of the sanitary or industrial applications of biology, give special attention to bacteriology, especially in its latest application to sanitary science in the examination of air, ice, and water, and its industrial applications in dairying, vinegar making, food preserving, etc. The organisms peculiar to or infesting water-works are particularly considered, owing to their practical importance.

Advanced students in biology devote most of their time to special work, in which they are allowed considerable choice, and they are expected to undertake original observations in their respective specialties. The subjects offered at present for specialization are comparative physiology (including microscopic anatomy) and applied biology (including bacteriology, industrial biology, and sanitary biology).

The Institute as a whole now affords unusual opportunities for advanced or special work in fermentation, hygiene, and sanitary science. The departments giving the principal instruction in these subjects are the biological, chemical, physi-

cal, architectural, and that of sanitary engineering. Graduate or special students, such as physicians, inspectors of boards of health, superintendents or other attachés of water-works or sewer departments of cities or towns, or persons engaged in industries depending on the activities of yeast, bacteria, etc., if qualified to pursue their work with advantage, will be admitted to such subjects as they may elect, and will be given every opportunity to equip themselves for their work.

The Biological Laboratory is furnished with tables for microscopical work, for dissection, and for the simpler operations of physiological chemistry; it is well supplied with microscopes, paraffin baths, Thoma and Minot microtomes, incandescent gas-burners, incubators, and other apparatus for work in gross and microscopical anatomy and embryology. For work in experimental physiology, there are four kymographs, a pendulum myograph, Du Bois Reymond induction coils, muscle forceps and levers, recording drums, moist chambers, tambours, etc. For work in bacteriology and sanitary science, there are culture-rooms, sterilizers, thermostats, special microscopes, autoclaves, and other bacteriological and microscopical apparatus.

The Biological Library includes the ordinary text-books and works of reference, and many important monographs, in all more than sixteen hundred volumes.

A Biological Journal Club, to which the more advanced students are admitted, is made helpful as a means of keeping abreast of current progress, and of giving practice in bibliography and the public presentation of original matter or of abstracts. Students of biology have also valuable privileges in connection with the Boston Society of Natural History, of which the museum, the library, etc., are freely accessible. (A special circular giving more detailed information concerning the Biological Department may be had on application.)

Geology and Mineralogy. — The work of the department is

introduced by courses in Crystallography, Mineralogy, and Blowpipe Analysis. Crystallography is taught with the aid of models, diagrams, and a series of crystals. In mineralogy specimens are freely used, an example of each of the more important species being placed before each student, while a collection of typical specimens is always accessible. The students are taught to identify minerals by their crystallization and physical properties, as well as by blowpipe or chemical tests. The instruction in blowpipe analysis is supplemented by sufficient practice to insure familiarity with the methods.

At the close of the term an excursion of several days is made to localities of mineralogical interest in New England or the adjoining States.

Dynamical Geology. — The course has been planned to meet the requirements of students in a school of industrial science. It discusses the processes by which the earth acquires its topographic and hydrographic features.

It is recognized that the phenomena of the earth's surface directly influence the prosperity of communities, and that some knowledge of th[illegible]n is essential to an intelligent consideration of many questions which arise in the administration of affairs. The subject is accordingly presented in a comprehensive manner, while parts of it are adapted to special studies, as, for example, to civil engineering.

While the students become familiar with the geological action of streams, the sea, the atmosphere, and even the earth's interior heat, they do not dismiss these topics without considering the limitations imposed upon works constructed to utilize, resist or evade the power of these agencies. A large number of maps, charts, diagrams and lantern illustrations are used.

Structural Geology — Petrology, embracing the principal structural features of large masses of rocks, such as stratification, joint-structure, faults, folds, slaty cleavage, veins, dikes, etc., is taught as concretely as circumstances will

allow. Specimens as well as diagrams and other illustrations are freely used in the class-room, and the unusually favorable opportunities which the local geology of the region of Boston presents for the illustration of these topics are utilized by means of frequent field lessons.

In the instruction in Lithology, a large amount of observation or laboratory work is combined with oral instruction. At each lesson a tray containing a typical hand-specimen of each type to be studied is placed before each student, and the lessons consist largely in the examination, testing, and description of the specimens by the students themselves, the instructors directing and supplementing the work of the class. The collections in this department are specially adapted to the laboratory method of instruction, and a complete series of typical rocks is accessible to students at all times. The instruction in Chemical Geology is also introduced in this term, and embraces the formation, alteration, and decay of rocks, the origin of vein-stones and ore-deposits, of rock-salt and mineral waters, and of coal and petroleum.

Historical Geology, Stratigraphical Geology. — The physical history of the earth is the subject for study in each of these two courses, but in the selection of topics and in their presentation, each is adapted to the needs of the students to whom it is given. The course in stratigraphic geology is for students in the department of Civil Engineering, and prominence is given to the development and significance of the physical features of the surface. In historical geology a larger amount of time is devoted to the past life of the earth as antecedent to existing species. The students are taught how the geologic events determined the structures and features of existing lands, and that it is through these that we ascertain the causes of the distribution and modes of occurrence of mineral productions, of soils, and of living species. The testimonies of geology upon the doctrine of evolution, and the geologic events which constitute a part of the earliest history of human life upon the earth, are taught in these

courses. The courses are illustrated by the use of specimens, maps, diagrams, and lantern projections.

The courses in Ore Deposits and Economic Geology are based upon extensive special collections, and are designed to prepare the students in Geology for professional work in connection with mines and quarries, including the selection and testing of materials for structural purposes and for industrial processes. In addition to frequent field-lessons during term time, students in these courses spend about ten days of the semi-annual vacation with an instructor in some mining district, making a practical study of the modes of occurrence and structural relations of the economic materials, as well as of the methods of mining, etc.

In all the courses in mineralogy and geology especial prominence is given to the practical and economic aspects of these sciences, the main object being to adapt the instruction in each case to meet the special demands of the student's profession, whether it be Mining Engineering, Civil Engineering, Architecture, Geology, Biology, or Chemistry. The students in architecture, for example, receive a course in which the study of building-stones is the prominent feature, and in which the regular exercises are supplemented by visits to quarries, stoneyards, buildings, and monuments, and by laboratory practice in physical and chemical tests of the strength and durability of stones.

The Geological Laboratory. — The Geological Laboratory contains collections which have been made and arranged expressly for the purpose of teaching. There is also a supply of unarranged material, and there are suitable appliances with which the students may obtain practice in working the rock and the determination of species. Implements are provided for geological field-work; a microscope and its accessories for the study of sections; and there is a machine for cutting, grinding, and polishing specimens, which is run by a separate dynamo and is always ready for use. In con-

nection with the laboratory there is a good geological library and the current publications are at hand. This equipment, and the facilities afforded for experiments and tests which may be made in the other laboratories of the Institute, furnish opportunities for much experimental work in geology. A person qualified to give direction to the work is always available for the instruction of laboratory students.

In addition to the working collections in the Rogers Building, the students in this department have access at all times to the extensive and valuable mineralogical and geological collections of the Boston Society of Natural History. These are very conveniently placed, and have been arranged with special reference to the needs of students, each division of mineralogy and geology being separately and fully illustrated in the same order in which it is taken up in the Institute courses.

To impart information is regarded as but one portion of the instruction; so far as practicable, the students are led to a direct acquaintance with natural features and objects, and then trained to employ correct methods of interpretation and presentation. The collections are especially adapted for use in teaching, and every available opportunity for field-practice is improved.

All students in the Course in Geology are also expected to devote four weeks in the summer vacation following the third year to field-work in connection with the summer school of Topography and Geodesy.

Modern Languages. — While the primary object of the instruction in French and German is to impart such facility in translation that the student may avail himself of foreign works relating to his professional department, much importance is attached to the study of these languages as a means of general training. For both purposes, a thorough and systematic study of the structure of the language is deemed to be an essential basis. This is, however, accomplished

by means of practical work with the language itself, including written and oral exercises, rather than by study of the abstract rules of grammar. French (see conditions of admission, page 65) is continued through one year, and German through two years, for all regular students.[1] In certain courses, especially in the Course in General Studies, there is advanced work in French and German, in part optional. Instruction in the elements of Italian and Spanish is also offered.

English. — All regular students receive instruction in English during the first two years of their course. During the first half of the first year they hear lectures and have exercises in English, the aim being not to develop a theory of rhetoric, but to train them to express themselves accurately and adequately. Each student writes, frequently and regularly, themes and exercises of various sorts, which are corrected and returned by the instructors. The student has also frequent opportunities for consulting the instructors in private about his especial needs. By arrangement with other instructors, the note-books in first-year chemistry, all written exercises in history and political economy for the second half of this year and during the third year, are subject to examination and correction by the English Department, which is thus enabled to direct continually the progress of each student in English composition. In several of the courses this criticism of the English is extended to technical papers in the fourth year. Throughout the second year instruction is given in the history of English literature, with practice in composition under the personal supervision and criticism of the instructor. In this course the student is required to read, as a whole or in part, such representative works as shall give him the best idea of the history and general character of English literature. The aim of the

[1] Students entering on German continue German for one year, then take two years of French.

department is to give students who are looking forward to professional or business life such drill as will help them to express themselves readily, accurately, and adequately, and to aid them in the understanding and appreciation of good literature.

In the Course in General Studies, instruction is offered in the following subjects, optional or required, — English literature before 1560, Elizabethan literature, English literature of the eighteenth century, English literature of the nineteenth century, contemporary English and American literature, logic, advanced English composition, and Argumentation. The aim in view is to give the student thorough drill, according to modern methods, in the literature and literary history of the periods mentioned, and to enable him, by theory and by practice, to express his ideas in a correct and adequate form.

Students have access to a library of over two thousand volumes of selected works in English literature.

History and Political Science. — The study of three comprehensive topics in history and political science is required of all regular students, as follows:

In the first year, United States History.

In the second year, Modern Political History of foreign nations, illustrating the political progress of the world during the present century, with particular reference to the growth of political institutions.

In the third year, Political Economy and Industrial History, including the discussion of current economic problems.

These three general subjects may be followed or accompanied by several series of more highly specialized historical and political studies, which are required in one or more courses, and are open to all qualified students. The history of England and the United States may be studied continuously for three years; mediæval and modern European

history throughout two years, introducing the student in the following year to the study of the era of the French Revolution.

The instruction in Social Science and History has been arranged so as to connect the instruction in biology with that in history. These two departments thus present an unbroken sequence of related studies extending through three successive years, and resting upon the fundamental knowledge of living forms and of prehistoric man that is presented in general biology, zoölogy, and anthropology. The study of social science and history is followed by that of comparative politics and constitutional history. The last link in the chain is international law.

Instruction is imparted by lectures, oral and written recitations, and assignments of reading for which students are held strictly responsible. The topical method of study is adhered to, so far as possible, and syllabuses of lectures and reference readings are placed in the hands of each student.

Economics. — In the group of economic studies, the course upon the elements of political economy taken by all regular students is continued for those in the Course in General Studies by more detailed studies extending through three years.

During this period, the economic instruction is devoted to five different lines of inquiry, — Finance and taxation, commercial and industrial history, theories and methods of social reform, history of economic theory, and statistics.

The Financial History of the United States from 1789 until the present time is studied. Use of public documents is taught, and the student is required to go to official sources for authority as to statements of fact. A second course is directed to the theory and history of taxation in general. A third optional course on the theory of banking and finance describes the most important banking institutions

of the world, and treats with more detail the questions of banking and money.

Two courses in Commercial and Industrial History are presented, the first dealing with questions of transportation, railroads, shipping, and commercial development; the second, with the industrial organization of society, as illustrated by the experience of England and the United States.

The course on Social Reform considers the economic systems proposed, particularly during the present century, to change the existing distribution of wealth.

In the last term of the Course in General Studies, a return may be made by optional work to the study of Economic Theory. The previous general historical studies, as well as the more special ones in finance and industry, lead the student to the development of the different schools of economic thought from the mercantilists and physiocrats to the more modern representatives of the science.

In Statistics there are two courses. The first is elementary, and is devoted to the use of statistical data of the United States, especially in their application to the questions of population, commerce, and finance. The more advanced and optional course treats of the general subject of statistics, its history, method, and technique. A good working library in statistics has been gathered, and the library of the American Statistical Association, kept in rooms of the department, affords special advantages.

For the students of the Department of Electrical Engineering a short course on the Economics of Corporations is given, open also to others who have completed the general course in Political Economy.

(For a more detailed account of the courses in History and Political Science, see the circular of the Course in General Studies.)

The Reading-room of the department contains libraries of authorities to be consulted in the required reference work, a large number of the best magazines and newspapers,

both bound and unbound, which are useful in historical, political, and literary study, together with reading-tables, and work-tables for the preparation of maps, charts, diagrams, and especially for statistical work. There is a good collection of maps and diagrams particularly serviceable for the illustration of industrial and political history. The library in connection with the reading-room comprises six thousand selected volumes and several thousand pamphlets. Every student enjoys immediate and unrestricted access to the shelves.

Military Science and Tactics. — In conformity with the requirements of the Acts of Congress of July 2, 1862, and August 30, 1890, and the Acts of the General Court of Massachusetts in furtherance thereof, the Institute provides instruction in Military Science and Tactics.

All male students, except aliens, who take a majority of their studies in the first year are required to attend, for three hours per week, exercises in Military Science and Tactics.

For these exercises they are required to provide themselves with uniforms, which are made from measure and by contract, in order to secure uniformity of material and manufacture, as well as cheapness. The whole cost to each student does not exceed eighteen dollars. Any student may be excused from the prescribed course in the military department, if he is twenty-three years of age at entrance, or if he pass an examination in the subjects taught during the year. Should a student present to the Faculty satisfactory evidence of physical disability, he may be excused from the prescribed drill exercises, and in lieu thereof may be required to attend a course of theoretical studies in Military Science and Tactics. All medical certificates intended to show physical disability must be presented within ten days after entrance.

At the commencement of the school year an examination will be held with a view to the selection of officers and non-commissioned officers. It will cover the infantry drill regulations from the beginning of the book to the school of the

battalion in close order, inclusive, both theoretically and practically, and will be open to all students.

Gymnastics. — Class and individual work are conducted at the Institute gymnasium under the guidance of an experienced instructor.

Libraries. — The libraries of the Institute contain forty-five thousand volumes and more than thirteen thousand pamphlets. In the General Library are to be found works on education, proceedings of learned societies that are of general character, and a complete set of the publications of the Institute and its officers; besides encyclopædias, dictionaries, catalogues of other libraries, and other books of reference. The greater part of the books belonging to the Institute are distributed to nine department libraries, where they are easily accessible to all students. These libraries, some of which have been mentioned in the preceding pages, contain a careful selection of special treatises, monographs, text-books, etc., and of periodical publications germane to the work of the respective departments. They are thus working libraries, and valuable experience in the use of them is acquired before the completion of the regular courses, either incidentally to the preparation of theses, or in connection with lectures or recitations. The division of the library enables each student to consult the works needed by him with the least possible inconvenience and loss of time.

The students have full use also of the valuable library of the Boston Society of Natural History, of the extensive collections of the Boston Public Library, comprising more than five hundred thousand volumes in all departments of knowledge, and of the library of the American Statistical Association. Many libraries of scientific societies, of individuals, and of private corporations, rich in complete sets of the scientific periodicals of all countries, and of the publications of leading scientific societies throughout the world, are, through the courtesy of the owners, open to advanced students of the Institute.

Schedule of Topics.

THE following thirty pages form a schedule which includes the larger part of all the distinct topics or subjects of study taught in the Institute. These subjects are classified under headings, such as "Mathematics," "Chemistry," "Physics," "Civil Engineering," "Mining Engineering," etc. In the first column of the table is given the numeral by which any given topic is designated for convenience of reference, the same numbers appearing in the course schedules, pages 29 to 55; in the second column, the name of the subject; in the third and fourth, the number of the year (1st, 2d, 3d, or 4th) and the term (1st or 2d) in which the subject occurs; in the fifth, the number of hours per week given to exercises in the subject, the number of weeks being fifteen for each term, except as indicated by subscript figures; in the sixth, the number of the preparatory subject or subjects required of those desiring to be admitted to that in question; in the seventh, the manner in which the subject is taught, whether by lectures, by recitations, or by work in the laboratory, drawing-room, or field, or by several of these in conjunction; in the eighth, the name of the professor or instructor in charge of the exercise; and in the ninth, the courses including this subject. The requirements in column six include not merely the subjects specified by number, but also those required as preparation for them. Thus, for instance, the requirements for 70 (Applied Mechanics) are 38 and 360; that for 38 is 33; that for 33 is 27; that for 27 is 22; those for 22 are 20 and 21; those for 20 and 21 are 1 and 2 (Algebra and Plane Geometry required for admission, page 63); the requirement for 360 is 27 (or 23), which has already been followed

through. So that to take up 70, Applied Mechanics, the applicant must be prepared to pass, or must have passed, examinations in 20, 21, 22, 27, 33, 38, 360, and in 1 and 2. The sufficient reason for this is, that in topic 70 use is made of all the subjects referred to; and to carry on the work the student must have had suitable training in all of them. In the sixth column the numbers are in some cases in italics. This denotes that the corresponding topics, if not previously completed, must be taken at the same time with the topic under consideration. For instance, the student cannot take 510, Mechanism, unless he takes 33, 110, and 360 at the same time, or has already completed them. Roman numerals in parentheses in the ninth column designate courses for which the topic in question is optional.

By a careful consideration of the schedule, in connection with the pages on the "Subjects and Methods of Instruction" (pages 78 to 124), the applicant for a special course may select for the earlier part of that course such topics as will enable him to pursue later those more advanced subjects which he may particularly desire. He may also ascertain what preparatory training is requisite for admission to any special course at the Institute.

Applications for exception from the requirements stated in column 6 will always be considered by the Faculty, for sufficient causes.

The topics included in the schedule are subject to change at any time by action of the Faculty; and the list of studies for which any special student applies must be submitted to the Faculty for approval.

The subjects named below are the entrance requirements, full statements of which are given on pages 63 to 71:

1. Algebra.
2. Plane Geometry.
3. English.
4. History.

20. Advanced Algebra or, 21, Solid Geometry.

190. French or, 200, German.

MATHEMATICS.

No.	Subject.	Year.	Term.	Hours[1] per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
20	Algebra[2]	1	1	2	(1) (2) . .	Rec.	Wells . . .	All reg. students.
21	Solid Geometry[2]	1	1	2	(1) (2) . .	Rec.	Wells	All reg. students.
22	Logarithms and Plane Trigonometry	1	1 2	2 1_{10}	(20) (21) .	Rec.	Wells	All reg. students.
23	Elements of Plane Analytic Geometry	1	2	2	(22) . . .	Rec.	Bartlett, Bailey Woods, Skinner,	V., VII., IX., XII.
27	Analytic Geometry	1	2	4	(22) . . .	Lect., Rec.	Bartlett, Bailey Woods, Skinner,	All courses except V., VII., IX., and XII.
33	Differential Calculus[3] . .	2	1	3	(27) . . .	Lect., Rec.	Runkle, Osborne .	All courses[4] except VII., IX., and XII.
34	Differential and Integral Calculus	2	1	3	(23) . . .	Lect., Rec.	Woods	(V.)
35	Determinants	2	1	1	(22) . . .	Lect., Rec.	Skinner	(VIII.)
38	Integral Calculus	2	2	3	(33) . . .	Lect., Rec.	Runkle, Osborne .	All courses[4] except VII., IX., and XII.
43	General Theory of Equations	3	1	2	(22) . . .	Lect., Rec.	Woods	(VIII.)

(1) The number of weeks is 15 per term, except as indicated by subscript figures.
(2) Numbers 20 and 21 are alternative, one being required for entrance.
(3) With Spherical Trigonometry for Course I.
(4) Optional in Course V.

MATHEMATICS.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
45	Differential Equations . . .	3	1	3	(38) . . .	Lect., Rec.	Osborne . . .	VI., VIII.
46	Elements of Differential Equations	3	1	2_5	(38) . . .	Lect., Rec.	Osborne . . .	II., X., XIII.
47	Quaternions	3	1	2	(45) . . .	Lect., Rec.	Bailey	(VIII.)
49	Analytic Geometry of Three Dimensions; Advanced Calculus	3	2	3	(35) (38) .	Lect., Rec.	Woods	(VIII.)
56	Fourier's Series; La Place's Coefficients	4	1, 2	2	(49) . . .	Lect., Rec.	Bailey	VIII.
57	Theory of Probability and Method of Least Squares	4	1	2	(38) . . .	Lect., Rec.	Bartlett	$I._3$, VI., VIII.
58	Differential Equations . . .	4	2	3	(38) . . .	Lect., Rec.	Osborne . . .	$I._3$.
61	Elliptic Functions	4	1, 2	2	(49) . . .	Lect.	Woods	Elective.

ANALYTICAL AND APPLIED MECHANICS.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
70	Statics; Stresses in Frames; Strength of Materials; Kinematics and Dynamics; Theory of Elasticity . .	3	1, 2 {	4_{20} / 3_{10} }	(38) (360) .	{ Lect., Rec., Lab. }	{ Lanza, Sondericker / Miller, Johnston . }	I., XI.
71	Statics and Stresses in Frames	3	1	2	(38) (360) .	{ Lect., Rec. }	{ Sondericker . . / Fuller . . . . }	{ II., III.(1), IV.(1), VI.(1), X., XIII.
75	Strength of Materials; Kinematics and Dynamics .	3	2	3	(71) . . .	{ Lect., Rec. }	{ Sondericker . . / Fuller . . . . }	{ II., III., VI., X., XIII.
76	Strength of Materials; Graphical Statics . . .	3	2	3	(71) . . .	{ Lect., Rec. }	Sondericker . .	IV.
77	Analytical Mechanics . . .	3	2	3	(45) (360) .	{ Lect., Rec. }	Lanza	VIII.
85	Analytical Mechanics . . .	4	1, 2	3	(77) . . .	{ Lect., Rec. }	Lanza	(VIII.)
86	Strength of Materials; Friction	4	1	3	(75) . . .	{ Lect., Rec., Lab. }	Lanza, Miller . .	{ II., III., VI., X., XIII.
87	Strength of Materials . . .	4	1	37	(76) . . .	{ Lect., Rec. }	Lanza	IV.
88	Strength of Materials; Stability of Structures; Theory of Elasticity . . .	4	2	3	(86) . . .	{ Lect., Rec., Lab. }	Lanza, Miller . .	II., X., XIII.

(1) 10 weeks.

DRAWING.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
100	Geometrical and Mechanical Drawing	1	1	6	. . . . .	Lect., Draw.	Faunce	All reg. Students.
101	Mechanical Drawing (1) . .	1	2	6_5	(21) (100) .	Lect., Draw.	Faunce	I., II., III.$_2$, IV., VI., X., XI., XIII.
102	Descriptive Geometry (continuation of 101)	1	2	6_{10}	(101) . .	Lect., Rec., Draw.	Faunce	I., II., III.$_2$, VI., X., XI., XIII.
103		1	2	12_{12}				IV.
104	Mechanical Drawing . . .	1	2	6	(100) . .	Lect., Draw.	Faunce	III.$_1$, V., VIII., XII.
105	Mechanical Drawing (Chart and Map Making for IX.)	1	2	4	(100) . .	Lect., Draw.	Faunce	VII., IX.
110	Descriptive Geometry (2) (continuation of 102) .	2	1	5	(102) . .	Lect., Rec., Draw.	Faunce	I., II., III.$_2$, VI., X., XI., XIII.
115	Freehand Drawing	1	1	1	. . . . .	Draw.	Adams	All reg. students.
116	Freehand Drawing	1	2	2	(115) . .	Draw.	Adams	All courses except IV.
117				3				IV.
118	Freehand Drawing	2	1, 2	4	(117) . .	Draw.	Adams	IV.
119	Freehand Drawing	3	1, 2	4	(118) . .	Draw.	Adams	IV.
120	Freehand Drawing	3	2	2	(116) . .	Draw.	Adams	XII.$_{2, 3}$.

(1) Course IV., 12 hours per week for 3 weeks.
(2) Applicants who have no previous knowledge of the subject, but are otherwise qualified to enter the second year of any of the courses named, should address Professor Faunce as early as possible.

SHOPWORK.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge. All shopwork is under the general direction of Professor Schwamb.	Taken by
130	Carpentry and Wood Turning	1	1	9	(100) (115) . .	Shop	Merrick	Special Class.
131	Pattern Work	1	2	6	(104) (116) (130)	Shop	Merrick	Special Class.
132	Foundry Work	1	2	3	(104) (116) . .	Shop	Merrick	Special Class.
133	Forging	1	1, 2	6, 3	(100) (115) . .	Shop	Lambirth . . .	Special Class.
135	Chipping and Filing . . .	1	1, 2	3, 3_6	(100) (115) . .	Shop	Lambirth . . .	Special Class.
136	Machine Tool Work . . .	1	2	6_5, 9_{10}	(104) (116) (135)	Shop	Smith	Special Class.
137	Carpentry and Wood Turning	2	1, 2	2		Shop	Merrick	VI.
138		2, 3, 4	1	4	. . . . .			II., (VIII.), X.
139	Metal Turning, Brass, etc. .	2	1	2	. . . . .	Shop	Smith	VI.
140	Foundry	2	2	2	. . . . .	Shop	Merrick	(II.)
141	Pattern Work	2	2	2	(138)	Shop	Merrick	II.
142	Forging	2, 3	1, 2	4, 6_8	. . . . .	Shop	Lambirth . . .	XIII., II.
143		4	2	3				X.
144	Chipping and Filing . . .	2, 3	2	6_7	. . . . .	Shop	Smith, Lambirth .	XIII., II.
145		4	1	6_5				II., XIII.
146	Machine Tool Work . . .	4	1, 2	6_{10}, 6	(145)	Shop	Smith	II., XIII.[1].
147	Metal Turning, Iron, etc. . .	4	2	2	. . . . .	Shop	Smith	X.
149	Pipe Fitting	4	1	2	. . . . .	Shop	Smith	XI.

[1] Ten weeks in second term.

ENGLISH LANGUAGE AND LITERATURE.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
160	Rhetoric and English Composition	1	1	2	(3) (4)	Lect., Rec., Comp.	Bates	All reg. students.
161	Logic	1	2	3	(160)	Lect., Rec.	Robinson	IX.
165	English Literature	2, 3	1, 2	1(1), 2	(160)	Lect., Rec., Comp.	Bates	All courses except X. / X.
167	English Composition (advanced course)	3	1	1	(165)	Lect., Comp.	Bates	IX.
169	English Literature: to 1660	3	1, 2	3	(165)	Lect., Read.	Robinson	(IX.)
175	English Literature: 1660–1780	4	1	3	(165)	Lect., Read.	Bates	IX.
176	Argumentation	4	1	2	(161)	Lect., Comp.	Pearson	(IX.)
177	English Literature: 1780–1860	4	2	3	(175)	Lect., Read.	Bates	IX.
178	Contemporary English and American Literature	4	2	2	(165)	Lect., Read.	Bates	(IX.)
179	Journalism	4	2	2	(165)	Lect., Comp.	Bates	(IX.)

(1) Course IX., 20 hours for the term.

MODERN LANGUAGES.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
190	French (elementary) [1] . .	2	1, 2	3	. . . . .	Lect., Rec.	C. Bernard . . .	All reg. students not taking 200.
191	French (grammar and translation)	1 or 3	1, 2	3	(190) . . .	Rec.	van Daell . . .	All reg. students.
192	French (sight reading) . .	1	2	3	(*191*) . . .	Rec.	L. Bernard . .	IV., IX.
193	French (advanced)	2	1, 2	3	(191) . . .	Lect., Rec.	van Daell . . .	IX.
195	French Literature	3	2	2	(193) . . .	Lect., Rec.	van Daell . . .	(IX.)
200	German (elementary) [1] . .	2	1, 2	3	. . . . .	Rect.	van Daell . . .	All reg. students not taking 190.
201	German (grammar and translation)	3 or 1	1, 2	[illegible]	(200) . . .	Rec.	Dippold . . .	All reg. students.
202	German (sight-reading) . .	3	1, 2	2	(*201*) . . .	Rec.	Vogel	IX.
204	German (advanced) . . .	4	1, 2	3	(201) . . .	Lect., Rec.	Dippold	Elective.
207	Spanish [2]	4	1, 2	2	. . . . .	Lect., Rec.	Erhardt	(IX.)
208	Italian [2]	4	1, 2	2	. . . . .	Lect., Rec.	Erhardt	(IX.)

[1] Identical with entrance requirement. See page 64.

[2] Given alternate years.

HISTORY.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
220	United States History . . .	1	2	2(1)	(4) . . .	Lect., Read.	Currier	All reg. students.
221	European History since 1815	2, 3	1	2	(220) . .	Lect., Rec.	Currier	All courses except X. X.
222	History of England	2	1, 2	2	(220) . .	Lect., Rec.	Sumner	IX.
227	History of England	3	1, 2	2	(222) *(228)*	Lect., Rec.	Currier	(IX.)
228	History and Literature of the Renaissance and the Reformation	3, 4	1, 2	3, 2(2)	(4) . . .	Lect., Read.	Sumner	IX. IV., (VII.)
230	History of the Era of the French Revolution . .	4	1, 2	2	(228) . .	Lect., Rec.	Currier	(IX.)
231	Local United States History .	4	1, 2	2	(221) (222)	Lect., Read.	Currier	(IX.)
232	History of Painting and Sculpture	4	1, 2	1	*(228)* . .	Lect., Read.	Sumner	IV.
234	History and Elements of Philosophy	4	2	3	. . . . .	Lect., Rec.	Sumner	IX.

(1) For Course IX., 3 hours.

(2) For Course VII., first term, 3 hours.

ECONOMICS AND STATISTICS. POLITICAL SCIENCE.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
240	Political Economy	2	1	2	(220) . . .	Lect., Rec.	Dewey	IX.
241	Economic Problems . . .	2	1	1	(*240*) or (*245*)	Read.	Ripley	IX.
245	Political Economy and Industrial History	3 or 4	1, 2	2, 1 [1]	(221) . . .	Lect., Rec.	Dewey, Ripley . .	All Courses except IX. and X. / X.
246	Statistics of the U. S., and Graphic Methods . .	3	1	2	(240) . . .	Lect., Draw.	Dewey	IX.
247	Theories and Methods of Social Reform . . .	3	1, 2	2	(240) or (*245*)	Lect.	Dewey	(IX.)
250	Financial History of the U. S.	3 or 4	1	3	(240) or (*245*)	Lect., Rec.	Dewey, Ripley . .	IX.
251	Commercial Geography . .	3 or 4	1	2½	(240) . . .	Lect., Rec.	Niles	IX.
252	History of Commerce . .	3 or 4	2	3	(222) (240)	Lect., Rec.	Dewey, Ripley . .	IX.
253	History of Industry [2] . .	3 or 4	2	3	(222) (240)	Lect., Rec.	Dewey, Ripley . .	IX.

(1) See 275.

(2) Alternating subjects, not given the present year.

ECONOMICS AND STATISTICS. POLITICAL SCIENCE.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
255	Taxation and Administration (1)	3 or 4	1	3	(241) . . .	Lect., Rep.	Dewey, Ripley . .	IX.
256	Descriptive Sociology . . .	3 or 4	2	3	(722) . . .	Lect., Rec.	Ripley	IX. (VII.)
257	Statistics of Sociology . .	4	1	3	(246) (252) or (253)	Lect., Rep.	Dewey	(IX.)
258	International Law	4	1	2	(221) . . .	Lect., Rec.	Ripley	IX.
260	History of Economic Theory	4	2	–	(250) (255)	Lect., Rec.	Dewey	(IX.)
261	Economics of Corporations .	4	2	2	(245) . . .	Lect., Rec.	Dewey, Ripley .	VI.
266	Comparative Politics and Constitutional History .	4	1, 2	3	(256) (220) or (221)	Lect., Rec.	Currier	IX.
270	Banking and Finance . . .	4	2	2	(250) . . .	Lect., Rec.	Not given the present year.	(IX.)
275	Business Law (1) (2)	3 or 4	1, 2	1	. . . . .	Lect.	Brandeis . . .	All courses except X. X.

(1) Alternating subject, not given the present year.

(2) Time transferred to 245.

CHEMISTRY.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
290	General Chemistry	1	1	7	(1)(2)(3)(4) . .	Lect., Lab., Rec.	Pope, Bardwell .	All reg. students.
291	General Chemistry: Qualitative Analysis	1	2	6[1]	(290) . . .	Lect., Lab.	Pope, Bardwell .	All courses except IV., IX.
295	Theoretical Chemistry (brief course)	2 3	2	2	(291) . . .	Lect.	Whitney . . .	III.$_2$ III.$_1$, VII., XII.$_1$.
300	Analytical Chemistry: Qualitative Analysis . .	2	1	8 10 6 9	(190) or (200) (291)	Lect., Lab.	Talbot, Walker, Moore	V., XII.$_1$, $_2$. VII. (VIII.) (VIII.), X.
		2	2	4				XI.
		3	1	6, 8				III.$_1$, $_2$.
302	Organic Chemistry (brief course)	2 3	1	1	(291)	Lect.	Noyes	XI. VII., VIII., X.
303	Theoretical Chemistry: Atomic and Molecular Weights	2 3	2	2	(291)	Lect.	Noyes	VIII. V.
305	Analytical Chemistry: Quantitative Analysis . .	2	2	10 8 6 5	(300)	Lect., Lab.	Talbot, Walker, Moore	V. VII. VIII., XII.$_1$, $_2$. X.
		3	1	3				XI.
		3	2	7, 8				III.$_1$, $_2$.

(1) Course V., 12 hours.

CHEMISTRY.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required	Method of Instruction.	Instructor in Charge.	Taken by
311	Sugar Analysis	3	1	1	(305)	Lab.	Rolfe	V.
312	Industrial Chemistry	3	1, 2	2 5 / 3 10	(291)	Lect.	Thorp	V., X.
313	Theoretical Chemistry: Solutions	3 / 4	1	1	(303)	Lect.	Talbot	VIII. / V.
314	Industrial Chemical Laboratory	3	1 or 2 / 2	6 / 5	(305) / (312)	Lab.	Smith	(V.) / X.
315	Organic Chemistry (brief course)	3	2	1	(303)	Lect.	Crafts	V.
316	Sanitary Chemistry	3	1 or 2 / 2	6	(305)	Lect., Lab.	Mrs. Richards, Whitney	(V.) / VII.
317	Water Analysis	3	2	2	(305)	Lab.	Mrs. Richards	XI.
318	Theoretical Chemistry: Chemical Change	3 / 4	2	1 / 2	(328)	Lect., Rec.	Noyes	VIII. / V.
319	Analytical Methods	3 / 3 / 4	1 / 1, 2 / 1, 2	2 / 2, 1 / 2, 1	(305) (191) or (201)	Lect., Rec.	Talbot, Fay	VII. / V., (VIII.), XII.1. / III.
320	Analytical Chemistry: Quantitative Analysis	3 / 3 / 3 / 4 / 4	1 / 1, 2 / 1, 2 / 1, 2 / 1, 2	4 / 12, 13 / 5 / 11, 11 / 8, 9	(305) (319)	Lab.	Talbot	VII. / V. / (VIII.) / XII.1. / III.1. / III.2.

CHEMISTRY.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
328	Molecular Weight Determinations	3, 4	1	1	(313)	Lab.	Talbot, Fay	VIII., V.
329	Organic Analysis	4	1	6	(320)	Lab.	Noyes, Mulliken	V.
332	Organic Chemistry	4	1, 2	3	(302) or (315)	Lect.	Crafts	V., (X.)
333	Organic Chemistry	4	1, 2 / 1	9, 6 / 9	(302) (305)	Lab.	Noyes	(VII.), (VIII.)
334	Air Analysis	4	1	2	(317)	Lab.	Mrs. Richards	XI.
335	Organic Preparations and Reactions	4	1	12	(315) (332)	Lab.	Noyes, Norris	V.
336	Testing of Oils	4	1	2	(305)	Lab.	Gill	V., X.
337	Proximate Technical Analysis	4	1	6	(320)	Lect., Lab.	Whitney	(V.)
338	Textile Coloring	4	1	6	(314)	Lab.	Smith	(V.), (X.)
339	Applied Chemistry	4	1, 2	4, 2[1]	(312)	Lect., Lab.	Gill	X.
340	Gas Analysis	4	1, 2	1	(291)	Lab.	Gill	X., V.
341	Chemistry of Water and Sewage	4	2	1	(743)	Lect.	Mrs. Richards	XI.
342	History of Chemistry	4	2	1	(313) (315)	Lect.	Norris	V.
344	Memoirs	4	2	1	(320) (332)	Read.	Noyes	V.

(1) Additional work optional.

PHYSICS.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
360	Physics: Wave Motion, Electricity, Optics . .	2	1, 2	5	(23) or (27)	Lect., Rec.	Cross, Drisko . .	All reg. students.
361	Descriptive Astronomy . .	2	1	2	(23) or (27)	Read.	Clifford	VIII.
362	Acoustics	2	1	2	(27) (360)	Lect., Rec.	Clifford	VI., VIII.
363	Theoretical Electricity . . .	2	2	2	(360)	Lect., Rec.	Clifford	VI., VIII.
365	Physical Measurements . .	2	2	1	(366)	Lect.	Goodwin . . .	V., VI., VIII.
366	Physical Laboratory	2	2	2	(360)	Lab.	Goodwin, Derr, Norton	V., VI., VIII.
367	Physical Laboratory	2	2	2	(360)	Lab.	Goodwin . . .	IX.
370	Physics: Heat	3	1	28	(360)	Lect.	Clifford	All courses except IV.
371	Photometry	3	1	1	(360)	Read.	Clifford	VIII.
372	Heating and Ventilation . .	3	1	3	(360)	Lect.	Woodbridge . .	IV.
373	Physical Laboratory	3	1, 2	2[7], 2	(370)	Lab.	Goodwin, Derr, Norton	I., II., V.[1], VII., X., XI., XII., XIII.
374	Physical Laboratory	3	1, 2	2[7], 4	(366) (370)	Lab.	Goodwin . . .	VIII.
375	Physical Laboratory	3	1, 2	2[7], 3	(366) (370)	Lab.	Goodwin, Derr, Norton	III., VI.
377	Theoretical Electricity . . .	3	1 / 2	2[7] / 2[8], 1[7]	(363)	Lect., Rec.	Clifford	VI., VIII.

[1] First term only.

PHYSICS.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
378	Methods of Telegraphy . .	3	1	2s	(363)	Lect.	Derr	VI.
379	Industrial Electricity . . .	3 4	1	1	(360) . .	Lect.	Cross	II., III.$_1$, V., VI., VIII., X., I., XI.
380	Dynamo-Electric Measurements	3	1	1	(360) *(379)*	Lect., Lab.	Puffer	II., III.$_1$
383	Electrical Measuring Instruments and Methods	3	2	1s, 2r	*(374)* or *(375)* *(377)*	Lect.	Laws	VI., VIII.
384	Physico-Chemical Laboratory	3 4	2	1	*(318)* . .	Lab.	Goodwin . . .	VIII. (V.)
390	Optics	4	1, 2	3	(38) (360) .	Lect.	Clifford . . .	VIII.
391	Color and Acoustics . . .	4	1	1$_5$	(360) . .	Lect.	Cross	IV.
392	Photometry	4	1	– [1]	(374) or (375)	Lect.	Clifford . . .	VI.
393	Energetics	4	1	2	(38) (318) (370)	Lect.	Goodwin . . .	VIII.
394	Kinetic Theory of Gases . .	4	1	– [1]	*(393)* . .	Lect.	Goodwin . . .	VIII.
395	Physical Colloquium . . .	4	1, 2	2	. . . . .	Read.	Goodwin . . .	VIII.
396	Heating and Ventilation . .	4	1	1 2	(370) . .	Lect.	Woodbridge . .	II. XI.
397	Physical Laboratory . . .	4	1, 2	4, 3	(373) . .	Lab.	Derr	I.$_3$.
398	Heat Measurements . . .	4	1	2 4	(373) (374) or (375)	Lect., Lab.	Norton	III., VIII. (X.)

(1) Time specially arranged each year.

PHYSICS.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction	Instructor in Charge.	Taken by
400	Electrical Engineering . . .	4	1, 2	4 or 5	(375) (377) (379)	Lect.	Cross	VI.
402	Methods of Dynamo Testing	4	1, 2	–(1)	(400) (406)	Lect.	Puffer	VI.
403	Railroad Signals	4	1	–(1)	(360) . .	Lect.	Blodgett . . .	$I._2$, VI.
404	Theory of Periodic Currents .	4	1, 2	1, 2	(377) . .	Lect.	Clifford	VI., VIII.(2)
405	General Electrical Testing(3) .	4	1	5 or 3	(374) or (375) (406)	Lab.	Laws	VI. VIII.
406	Electrical Measuring Instruments and Methods	4	1	1_{11}	(383) . .	Lect.	Laws	VI., VIII.
410	Photography	4	2	1	. . . . .	Lect.	Derr	Elective.
411	Electro-Chemistry	4	2	2	(393) . .	Lect.	Goodwin . . .	VIII.
412	Potential, Theory of . . .	4	2	2	(377) . .	Lect.	Clifford	(VIII.)
413	Electro-Magnetic Theory of Light	4	2	2	. . . . .	Lect.	Clifford	Elective.

(1) Time specially arranged each year. (2) Optional in second term. (3) 405 is followed by 420 and hours are subject to transfer.

PHYSICS.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by.
414	Principles of Scientific Investigation	4	2	3		Read.	Cross	VIII.
415	Advanced Chemistry or Physics	4	2	–(1)	(333) (393)	Read. Rec.	Noyes, Goodwin	(VIII.)
416	Alternating Current Machinery	4	2	–(1)	(400)	Lect.	Puffer	VI.
417	Distribution of Electricity	4	2	–(1)	(400)	Lect.	Puffer	VI.
418	Principles of Dynamo Design	4	2	–(1)	(400)	Lect.	Derr	VI.
419	Telephone Engineering	4	2	–(1)	(400)	Lect.	Hayes	VI.
420	Electrical Engineering Laboratory	4	1, 2	–(2), 5	(405)	Lab.	Puffer	VI.
421	Electrical and Heat Measurements	4	2	2	(373)	Lab.	Laws, Norton	V.
423	Precision of Measurements	4	2	2½	(57) (365)	Lect.	Clifford	VI., VIII.

(1) Time specially arranged each year.

(2) 405 is followed by 420 and hours are subject to transfer.

CIVIL ENGINEERING.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
440	Surveying and Plotting . .	2	1, 2	6, 5	(27) (102)	Lect., Rec., Field., Draw.	Burton, Robbins .	I., III.$_1$[1], XI., XII.$_3$.
442	Topographical Drawing . .	2	1	2	(102) (116)	Draw.	Burton, Robbins .	I., III.$_1$, XI., XII.$_3$.
443	Elements of Astronomy . .	2	1	1	(*440*)	Lect., Rec., Field.	Burton	I.
450	Surveying	3	1, 2	2	(360) (440) .	Lect., Rec., Field., Draw.	Burton, Sweet .	I., XI, XII.$_3$.
451	Surveying Instruments (six lessons)	3	2	—[2]	(*526*) . .	Lect., Field.	Burton, Robbins .	II.
452	Railroad Field-work and Drawing	3	1, 2	4, 5 / 2, 5	(440) (*453*)	Field., Draw.	Allen, Robbins .	I. / XI.
453	Railroad Engineering . . / Highway Engineering . .	3	1, 2	2, 3[3]	(38) (440) . / (*452*) . .	Lect., Rec.	Allen, Robbins . . .	I., XI.

(1) In second term, for Course XI., 6 hours; for Course III., 4 hours.
(2) Time included in 526.
(3) For Course XI., 10 weeks in first term, 12 in the second.

CIVIL ENGINEERING.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
455	Stereotomy	3	1	4	(110) . .	Rec., Draw.	Porter, Sweet . .	I., XI.
460	Theory of Structures . . .	3	2	1_5 2_{10}	(70) . . .	Lect., Rec.	Swain	I., XI.
465	Railroad Engineering . . .	4	1, 2	2, 3	(70) (453) .	Lect., Rec.	Allen	$I._2$.
466	Railroad Management . . .	4	1	2	(245) (453)	Lect.	Allen	$I._2$.
467	Geodesy (see also 497) . .	4	1	3	(57) (450) .	Lect., Rec., Field.	Burton	$I._3$.
468	Practical Astronomy . . .	4	1	1	(38) (450) .	Lect.	Robbins . . .	$I._{1, 3}$.
470 471	Theoretical Hydraulics . .	4	1	3_7	(70) (75)	Lect., Rec.	Porter	I., XI. II., $III._2$, VI., (X.), XIII.
47^2	Sanitary and Hydraulic Engineering	4	1	3	(470)	Lect, Rec.	Porter	$I._1$, XI.
473	Hydraulic Measurements . .	4	1	2	(470) or (471) for XII. (450)	Field., Draw., Rec.	Porter, Sweet . .	$I._{1, 3}$, (X.), XI., $XII._3$.
474	Theory of Structures . . .	4	1, 2	2	(460)	Lect., Rec.	Swain	$I._{1, 2}$,

CIVIL ENGINEERING.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
476	Bridges and Similar Structures	4	1, 2	2	(*474*)	Lect., Rec.	Swain	$I._{1, 2}$
477	Theory of Structures: Bridges and Similar Structures	4	1, 2	3	(460)	Lect., Rec.	Swain	$I._{3}$, XI.
478 479	Bridge Design	4 4	1, 2 1	6 5, 4	(*474*) (*476*) (*477*)	Draw.	Swain, McKibben, Spofford	$I._{1, 2}$ $I._{3}$, XI.
480	Engineering Laboratory	4	2	28	(470)	Lab.	Miller	$I._{1, 2}$, XI.
490	Hydraulic Motors	4	2	2	(471)	Lect., Rec.	Porter	II., (X.)
491	Hydraulic Engineering	4	2	3	(472)	Lect., Rec.	Porter	$I._{1, 3}$, XI.
493	Railroad and Highway Design	4	1, 2	3	(*465*)	Draw.	Allen	$I._{2}$.
494	Sanitary and Hydraulic Designing	4	2	2 6	(472) (*491*)	Draw.	Porter, Sweet	$I._{1}$. XI.
495	Hydraulic Machinery	4	2	2	(*491*)	Lect., Rec.	Porter	XI.
497	Geodesy (see 467)	4	2	1	(38) (450)	Lect., Rec., Field.	Burton	$I._{1}$.
499	Foundations	4	2	1	(*474*)	Lect.	Swain	$I._{1, 2}$.

MECHANICAL ENGINEERING.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
510	Principles of Mechanism . .	2	1	2	(33) (110) (360)	Lect., Rec.	Merrill, Park . .	II., III.$_2$, VI., X., XIII.
512	Drawing	2	1	2	(510)	Draw.	Schwamb / Park . .	II., XIII.
515	Drawing	2	2	6 / 3 / 5	(517) or (518)	Draw.	Schwamb / Park . .	II., X. III.$_2$, VI. XIII.
517	Mechanism: Construction of Gear-Teeth, Machine Tools, Cotton Machinery	2	2	3	(510) (515)	Lect., Rec.	Merrill	II., X.
518	Mechanism: Construction of Gear-Teeth, Machine Tools	2	2	2	(510) (515)	Lect., Rec.	Merrill, Park . .	III.$_2$, VI., XIII.
520	Principles of Mechanism . .	2	2	2	(33) (110)	Lect., Rec.	Merrill	I.
525	Steam Engineering: Valve Gears, Boilers	3	1, 2,	3	(38) (71) (75) (370) (517) or (518) (526)	Lect., Rec.	Peabody, Miller .	II., III.$_2$, VI., X., XIII.

MECHANICAL ENGINEERING.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
526	Drawing Design	3	1, 2 1 1, 2 1, 2 1	6, 5 5 3, 2 6, 2 2	(515) (525)	Draw.	Schwamb, Peabody, Park	II. III.$_2$. VI. X. XIII.
530	Engineering Laboratory	3	2	2	(525)	Lab.	Miller	II., III.$_2$, VI., X., XIII.
540	Steam Engineering	4	1	28	(525)	Lect., Rec.	Peabody	II., VI., X., XIII.
541	Steam Engineering	4	1, 2	2	(38) (370) (520)	Lect., Rec.	Peabody	I.$_{1, 2}$.
542 543	Dynamics of Machines	4	1	39 35	(86) (525)	Lect., Rec.	Lanza	II., XIII., VI., X.
544	Machine Design	4	1	9	(86) (525) (526) (542)	Lect., Rec., Draw.	Schwamb	II.
545	Engineering Laboratory	4	1, 2	4	(471) (530) (540) (542) or (543)	Lab.	Miller	II., VI.(1), X.(1), XIII.

(1) Course VI., 45, Course X., 50 hours, first term.

MECHANICAL ENGINEERING.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
550	Locomotive Construction .	4	1, 2	3 6, 3	(86) (471) (540) (542)	Lect., Rec.	Lanza	II.$_2$.
551	Marine Engineering . .						Peabody . . .	II.$_1$, XIII.
552	Mill Engineering . . .						Schwamb . . .	II.$_3$.
553	Engineering Laboratory . .	4	2	4	(86) (525) (530)	Lab.	Miller	III.$_2$.
554	Technical Machinery . . .	4	2	2	(540) . .	Lect. .	Merrill	X.
555	Foundations	4	2	2$_5$	(88) . . .	Lect. .	Lanza	II.
556	Shop Management	4	2	2$_5$	(550) (551) or (552)	Lect. .	Schwamb . . .	II.

NAVAL ARCHITECTURE.

570	Naval Architecture	3	1, 2	2	(71) (75) (518) (525) (571)	Lect. .	Peabody . . .	XIII.
571	Naval Architectural Drawing	3	1, 2	6, 5	(570) . .	Draw..	Peabody, Swan .	XIII.
572	Naval Architecture	4	1, 2	2	(86) (525) (540) (542) (551) (570) (573)	Lect. .	Peabody . . .	XIII.
573	Naval Architectural Drawing	4	1, 2	4, 6	(572) . .	Draw..	Peabody, Swan .	XIII.

MINING ENGINEERING.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
580	Blowpipe Silver Assay . .	2	2	2	(291)	Lab. .	Richards . . .	III.$_1$, (III.$_2$).
581	Mining Engineering . . .	3 4	1, 2 1	3 3	(360) (440) (661) (665)	Lect. .	Richards, Hofman	III.$_1$. XII.$_1$.
582 583	Assaying by Fire	3	1 2	4 2	(661) (662)	Lab. .	Lodge	III. V., XII.
587	Metallurgy of Iron . . .	4	1	1	(291)	Lect. .	Richards . . .	I.$_1$, $_2$, II., III., V., X., XI., XII.$_1$, XIII.
588	Metallurgy of Non-ferrous Metals	4	1	2	(291) (592)	Lect. .	Hofman . . .	III.
589	Elements of Non-ferrous Metallurgy	4	1	1	(291) (661)	Lect. .	Hofman . . .	(V.), X., XII.$_1$.
590	Ore Dressing and Non-ferrous Metallurgy	4	1	4	(360) (583) (592)	Lect. .	Richards, Hofman	(V.)
592	Metallurgical Laboratory .	4	1, 2	8, 14 8, 12 8	(320) (360) (582) (595)	Lab. .	Richards, Hofman, Lodge .	III.$_1$. III.$_2$. (V.)
593	Mining Engineering . . .	4	1, 2	2	(360) (661)	Lect. .	Richards . . .	III.
595	Memoirs	4	1, 2	1	(191) (201)	Read. .	Richards, Hofman, Lodge .	III.
596	Laboratory Reports . . .	4	1, 2	1	(592)	Rec. .	Richards, Hofman, Lodge .	III., (V.)
599	Metallurgy of Non-ferrous Metals and General Metallurgy	4	2	3	(588) or (589)	Lect. .	Hofman . . .	III., (V.), (X.)

ARCHITECTURE.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
610	Design	2	1	6	(103) (*118*)	Lect., Rec., Draw.	Gardner . . .	IV.
611	Shades and Shadows . . .	2	1	28	(103) (117)	Lect., Draw.	Gardner . . .	IV.
612	Materials	2	1	1	(103) . . .	Lect.	Chandler . . .	IV.
618	Design	2	2	7	(610) (611) (*118*)	Draw.	Despradelle Gardner	IV.
619	Perspective	2	2	1	(611) . . .	Lect., Draw.	Lawrence . . .	IV.
620	Stereotomy	2	2	1	(103) . . .	Lect., Draw.	Lawrence . . .	IV.
625	Design	3	1, 2	10, 14	(*119*) (618)	Draw.	Despradelle, Mead	IV.
626	Architectural History . . .	3	1, 2	2	(610) . . .	Lect., Draw.	Homer	IV.
627	Specifications and Working Drawings	3	1	4	(612) . . .	Lect., Draw.	Chandler . . .	IV.
628	Pen and Ink	3	2	1	(*118*) . . .	Draw.	Gregg	IV.

ARCHITECTURE.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
635	Design	4	1, 2	15, 26	(625) (637) (641)	Draw.	Despradelle	IV.
636	History of Construction	4	1	1	(627)	Lect.	Chandler	IV.
637	History of Ornament	4	1, 2	1_{10}	(119) (625) (628)	Lect., Draw.	Walker	IV.
638	Constructive Design	4	1	2_8	(87) (620)	Lect., Draw.	Lawrence	IV.
639	Pen and Ink	4	1, 2	1	(628)	Draw.	Gregg	IV.
640	Water Color	4	1, 2	2	(119)	. . .	Turner	IV.
641	Life Class	4	1, 2	4	(119)	Draw.	Adams	IV.
647	Business Relations, Contracts, etc.	4	2	1	(627)	Lect.	Chandler	IV.
648	Modelling	4	2	2	(119)	. . .	Bartlett	IV.
649	Building Construction	4	2	1		Lect.	Chandler	$I._2$, XI.

NATURAL SCIENCES.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
660	Physiography	2	1	2	(*360*)	Field., Lab.	Niles	XII.
661	Mineralogy	2	1	4	(291)	Lect., Lab.	Crosby, Barton	III., V., VII., XII.
662	Blowpipe Analysis	2	1	2	(291) (*661*)	Lab.	Barton	III., V., VII., XII.
665	Dynamical Geology	2	2	3	(360) 1st term	Lect.	Niles	I., III.$_1$, (V.), VII., IX., XI., XII.
666	Geological Field-work and Laboratory	2	2	3	(*668*)	Field., Lab.	Crosby	XII.
668	Structural and Chemical Geology	2 3	2	3	(661) (*665*)	Lect., Lab.	Crosby	III.$_1$, VII., XII., (V.)
669	Historical Geology	3	1	3	(*670*) (668)	Lect., Rec.	Niles	III.$_1$, (V.) [1], VII., XII.
670	Structural Geology	3	1	2	(291) (665)	Lect., Lab.	Barton	I., XI.
671	Geological Maps and Sections	3	1	2	(666) (668) (*669*)	Field., Draw.	Niles	XII.
672	Structural Palæontology	3	1	4	(716)	Lab.	Niles	XII.
673	Geological Field-work	3	1	4	(666) (669)	Field., Lab.	Crosby	XII.
675	Stratigraphic Geology	3	2	2	(670)	Lect., Rec.	Niles	I.
676	Building Stones	3	2	2	(290)	Lect., Lab.	Crosby	IV.

[1] Fourth year.

NATURAL SCIENCES.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
677	Mineralogy	3	2	4	(661) (662)	Lect., Lab.	Crosby	XII.
678	Geology	3	2	3	(665)	Lect., Rec.	Niles	IX.
679	Glacial Geology	3	2	1	(669) or (675)	Lect.	Niles, Barton	XII.
680	Stratigraphic Palæontology	3	2	4	(669) (672)	Lab.	Niles	XII.
681	Applied Geology	3	2	8	(671)	Lab., Read.	Niles, Crosby	XII.3.
685	Climatology	4	1	2	(360)	Lect., Rec.	Niles	(VII.), IX., XII.
686	Geological Field-work and Laboratory	4	1, 2	8, 10	(666)	Field., Lab.	Niles, Crosby, Barton	XII.
687	Physiographic Geology	4	1	3	(669) or (675)	Rec.	Niles	XII.
688	Geological Memoirs	4	1, 2	1	(669)	Rec.	Niles	XII.
689	Stratigraphic Correlation	4	1	5	(680)	Lect., Lab.	Niles, Crosby	XII.
690	Micro-Lithology	4	1, 2	3	(668) (669) (677)	Lect., Lab.	Barton	XII.
691	Ore Deposits	4	1	2	(668) (669) (677)	Lect., Lab.	Crosby	XII.

NATURAL SCIENCES.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
692	Experimental Geology	3 or 4	1	8 or 6	(669)	Lab.	Niles	XII.$_3$. or XII.$_2$.
695	Economic Geology	4	2	4	(668) (669) (677)	Lect., Lab.	Crosby	XII.
696	Hydrography	4	2	3	(669)	Rec.	Niles	XII.
710	Microscopy	1 2 2	2 2 1	2	(290)	Lect., Rec., Lab.	Sedgwick	VII. (V.) VIII.
711 712	General Biology	2 3	1	5 4 2$_7$	(290)	Lect., Rec., Lab.	Sedgwick	VII. IX., XII. XI.
715	General Biology	2	2	1	(291)	Lect., Lab.	Sedgwick	V.
716	General Zoölogy	2 3	2	2[1]	(711) or (712)	Lect., Lab.	Weysse	VII., IX., XII. XI.
717	General Botany	2 3	2	1[1]	(711) or (712)	Lect., Lab.	Sedgwick	VII., IX., XII. XI.
720	Comparative Anatomy and Embryology	3	1, 2	8	(711)	Lect., Rec., Lab.	Weysse	VII., XII.$_2$.

(1) Ten weeks for Course XI.

NATURAL SCIENCES.

No.	Subject.	Year.	Term.	Hours per Week.	Preparation Required.	Method of Instruction.	Instructor in Charge.	Taken by
722	Anthropology	3	1	1	(716)	Lect.	Ripley	VII., IX., XII.
728	Cryptogamic Botany	3	2	4	(717)	Rec., Lab.	Prescott	VII.
735	Comparative Physiology	4	1, 2	5, 6	(720)	Lect., Rec., Lab.	Hough	VII.
736	Physiological Laboratory	4	1, 2	4, 3	(720)	Lab.	Hough	VII.
737	Microscopic Anatomy	4	1, 2	4, 3	(720)	Lect., Rec., Lab.	Weysse	VII.
738	Theoretical Biology	4	1, 2	1	(720)	Lect.	Bigelow	VII.
739	Journals	4	1, 2	1	(711)	Read.	Sedgwick, Hough	VII.
740	Industrial Biology	4	1	3	(711) or (715)	Lect.	Prescott	(V.), VII.
741	Physiology and Hygiene	4	1	2	(711)	Rec., Lab.	Hough	IX.
742	History of Inductive Sciences	4	1	1	(290)	Lect.	Sedgwick	VII., VIII.
743	Bacteriology	4	1	3 or 4	(711) (or 712) (or 715)	Lect., Rec., Lab.	Prescott	(V.), VII. XI.
750	Sanitary Science and the Public Health	4	2	1	(290)	Lect.	Sedgwick	I., IV., VII., IX., XI.
751	Sanitary Biology	4	2	3 or 4	(743)	Lect., Rec., Lab.	Sedgwick, Holman	(VII.) XI.

Regulations.

School Year. — The first term begins on the first Wednesday after September 25. There is a recess of one week after the semi-annual examinations, and the second term begins on the first Tuesday after February 4. On legal holidays, on the Friday and Saturday following Thanksgiving Day, and for three days at Christmas, and three in April, the exercises of the school are suspended.

CALENDAR FOR 1897-98.

School Year began	Wednesday, Sept. 29, 1897.
Semi-annual Examinations begin	Tuesday, Jan. 18, 1898.
Second Term begins	Tuesday, Feb. 8, 1898.
Annual Examinations begin	Tuesday, May 24, 1898.
Degrees conferred. — School Year ends	Tuesday, June 7, 1898.
First Entrance Examinations	Thursday, June 30, 1898, and Friday, July 1, 1898.
Examinations for Advanced Standing begin	Monday, Sept. 19, 1898.
Second Entrance Examinations [1]	Tuesday, Sept. 20, 1898, and Wednesday, Sept. 21, 1898.
School Year of 1898–99 begins	Wednesday, Sept. 28, 1898.

CALENDAR FOR 1898-99.

School Year begins	Wednesday, Sept. 28, 1898.
Semi-annual Examinations begin	Tuesday, Jan 17, 1899.
Second Term begins	Tuesday, Feb. 7, 1899.
Annual Examinations begin	Tuesday, May 23, 1899.
Degrees conferred. — School Year ends	Tuesday, June 6, 1899.
First Entrance Examinations	Thursday, June 29, 1899, and Friday, June 30, 1899.
Examinations for Advanced Standing begin	Monday, Sept. 18, 1899.
Second Entrance Examinations [1]	Tuesday, Sept. 19, 1899, and Wednesday, Sept. 20, 1899.
School Year of 1897–98 begins	Wednesday, Sept. 27, 1899.

The Status of Students in regard to scholarship and ability to continue their courses is determined in part by means of examinations; but regularity of attendance and faithfulness to daily duties are considered equally essential.

[1] See page 61.

Examinations. — Semi-annual examinations are held in January and in May. The January examinations cover, in the third and fourth years, all the studies of the preceding term. The May examinations cover, in the third year, the studies of the entire year, except subjects finished during the first half-year, and in the fourth year, all the work of the year, as well as any professional work of previous years upon which it may be deemed best to hold examination. In the first and second years formal examinations are held at the same times, but not in all subjects.

Examinations for students conditioned in May in subjects of the first, second, and third years are held on the Friday and following days previous to the September entrance examinations, and for first term subjects, at the time of the May examinations.

Intermediate examinations, the results of which are not made a matter of permanent record, but are primarily for the information of students and their parents or guardians, may be held at any time in place of regular exercises.

Students conditioned in any subject and failing to make up the condition at the time appointed for the examination are not entitled to another examination, but will be required either to repeat the subject or to discontinue it, as well as all subjects dependent thereon, unless further time be allowed by special vote of the Faculty. A regular student failing entirely to make up any condition will cease to be regular, and his name will be transferred to the list of special students.

Students having clear records at the end of their first term are allowed to choose their courses without restriction. Students will not be admitted to professional work of the several courses without clear records in those previous subjects on which the former especially depend. Intermediate cases are specially considered by the Faculty.

Any special student attaining a proper standing in all subjects required of a regular student, up to any given period

of the course, may apply to have his name transferred to the list of regular students.

Reports of Standing. — Intermediate informal reports are sent to students, and to the guardians of those not of age, for all first and second year subjects twice during each term. Formal semi-annual reports are sent at the close of each term. In connection with these reports special votes of the Faculty are transmitted in cases requiring consideration.

Attendance Card. — At the opening of each term the student is required to fill out and present to the Secretary an attendance card, blank forms for which are supplied. The attendance card is the direct means by which the student places before the Faculty his wishes in regard to his professional course or selection of studies. The card must be presented at the earliest possible moment, to give opportunity for the immediate determination of qualifications and status. All subjects applied for must be regularly pursued, and no others can be taken except by special permission of the Faculty, duly applied for by petition.

Bond or Deposit. — Every student is required, on entering the school, to file with the Bursar a bond in the sum of two hundred dollars, signed by two responsible sureties, one of whom must be a citizen of the United States, as security for the payment of all charges of the Institute against him. If, for any reason, such a bond cannot be obtained, a deposit of fifty dollars may, in exceptional cases, be accepted as security. No officer of instruction or student of the Institute will be received as a surety.

Fees. — The tuition fee for regular students is $200 per year, and must be paid *in advance*, as follows, — $125 on or before October 10, and $75 on or before February 10. For one-half or any less fraction of the school year, the fee is

$125. Payment is also required of the cost of chemicals used and of apparatus injured or destroyed in the laboratories, and of the cost of repair of damage by students to any other property of the Institute. Special students pay, in general, the full fee; but when a few branches only are pursued, and the time required for instruction is limited, application for reduction may be made to the Bursar. The fee for students in graduate courses is the same as that for regular students.

It is desired that regular students, whose financial necessities are such as to prevent their continuance at the Institute, communicate, through the Secretary, with the Scholarship Committee of the Faculty.

Payments. — All payments should be made to Albert M. Knight, Bursar. If by check, remittance from points out of New England should be in New York or Boston funds.

Scholarships. — *Massachusetts State Scholarships.* In consideration of aid received from the Commonwealth, the Institute has established forty free scholarships, one being assigned to each senatorial district of the State. Information regarding the terms and conditions upon which these are to be awarded may be obtained by addressing the Secretary of the State Board of Education, State House, Boston.

William Barton Rogers Scholarship Fund. The income from this fund, which was presented by the Alumni Association of the Institute as a memorial of the late President Rogers, is applied to aiding needy students.

Coöperative Scholarships. The Coöperative Society of the students of the Institute applies its annual profits to the assistance of members of the Society, selected by its Board of Directors.

Perkins Fund. By a bequest of the late Richard Perkins, of Boston, the income of fifty thousand dollars is available

for aiding students in such amounts as shall be recommended by the Faculty.

Vose Fund. By the will of Mrs. Ann White Vose, the Institute has received about fifty thousand dollars, the income of which is used for scholarships.

Elisha Atkins Scholarship and Farnsworth Scholarship. Founded by the late Mrs. Mary E. Atkins, of Boston.

Charles L. Flint Scholarship. Founded by the late Charles L. Flint, of Boston. This scholarship is to be awarded, by preference, to a graduate of the Boston High School.

T. Sterry Hunt Scholarships. Founded by bequest of the late T. Sterry Hunt, for seven years Professor of Geology at the Institute; preference will be given chemical students of the higher years.

William F. Huntington Scholarship. Founded in memory of William F. Huntington, who graduated in Civil Engineering in the class of '75. Preference will be given to a student in that course.

Joy Scholarships. The money by which these scholarships are sustained was given by Miss Nabby Joy. They were created pursuant to a decree of the Supreme Judicial Court of Massachusetts, for the benefit of one or more women studying natural science in the Institute. At present one scholarship only is available; a second will be established when the fund has increased sufficiently to warrant such an expenditure.

Elisha T. Loring Scholarship. Founded by the late Elisha Thacher Loring, of Boston.

Milton High School Scholarship. Founded by the contributions of residents of Milton. This scholarship will be conferred upon such former pupil of the Milton High School as the master of that school and the school committee of the town may select.

James Henry Mirrlees Scholarship. Founded by James B. Mirrlees, Esq., of Glasgow, Scotland, in memory of his son,

who died in May, 1886, while attending the Institute. This scholarship will be awarded to a third or fourth year student in Mechanical Engineering.

Nichols Scholarship. Founded by bequest of the late Mrs. Betsey F. M. Nichols in memory of her son, William Ripley Nichols, of the class of '69, for sixteen years Professor of General Chemistry at the Institute. Preference will be given to students in the Chemical Course.

Sherwin Scholarship. Founded by the English High School Association in memory of the late Thomas Sherwin. The pupil, to receive the privilege of this scholarship, is to be a graduate of the English High School of Boston and a regular student of the Institute.

The Class of 1891, on leaving the Institute, provided funds for a system of letter-boxes for the use of students. Any profits accruing from the rental of these letter-boxes will be applied to the assistance of scholarship applicants.

Conditions governing Award of Scholarships. — Scholarships are awarded in general only to those applicants who have completed at least a year of thoroughly satisfactory work at the Institute. The facts considered in making assignments are the needs of the student and his promise as indicated by his previous work in the Institute. It is expected that only those students who are greatly in need of aid will apply for a scholarship, and none will be awarded to a student if, either from physical, mental, or moral weakness, he gives little promise of future usefulness. Awards will be made in October, and five-eighths of the amount awarded will be credited on the term bill due in October, and the remaining three-eighths on the term bill due in February. Applications for scholarships should be addressed to the Secretary of the Faculty.[1]

[1] Applications for Massachusetts State Scholarships should be made only to the Secretary of the State Board of Education, State House, Boston, from whom the necessary blanks may be obtained.

Graduate Scholarships and Fellowships. — Five scholarships for graduates of the Institute, carrying free tuition, have been established, and will be awarded to such applicants as are recommended by the Faculty.

Dalton Graduate Scholarship. Founded by Charles H. Dalton, the income to be used for the payment of fees of American male students, graduates of the Institute, who may wish to pursue advanced chemical study and research, especially applicable to textile industries.

In addition to these, the following fellowships of four hundred dollars each may be held by resident graduate students, or may be awarded to graduates desiring to continue their studies abroad:

James Savage Fellowship Fund. Founded by the late James Savage. Four hundred dollars from the income of this fund will be annually awarded to a graduate student of the Institute, or of some similar institution of equal standing. This sum will be awarded only to a student of distinguished ability engaged in the advanced study of some branch or branches of knowledge taught in the Institute.

Susan H. Sweet Fellowship Fund. Four hundred dollars from the income of this fund will be annually awarded to a graduate student of the Institute, or of some similar institution of equal standing, who, by his character, capacity, training, and attainments, shall give evidence of special fitness to pursue advanced study in some branch or branches of knowledge taught in the Institute. The holder of this fellowship will be eligible to reappointment for a second year; and if in any year the sum above named cannot be advantageously used for the purpose prescribed, no appointment will be made.

For both of these fellowships the preference is given to graduate students who are candidates for advanced degrees.

Residence and Expenses. — As the exercises of the school begin at nine o'clock in the morning, and end before five o'clock in the afternoon, students may conveniently live in

any of the nearer cities or towns, on the lines of the various railroads, if they prefer to do so.

The cost of board and rooms in Boston and the neighboring cities and towns need not exceed seven or eight dollars a week. The cost of books, drawing instruments, paper, etc., exclusive of chemical breakage, is from twenty-five to thirty-five dollars a year.

Attendance. — Regular students are expected to attend all the exercises of their several courses. Special students are expected to attend all the exercises in subjects applied for on their attendance cards, unless excused by special vote of the Faculty. Students are in general expected to devote themselves to the work of the school between the hours of 9 A. M. and 4 P. M., except during the interval from 1 P. M. to 2 P. M. There are no exercises on Saturday afternoon, and the rooms are closed.

Conduct. — It is assumed that students come to the Institute for a serious purpose, and that they will cheerfully conform to such regulations as may be from time to time made by the Faculty. In case of injury to the building, or to any of the furniture, apparatus, or other property of the Institute, the damage will be charged to the student or students known to be immediately concerned; but if the persons who caused the damage are unknown, the cost of repairing the same may be assessed equally upon all the students of the school. Conduct inconsistent with the general good order of the school, if repeated after admonition, will be followed by suspension or dismissal. It is the aim of the Faculty so to administer the discipline of the school as to maintain a high standard of integrity and a scrupulous regard for truth; and *the attempt of any student to present as his own the work of another, or to pass any examination by improper means, is regarded as a most serious offence, rendering the offender liable to immediate expulsion.*

Register of Students.

For residence addresses in suburban portions of Boston the following abbreviations are used:

A.	Allston.	M.	Mattapan.
B.	Brighton.	N.	Neponset.
C.	Charlestown.	S. B.	South Boston.
D.	Dorchester.	R.	Roxbury.
E. B.	East Boston.	Ros.	Roslindale.
J. P.	Jamaica Plain.	W. R.	West Roxbury.

GRADUATE STUDENTS.

FELLOWS.

Savage Fellowship.

NAME.	HOME.	RESIDENCE.
Wendell, George Vincent	*Cambridgeport*	Studying abroad.
S.B., Massachusetts Institute of Technology.		

Swett Fellowship.

Coolidge, William David	*Hudson*	Studying abroad.
S.B., Massachusetts Institute of Technology.		

CANDIDATES FOR ADVANCED DEGREES.

NAME.	HOME.	RESIDENCE.
Collins, John Arthur, Jr.	*Fall River*	37 St. Botolph St.
S.B., Massachusetts Institute of Technology.		
du Pont, Irénée	*Wilmington, Del.*	531 Mass. Ave.
S.B., Massachusetts Institute of Technology.		
Everett, Frank Warren	*Highland Park, Ill.*	531 Mass. Ave.
S.B., Massachusetts Institute of Technology.		

NAME.	HOME.	RESIDENCE.
Manson, Edmund Sewall, Jr.	*Dorchester*	7 Holiday St., D.
S.B., Massachusetts Institute of Technology.		
Smyser, Albert Ernest	*Brookline*	Brookline.
S.B., Massachusetts Institute of Technology.		
Smyser, James Swett	*Brookline*	Brookline.
S.B., Massachusetts Institute of Technology.		
Videto, Theodore Ernest	*So. Framingham*	So. Framingham
S.B., Massachusetts Institute of Technology.		

OTHER GRADUATE STUDENTS.

Adams, Herbert Henry	*New York, N. Y.*	99 Pinckney St.
A.B., Johns Hopkins University.		
Allen, Joseph Percival, Jr.	*Greencastle, Ind.*	116 Dartmouth St.
A.B., De Pauw University.		
Bowditch, Ingersoll	*Jamaica Plain*	Jamaica Plain.
A.B., Harvard University.		
Brock, Henry Matthias	*Boston*	15 Woodville St., R.
A.B., Boston College.		
Brown, Dickson Queen	*New York, N. Y.*	1116 Boylston St.
A.B., Princeton University.		
Burnet, Robert Wallace, Jr.	*Cincinnati, Ohio*	56 W. Cedar St.
A.B., Yale University.		
Chapman, James Finlay	*Mankato, Minn.*	Brookline.
S.B., Carleton College.		
Clapp, Frederick Otis	*Providence, R. I.*	199 St. Botolph St.
A.M., Brown University.		
Curtis, Harry Appleton	*Boston*	28 Mt. Vernon St.
A.B., Harvard University.		
Dater, Philip Herrick	*Troy, N. Y.*	69 Montgomery St.
B.A., Williams College.		
Dike, George Phillips	*Auburndale*	Auburndale.
B.A., Williams College.		
Drew, Charles Davis	*W. Newton*	W. Newton.
A.B., Harvard University.		
Dutton, Francis Bird	*Auburndale*	Auburndale.
A.B., Harvard University.		
Fenner, David Colton	*Providence, R. I.*	86 Huntington Ave.
Ph.B., Yale University.		
Ferguson, Finlay Forbes	*Norfolk, Va.*	1116 Boylston St.
A.B., B.S., Hampden-Sidney College.		
Field, Leonard Hamilton, Jr.	*Jackson, Mich.*	8 Berwick Park.
A.B., Amherst College.		
Fifield, Ethel Frances	*Salem*	Salem.
B.A., Smith College.		
Furbish, Frederic	*Iowa City, Iowa*	362 Columbus Ave.
B.S., Iowa State University.		
Godfrey, William Hollis	*Needham*	Needham.
Ph.B., Tufts College.		

NAME.	HOME.	RESIDENCE.
Hanscom, Helen MacGregor A.B., Colby University.	*Franklin*	Franklin.
Hardy, Charles Ashley A.B., Harvard University.	*Auburndale*	Auburndale.
Hawkins, Laurence Ashley B.A., Williams College.	*Pittsfield*	69 Montgomery St.
Heghinian, Garabed George A.B., Central Turkey College.	*Marash, Turkey*	Auburndale.
Henderson, Reuben Stewart B.S., DePauw University.	*Olentangy, Ohio*	101 Appleton St.
Hewitt, Henry Harwood A.B., University of Chicago.	*Chicago, Ill.*	39 St. Botolph St.
Horsey, Outerbridge, Jr. A.B., Georgetown University.	*Burkittsville, Md.*	89 Charles St.
Howard, Arthur Fiske B.S., Amherst College.	*Portsmouth, N. H.*	8 Berwick Park.
Hubbard, Henry Vincent A.B., Harvard University.	*Taunton*	437 Boylston St.
Hughes, Raymond Mollyneaux M.Sc., Ohio State University.	*Columbus, Ohio*	4 Oxford Terrace.
Huntington, George Danforth A.B., University of Rochester.	*Rochester, N. Y.*	192 Dartmouth St.
Jackson, Jerome Paul A.B., Amherst College.	*Swampscott*	Swampscott.
Johnson, Arthur Albert A.B., Indianapolis University.	*Irvington, Ind.*	Cambridge.
Johnson, Benjamin Robert A.B., Hamilton College.	*Albany, N. Y.*	9 Concord Sq.
Lacy, Robert A.B., Johns Hopkins University.	*Baltimore, Md.*	142 Marlborough St.
Lansingh, Van Rensselaer B.S., University of Chicago.	*Chicago, Ill.*	39 St. Botolph St.
Lawrence, Amos Amory A.B., Harvard University.	*Boston*	59 Commonwealth Ave.
Little, James Lovell, Jr. A.B., Harvard University.	*Brookline*	Brookline.
Lombard, Percival Hall A.B., Harvard University.	*Boston*	130 Newbury St.
Lootz, Emma B.A., Smith College.	*Boston*	116 St. Botolph St.
McCrea, Almeron Wallace B.S., University of Minnesota.	*St. Paul, Minn.*	118 Pembroke St.
Mitchell, George LeRoy B.S., Monmouth College.	*Kirkwood, Ill.*	14 James St.
Neidich, Samuel Abrahims Ph.B., Dickinson College.	*Carlisle, Pa.*	A1 Berwick Park.
O'Hanlon, Thomas Joseph A.B., Gonzaga College.	*Chinook, Mont.*	53 Concord St.
O'Leary, William Henry Joseph A.M., Georgetown University.	*Richibucto, N. B.*	72 Clarendon St.
Perkins, Grace Hamilton A.B., Wellesley College.	*Exeter, N. H.*	Arlington.

NAME.	HOME.	RESIDENCE.
Price, Paul	*Winterset, Iowa* . .	27 Falmouth St.
Ph.B., Simpson College.		
Putnam, William Edward, Jr. .	*Brookline*	Brookline.
A.B., Harvard University.		
Rash, Frank Dillman	*Earlington, Ky.* . .	19 Claremont Park.
A.B., South Kentucky College.		
Real y Gaillard, Juan	*Santiago de Cuba* . .	398 Northampton St.
A.B., Colegio de Carreras.		
Reynolds, Albert Adieu	*No. Adams*	554 Tremont St.
A.B., Williams College.		
Richardson, Philip	*Brookline*	Brookline.
A.B., Harvard University.		
Ripley, Philip Franklin	*Andover*	36 Newbury St.
A.B., Yale University.		
Roberts, Thomas Mayo	*Boston*	755 Tremont St.
A.B., University of Oregon.		
Sargent, Homer Earle, Jr. . . .	*Chicago, Ill.* . . .	86 Huntington Ave.
Ph.B., Yale University.		
Sayward, William James . . .	*Woodstock, Vt.* . .	124 W. Newton St.
B.S., University of Vermont.		
Scudder, Heyward	*Boston*	29 Newbury St.
B.A., Trinity College.		
Stanwood, Francis Manning, Jr. .	*Boston*	527 Beacon St.
A.B., Harvard University.		
Stockton, Philip	*Boston*	390 Beacon St.
A.B., Harvard University.		
Tallant, Alice Weld	*Boston*	66 Marlborough St.
A.B., Smith College.		
Walworth, Arthur Clarence, Jr. .	*Newton Centre* . .	Newton Centre.
A.B., Yale University.		
Wessel, John Frederick	*Nashville, Tenn.* . .	126 W. Newton St.
A.B., Georgetown University.		
Whiting, Charles Frederick . .	*Wilton, N. H.* . . .	Somerville.
A.B , Harvard University.		
Willis, John Howard	*Waban*	Waban.
S.B., Massachusetts Institute of Technology.		

FOURTH YEAR.

NAME.	COURSE.	HOME.	RESIDENCE.
Alexander, Donald Nelson .	IV.	*E. Boston*	33 Falcon St., E. B.
Alland, Leon	I.	*Dorchester*	34 Bicknell St., D.
Allyn, Robert	II.	*New London, Conn.* .	135 Warren Ave.
Anthony, George Rutherford	II.	*Waltham*	Waltham.
Arnold, Lyman	VI.	*W. Springfield* . .	103 Appleton St.
Ayres, Milan Valentine . .	VI.	*Newton Centre* . .	Newton Centre.
Babson, Roger Ward . . .	I.	*Gloucester*	Hotel Berkeley.
Bacon, Lyman Edward . .	I.	*Bridgewater* . . .	Bridgewater.

FOURTH YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
Bancroft, Joseph	X.	*Wilmington, Del.*	4 Oxford Terrace.
Barker, Elliott Rensselaer	V.	*Greendale*	114 White St., E. B.
Barker, Harrington	II.	*No. Cambridge*	No. Cambridge.
Barlow, William Harvey	V.	*Mahanoy City, Pa.*	38 St. Botolph St.
Belcher, Henry Clifford	II.	*Easton*	Easton.
Bergen, Francis Patrick	VI.	*Hartford, Conn.*	694 Mass. Ave.
Bissell, Thomas Hally*.	VI.	*Buffalo, N. Y.*	192 Dartmouth St.
Blackmer, William Daniels	III.	*Colorado Springs, Colo.*	543 Mass. Ave.
Blanchard, Arthur Alphonzo	V.	*Newton Centre*	Newton Centre.
Bleecker, John Stearns	II.	*Boston*	6 Louisburg Sq.
Bodwell, Howard Lawrence	II.	*W. Boxford*	4 Oxford Terrace.
Booth, George Henry	II.	*Poughkeepsie, N. Y.*	15 Concord Sq.
Boyle, Martin	V.	*Newburyport*	Newburyport.
Brewster, William	II.	*Plymouth*	85 Newbury St.
Burnham, George	IV.	*Portland, Me.*	563 Mass. Ave.
Butcher, William Laramy	I.	*Cambridge*	Cambridge.
Butler, Winthrop Fessenden	V.	*Chelsea*	Chelsea.
Butterworth, Elwell Robert	II.	*Somerville*	Somerville.
Byam, Le Roy Henry	I.	*Waltham*	Waltham.
Campbell, Donald Chenery	II.	*Lowell*	13 Greenwich Park.
Chace, Ira Mason, Jr.	I.	*New Bedford*	53 Morton St., M.
Chapin, Edward Samuel	V.	*Boston*	23 Parker St.
Cobb, Herbert Franklin	II.	*Newton Centre*	Newton Centre.
Cobb, Herbert Luther	VI.	*Mansfield*	Mansfield.
Coburn, Howard Lincoln	II.	*Boston*	143 Appleton St.
Coffin, Joseph George	VIII.	*Boston*	12 Follen St.
Colcord, Frank Forest	III.	*Roxbury*	3 Weld Ave., R.
Conklin, Herbert King	IV.	*Newark, N. J.*	433 Columbus Ave.
Cook, Joseph Cochran	VIII.	*Roxbury*	2902 Washington St., R.
Coombs, Frank Eugene	IV.	*E. Boston*	26 Maverick St., E.B.
Cornell, Worthington	VI.	*Wellington*	Wellington.
Cotter, William Edward	IV.	*Somerville*	Somerville.
Cotle, George Thurston	V.	*Roxbury*	13 Copley St., R.
Crane, Eva Hayes	IV.	*Cambridge*	Cambridge.
Craven, George Warren	VI.	*Bozeman, Mont.*	27 Gray St.
Crowell, Luther Alberto	VI.	*W. Dennis*	143 W. Newton St.
Currier, Harvey Leon	II.	*Swampscott*	Lynn.
Curtis, Everett Nichols	IX.	*Boston*	26 Cumberland St.
Cutter, Fred Bertram	VI.	*Wakefield*	Wakefield.
Dana, Wm. Sumner Barton	IV.	*Worcester*	696 Tremont St.
Danforth, Raymond Hewes	II.	*Salem*	Salem.
Dater, Philip Herrick, B.A.	I.	*Troy, N. Y.*	69 Montgomery St.
Davis, Alvan Lamson	III.	*Hyde Park*	Hyde Park.
Davis, Huntly Ward	IV.	*Montreal, Que.*	549 Mass. Ave.
Davison, George Rupert	VI.	*So. Boston*	33 M St., S. B.

* Died December 20.

FOURTH YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
De Golyer, Robert Seely	IV.	*Evanston, Ill.*	531 Mass. Ave.
Dixon, John Brown	V.	*Washington, D.C.*	32 Lawrence St.
Dodge, Irving Bigelow	II.	*Grafton*	215 W. Canton St.
Draper, Robert May	III.	*Fayville*	Fayville.
Drew, Albert Thompson	X.	*Newburyport*	23 Dartmouth St.
Driscoll, Timothy Joseph	VI.	*Boston*	7 Hamburg St.
Edgerly, Daniel Wilbert	V.	*Cambridgeport*	Cambridgeport.
Fairbanks, William Kendall	VI.	*Boston*	213 Newbury St.
Faught, Ray Clinton	VI.	*Allston*	11 Mansfield St., A.
Fearing, Albert Justin	I.	*So. Weymouth*	So. Weymouth.
Fenner, David Colton, Ph.B.	II.	*Providence, R. I.*	86 Huntington Ave.
Ferguson, Finlay F., A.B., B.S.	IV.	*Norfolk, Va.*	1116 Boylston St.
Field, Frederick Cromwell	VI.	*Brooklyn, N. Y.*	531 Mass. Ave.
Fisher, Howell	X.	*Boston*	Orkney Road.
Fiske, George Isaac	VI.	*Roxbury*	50 Elmore St., R.
Fleisher, Simon	VI.	*Boston*	48 Lowell St.
Forrest, Mabel Flora	VII.	*Lowell*	462 Mass. Ave.
Foulkes, Edward Thomas	IV.	*Portland, Oreg.*	343 Cambridge St.
Fownes, William Clark	X.	*Pittsburgh, Pa.*	Brookline.
Frye, Albert Irvin	I.	*Alameda, Cal.*	155 W. Canton St.
Furbish, Frederic B. S.	IV.	*Iowa City, Iowa*	362 Columbus Ave.
Gallison, Ernest Augustus	II.	*Chelsea*	Chelsea.
Gilbert, Frederick Chester	V.	*Cambridgeport*	Cambridgeport.
Godbold, Charles Henry, Jr.	XIII.	*E. Boston*	150 Trenton St., E.B.
Goddard, John Newton	V.	*Plainfield, N. J.*	553 Boylston St.
Godley, George McMurtrie	III.	*New York, N. Y.*	563 Mass. Ave.
Goldsmith, Clarence	II.	*Andover*	Andover.
Goodrich, Arthur Lindsay	X.	*Stockbridge*	1A Berwick Park.
Haskell, George Owens	II.	*Savannah, Ga.*	151 Warren Ave.
Hazeltine, James Ezra	VI.	*Warren, Pa.*	112 Huntington Ave.
Hewins, Lyman Foster	XIII.	*Dorchester*	353 Washington St., D.
High, Carl Stout	VI.	*Arlington, Kans.*	11 Columbus Sq.
Hopkins, Heber Augustus	II.	*Cambridgeport*	Cambridgeport.
Horton, Ralph Tucker	I.	*Foxboro*	Foxboro.
Howard, Arthur Fiske, B.S.	VI.	*Portsmouth, N. H.*	8 Berwick Park.
Hubbard, Winfred Dean	XI.	*Concord*	Concord.
Huntington, Geo. Danforth, A.B.	I.	*Rochester, N. Y.*	192 Dartmouth St.
Hürter, Charles Swanberg	III.	*Hyde Park*	Hyde Park.
Hutchinson, George Anthony	II.	*Dorchester*	14 Wales St., D.
Ingalls, Harry Creighton	IV.	*Lynn*	563 Mass. Ave.
Jackson, Henry Docker	VI.	*Boston*	Hotel Oxford.
Jacoby, Areli Hull	V.	*Wilkes-Barre, Pa.*	553 Boylston St.
Johnson, Edward, Jr.	I.	*Boston*	178 Marlborough St.
Johnson, Paul Franklin	II.	*Boston*	67 Westland Ave.
Jones, Frederic Alexander	I.	*Needham*	Needham.

FOURTH YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
Kaufman, Irvin Hayes	II.	*Brookline*	Brookline.
Keene, Arthur Samuel	IV.	*Brighton*	41 Murdock St., B.
Kellogg, Franklin Miner	VI.	*W. Stafford, Conn.*	86 Myrtle St.
Kendall, Robert Everett	V.	*Hyde Park*	Hyde Park.
Kimball, Elwell Fairfield	I.	*Newburyport*	7 Burlington Ave.
Kimball, Walter Everard	XIII.	*Roxbury*	1 Robin Hood St., R.
King, William Braman	VI.	*Dorchester*	11 Merlin St., D.
Koch, Carleton Spayth	V.	*Buffalo, N. Y.*	110 Newbury St.
Kuttroff, Edwin	X.	*New York, N. Y.*	1091 Boylston St.
Lacy, Robert, A.B.	I.	*Baltimore, Md.*	142 Marlborough St.
Lane, Edward Percy	I.	*Manchester*	212 W. Canton St.
Langford, Grace	VIII.	*Plymouth*	10 Concord Sq.
Lansingh, Van Rensselaer, B.S.	VI.	*Chicago, Ill.*	39 St. Botolph St.
Lee, Walter Henry	IV.	*Home City, Ohio*	145 Worcester St.
Leonard, Owen Lewis	V.	*Newton Centre*	Newton Centre.
Lippincott, Jesse Treadwell	X.	*Cincinnati, Ohio*	1091 Boylston St.
Little, Edmund Cook	IV.	*Lowell*	8 Berwick Park.
Lombard, Percival Hall, A.B.	VI.	*Boston*	130 Newbury St.
Lord, Charles Edward	VI.	*Somerville*	Somerville.
McConnell, Walter Gardner	XIII.	*Roxbury*	516 Warren St., R.
McIntyre, James Sherwood	IV.	*New Bedford*	678 Tremont St.
McJunkin, Paul	VIII.	*Boston*	7 St. Paul St.
Marshall, William Adamson	X.	*Brookline*	Brookline.
Mathews, George Eugene	IV.	*Dayton, Ohio*	29 Appleton St.
Mayer, Durand	VI.	*New York, N. Y.*	126 W. Newton St.
Milliken, Sumner Moulton	I.	*Saco, Me.*	105 Warren Ave.
Moebs, Joseph Julius	I.	*Dorchester*	235 Magnolia St., D.
Mommers, Richard	V.	*So. Manchester, Conn.*	543 Mass. Ave.
Morrill, Edward Francis	VI.	*Fitchburg*	4 Oxford Terrace.
Muhlig, James Fred	II.	*Natick*	Natick.
Neidich, Samuel A., Ph.B.	II., X.	*Carlisle, Pa.*	A1 Berwick Park.
Nelson, Willard Bundy	VI.	*Jamaica Plain*	14 Boylston Terrace, J. P.
Newbury, George Kellogg	XIII.	*Jackson, Mich.*	107 Mt. Vernon St.
Newhall, Henry Borden, Jr.	VI.	*Plainfield, N. J.*	531 Mass. Ave.
Nickerson, Clarendon	X.	*Bridgeport, Conn.*	25 Rockville Park, R.
Osgood, Henry Douglas	XI.	*Hancock*	200 W. Brookline St.
Packard, Alpheus Appleton	XIII.	*Providence, R. I.*	146 Marlborough St.
Page, Walter	XIII.	*Boston*	253 Beacon St.
Parker, Will Rogers	VI.	*Portsmouth, N. H.*	31 Centre St., R.
Pease, Charles Henry	II.	*Marlboro, N. H.*	234 W. Canton St.
Peavey, Leroy Deering	I.	*Malden*	Malden.
Pendell, Charles William	VI.	*Cleburne, Tex.*	130 W. Brookline St.
Perry, Frank Bridgham	II.	*Norwich, Conn.*	136 Chandler St.
Philbrick, Shirley Seavey	II.	*Rye Beach, N. H.*	136 Chandler St.
Porter, Arthur Felix	V.	*Hyde Park*	Hyde Park.

FOURTH YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
Pratt, Robert Winthrop, Jr.	I.	*Waban*	Waban.
Priest, Benson Bulkeley	I.	*Littleton*	Brookline.
Putnam, Wm. Edward, Jr., A.B.	IV.	*Brookline*	Brookline.
Richardson, Edward Bridge	VI.	*Boston*	155 Beacon St.
Richmond, Henry Parsons	IV.	*E. Providence, R. I.*	92 Pembroke St.
Riley, Joseph Cains, Jr.	II.	*Jamaica Plain*	13 Spring Park Ave., J. P.
Ritchie, Edward Warren	IV.	*Newton Highlands*	Hotel Rand.
Roberts, Thomas Mayo, A.B.	VI.	*Boston*	755 Tremont St.
Russ, Ernest Frank	IX.	*Boston*	193 W. Brookline St.
Russell, Benjamin F. W.	IV.	*Concord Junction*	Cambridge.
Rutherford, Eugene White	II.	*Brooklyn, N. Y.*	114 W. Concord St.
Sargent, Homer Earle, Jr., Ph.B.	VI.	*Chicago, Ill.*	86 Huntington Ave.
Sawtelle, Harry Francis	I.	*Cambridge*	Cambridge.
Sawtelle, William Otis	VIII.	*Bangor, Me.*	563 Mass. Ave.
Schroeder, Ernest Herman	IV.	*Omaha, Neb.*	92 Pembroke St.
Scott, Henry Francis	II.	*Brockton*	Brockton.
Sears, Joseph Homer	V.	*E. Dennis*	22 Claremont Park.
Seidensticker, Lewis Jerome	V.	*Cambridge*	Cambridge.
Shaw, Albion Walker	VI.	*Malden*	Malden.
Shedd, Albert Rix	II.	*Silver Creek, N. Y.*	28 Claremont Park.
Sherman, Edward Clayton	I.	*Cambridge*	Cambridge.
Skinner, Charles Jernegan	I.	*Ottawa, Kans.*	92 Pembroke St.
Smith, Charles Henry	II.	*Charlestown*	107 Warren St., C.
Smith, Horace Tilden	V.	*E. Bridgewater*	E. Bridgewater.
Smith, William Graves	I.	*Mansfield*	182 W. Canton St.
Spaulding, Frank Alger	I.	*W. Stockbridge*	159 W. Canton St.
Staples, William Deering	VI.	*Portland, Me.*	220 W. Springfield St.
Steffens, William Frederick	I.	*Boston*	137 W. Concord St.
Stevens, Gorham Phillips	IV.	*Cambridge*	Cambridge.
Stevens, William Wentworth	IV.	*Lynn*	Lynn.
Streng, Lewis Starr	VI.	*Louisville, Ky.*	6 Rutland Sq.
Sturtevant, Edward	IX.	*Brookline*	Brookline.
Swift, Charles Williston	II.	*Provincetown*	28 Yarmouth St.
Tallmadge, Thomas Eddy	IV.	*Evanston, Ill.*	531 Mass. Ave.
Taylor, Edward Molineux	II.	*Poughkeepsie, N. Y.*	531 Mass. Ave.
Taylor, Mark Elliott	II.	*Hyde Park*	Hyde Park.
Thayer, Horace Richmond	I.	*Blackstone*	17 Concord Sq.
Thompson, Maurice de K., Jr.	VIII.	*Covington, Ky.*	563 Mass. Ave.
Thomson, Mary Jane	V.	*Elizabeth, N. J.*	41 Union Park.
Tietig, Rudolph	IV.	*Cincinnati, Ohio*	117 St. Botolph St.
Torrey, Charles Augustine, Jr.	V.	*Lynnfield*	Lynnfield.
Treat, George Winfield	I.	*Livermore Falls, Me.*	183 Warren Ave.
Tucker, Atherton Howe	IV.	*Dorchester*	1079 Adams St., D.
Tucker, Frank Stevenson	II.	*Marblehead*	693 Tremont St.
Ulmer, George Frederick	V.	*Norwich, Conn.*	543 Mass. Ave.
Usher, Susannah	VII.	*Cambridge*	Cambridge.

FOURTH YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
Wadsworth, George Reed	I.	*Keene, N. H.*	549 Mass. Ave.
Warren, John Edward	II.	*Foxvale*	Foxvale.
Waterson, Karl William	VI.	*Lowell*	Wakefield.
Wessel, John Frederick, A.B.	VI.	*Nashville, Tenn.*	126 W. Newton St.
Wesson, Paul Bancroft	II.	*Tyngsboro*	78 Zeigler St., R.
Whitten, Roscoe Benjamin	IV.	*E. Boston*	129 Brooks St., E. B.
Wiard, Edward Saxon	III.	*Boston*	78 Chandler St.
Wilder, Clifton White	II.	*Leominster*	35 Rutland Sq.
Wilder, Ralph Edward	I.	*Jamaica Plain*	3 Sunset Ave., J. P.
Wing, Charles Frederic, Jr.	VI.	*New Bedford*	407 Mass. Ave.
Wing, David Laforest	IX.	*Bangor, Me.*	563 Mass. Ave.
Winslow, Charles-Edward A.	VII.	*Boston*	Hotel Oxford.
Wood, Winthrop Barrett	I.	*Concord*	Concord.
Zimmermann, Walter Gustave	II.	*Chicago, Ill.*	1116 Boylston St.

THIRD YEAR.

Abbott, Lewis Benjamin	IV.	*Danvers*	Danvers.
Abeel, David Gustavus	I.	*Catskill, N. Y.*	11 Irvington St.
Adams, Herbert Henry, A.B.	I.	*New York, N. Y.*	99 Pinckney St.
Adams, John Howard	IV.	*Pawtucket, R. I.*	193 W. Canton St.
Adams, Walter Owen	X.	*Annisquam*	Cambridge.
Addicks, Lawrence	II., VI.	*Philadelphia, Pa.*	36 Newbury St.
Albee, Edward Everett	I.	*Melrose*	Melrose.
Allen, James Walter	VI.	*Newtonville*	Newtonville.
Anderson Robert Peter	I.	*Brooklyn, N. Y.*	27 Falmouth St.
Ayer, Harold Osgood	V.	*Danville, Vt.*	Hyde Park.
Babcock, Henry Kimberly	VI.	*Neenah, Wis.*	112 Newbury St.
Bailey, Thomas Wendell	IV.	*Allston*	49 Gardner St., A.
Bean, Walter Raymond	XIII.	*Roxbury*	44 Woodbine St., R.
Bennett, Raymond Franklin	I.	*Portland, Me.*	23 Dartmouth St.
Blake, Francis Minot	II.	*Boston*	426 Marlborough St.
Blake, Kenneth Mallon	II.	*Newton*	Newton.
Bonns, Walter Weidenfeld	IV.	*Milwaukee, Wis.*	127 Pembroke St.
Brooks, Miles Elijah	I.	*Boston*	19 Milford St.
Brown, Arthur Harrison	II.	*Reading*	433 Columbus Ave.
Brown, Carroll Wilder	I.	*Rye Beach, N. H.*	16 Concord Sq.
Brown, Charles Hoyt	X.	*Wellsville, N. Y.*	59 Rutland Sq.
Burch, Guy Prentiss	I.	*Dubuque, Iowa*	3 Joy St.
Burgess, Philip	XI.	*Newtonville*	Newtonville.
Butler, Ferdinand Almon	VI.	*Salem*	Salem.
Caldwell, Frederick William	II.	*Winchester*	Winchester.
Campbell, Harry Andrew Bach	II.	*London, Eng.*	13 Concord Sq.
Cannon, Sylvester Quayle	III.	*Salt Lake City, Utah,*	193 W. Canton St.
Cannon, Willard Telle	II.	*Salt Lake City, Utah,*	193 W. Canton St.

THIRD YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
Case, Herbert Monroe	VI.	*Hartford, Conn.*	10 Turner St.
Chandler, Edna Matilda	V.	*Roxbury*	110 Thornton St., R.
Clapp, Frederick Otis, A.M.	I.	*Providence, R. I.*	199 St. Botolph St.
Clark, James Kenneth	II.	*Warren, Pa.*	112 Huntington Ave.
Clausen, Rudolph Julius	IV.	*Davenport, Iowa*	38 St. Botolph St.
Cluff, Clarence Brooks	V.	*Haverhill*	Haverhill.
Congdon, John Elliott	II.	*Fall River*	10 Turner St.
Copp, George Irving	II.	*Cambridgeport*	Cambridgeport.
Corbett, Charles Walter, Jr.	VI.	*Boston*	6 Rutland Sq.
Corse, William Malcolm	V.	*Medford*	357 Mass. Ave.
Curry, William	VI.	*Pittsburgh, Pa.*	543 Mass. Ave.
Cushing, Harvey Morse	VI.	*Ottumwa, Iowa*	27 Falmouth St.
Damon, Harry Sumner	II.	*Bryantville*	171 W. Newton St.
Dozier, Henrietta Cuttino	IV.	*Atlanta, Ga.*	Mellen St., D.
Drew, Charles Davis, A.B.	I.	*W. Newton*	W. Newton.
Eaton, Henry Charles	II.	*Waltham*	Waltham.
Ellery, James Benjamin	V.	*Annisquam*	183 Warren Ave.
Farnum, Dwight	III.	*Brookline*	Brookline.
Ferguson, John Berton	I.	*Woburn*	Woburn.
Field, Leonard H., Jr., A.B.	IV.	*Jackson, Mich.*	8 Berwick Park.
Fifield, Frederic Alonzo	II.	*Methuen*	171 W. Newton St.
Flemings, John Albert	VI.	*Lowell*	Lowell.
Flynn, William Burwell	VI.	*Bridgeport, Conn.*	549 Mass. Ave.
Foote, Arthur Burling	I.	*Grass Valley, Cal.*	95 Mt. Vernon St.
Fowle, Frank Fuller	VI.	*Brookline*	Brookline.
Gale, Gardner Manning	IV.	*Olean, N. Y.*	210 W. Canton St.
Gehring, Edwin Wagner	I.	*Cleveland, Ohio*	51 Pinckney St.
Gillson, Charles Burton	X.	*Evanston, Ill.*	19 W. Cedar St.
Gilpin, Russell	II.	*Wilmington, Del.*	21 W. Cedar St.
Glover, George Curtis	IV.	*Melrose Highlands*	Melrose Highlands.
Goldthwaite, Harry Wales	II.	*Brighton*	19 Bigelow St., B.
Greer, Herbert Chester	III.	*New Castle, Pa.*	110 Newbury St.
Grover, Frederick Warren	VIII.	*Lynn*	Lynn.
Hammond, Edward Hosmer	V.	*Newton Centre*	Newton Centre.
Hammond, Edwin Walden	I.	*Asbury Park, N. J.*	Lynn.
Hapgood, Lyman Proctor	I.	*Athol Center*	126 W. Newton St.
Hawkins, Laurence Ashley, B.A.	VI.	*Pittsfield*	69 Montgomery St.
Hazeltine, Benj. Prescott, Jr.	VI.	*Belfast, Me.*	18 St. James Ave.
Heghinian, Garabed Geo., A.B.	I.	*Marash, Turkey*	Auburndale.
Henderson, Reuben Stewart, B.S.	I.	*Olentangy, Ohio*	101 Appleton St.
Herbert, Edward	VI.	*Broad Run, Va.*	694 Tremont St.
Herman, Bernard	I.	*Washington, D. C.*	167 Mass. Ave.
Hermanns, Frank Edward	I.	*Denver, Colo.*	81 Worcester St.
Hern, Joseph Louis	VI.	*Dorchester*	34 Sydney St., D.
Hewitt, Henry Harwood, A.B.	IV.	*Chicago, Ill.*	39 St. Botolph St.

THIRD YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
Hinckley, Everett Hale	X.	*Hyannis*	466 Mass. Ave.
Hinman, Dean	I.	*Taunton*	Taunton.
Holden, Amasa Amidon	IX.	*Malden*	Malden.
Holliday, Alexander Rieman	I.	*Indianapolis, Ind.*	543 Mass. Ave.
Horton, Frank Nelson	II.	*Southbridge*	Intervale Park, D.
James, Henry Philip	II., VI.	*Kendal Green*	36 Newbury St.
Jensen, Hans Peter	I.	*Cambridge*	Cambridge.
Johnson, Harry George	V.	*Auburndale*	Auburndale.
Johnson, Lane	II.	*Kansas City, Mo.*	31 St. Botolph St.
Keys, Harry Montifix	VI.	*Linden, Md.*	32 Tremlett St., D.
Kimball, Fred Lewis Holt	III.	*Newton Lower Falls*	Newton Lower Falls.
Kingman, William Alden	V.	*So. Framingham*	So. Framingham.
Kinsman, William Abbot	II.	*Salem*	Salem.
Lawrence, Herbert Everett	IV.	*Ayer*	Ayer.
Leiper, James Gerhard, Jr.	II.	*Philadelphia, Pa.*	145 Worcester St.
Lennan, Thomas Frank	V.	*Belmont*	Belmont.
Lewis, Clancey Montana	III.	*Ketchum, Idaho*	198 W. Brookline St.
Lewis, Joseph Elliot	II.	*Charlemont*	198 W. Brookline St.
Loomis, Allen	II., XIII.	*Jackson, Mich.*	178 W. Canton St.
Loveman, Lee Rosenberg	VI.	*Nashville, Tenn.*	427 Mass. Ave.
McCrea, Almeron W., B.S.	IV.	*St. Paul, Minn.*	118 Pembroke St.
McDonald, Charles Snead	IV.	*Louisville, Ky.*	Newton.
Magee, Guy, Jr.	I.	*Chicago, Ill.*	1116 Boylston St.
Matheson, William Scott	II.	*Tatamagouche, N. S.*	857 Columbus Ave.
Milliken, Carl Spencer	VII.	*Malden*	Malden.
Moore, Clarence Alfred	X.	*Arlington*	Arlington.
Mork, Harry Solomon	V.	*Roxbury*	19 Waumbeck St., R.
Morris, William Longfellow	VI.	*Washington, D.C.*	694 Tremont St.
Morse, Benjamin Eames	II.	*Canton*	Canton.
Morse, Harry Leonard	II., VI.	*Allston*	8 Ashford St., A.
Motch, Stanley	III.	*Covington, Ky.*	145 Worcester St.
Mott-Smith, Morton Churchill	VI.	*Boston*	911 Boylston St.
Nathan, Albert Franklin, Jr.	X.	*Kansas City, Mo.*	17 St. James Ave.
Newell, Lester Allan	III.	*Southbridge*	13 Intervale Park, D.
Newell, William Stark	XIII.	*Winchester*	Winchester.
O'Hearn, Timothy Cyril	X.	*No. Cambridge*	No. Cambridge.
O'Leary, William H. J., A.M.	VI.	*Richibucto, N. B.*	19 W. Dedham St.
Packard, Edwin Augustus	II.	*Mansfield*	Mansfield.
Page, Charles Barnard	XIII.	*Dorchester*	259 Washington St., D.
Paige, Ellwood Bryant	IV.	*Lynn*	Lynn.
Parker, William Edward	I.	*Boston*	56 Rutland Sq.
Pennock, George Alger	II.	*Weston*	Weston.
Perkins, George Hawthorne	II.	*Salem*	Salem.
Phalen, William Clifton	V.	*Gloucester*	148 Trenton St., E. B.
Phelps, Earle Bernard	V.	*New Brunswick, N. J.*	Somerville.

THIRD YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
Pierce, Edward Everett	XIII.	*Malden*	Malden.
Pinkham, Ralph Howard	I.	*Greenwood*	Greenwood.
Price, Willard Atherton	I.	*Denver, Colo.*	27 Falmouth St.
Priest, George Heywood	X.	*Waltham*	Waltham.
Priest, Warren Albert	VII.	*Roxbury*	100 Homestead St., R.
Proctor, Alfred Waters	VI.	*Boston*	219 W. Springfield St.
Real y Gaillard, Juan, A.B.	I.	*Santiago de Cuba*	398 Northampton St.
Regestein, Ernest Albrecht	VI.	*Jamaica Plain*	92 Wyman St., J. P.
Renshaw, Clarence	VI.	*Baltimore, Md.*	193 Warren Ave.
Richardson, James Herbert	I.	*Newtonville*	Newtonville.
Richardson, Maurice Frederic	II.	*E. Providence, R. I.*	98 Pembroke St.
Richmond, Gerald Martin	VI.	*Worcester*	37 St. Botolph St.
Rickards, Burt Ransom	V.	*Malden*	Malden.
Riddle, Herbert Hugh	IV.	*Chicago, Ill.*	Trinity Court.
Riddle, Lewis Wetmore	XIII.	*Chicago, Ill.*	Trinity Court.
Riker, George Hayes	X.	*Somerville*	Somerville.
Robertson, Samuel Brown	I.	*E. Milton*	E. Milton.
Robinson, Amos George	XIII.	*Vienna, Va.*	183 Warren Ave.
Samuels, Edwin Francis	II.	*Hyde Park*	Hyde Park.
Sawyer, Haven	II.	*Bangor, Me.*	563 Mass. Ave.
Seavey, Norman Emery	VI.	*Dover, N. H.*	Park St., R.
Sherrill, Miles Standish	V.	*Louisville, Ky.*	357 Mass. Ave.
Sibley, Edward Warren	II.	*Weston*	Weston.
Sites, Frederick Robert	I.	*Newton*	Newton.
Skinner, Hervey Judson	V.	*Wakefield*	Wakefield.
Smith, Charles Alfred	I.	*No. Reading*	210 W. Canton St.
Smith, Charles Edward	I.	*Somerville*	Somerville.
Smith, Godfrey Lewis	XIII.	*Dorchester*	4 Wentworth St., D.
Smith, Granville	XIII.	*Washington, D. C.*	549 Mass. Ave.
Smithwick, Harold	II.	*Newcastle, Me.*	156 Mt. Vernon St.
Soule, Horace Webster	II.	*Somerville*	Somerville.
Soule, Lawrence Clement	X.	*Newtonville*	Newtonville.
Starr, Herbert Harris	I.	*New London, Conn.*	135 Warren Ave.
Stearns, Frederic Baldwin	IV.	*Brookline*	Brookline.
Stillings, Samuel Warren	IV.	*Boston*	205 St. Botolph St.
Stockton, Philip, A.B.	I.	*Boston*	390 Beacon St.
Stone, Jacob, Jr.	IV.	*Newburyport*	549 Mass. Ave.
Street, Gerald Basil	II.	*Highland Park, Ill.*	531 Mass. Ave.
Sullivan, Henry Howard	II.	*Brighton*	98 Foster St., B.
Sutermeister, Edwin	V.	*Readville*	Readville.
Swasey, Albert Loring	XIII.	*Taunton*	6 Louisburg Sq.
Swan, Clifford Melville	V.	*Brookline*	Brookline.
Swift, Frank Robinson	X.	*Wollaston*	Wollaston.
Tappan, Frederic	VI.	*Boston*	171 Newbury St.
Taylor, Denzil Hollis	I.	*Peterboro, N. H.*	9 Dartmouth St.

THIRD YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
Trask, Edgar Pierce	XIII.	*Peabody*	Peabody.
Waddell, Frederick Creelman	I.	*Rockport*	14 Hamlet St., D.
Walker, Clarence Howard	II.	*Rumford, R. I.*	134 W. Newton St.
Walker, Etheredge	III.	*Boston*	4 Brimmer St.
Walters, Edward Philip	V.	*Providence, R.I.*	28 Leyland St., D.
Walton, James Henry, Jr.	V.	*Newburyport*	1 Oxford Terrace.
Watkins, Frederick Arthur	II.	*Chicago, Ill.*	173 St. Botolph St.
Watrous, Charles Albert	IV.	*Des Moines, Iowa*	531 Mass. Ave.
Wedlock, William Henry	I.	*Dorchester*	21 Ashmont St., D.
Wells, Walter Wiley	VI.	*Sackville, N. B.*	Waltham.
Whitaker, Lewis Rose	I.	*Brighton*	Parsons St., B.
White, Harry Keith	IV.	*Brattleboro, Vt.*	193 W. Canton St.
Whitney, Walter Cummings	I.	*Newton*	Newton.
Witherell, Percy Warren	VI.	*Roxbury*	5 Devon St., R.
Woollett, John Woodward	I.	*Valmont, Colo.*	77 Humboldt Ave., R.

SECOND YEAR.

Adams, George Orlando	V.	*No. Andover*	No. Andover.
Allen, Elbert Grover	II.	*E. Bridgewater*	E. Bridgewater.
Angus, William Jackson	I.	*Chicago, Ill.*	19 W. Cedar St.
Ashley, Harrison Everett	X.	*New Bedford*	186 Columbus Ave.
Atwood, George Desler	II.	*No. Bennington, Vt.*	7 Follen St.
Ayers, Frederic Chesley	II.	*Roxbury*	11 Forest St., R.
Babcock, Paul Aldrich	I.	*E. Milton*	E. Milton.
Badlam, Stephen	III.	*Dorchester*	15 Columbia St., D.
Bailey, Eric Waldorf	III.	*Cambriageport*	Cambridgeport.
Baker, Willis Clark	V.	*Graniteville, S. C.*	Arlington.
Balcom, Reuben Wilfred	V.	*Framingham*	Framingham.
Barker, James Edmund	VI.	*Pasadena, Cal.*	219 W. Canton St.
Barney, Morgan	XIII.	*New Bedford*	37 W. Cedar St.
Bartlett, Jane Howard	V.	*W. Bridgewater*	314 Shawmut Ave.
Barton, Charles Augustus, Jr.	VI.	*Ravenswood, Ill.*	194 W. Brookline St.
Batcheller, James Hervey	III.	*Charlestown*	34 Monument Sq., C.
Beckwith, Edward Pierrepont	VI.	*Cambridge*	Cambridge.
Birks, Arthur Henry	IV.	*Peoria, Ill.*	156 Mt. Vernon St.
Blair, Robert Sherman	VI.	*Waterbury, Conn.*	466 Mass. Ave.
Bolster, Roy Hale	VI.	*Roxbury*	10 Cobden St., R.
Bowditch, Ingersoll, A.B.	I.	*Jamaica Plain*	Jamaica Plain.
Briggs, Albert Billings	I.	*Boston*	2 Pleasant-St. Pl.
Briggs, Charles Calvin, Jr.	II.	*Pittsburgh, Pa.*	543 Mass. Ave.
Brigham, Edmond Francis	X.	*Newton Highlands*	Newton Highlands.
Brooks, Paul Raymond	II.	*Chicago, Ill.*	25 St. Botolph St.
Brown, Clarence Clapp	VI.	*Reading*	Reading.
Brown, John Wesley	V.	*Newburyport*	1 Oxford Terrace.

SECOND YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
Brown, Stephen Pearson	II.	*Dover, Me.*	15 St. Germain St.
Bugbee, Edward Everett	III.	*Brookline*	Brookline.
Bullard, Lewis Hinkley	II.	*Wellesley Hills.*	Wellesley Hills.
Burnet, Robert Wallace, Jr., A.B.	VI.	*Cincinnati, Ohio*	56 W. Cedar St.
Burnham, Frank Erwin	X.	*Reading*	Reading.
Burnham, Roy Gibson	II.	*Essex*	Essex.
Burroughs, Karl	X.	*Somerville*	Somerville.
Campbell, Charles Francis F.	IX.	*London, Eng.*	13 Concord Sq.
Campbell, John	III.	*Pittsburgh, Pa.*	466 Mass. Ave.
Carpenter, Charles Mayhew	X.	*Schuylerville, N. Y.*	88 Pinckney St.
Cayvan, Llewellyn Leopold	V.	*So. Boston*	660 Sixth St., S. B.
Chaffee, Walter Crane	IV.	*Detroit, Mich.*	28 Yarmouth St.
Chalmers, Harry Bishop	X.	*Lonsdale, R. I.*	190 W. Brookline St.
Charles, Walter Nathan	I.	*Dorchester*	2 Harvard Ave., D.
Chase, Frank David	I.	*Malden*	Malden.
Clapp, Frederick Gardner	XII.	*So. Boston*	169 Boston St., S. B.
Clark, Burton Stedman	IV.	*Worcester*	29 St. Botolph St.
Clary, Robert Hodgen	III.	*Seattle, Wash.*	162 St. Botolph St.
Clow, Percival Charles	IV.	*Orange*	Brockton.
Collier, William Rawson	VI.	*Atlanta, Ga.*	15 St. Germain St.
Conant, Franklin Norton	VI.	*Boston*	3 Wellington St.
Conant, Harold Sargent	VII.	*Gloucester*	69 Pinckney St.
Conant, John Bancroft	VI.	*Boston*	421 Mass. Ave.
Cooke, Frederick Hosmer	I.	*Cincinnati, Ohio*	220 W. Springfield St.
Croswell, Joseph Simonds	II.	*No. Cambridge.*	No. Cambridge.
Crowell, Louis Austin	I.	*E. Dennis*	18 Berwick Park.
Dart, Albert Charles, Jr.	III.	*Rock Island, Ill.*	9 St. James Ave.
De Wolf, Richard Crosby	V.	*Sharon*	112 W. Concord St.
Dorey, William Asbury	III.	*Cincinnati, Ohio*	145 Worcester St.
Dunbar, Howard Reginald	II.	*Canton*	Canton.
Durgin, Clara Isabel	V.	*Belmont*	Belmont.
Dutton, Francis Bird, A.B	X.	*Auburndale*	Auburndale.
Edson, Warren Adams	II.	*Dorchester*	11 Tremlett St., D.
Elbert, Samuel Bass	III.	*Des Moines, Iowa*	543 Mass. Ave.
Ellis, Carleton	V.	*Keene, N. H.*	152 Warren Ave.
Emery, George Webster	III.	*Somerville*	Somerville.
Fitch, Stanley Gay Hyde	X.	*Dorchester*	14 Morrill St., D.
Flanders, Herbert Merritt	I.	*Malden*	Malden.
Fosdick, Charles Mussey	XI.	*Fitchburg*	220 W. Springfield St.
Frazer, Robert, Jr.	IX.	*Philadelphia, Pa.*	6 Louisburg Sq.
French, Philip Roland	V.	*Roxbury*	36 Magnolia St., R.
Fulton, William Howard	VI.	*Chelmsford*	117 Appleton St.
Gage, Frank De Meritte	XI.	*Bradford*	373 Columbus Ave.
Gardner, Stephen Franklin	II.	*Boston*	401 Charles St.
Gauss, Carl Frederich	IX.	*Cambridge*	Cambridge.

SECOND YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
Gibbs, George Crocker	I.	*New Bedford*	3 Joy St.
Gilson, Henry Robbins	II.	*Groton*	Groton.
Glover, Russell Henry	III.	*Harrington, Me.*	543 Mass. Ave.
Goodridge, Frederick Stanley	II.	*Lynn*	Lynn.
Gowell, Louis Nelson	IV.	*Weston*	Weston.
Grant, Harry Lamar	II.	*Covington, Ky.*	563 Mass. Ave.
Greene, Bertram W. Batchelder	VII.	*Paris, France*	6 Louisburg Sq.
Hall, George Anthony	IX.	*Boston*	30 Exeter St.
Hall, Milton Weston	VII.	*Evanston, Ill.*	563 Mass. Ave.
Hall, Stephen Minard	VI.	*Waverly, N. Y.*	231 W. Newton St.
Hammond, Clifford Robson	VI.	*Buffalo, N. Y.*	134 St. Botolph St.
Hapgood, Cyrus Howard	VI.	*Everett*	Everett.
Harahan, James Thomas, Jr.	II.	*Chicago, Ill.*	1116 Boylston St.
Harps, Harry Macy	I.	*Nantucket*	Cambridgeport.
Holbrook, George Myron	V.	*Cambridgeport*	Cambridgeport.
Hopeman, Bertram Cornelius	IV.	*Rochester, N. Y.*	19 Linden St., A.
Hopkins, Robert Milne	VI.	*Allston*	610 Cambridge St., A.
Hopwood, Cora Stella	VIII.	*Worcester*	Worcester.
Hough, William Baldwin	II.	*Williamsport, Pa.*	549 Mass. Ave.
Hubbard, Henry Vincent, A.B.	IV.	*Taunton*	437 Boylston St.
Hughes, Charles Haynes	II.	*Boston*	23 Concord Sq.
Hunt, Herman Reynolds	XIII.	*New Bedford*	3 Joy St.
Jackson, Jerome Paul, A.B.	IV.	*Swampscott*	Swampscott.
Jackson, Willard Franklin	IV.	*Campello*	Campello.
Jennings, Levi Brown	I.	*Newton Lower Falls*	Newton Lower Falls.
Jennings, Walter Upham	I.	*Newton Lower Falls*	Newton Lower Falls.
Johnson, Charles Chaplin	X.	*Danversport*	Danversport.
Jouett, Henry Detrict	I.	*Somerville*	Somerville.
Kattelle, Walter Roby	IV.	*Auburndale*	Auburndale.
Keay, Herbert Orestes	II.	*Kingston, N. H.*	18 Greenwich Park.
Keith, Leigh Shelton	VI.	*No. Easton*	No. Easton.
Knight, George Washington	V.	*Dorchester*	38 Rosseter St., D.
Lawrence, Lewis Morse	IV.	*Dorchester*	9 Grant St., D.
Leach, Robert Howland	III.	*Brockton*	Brockton.
Leeds, Charles Tileston	IV.	*Newton*	Newton.
Leonard, Clifford Milton	I.	*Chicago, Ill.*	32 W. Cedar St.
Lewis, Rondel	V.	*Malden*	136 I St., S. B.
Liliencrantz, Edith	IV.	*Oakland, Cal.*	134 Marlborough St.
Lincoln, Francis Church	III.	*Boston*	11 St. James Ave.
Lingley, Robert Ross	II.	*Cambridge*	Cambridge.
Littlefield, Frank William	III.	*Peabody*	Peabody.
Littlefield, Homer	VI.	*Watervliet, N. Y.*	Cambridge.
Luyties, Otto Gerhard	II.	*New York, N. Y.*	150 Warren Ave.
McCrudden, Francis Henry	V.	*Boston*	134 Castle St.
McGowan, Francis Xavier	II.	*Lawrence*	Lawrence.

SECOND YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
MacKeen, Isaac Abner	I.	*Peabody*	Peabody.
MacPherson, Herbert Austin	XIII.	*Medford*	Medford.
Maxfield, Daniel Ellwood	II.	*Amesbury*	634 Warren St., R.
Mayhew, Harold Baker	I.	*W. Tisbury*	155 W. Canton St.
Melcher, Arthur Clarke	V.	*Newton Centre*	Newton Centre.
Merrill, Albert Sidney	X.	*Malden*	Malden.
Merrill, Leslie Eaton	II.	*Haverhill*	Haverhill.
Miller, Lewis Arthur	I.	*No. Easton*	No. Easton.
Miller, Stuart Berwick	X.	*Cambridge*	Cambridge.
Moody, George Barrell	XIII.	*Bangor, Me.*	152 Warren Ave.
Morris, Henry Curtis	III.	*Chicago, Ill.*	99 Falmouth St.
Moulton, Walter Augustus	III.	*Dorchester*	10 Upland Ave., D.
Neall, Newitt Jackson	II., VI.	*Philadelphia, Pa.*	73 Cedar St., R.
North, Edward	III.	*Brookline*	Brookline.
Oppenheim, Robert Emmet	II.	*New York, N. Y.*	561 Columbus Ave.
Osgood, Harry Edmund	II.	*Chicago, Ill.*	Somerville.
Osgood, Isaac	II.	*W. Newton*	W. Newton.
Oxnard, Horace Whitcomb	I.	*Norway, Me.*	18 Holyoke St.
Paul, Charles Edward	II.	*Belfast, Me.*	149 W. Canton St.
Peck, Arthur Stearns	VIII.	*Wellington*	Wellington.
Pigeon, William Gardner	IV.	*E. Boston*	139 Trenton St., E. B.
Pitcher, Edmund Henry	II.	*Keene, N. H.*	Somerville.
Porter, John Lewis	XI.	*No. Adams*	554 Tremont St.
Price, Paul, Ph.B.	IV.	*Winterset, Iowa*	27 Falmouth St.
Priest, Russell Parker	I.	*Malden*	Malden.
Rand, William Proudman	IV.	*Peabody*	Peabody.
Rapp, Walter Louis	IV.	*Cincinnati, Ohio*	549 Mass. Ave.
Redman, Arville	I.	*Belfast, Me.*	149 W. Canton St.
Reimer, Arthur Adams	I.	*E. Orange, N. J.*	466 Mass. Ave.
Remington, Wolcott	VI.	*Dorchester*	8 Lindsay St., D.
Richardson, Chester Augustus	I.	*Pelham, N. H.*	36 Greenwich Park.
Richardson, Clinton Leroy	I.	*Winchester*	Winchester.
Roberts, Robert Parker	III.	*Roxbury*	42 Quincy St., R.
Robson, Edward Riggs	IX.	*Wellesley Hills*	Wellesley Hills.
Rossmässler, Carl	XIII.	*Philadelphia, Pa.*	8 Lindsay St., D.
Russell, George Edmond	I.	*Woburn*	Woburn.
Sanders, Warren Willard	V.	*W. Gardner*	199 W. Newton St.
Saunders, William Colegrove	II.	*Jamaica Plain*	67 Peter Parley St., J.P.
Sayward, William James, B.S.	IV.	*Woodstock, Vt.*	124 W. Newton St.
Schmidt, Albert George Anton	II.	*Chicago, Ill.*	127 Pembroke St.
Schneller, George Otto	II.	*Ansonia, Conn.*	543 Mass. Ave.
Scott, Walter	II.	*Lawrence*	466 Mass. Ave.
Searle, Lewen Firth	I.	*Lawrence*	36 Greenwich Park.
Sears, Stanley Collamore	III.	*Winthrop*	549 Mass. Ave.
Seaver, Kenneth	I.	*Woodstock, Vt.*	466 Mass. Ave.

SECOND YEAR (*continued*).

NAME.	COURSE.	HOME.	RESIDENCE.
Shapley, Harry Tilton	X.	*Leominster*	35 Rutland Sq.
Sherman, Charles Edwin	IV.	*Westerly, R. I.*	12 Newbury St.
Simpson, Robert Comm	XIII.	*Chelsea*	Chelsea.
Smith, Lawrence Southwick	II.	*Peabody*	Peabody.
Smith, Sumner Ives	VI.	*Elkhart, Ind.*	18 Berwick Park.
Southworth, Frederic Willard	IV.	*W. Stoughton*	W. Stoughton.
Sperry, Marcy Leavenworth	II.	*New York, N. Y.*	86 Mt. Vernon St.
Stearns, Herbert Richardson	I.	*Dorchester*	108 Cushing Ave., D.
Steidemann, Theodore William	IV.	*St. Louis, Mo.*	17 Dartmouth St.
Stevens, Ralph	III.	*Whitman*	105 Dartmouth St.
Stevens, William Leonard	III.	*Somerville*	Somerville.
Stone, Willard Wilberforce	I.	*Taunton*	6 Clarendon St.
Stratton, Charles Heywood	IV.	*Springfield*	199 W. Newton St.
Suhr, Carl Frederick	II.	*Chelsea*	Chelsea.
Suter, Russell	I.	*Cambridge*	Cambridge.
Thayer, Harry Martin	V.	*Brockton*	Brockton.
Thurber, Clinton Draper	I.	*Boston*	592 Tremont St.
True, Percival Edward	X.	*Andover*	Andover.
Tuck, Theodore Calvin	I.	*Haverhill*	Haverhill.
Tudbury, Warren Chamberlain	I.	*Salem*	Salem.
Tweedy, George Augustus	III.	*Los Angeles, Cal.*	231 W. Newton St.
Vogel, Emil Frederick	I.	*Roxbury*	40 Hartwell St., R.
Warren, Frank Dinsmore	II.	*Northboro*	Northboro.
Wastcoat, Richard	I.	*Taunton*	Taunton.
Wentworth, John Frank	XIII.	*Rochester, N. H.*	315 Columbus Ave.
Wesson, Leonard	II.	*Roxbury*	21 Rockville Park, R.
White, Arthur Burr	I.	*Allston*	Allston Heights, A.
Wilder, Fred Blaisdell	III.	*Evanston, Ill.*	219 W. Canton St.
Willey, Raymond	X.	*Newtonville*	Newtonville.
Wilson, Alice Virginia	V.	*Lenoir, N. C.*	101 Pinckney St.
Wise, Howard Parker	I.	*Malden*	Malden.
Witherell, Frederick Whitefield	XI.	*Winchester*	Winchester.
Worden, Edwin Sheldon	X.	*Newton*	Newton.
Wyzanski, Isaac	XIII.	*Boston*	3 Ashburton Pl.
Ziegler, Percy Rolfe	II.	*Roxbury*	1 Ellis St., R.

FIRST YEAR.

Adams, Charles Ward	*Montpelier, Vt.*	611 Tremont St.
Albiston, Clayton	*New Bedford*	122 Chandler St.
Aldrich, William Truman	*Providence, R. I.*	Brookline.
Allen, Ernest Blake	*Lynn*	Lynn.
Allen, George Winthrop	*E. Bridgewater*	E. Bridgewater.
Anderson, John Robinson, Jr.	*Montclair, N. J.*	179 Brighton Ave., A.
Andrew, Robert	*Cincinnati, Ohio*	7 Follen St.

FIRST YEAR (*continued*).

NAME.	HOME.	RESIDENCE.
Appleton, William Cornell	*Auburn, R. I.*	466 Mass. Ave.
Arnold, Albert Heber Bailey	*Roxbury*	31 Waumbeck St., R.
Auer, Charles Israel	*Cincinnati, Ohio*	121 School St., R.
Backus, LeRoy Manson	*Seattle, Wash.*	29 St. Botolph St.
Baldwin, Theodore Anderson, Jr.	*Fort Assinniboine, Mont.*	155 W. Newton St.
Bardin, Isaac David	*Charleston, S. C.*	153 Warren Ave.
Baxter, Francis Kernan	*Utica, N. Y.*	34 Rutland Sq.
Belcher, Edward Browne	*Malden*	Malden.
Benson, Harry Frederick	*Whitman*	Whitman.
Bickford, Warren Ira	*Washington, D. C.*	A1 Berwick Park.
Bigelow, Lyman Herbert	*Charlestown*	376 Main St., C.
Bilyea, Carl Thompson	*Watertown, N. Y.*	34 Rutland Sq.
Blanchard, Huse Templeton	*Concord, N. H.*	10 Dundee St.
Bleecker, Warren Floyd	*Pueblo, Colo.*	915 Boylston St.
Bond, Frederick Henry, Jr.	*Brookline*	Brookline.
Booth, Arthur Robert Gregory	*Lowell*	Lowell.
Boyd, Frederic Roy Courtenay	*Hartford, Conn.*	Cambridgeport.
Boyle, John, Jr.	*Newburyport*	Newburyport.
Boynton, Perkins	*Newtonville*	Newtonville.
Briggs, John Porter	*Plymouth*	Plymouth.
Bronson, John Stanard	*Nashville, Tenn.*	2 Menlo St., B.
Brown, Clarence Lincoln	*Newtonville*	Newtonville.
Brush, Matthew Chauncey	*Duluth, Minn.*	8 St. Botolph St.
Butters, Charles Milton	*Somerville*	Somerville.
Buxton, Philip Loren	*Worcester*	134 St. Botolph St.
Cade, Charles Walker	*Cambridgeport*	Cambridgeport.
Callahan, Edward Henry	*New London, Conn.*	8 Concord Sq.
Campau, Antoine Blackwell	*Grand Rapids, Mich.*	192 Dartmouth St.
Carpenter, Robert Ruliph Morgan	*Wilkes Barre, Pa.*	520 Mass. Ave.
Carr, James Henry	*Salem*	Salem.
Carter, George William	*Chicopee Centre*	118 Dartmouth St.
Casani, Albert Aeneas	*Everett*	Everett.
Catlin, Joseph Priestley	*Gouverneur, N. Y.*	70 Chandler St.
Chandler, Howard Trueman	*Mattapan*	Oakridge St., M.
Chandler, Leonard Dexter	*Somerville*	Somerville.
Chapman, Warren Gorton	*Niantic, Conn.*	7 Follen St.
Chubb, Chester Niles	*Lawrence*	104 Howard Ave., R.
Church, Edwin Fayette, Jr.	*Roxbury*	20 Holborn St., R.
Claflin, Fred Winslow	*Hopkinton*	Hopkinton.
Clark, Benjamin Franklin, Jr.	*Conway, N. H.*	116 London St., E.B.
Clark, George Adams	*E. Boston*	72 Marginal St., E.B.
Clark, Reuben Bacon	*Washington, D. C.*	6 Louisburg Sq.
Coburn, Frederick Ward	*Lowell*	466 Mass. Ave.
Colby, Frank Arnold	*Hyde Park*	Hyde Park.
Collord, William	*Cincinnati, Ohio*	478 Columbus Ave.

FIRST YEAR (*continued*).

NAME.	HOME.	RESIDENCE.
Colman, Jeremiah, Jr.	*Arlington*	Arlington.
Connor, Harry Percy	*Wilkes Barre, Pa.*	28 Yarmouth St.
Cooke, Edward Bailey	*Pottstown, Pa.*	Cambridge.
Cowell, David Holbrook	*Dorchester*	21 Monadnock St., D.
Cowing, George Arthur	*Wyoming, Ohio*	59 Pinckney St.
Crittenden, Philip Lee	*Geneva, Ill.*	247 W. Newton St.
Cross, Frederick C[illegible]	*Fitchburg*	21 St. Botolph St.
Cross, George Irving	*So. Boston*	73 Dorchester St., S.B.
Cummins, Harle Oren	*Montpelier, Vt.*	611 Tremont St.
Curtis, Charles Warren	*Lowell*	Lowell.
Curtis, Walter Molbray	*Whitman*	Whitman.
Curtiss, John Lee	*Fishkill-on-Hudson, N. Y.*	35 St. Botolph St.
Cushing, Matthew Marble	*Fitchburg*	21 St. Botolph St.
Daloz, Laurent Esaie	*Dorchester*	19 Mt. Vernon St., D.
Danforth, Charles Warren	*Tyngsboro*	Tyngsboro.
Danforth, Newman Loring	*Buffalo, N. Y.*	45 Westland Ave.
Dart, Harry Edson	*New London, Conn.*	8 Concord Sq.
Davis, Arthur Colbey	*Gloucester*	7 Holyoke St.
Davis, Edward Hatton	*Hyde Park*	Hyde Park.
Davis, Harold Henry	*Chelmsford*	312 Columbus Ave.
Davis, Walter Poore	*W. Newbury*	195 Warren Ave.
Dearden, Clinton Merrill	*Fall River*	218 Columbus Ave.
Dennison, Charles Hamilton	*Chelsea*	Chelsea.
Derby, Richard Baker	*Concord*	Concord.
Derby, Robert Mason	*Boston*	352 Beacon St.
Dodge, Lyman Edward	*Newburyport*	Newburyport.
Dooley, William Henry	*Boston*	26 Ball St.
Dorsey, Farnum Francis	*Winchester*	Winchester.
Dow, Richard Ernest	*Melrose*	Melrose.
Dow, Willard Wellman	*Malden*	Malden.
Driscoll, Frank Blair	*Dorchester*	7 Michigan Ave., D.
Dubois, Norman Armin	*Fall River*	92 Wyman St., J. P.
Dulude, Frederick Joseph	*Woonsocket, R. I.*	27 Berwick Park.
Dunwoody, Preston Yarnall	*Minneapolis, Minn.*	17 St. James Ave.
du Pont, Lammot	*Wilmington, Del.*	37 St. Botolph St.
Eager, Frank Joseph	*Roxbury*	54 Quincy St., R.
Evans, Joseph Dean	*Lowell*	Lowell.
Eveland, Arthur John	*Dorchester*	15 Nottingham St., D.
Fischer, Adolph Louis	*Salem, Mo.*	312 Columbus Ave.
Fisher, Oliver Dearborn	*Newtonville*	Newtonville.
Fisk, George Farnsworth	*Hyde Park*	Hyde Park.
Fleming, Edward Pickering	*Cambridge*	Cambridge.
Flint, Charles Kimball	*Waban*	Waban.
Florsheim, Leonard S.	*Chicago, Ill.*	86 Huntington Ave.
Foster, Mortimer Bristol	*Boston*	879 Beacon St.

FIRST YEAR (*continued*).

NAME.	HOME.	RESIDENCE.
Fowle, Leonard Munn	*Boston*	166 St. Botolph St.
Freeman, Frederic William	*W. Newton*	W. Newton.
Gallup, Anna Billings	*Ledyard, Conn.*	623 Columbus Ave.
Garrett, William Warren	*Cambridgeport*	Cambridgeport.
Giel, Marcel Ignaz	*Brooklyn, N. Y.*	75 Bromley St., R.
Gleason, Ethel Augusta	*Roxbury*	12 Ruthven St., R.
Goodwin, Percy Freeman	*Winchester*	Winchester.
Gorfinkle, Emanuel	*Chelsea*	Chelsea.
Gray, Greta	*Cincinnati, Ohio*	70 Westland Ave.
Griffin, Allan Tristram	*Malden*	Malden.
Gustafson, Gustaf Edward	*Campello*	Campello.
Haley, Dennis Frederick	*Lowell*	458 Mass. Ave.
Harris, Charles Hardy	*Natick*	Natick.
Harris, George Lourie	*Oakdale*	11 Yarmouth St.
Haynes, Heber Newton	*Lawrence*	Lawrence.
Hazlewood, Sumner	*Lynn*	Lynn.
Healey, Harry Raymond	*Roxbury*	11 Wyoming St., R.
Heinritz, Walter John	*Clinton*	30 Appleton St.
Henrich, Louis Richard	*Buffalo, N. Y.*	112 Dartmouth St.
Higgins, Albert Willis	*Auburndale*	Auburndale.
Hodgdon, Harry Augustine	*Somerville*	Somerville.
Hogle, Milton Ward	*Rochester, N. Y.*	19 Linden St., A.
Holford, William Gordon	*Hazardville, Conn.*	Malden.
Holmes, Valdemar Frank	*Copenhagen, Denmark*	4 Arden St., Ros.
Hood, John Mifflin, Jr.	*Baltimore, Md.*	162 Huntington Ave.
Horne, Lewis Winslow	*Malden*	Malden.
Horsey, Burton Tuttle	*Utica, N. Y.*	34 Rutland Sq.
Hounsfield, Lammot du Pont	*Louisville, Ky.*	37 St. Botolph St.
Hudson, Henry Norman	*Cambridge*	Cambridge.
Hunt, James Henry	*Newburyport*	31 Worcester St.
Hutchinson, John Albert	*No. Evans, N. Y.*	Cambridgeport.
Hyde, Austin Taber	*Waltham*	Waltham.
Isham, Alonzo Keyt	*Cincinnati, Ohio*	16 Union Park.
Iverson, Carl Appleton	*Beverly*	Beverly.
Jeffords, Alexander Hay Brand	*Philadelphia, Pa.*	21 W. Cedar St.
Jennings, Alfred Chappell	*New London, Conn.*	466 Mass. Ave.
Jewett, Arthur Crawford	*Toledo, Ohio*	No. Cambridge.
Jillson, Douglas Condé	*Indianapolis, Ind.*	25 St. Botolph St.
Johnson, Horace	*Newburyport*	Newburyport.
Kelley, Herbert Lloyd	*Campello*	Campello.
Kelley, Will Ghost	*Burlington, Iowa*	W. Everett.
Kennard, William Oliver	*Everett*	Everett.
Kennedy, Herbert Harley	*So. Framingham*	So. Framingham.
Klyver, Albert Nielsen	*Copenhagen, Denmark*	100 Charles St.
Knox, King Harding	*Baton Rouge, La.*	85 Newbury St.

FIRST YEAR (*continued*).

NAME.	HOME.	RESIDENCE.
Koch, Harry George	*Milwaukee, Wis.*	543 Mass. Ave.
Lane, Frank George	*Portland, Me.*	9 Concord Sq.
Lawrence, Ellis Fuller	*Malden*	Malden.
Laws, James Bradford	*Cincinnati, Ohio*	Trinity Court.
LeBosquet, John Elliott	*Price Bluff, Ark.*	19 Norway St.
Lincoln, Charles Thayer	*Boston*	11 St. James Ave.
Lindsley, Frederic Cleland	*Washington, D. C.*	531 Mass. Ave.
Little, Arthur	*Newbury*	Newbury.
Littlefield, Robert Stanley	*Somerville*	Somerville.
Loring, Ralph Stoodley	*Somerville*	Somerville.
Lunan, Thomas Mason	*Andover*	610 Columbus Ave.
Lundin, Laura Marie	*Cambridgeport*	Cambridgeport.
McAllep, James Albert	*Eastport, Me.*	70 Chandler St.
McDaniel, Allen Boyer	*Newton Centre*	Newton Centre.
McDonald, Harry Peake	*Louisville, Ky.*	Newton.
Mace, Charles Austin	*Dorchester*	19 Ashland St., D.
McGann, John Frederick	*Somerville*	Somerville.
McInnes, Angus Archie	*Dorchester*	23 Salcombe St., D.
McIntyre, Frederick William	*Chelsea*	Chelsea.
McKissick, Stuart	*Easthampton*	Somerville.
MacLeod, Grace	*Cambridge*	Cambridge.
McNeil, Hector	*Dorchester*	29 Stanley St., D.
Madero, Alberto	*Parras-Coahuila, Mex.*	44 Union Park.
Madero, Alfonso	*Parras-Coahuila, Mex.*	44 Union Park.
Madero, Emilio	*Parras-Coahuila, Mex.*	44 Union Park.
Mahar, James Joseph	*So. Boston*	648 Eighth St., S.B.
Marcus, Henry Charles	*Menlo Park, Cal.*	23 St. James Ave.
Marsh, George Everett, Jr.	*Georgetown, Colo.*	19 Park Lane, J.P.
Marshall, Harry Hale	*So. Framingham*	So. Framingham.
Martin, Charles Everett	*Antrim, N. H.*	Wakefield.
Mathews, William John	*Worcester*	Worcester.
Merrick, Silas Clarence	*New Brighton, Pa.*	543 Mass. Ave.
Millar, Leslie Walker	*Boston*	116 W. Concord St.
Miller, Benjamin	*Cincinnati, Ohio*	150 Chandler St.
Miller, Lester Freeman	*Pepperell*	Cambridge.
Mitchell, Frank Kollock	*Hyde Park*	Hyde Park.
Mitchell, George LeRoy	*Kirkwood, Ill.*	14 James St.
Monaghan, James Francis	*Lowell*	458 Mass. Ave.
Montgomery, Robert James	*Natick*	Natick.
Moore, Philip Wyatt	*Brookline*	Brookline.
Morris, John Felt	*Hartford, Conn.*	915 Boylston St.
Morse, John Russell	*Brockton*	Brockton.
Murray, Ray	*Pleasant Valley, N. Y.*	35 St. Botolph St.
Niles, William Avery	*New Haven, Conn.*	35 Milford St.
Nims, Lester Albert	*Keene, N. H.*	Malden.

FIRST YEAR (*continued*).

NAME.	HOME.	RESIDENCE.
Nutter, Alfred DeWitt	*Chelsea*	Chelsea.
Ober, Julius Edward	*Boston*	748 Tremont St.
O'Hanlon, Thomas Joseph, B.A.	*Chinook, Mont.*	53 Concord St.
Ordway, Daniel Leighton	*Newton Centre*	Newton Centre.
Parrock, Harry Percy	*Youngstown, Ohio*	210 W. Newton St.
Patch, Claude Eldred	*Stoneham*	Stoneham.
Patch, Nathaniel Knight Bailey	*Buffalo, N. Y.*	Somerville.
Payne, Arthur Warren	*Winchester*	Winchester.
Pearson, Philip Coombs	*Newburyport*	91 Revere St.
Pendleton, Everett Hall	*Taunton*	Taunton.
Pepperell, William Swett, Jr.	*Roxbury*	3117 Washington St., R.
Perry, Oliver Hazard, Jr.	*Lowell*	466 Mass. Ave.
Persons, Ashton Clifford	*Winsted, Conn.*	110 Charles St.
Peters, Anthony Winfred	*W. Roxbury*	Gould St., W. R.
Peterson, Guy Crosby	*Duxbury*	Duxbury.
Philbrick, Joseph Ernest	*Roxbury*	1 Wabon St., R.
Pitts, Earl Phelps	*Fitchburg*	436 Columbus Ave.
Potter, Philip Arthur	*Springfield*	314 Columbus Ave.
Pough, Francis Harvey	*Brooklyn, N. Y.*	15 Concord Sq.
Proulx, Elzear Joseph	*Holyoke*	149 Appleton St.
Puckey, Francis Willard	*Wilkes Barre, Pa.*	28 Yarmouth St.
Putnam, Harry Ames	*Boston*	24 Soley St., C.
Putnam, James Russell	*Allston*	16 Webster Ave., A.
Raife, Claude Byron	*Wilkes Barre, Pa.*	179 Brighton Ave., A.
Read, Walter Augustine	*Boston*	24 St. Stephen St.
Record, Charles Arthur	*Medford*	Medford.
Rice, William Paul	*Chicago, Ill.*	20 Mayfield St., D.
Rice, Winthrop Merton	*Stamford, Conn.*	Newton.
Ritchie, Andrew Eliot	*Brookline*	Brookline.
Robinson, Charles Louis	*Hawthorne, Fla.*	755 Tremont St.
Robinson, Ralph Chandler	*No. Andover Depot*	No. Andover Depot.
Rockwood, Charles Parkman	*Indianapolis, Ind.*	543 Mass. Ave.
Roney, William Wheeler	*Brookline*	Brookline.
Rosnosky, Samuel Fabion	*Boston*	130 Dartmouth St.
Ross, John Allen, Jr.	*Hampton, N. H.*	27 St. Stephen St.
Rowe, Allan Winter	*Gloucester*	194 Huntington Ave.
St. Clair, Samuel Winthrop	*Boston*	3 St. Paul St.
Sammet, George Victor	*Jamaica Plain*	73 Sheridan St., J. P.
Seaver, Edward, Jr.	*Roxbury*	22 Westminster Ave., R.
Sexton, Frederick Henry	*Billerica*	Billerica.
Shepard, Ralph Lunt	*Newburyport*	Newburyport.
Shivers, Clifford Hopkins	*Woodbury, N. J.*	466 Mass. Ave.
Shute, George Percival	*Malden*	Malden.
Simonds, Roland Emerson	*Winchester*	Winchester.
Skene, Norman Locke	*Cambridgeport*	Cambridgeport.
Smith, Frank Arthur	*Newburyport*	26 Rosedale St., D.

FIRST YEAR (*continued*).

NAME.	HOME.	RESIDENCE.
Spear, George Morton	*Lowell*	Lowell.
Stadler, Louis Andrew	*Helena, Mont.*	314 Columbus Ave.
Stearns, Ralph Hamilton	*Dorchester*	108 Cushing Ave., D.
Sternbergh, Philip Hervey	*Reading, Pa.*	27 Berwick Park.
Stewart, Clarence Beardsley	*Duluth, Minn.*	231 W. Canton St.
Stockman, Orlando Sargent	*Newburyport*	35 Houghton St., D.
Stone, Solon Jones, Jr.	*Boston*	24 Tyler St.
Stover, Charles Clark	*Amesbury*	36 High St., C.
Sucro, William George	*Catonsville, Md.*	162 Huntington Ave.
Sweetser, William Jordan	*Cliftondale*	Cliftondale.
Taft, Theodore Howard	*No. Cambridge*	No. Cambridge.
Taylor, Warren Crosby	*Arlington*	Arlington.
Thatcher, Edward Gordon	*Middleborough*	541 Mass. Ave.
Thurlow, Leon Rhodes	*Lowell*	Lowell.
Toohey, Francis Patrick	*Concord*	Cambridge.
Trott, John Alden	*Dedham*	Dedham.
Trufant, Alton Philip	*Abington*	351 Columbus Ave.
Tufts, Charles Gilman	*Arlington Heights*	Arlington Heights.
Upham, Everett Lyman	*E. Woodstock, Conn.*	Hyde Park.
Vermilye, William Moorhead	*New Brighton, N. Y.*	16 Brimmer St.
Walcott, William Wright	*Natick*	Natick.
Warren, Carleton	*Woburn*	Woburn.
Webster, Fred Bibber	*Cambridge*	Cambridge.
Weil, Asher Lowenstein	*Wilkes Barre, Pa.*	167 Mass. Ave.
Welch, William Wells	*W. Quincy*	W. Quincy.
Wesson, Harold	*Springfield*	16 Louisburg Sq.
Whalan, Edward Lawrence	*Marlboro*	Marlboro.
Whipple, William	*Springfield*	86 Mt. Vernon St.
White, Fred Richmond	*Arlington Heights*	Arlington Heights.
White, Harry Ransome	*Arlington Heights*	Arlington Heights.
White, Robert, Jr.	*Boston*	321 Hanover St.
Whitman, Ralph	*Roxbury*	109 Walnut Ave., R.
Whiton, Harry Augustus	*Bloomfield, Conn.*	149 Appleton St.
Whittemore, Charles Augustus	*Scranton, Pa.*	179 Brighton Ave.
Wight, Roger Willard	*Natick*	Natick.
Wilcox, Frank Patten	*Boston*	40 Norway St.
Wilder, Lowell Bosworth	*Newton Highlands*	Newton Highlands.
Wildes, Waldo Gilman	*Melrose*	Melrose.
Willard, Charles Franklin	*Marlboro*	3 Oxford Terrace.
Williams, Louis Ezra	*Duluth, Minn.*	172 Huntington Ave.
Wilson, Archibald Henry	*Lawrence*	Lawrence.
Wood, Harold Blake	*Arlington*	Arlington.
Wood, Howard Irving	*Rockville, Conn.*	21 Cortes St.
Woodhull, Charles Richard	*Monroe, N. Y.*	21 St. James Ave.
Woodsome, James Chadbourne	*So. Boston*	652 E. Sixth St., S.B.
Worcester, Philip Henry	*Portland, Me.*	9 Concord Sq.

SPECIAL STUDENTS.

The abbreviations used in this list, which includes all students who are not in the full regular courses, are:

App. Mech.	Applied Mechanics.	Hist.	History.
Arch.	Architecture.	Lang.	Modern Languages.
Biol.	Biology.	Math.	Mathematics.
Chem.	Chemistry.	Mech. Eng.	Mechanical Engineering.
Civ. Eng.	Civil Engineering.	Min. Eng.	Mining Engineering.
Draw.	Drawing and Descriptive Geometry.	Nav. Arch.	Naval Architecture.
Elect. Eng.	Electrical Engineering.	Phys.	Physics.
Eng.	English.	Pol. Sci.	Political Science.
Geol.	Geology.	San. Eng.	Sanitary Engineering.
		Shop.	Shopwork.

NAME.	HOME.	RESIDENCE.
Albin, Henry Allison	*Concord, N. H.*	38 Falmouth St.
Chem., Draw., Eng., Lang., Math., Shop.		
Allen, Joseph Percival, Jr., A.B.	*Greencastle, Ind.*	116 Dartmouth St.
App. Mech., Chem., Draw., Hist., Mech. Eng., Phys., Shop.		
Allen, Lucy Mabel	*Lynn*	Lynn.
Chem.		
Ames, Joseph William	*Melrose*	Melrose.
App. Mech., Math., Mech. Eng., Phys., Shop.		
Amory, Anna Sears	*Boston*	7 Fairfield St.
Hist.		
Anderson, Charles Louis Bates	*Newburyport*	Newburyport.
Civ. Eng., Draw., Eng., Hist., Lang., Math., Phys.		
Anderson, Mary Perle	*E. Berkshire, Vt.*	Somerville.
Biol.		
Appleton, Herbert Davis	*Cambridge*	Cambridge.
Arch., Draw., Math., Phys.		
Appleton, Marjorie Crane	*Newton Centre.*	462 Beacon St.
Eng.		
Archibald, Warren Martin	*Medford*	Medford.
App. Mech., Civ. Eng., Geol., Phys., Pol. Sci.		
Ashley, George Francis	*Somerville*	Somerville.
Arch., Draw., Eng., Lang., Math., Phys.		
Atkinson, Fred Sewall	*Chelsea*	Chelsea.
Chem., Draw., Eng., Lang., Math., Mech. Eng., Phys.		
Bachelder, Grace Darling	*New Hampton, N. H.*	87 Rutland Sq.
Biol.		
Bacon, Charles James	*Winthrop*	Winthrop.
Draw., Eng., Hist., Lang., Math., Phys., Shop.		
Bailey, Robert William	*New York, N. Y.*	2 St. Botolph St.
Lang., Mech. Eng., Phys.		

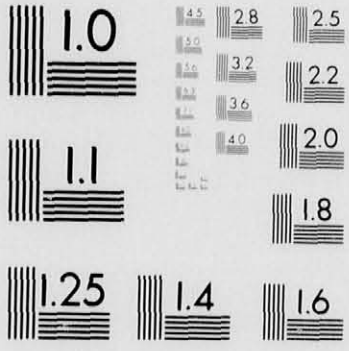
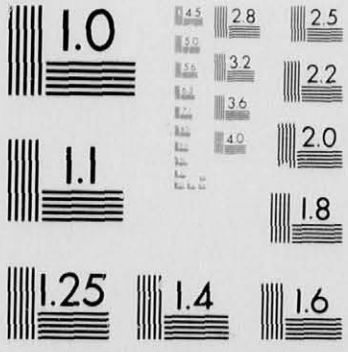
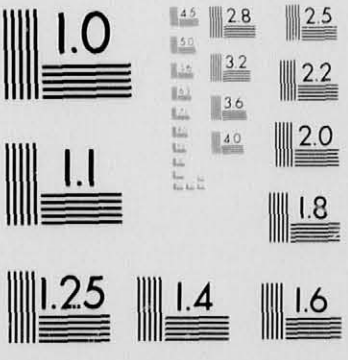
NAME.	HOME.	RESIDENCE.
Ballantyne, Bertha Lennie . . .	*Hudson*	20 Ashburton Pl.
Biol., Chem., Eng., Hist., Lang., Phys.		
Barrows, Anna	*Boston*	485 Tremont St.
Biol.		
Barry, Charles Gardner	*Melrose*	Melrose.
Civ. Eng., Draw., Geol., Math., Phys., Pol. Sci.		
Baumann, Edgar Butler	*Chicago, Ill.*	210 W. Newton St.
Arch., Draw.		
Beder, Harold Waldemar . . .	*New York, N. Y.* . . .	134 W. Newton St.
Arch., Draw., Lang., Math.		
Bedortha, Alfred Calvin	*Windsor, Conn.* . . .	1010 Boylston St.
Biol., Chem., Eng.		
Beekman, John Vanderveer, Jr. .	*Plainfield, N. J.* . . .	Cambridge.
Arch., Draw., Eng., Hist., Lang., Math., Phys., Shop.		
Belknap, George Henry	*Dorchester*	13 Milton Ave., D.
Chem., Eng., Hist., Lang., Phys., Shop.		
Bennink, Carroll Augustus . . .	*Cambridge*	Cambridge.
App. Mech., Arch., Draw., Hist.		
Benson, Newton Davis	*Providence, R. I.* . . .	179 Warren Ave.
App. Mech., Arch., Draw., Phys., Pol. Sci.		
Betts, Ira Benedict, Jr.	*New York, N. Y.* .	302 Columbus Ave.
Arch., Draw., Lang.		
Bishop, Frederic Lendall. . . .	*Malden*	Malden.
Elect. Eng., Math., Phys.		
Bittinger, Charles	*Washington, D. C.* .	195 W. Brookline St.
Chem., Draw., Eng., Lang., Math.		
Blackmer, Arthur Elliott . . .	*Plymouth*	Beverly.
Civ. Eng., Lang., Phys., Pol. Sci.		
Blood, George Whitefield . . .	*Newburyport* . . .	95 Pinckney St.
Arch., Draw., Hist.		
Boland, Mary A	*Boston*	117 W. Newton St.
Biol., Geol., Hist., Pol. Sci.		
Bollman, William Charles . . .	*New York, N. Y.* . . .	121 Charles St.
Draw., Shop.		
Borden, Raymond Davis . . .	*Fall River*	73 Pinckney St.
Chem., Eng., Hist., Lang., Math.		
Bradt, Cecilia Katharine . . .	*Cambridge*	Waverley.
Biol.		
Breer, Louis Bennett	*Lynn*	22 Berwick Park.
Chem., Eng., Geol., Hist., Lang., Math., Phys.		
Brickley, William Joseph . . .	*Charlestown* . . .	68 Tremont St., C.
Draw., Eng., Math., Mech. Eng., Phys.		
Briggs, Ernestine Hanson . . .	*Chelsea*	Chelsea.
Biol.		
Brigham, Theodore William . .	*New York, N. Y.* . . .	Watertown.
Draw., Eng., Hist., Lang., Math., Mech. Eng., Phys., Shop.		
Brock, Henry Matthias, A.B. . .	*Boston*	15 Woodville St., R.
Biol., Chem., Draw., Math., Phys., Pol. Sci.		
Brown, Dickson Queen, A.B. . .	*New York, N. Y.* . . .	1116 Boylston St.
Elect. Eng., Mech. Eng., Phys.		
Brown, George Winslow . . .	*Boston*	1085 Boylston St.
Chem., Lang., Phys., Pol. Sci.		

NAME.	HOME.	RESIDENCE.
Brown, John	*Fall River*	603 Tremont St.
Civ. Eng., Draw., Eng., Hist., Lang., Math., Phys.		
Brownell, John Randolph . . .	*Chicago, Ill.* . . .	23 Claremont Park.
Civ. Eng., Draw., Eng., Hist., Lang., Math., Phys.		
Bucklin, Milton Pollard	*Providence, R. I.* . .	80 Montgomery St.
Chem., Eng., Hist., Lang., Math.		
Buffum, Frederick Delano . . .	*Winchester, N. H.* .	25 Rutland Sq.
Chem., Draw., Math., Mech. Eng., Phys., Shop.		
Bunnell, Fred Oscar	*Honesdale, Pa.* . . .	73 Finckney St.
Chem., Lang., Math., Phys.		
Burdick, Edwin Park	*Hartford, Conn.* . .	Cambridge.
Civ. Eng., Draw., Eng.		
Burns, James Dennis, Jr. . . .	*Salem*	Salem.
Chem., Civ. Eng., Draw., Eng., Hist., Lang., Math., Phys.		
Burr, Alice Morville	*Melrose*	Melrose.
Biol.		
Butler, Walter Harold	*Akron, Ohio* . . .	231 W. Newton St.
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App. Mech., Arch., Hist., Lang.		


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Reardon, Thomas Frederick Eugene,	*Wellesley*	Wellesley.
Chem., Draw., Eng., Hist., Lang., Math., Mech. Eng., Phys., Shop.		
Reding, Fannie Whitney . . .	*Brookline*	Brookline.
Eng.		
Reynolds, Albert Adieu, A.B. . .	*No. Adams*	554 Tremont St.
Chem.		
Richardson, Frank Linden . . .	*Concord*	Concord.
Biol.		
Richardson, Philip, A.B. . . .	*Brookline*	Brookline.
Arch., Draw.		
Richmond, Miles Standish . . .	*Brookline*	Brookline.
Arch., Draw., Lang., Math.		
Riley, Frank Morris	*Madison, Wis.* . .	158 W. Newton St.
Arch., Draw.		
Ripley, Philip Franklin, A.B. . .	*Andover*	36 Newbury St.
Chem., Draw., Geol., Lang., Phys.		
Roaf, Edward Walter	*Newburyport* . . .	218 W. Springfield St.
Civ. Eng., Lang., Phys.		
Robinson, John Tilden, Jr. . . .	*Hyde Park*	Newton Centre.
App. Mech., Math., Mech. Eng., Phys., Shop.		
Robinson, Thomas Pendleton . .	*Philadelphia, Pa.* . .	Chestnut Hill.
App. Mech., Arch., Draw., Lang., Pol. Sci.		
Root, Ralph	*E. Orange, N. J.* .	12 Newbury St.
Chem., Civ. Eng., Geol., Min. Eng., Phys.		
Ross, Sidney Fuller	*Arlington*	Arlington.
Arch., Chem., Draw., Eng., Lang., Math.		
Schlegelmilch, Leo William, Jr. .	*Roxbury*	32 Mt. Pleasant Av., R.
Chem., Draw., Eng., Hist., Math.		
Schmidt, Herman Henry . . .	*Melville, N. Y.* . .	8 Magnolia St., D.
App. Mech., Civ. Eng., Eng., Geol., Phys., Pol. Sci.		
Scudder, Heyward, B.A. . . .	*Boston*	29 Newbury St.
Chem., Phys.		
Scully, John Timothy, Jr. . . .	*Cambridge*	Cambridge.
Chem., Draw., Eng., Lang., Math.		
Shaw, Brackley Azel	*Brighton*	Englewood Ave., B.
Biol., Eng., Hist., Lang., Pol. Sci.		
Shumaker, Louis William . . .	*Ortonville, Minn.* .	118 Pembroke St.
App. Mech., Elect. Eng., Lang., Math., Mech. Eng., Phys., Pol. Sci.		
Sickman, James Francis	*Holyoke*	1116 Boylston St.
Civ. Eng., Draw., Lang., Phys.		
Silverman, Mortimer	*Allegheny, Pa.* . . .	210 Huntington Ave.
Draw., Eng., Hist., Lang., Math., Mech. Eng., Phys., Shop.		
Slocum, William Whitaker . . .	*E. Providence, R. I.*	E. Providence, R. I.
Arch., Draw., Phys.		
Smith, Charles Franklin	*Washington, D. C.* .	2 Wellington St.
App. Mech., Chem., Civ. Eng., Phys., Pol. Sci., Shop.		

NAME.	HOME.	RESIDENCE.
Smith, Montfort Hill	*Falmouth*	19 W. Cedar St.
App. Mech., Arch., Draw., Lang., Pol. Sci.		
Smith, William Henry	*Altoona, Pa.*	98 Kendall St.
Chem., Draw., Hist., Lang., Math., Shop.		
Snow, Frank Whipple	*Newburyport*	Newburyport.
Biol.		
Snow, Frederick Willis	*Lynn*	Lynn.
App. Mech., Chem., Civ. Eng., Geol., Lang., Phys., Pol. Sci.		
Sohier, Louis Amory	*Concord*	Concord.
Math., Mech. Eng., Phys., Pol. Sci.		
Stanwood, Francis Manning, Jr., A.B.	*Boston*	527 Beacon St.
Civ. Eng., Draw.		
Stebbins, Roland Williams	*Springfield*	6 Louisburg Sq.
Draw., Lang., Math., Mech. Eng., Phys., Pol. Sci., Shop.		
Stetson, James Alexander	*New Bedford*	134 W. Newton St.
Civ. Eng., Geol., Lang., Phys., Pol. Sci.		
Stewart, Edmund Thomas	*Boston*	56 Clarendon St.
Arch., Draw.		
Stewart, Lewis	*Trenton, N. J.*	6 Louisburg Sq.
Arch., Draw., Eng., Hist., Lang., Math., Phys.		
Strickland, William Randolph	*Brookline*	Brookline.
Civ. Eng., Phys., San. Eng.		
Strout, Robert Wheelock	*Salem*	194 W. Brookline St.
Chem., Draw., Eng., Hist., Lang., Shop.		
Stuart, Harve Reed	*Newark, N. Y.*	98 Pembroke St.
App. Mech., Elect. Eng., Math., Mech. Eng., Phys., Shop.		
Sturtevant, William Isaac	*Ogden, Utah*	156 Warren Ave.
Chem., Draw., Eng., Math.		
Sutliff, Walter Hannen	*Albany, N. Y.*	35 Rutland Sq.
App. Mech., Arch., Draw., Lang., Pol. Sci.		
Swinson, Johannah Charlotte	*Wellesley*	Wellesley.
Biol., Chem., Eng., Hist., Lang., Math., Phys.		
Tallant, Alice Weld, A.B.	*Boston*	66 Marlborough St.
Phys.		
Teuteberg, Eugene Adolph	*St. Louis, Mo.*	156 Warren Ave.
Arch., Draw.		
Thanisch, Otto Conrad	*Jamaica Plain*	3305 Washington St., J.P.
Chem., Draw., Eng., Hist., Lang., Math., Mech. Eng., Phys.		
Tiffany, George Stanton	*Washington, D. C.*	86 Mt. Vernon St.
Arch., Chem., Draw., Eng., Hist., Math.		
Tilton, Mary Azuba	*Concord*	Concord.
Biol.		
Torrey, Emeline Eliza	*Boston*	23 Winthrop St.
Biol.		
Towne, Lillian May	*Brighton*	89 Surrey St., B.
Biol.		
Treat, Nellie Florence	*Chelsea*	Chelsea.
Biol.		
Tubbs, Henry Welles	*Kingston, Pa.*	543 Mass. Ave.
Arch., Chem., Draw., Eng., Hist., Math., Phys.		
Tucker, Albert William	*Newburyport*	218 W. Springfield St.
Chem., Min. Eng., Phys.		

NAME.	HOME.	RESIDENCE.
Tucker, Fred Irving	*Boston*	544 Newbury St.
Draw., Eng., Lang., Math., Mech. Eng., Phys., Shop.		
Tufts, John Lawrence	*Roxbury*	50 Woodbine St., R.
Chem., Eng., Lang., Phys., Pol. Sci.		
Turner, Lawrie Humphrey	*Medford*	Medford.
Chem., Lang., Phys., Pol. Sci.		
Twombly, Fred Henry	*Newton Centre*	Newton Centre.
Biol., Eng., Geol., Hist., Phys., Pol. Sci.		
Vining, Robert Macalister	*So. Weymouth*	So. Weymouth.
App. Mech., Mech. Eng., Phys., Shop.		
Vogt, Oscar George	*Washington, D. C.*	294 Columbus Ave.
Arch., Draw.		
Vrooman, Mae	*Oakland, Cal.*	134 Marlborough St.
Arch., Draw., Eng., Hist., Lang.		
Wallace, Robert Bruce	*Cleveland, Ohio*	549 Mass. Ave.
App. Mech., Draw., Lang., Mech. Eng., Nav. Arch.		
Walls, John	*Lewisburg, Pa.*	187 Huntington Ave.
App. Mech., Draw., Elect. Eng., Hist., Lang., Math., Phys., Pol. Sci.		
Walworth, Arthur Clarence, Jr., A.B.	*Newton Centre*	Newton Centre.
App. Mech., Draw., Eng., Mech. Eng., Phys., Shop.		
Webster, James Edward	*Newtonville*	Newtonville.
Arch., Draw.		
Weeks, Irving Chambers	*Dorchester*	21 Ashmont St., D.
Biol., Chem., Eng., Hist., Lang., Phys., Pol. Sci.		
Weeks, Merle	*Washington, D. C.*	86 Mt. Vernon St.
App. Mech., Arch., Chem., Draw., Lang., Pol. Sci.		
Weimer, Edgar Arthur	*Lebanon, Pa.*	136 Chandler St.
App. Mech., Mech. Eng., Phys.		
Werner, Carl	*Oakland, Cal.*	210 W. Newton St.
Arch., Draw., Lang.		
Werner, Frank Albert	*Akron, Ohio*	1116 Boylston St.
Lang., Math., Mech. Eng., Phys., Shop.		
Wescott, Jennie Smith	*No. Gorham, Me.*	25 Rutland Sq.
Biol.		
White, William	*Taunton*	Taunton.
Chem., Phys.		
Whiting, Charles Frederick, A.B.	*Wilton, N. H.*	Somerville.
Biol., Chem., Lang.		
Whiting, Eleanor Felton	*Boston*	Trinity Court.
Biol.		
Wickes, Lewis Webster	*Helena, Mont.*	29 St. Botolph St.
Chem., Draw., Eng., Geol., Lang., Min. Eng., Phys.		
Wilder, William Alfonso	*Washington, D. C.*	15 Cortes St.
App. Mech., Elect. Eng., Math., Mech. Eng., Phys., Pol. Sci.		
Willis, John Howard, S.B.	*Waban*	Waban.
Arch., Draw.		
Wilson, Lillie Marian	*Denmark, Me.*	52 Berkeley St.
Biol.		
Wing, Ida Ceola Stratton*	*Jamaica Plain*	49 Boylston St., J. P.
Chem.		

* Died November 10.

NAME.	HOME.	RESIDENCE.
Winslow, George Carlos, Jr.	*Boston*	12 Yarmouth St.
App. Mech., Chem., Geol., Lang., Min. Eng., Phys., Pol. Sci.		
Wood, Leonard Percy	*Brooklyn, N. Y.*	9 Turner St.
Chem., Draw., Eng., Lang., Math.		
Wood, Willard Lyman, Jr.	*Upton*	145 W. Newton St.
App. Mech., Elect. Eng., Math., Mech. Eng., Phys., Pol. Sci.		
Woodward, Allan Henry	*Birmingham, Ala.*	34 W. Cedar St.
Eng., Geol., Hist., Lang., Math., Phys.		
Young, Ross Redsecker	*Middletown, Pa.*	308 Columbus Ave.
Chem., Draw., Lang.		
Zirngiebel, Frances	*Roxbury*	61 Bower St., R.
Biol.		

SUMMARY.

GRADUATE STUDENTS	73	REGULAR STUDENTS, 2d year	197
REGULAR STUDENTS, 4th year	203	" " 1st year	279
" " 3d year	178	SPECIAL STUDENTS	332

Total	1,262
Deduct names counted twice	64
	1,198

Lowell Free Courses of Instruction.

THE Trustee of the Lowell Institute has established, under the supervision of the Institute of Technology, courses of instruction, generally given in the evening, and open to students of either sex, free of charge.

These courses are more or less varied from year to year by the omission or interchange of particular subjects, but include in their entire scope, instruction in Mathematics, Mechanics, Physics, Drawing, Chemistry, Geology, Natural History, Biology, English, French, German, History, Navigation and Nautical Astronomy, Architecture, and Engineering.

The subjects and the extent of the several courses will be made known by suitable advertisement in the public journals, in October of each year.

As it is the object of these courses to provide substantial teaching rather than merely popular illustration of the subjects treated, it is expected that all persons attending will come with a serious purpose of improvement, and that they will cheerfully comply with such rules as may be prescribed in regard to attendance and to order in the class or lecture-room.

The conditions of attendance on these gratuitous courses are as follows:

1. Candidates must have attained the age of eighteen years.

2. Their applications must be made in writing, addressed to the Secretary of the Institute, specifying the course or courses they desire to attend, mentioning their present or prospective occupations, and, when the course is of a nature

demanding preparation, stating the extent of their preliminary training.

The number of students in each class is necessarily limited.

The subjects for the current year are as follows:

I. PLANE ANALYTIC GEOMETRY.[1] Twelve lectures by Assistant Professor F. H. Bailey.

II. MECHANISM AND GEARING. Twelve lectures by Assistant Professor A. L. Merrill.

III. STEAM ENGINEERING. Twelve lectures by Assistant Professor E. F. Miller.

IV. THE FUNDAMENTAL PRINCIPLES OF CHEMICAL THEORY AND THEIR HISTORICAL DEVELOPMENT. Twelve lectures by Associate Professor H. P. Talbot.

V. THEORY OF EQUATIONS. Twelve lectures by Assistant Professor F. S. Woods.

VI. DESCRIPTIVE GEOMETRY. Twelve lectures by Associate Professor Linus Faunce.

VII. THE ELEMENTS OF ORGANIC CHEMISTRY. Twelve lectures (illustrated by experiments) by Associate Professor A. A. Noyes.

VIII. THE TECHNOLOGY AND ANALYSIS OF GASES. Twelve lectures by Assistant Professor A. H. Gill.

IX. PLANE SURVEYING AND LEVELING. Twelve lectures by Assistant Professor A. G. Robbins.

X. THE DEVELOPMENT OF PROSE FICTION IN FRANCE, beginning with the 17th century. Twelve lectures (in French) by Professor A. N. van Daell.

XI. ANALYTIC GEOMETRY OF THREE DIMENSIONS.[1] Twelve lectures by Assistant Professor D. P. Bartlett.

XII. ELECTRO-CHEMISTRY. Twelve lectures by Assistant Professor H. M. Goodwin.

XIII. NAVIGATION AND NAUTICAL ASTRONOMY. Twelve lectures by Professor A. E. Burton.

XIV. METALLURGY OF THE MINOR METALS, II: Arsenic, Antimony, Bismuth, Tin, Quicksilver, Platinum. Twelve lectures by Associate Professor H. O. Hofman.

XV. MARINE PROPELLERS; SCREW PROPELLERS, PADDLE WHEELS, AND HYDRAULIC PROPULSION. Twelve lectures by Professor C. H. Peabody.

XVI. THE CHEMISTRY OF THE LESS FREQUENTLY CONSIDERED ELEMENTS. Twelve lectures by Assistant Professor F. L. Bardwell.

[1] These two courses form the fourth part of a consecutive series begun in 1894.

XVII. Electrical Measuring Instruments. Twelve lectures by Assistant Professor F. A. Laws.

XVIII. Algebra, Beginning at Quadratic Equations. Twelve lectures by Assistant Professor J. J. Skinner.

XIX. Descriptive Astronomy. Twelve lectures by Assistant Professor H. E. Clifford.

XX. Schiller's Leben und Werke. Twelve lectures (in German) by Assistant Professor Frank Vogel.

Lowell School of Practical Design.

The Lowell School of Practical Design was established in 1872, by the trustee of the Lowell Institute, for the purpose of promoting industrial art in the United States. The Corporation of the Massachusetts Institute of Technology, having approved the purpose and general plan of the school as proposed by the Trustee of the Lowell Institute, assumed the responsibility of conducting it; and in the same year the first pupils were admitted.

The expenses of this school are borne by the Lowell Institute, and tuition is free to all pupils.

The school occupies a drawing-room in the building of the Institute on Garrison Street. It is constantly provided with samples of all the novelties in textile fabrics from Paris, such as brocaded silks, ribbons, alpacas, armures, and fancy woollen goods.

Course of Study. — Students are taught the art of making patterns for prints, ginghams, delaines, silks, laces, paper-hangings, carpets, oil-cloths, etc. The course is of three years' duration, and embraces:

1. Technical manipulations; 2. Copying and variations of designs; 3. Original designs or composition of patterns; 4. The making of working drawings, and finishing of designs.

Instruction is given personally to each student over his work. Students supply their own instruments and materials, the cost of which is about $5 per year.

The class is under the personal direction of MR. CHARLES KASTNER, assisted by Miss Harriet J. Ford.

Requirements for Admission. — To teach drawing is not among the objects of this school. Applicants must therefore possess a knowledge of drawing adequate to enable them advantageously to begin the work of composition and design. A considerable degree of skill in freehand drawing from nature, and in the use of the brush, will be positively required for entrance to the school.

Applicants for admission, or persons desiring further information regarding this school, may apply by letter to the Secretary of the Institute.

Regulations of the School. — The next school-year will begin on the last Wednesday of September. The number of students in the school, including those to be admitted, will be limited to forty-two. Examinations in freehand drawing of flowers from nature, and of historical ornament, for applicants for admission, will be held at 9 A. M. on the first Tuesday, Wednesday, and Thursday after September 15. Students are required to be regular in their attendance, the hours being from 9.30 A. M. to 12 M., and from 1 P. M. to 3.30 P. M. Only those students can be retained in the school who, after a fair and patient trial, are found to have some aptitude for the work. At the close of each half-year, the Director will, with the approval of the President of the Institute, convey the needed information to such students as shall be found gravely deficient in qualifications for an advantageous pursuit of their studies. No publication will be made of the fact, and such students will be left to withdraw as of their own motion.

Register of Students.

LOWELL SCHOOL OF DESIGN.

NAME.	HOME.	RESIDENCE.
Alger, John Herbert	*Reading*	Reading.
Armstrong, Lillian May	*Everett*	Everett.
Baxter, Clara Virginia	*Dorchester*	100 Melville Ave., D.
Bott, Royal Prescott	*Boston*	31 Dorr St.
Chamberlin, Fannie Louise	*Newton Centre*	Newton Centre.
Conant, Mabel Porter	*Shirley*	Shirley.
Danforth, Homer Wallace	*Woburn*	Woburn.
Davis, Grace Hammond	*Littleton, N. H.*	45 Julian St., R.
Dunn, Henrietta Whitfield	*Minneapolis, Minn.*	40 Berkeley St.
Falvey, Katharine	*Roxbury*	2 Hazelwood St., R.
Fernald, Blanche Soper	*Fitchburg*	Fitchburg.
Fisk, Florence	*Brattleboro, Vt.*	126 Chestnut Ave., J. P.
Foster, Blanche Watson	*Newton Highlands*	Newton Highlands.
Gillette, Mary Louise	*Newton Highlands*	Newton Highlands.
Gray, Reuben Forrest	*So. Manchester, Conn.*	64 Rutland St.
Harmon, May Flanders	*Wilmington*	Wilmington.
Hasey, Alice Woodward	*Dorchester*	2 Dyer St., D.
Hines, Edward Waldron	*Danvers*	Danvers.
Holmes, Lena Bradford	*Newton Highlands*	Newton Highlands.
Hosmer, George Hammond	*Everett*	Everett.
Howard, Clara Antoinette	*Somerville*	Somerville.
Jordan, Carlotta May	*Boston*	A1 Berwick Park.
Kelheur, Warren Ruperd	*Hyde Park*	Hyde Park.
Kidger, Lottie Henson	*Everett*	Everett.
McGrath, Benedict Vincent	*Mattapan*	94 Corbett St., M.
Meads, Gertrude Ella Ruth	*Brookline*	Brookline.
Orcutt, Leon Forest	*Hyde Park*	Hyde Park.
Pike, Helen Packard	*Worcester*	Worcester.
Poor, Frederick Walton	*Derry, N. H.*	Derry, N. H.
Ronan, Cecilia Gertrude	*Revere*	Revere.
Russell, Elizabeth Eulalie	*Boston*	174 W. Canton St.
Sargent, Ethel Marion	*Roxbury*	Waverley St., R.
Stanton, Walter Tucker	*E. Onondaga, N. Y.*	3 Murdock Park, B.

NAME.	HOME.	RESIDENCE.
Taggard, Harriet Sophia	*Nashua, N. H.*	130 Huntington Ave.
Thuresson, Gertrude Ella	*So. Boston*	98 G St., S. B.
Thuresson, Maude May	*So. Boston*	98 G St., S. B.
Tileston, Millie Houghton	*Dorchester*	Tileston Pl., D.
Tripp, Herbert Lyman	*Middleboro*	Middleboro.
Waterman, James Copeland	*Hanover*	Hanover.
Wheeler, Bessie Baldwin	*Dorchester*	741 Dudley St., D.
Wood, Beulah Locke	*Roslindale*	Eldredge St., Ros.
Wright, Lena Julia	*Boston*	65 Appleton St.
Wright, Myra	*Boston*	65 Appleton St.
Wright, Nellie Elizabeth	*Allston*	1 Wadsworth St., A.

Alumni Association.

The Alumni Association of the Institute holds its annual meeting in Boston in December or January; and at the close of each year gives a reception to the graduating class, the Corporation, and the Faculty of the Institute. It includes in its membership all graduates of the Institute. Associate or honorary membership is open to non-graduates and to members of the Faculty or Corporation.

Its officers for 1898 are:

President: JOHN R. FREEMAN, '76.
Vice-President: EDWIN C. MILLER, '79.
Secretary: A. H. GILL, '84, Massachusetts Institute of Technology.
Executive Committee: THE PRESIDENT, VICE-PRESIDENT AND SECRETARY, CHARLES T. MAIN, '76, FREDERIC H. FAY, '93.

THE TECHNOLOGY CLUB.

The object of the Club is to promote the welfare of the Institute and the common social interests of its past and present officers and students. The Club-house is at No. 71 Newbury Street, nearly opposite the Rogers Building, and the membership is at present nearly six hundred, including graduates and other former students, members of the Corporation and instructing staff, and undergraduates.

The officers for the current year are:

President: JAMES P. MUNROE, '82.
Vice-President: FRANCIS H. WILLIAMS, '73.
Secretary: DANA P. BARTLETT, '86.
Treasurer: EDWIN C. MILLER, '79.
Chairman of House Committee: Prof. WILLIAM T. SEDGWICK.
Chairman of Membership Committee: ARTHUR T. BRADLEE, '88.

The Executive Committee includes the above and the Secretary of the Institute, *ex officio.*

THE NORTHWESTERN ASSOCIATION, MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

President: B. R. T. COLLINS, '88.

Vice-President: R. H. PIERCE, '85.

Secretary and Treasurer: E. McK. HAGAR, '93, 554 The Rookery, Chicago, Ill.

Executive Committee: THE PRESIDENT, VICE-PRESIDENT, SECRETARY AND TREASURER, H. H. CUTLER, '81, J. L. SHORTALL, '87, SOLOMON STURGES, '87, L. A. FERGUSON, '88.

Monthly dinners at "The Bismarck," 180 Randolph St., on the sixteenth of each month, 6.30 P.M. All Institute men are invited.

THE WESTERN ASSOCIATION, MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

President: EDWARD W. ROLLINS, '71.

Vice-President: BRADFORD H. LOCKE, '72.

Secretary and Treasurer: FRANK E. SHEPARD, '87, 924 Washington Ave., Denver, Colo.

THE M. I. T. SOCIETY OF NEW YORK.

Executive Committee: GEORGE L. HEINS, '82; WILLIAM B. DOWSE, '74; FRANK A. PICKERNELL, '85; EDWARD D. BROWN, '90, ALEX. RICE MCKIM, *Secretary and Treasurer*, 106 East Twenty-third St., New York, N. Y.

Annual Meeting first Saturday after February 1.

THE CONNECTICUT VALLEY ASSOCIATION, M. I. T.

Executive Committee: GUY KIRKHAM, '87, *Chairman*, Springfield, Mass.; HENRY SOUTHER, '87; N. P. A. CARTER, '87; JAMES S. NEWTON, '88; HENRY A. FRANCIS, '83.

THE TECH SOCIETY OF PHILADELPHIA.

Secretary-Treasurer: SAMUEL S. SADTLER, '95.

Executive Committee: AMOS J. BOYDEN, '75; JOHN W. LOGAN, '93; AUGUSTUS B. STOUGHTON, '86; BENJAMIN ADAMS, '95.

Annual Dinner second Saturday in November; Semi-annual Dinner in April.

Register of Graduates.

For names of deceased graduates see the Alphabetical List, page 299.

The Roman numerals in the column marked "Course" denote the course in which the Graduate received the degree of S. B., as follows:

I. Civil Engineering.
II. Mechanical Engineering.
III. Mining Engineering and Metallurgy.
IV. Architecture.
V. Chemistry.
VI. Electrical Engineering.
VII. Biology.
VIII. Physics.
IX. General Studies.
X. Chemical Engineering.
XI. Sanitary Engineering.
XII. Geology.
XIII. Naval Architecture.

Courses no longer maintained are Sci. and Lit., Science and Literature, Phil., Philosophy, and Elective.

1868.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ELLERY C. APPLETON Westboro, Mass.	III.	Civil Engineer; Assistant Engineer, Metropolitan Water Board.
WHITNEY CONANT Long Branch, N. J.	III.	Secretary, Long Branch Water Supply Co.
ELI FORBES Clinton, Mass.	Sci. and Lit.	Chemist, Lancaster Mills.
CHARLES C. GILMAN Marshalltown, Iowa.	III.	General Contractor.
CHAS. E. GREENE, A.M., C.E. Ann Arbor, Mich.	I.	Professor of Civil Engineering; Dean, Department of Engineering, University of Michigan.
ALBERT F. HALL 265 Third St., East Cambridge, Mass.	II.	Constructing Engineer, The Geo. F. Blake Manufacturing Co.
WILLIAM E. HOYT Rochester, N. Y.	I.	Chief Engineer, Buffalo, Rochester, & Pittsburgh R. R.
ROBERT H. RICHARDS Boston, Mass.	III.	Professor of Mining Engineering and Metallurgy, Mass. Institute of Technology.
WALTER H. SEARS Plymouth, Mass.	I.	Civil Engineer.
JOSEPH STONE 53 State St., Boston.	I.	In Business.

1868. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
BRYANT P. TILDEN . . . Jamestown, N. Dak.	III.	Chief Engineer, Duluth, Pierre, & Black Hills R. R.
JAMES P. TOLMAN . . . . 115 Congress St., Boston.	III.	President, Samson Cordage Works.

1869.

WILLIAM H. BAKER . . . Fitchburg, Mass.	I.	Consulting Engineer.
HOWARD A. CARSON . . . 20 Beacon St., Boston.	I.	Chief Engineer, Boston Transit Commission.
J. RAYNER EDMANDS . . . Cambridge, Mass.	II.	Assistant, Harvard College Observatory.
CHANNING WHITAKER . . Tyngsborough, Mass.	II.	Investigating Questions of Infringement and Patentability for the Lowell Machine Shop (Lowell, Mass.).

1870.

CHARLES R. CROSS Boston, Mass.	Sci. and Lit.	Thayer Professor of Physics; Director of the Rogers Laboratory, Mass. Institute of Technology.
CHARLES W. HINMAN . . 63 Beverly St., Boston.	III.	Manager, Nathaniel Tufts Meter Co.
SAMPSON D. MASON . . . Port Townsend, Wash.	I.	Assistant, U. S. Fortification Works at Admiralty Head.
N. FREDERICK MERRILL . Burlington, Vt.	V.	Professor of Chemistry, University of Vermont.
THEODORE F. TILLINGHAST 37 Eighth St., New Bedford, Mass.	I.	
EDMUND K. TURNER . . . 53 State St., Boston.	I.	Civil Engineer.
DANIEL W. WILLARD . . Redlands, Cal.	II.	Architect.
LAURENCE F. J. WRINKLE Thebe, Inyo Co., Cal.	III.	Mining Engineer.

1871.

FOSTER E. L. BEAL . . . 1516 Kingman Pl., Washington, D. C.	I.	Assistant Biologist, Biological Survey, U. S. Department of Agriculture.
EDWARD H. FOOTE . . . 31 Commercial St., Boston.	I.	Of the Firm of Skilton, Foote, & Co., Manufacturers of Pickles.
FRANK L. FULLER . . . . 12 Pearl St., Boston.	I.	Civil and Hydraulic Engineer.

1871. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HENRY M. HOWE, A.M. . 27 W. Seventy-third St., New York, N. Y.	III.	Professor of Metallurgy, Columbia University.
ALBERT H. HOWLAND, A.M. 60 Congress St., Boston.	I.	Civil Engineer.
G. RUSSELL LINCOLN . . Care Brown, Shipley & Co., London, England.	III.	Studying abroad.
GEORGE H. PRATT . . . . 31 Tenth St., Long Island City, N. Y.	V.	Superintendent for D. D. Williamson & Co., Manufacturing Chemists.
EDWARD W. ROLLINS . . 19 Milk St., Boston.	III.	Banker, E. H. Rollins & Sons.
CHARLES F. STONE . . . . Waltham, Mass.	III.	Treasurer, Waltham Savings Bank.
ISAIAH S. P. WEEKS . . . 1327 H St., Lincoln, Neb.	I.	Chief Engineer, Burlington & Missouri River R. R. in Nebraska.
RANDAL WHITTIER . . . . Columbia Bldg., Louisville, Ky.	V.	Cashier, Kentucky Branch Office, New York Life Insurance Co.

1872.

C. FRANK ALLEN . . . . Boston, Mass.	I.	Professor of Railroad Engineering, Mass. Institute of Technology.
BENJAMIN E. BREWSTER . 39 Court St., Boston.	III.	Stock Raising.
WILLIAM B. DODGE . . . Columbus, Ohio.	I.	Scale Inspector, Pittsburgh, Cincinnati, Chicago, & St. Louis Ry.
FREDERIC A. EMMERTON . 9 Bratenahl Bldg., Cleveland, O.	V.	Analytical Chemist and Metallurgist.
JAMES A. HERRICK . . . Wyncote, Montgomery Co., Pa.	V.	Consulting Engineer and Contractor for Steel Plants, Tube Mills, Gas Producers, Furnaces, etc. (Twenty-third St. and Washington Ave., Philadelphia, Pa.).
JAMES M. HODGE . . . . Big Stone Gap, Va.	III.	Geologist and Engineer.
BRADFORD H. LOCKE . . Denver Club, Denver, Colo.	III.	Mining Engineer.
CHAS. S. MINOT, S.D. (Harv.) 688 Boylston St., Boston.	V.	Professor of Histology and Human Embryology, Harvard Medical School.
MAURICE B. PATCH . . . 1 Austin St., Buffalo, N. Y.	III.	Superintendent, Buffalo Smelting Works, Calumet & Hecla Mining Co.
WALTER SHEPARD, A.B. . 4 Arion St., Dorchester, Mass.	I.	Chief Engineer, Boston & Albany R. R.
RICHARD H. SOULE, A.B. . Philadelphia, Pa.	II.	With the Baldwin Locomotive Works.

1872. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CLARENCE S. WARD, LL.B. (B. U.) 27 School St., Boston.	III.	Lawyer.

1873.

AMORY AUSTIN, A.B. 4 Redwood St., Newport, R. I.	V.	
GEORGE W. BLODGETT Central St., Auburndale, Mass.	I.	Electrical Engineer, Boston & Albany R. R.; Consulting Electrician.
WILLIAM E. BROTHERTON Cincinnati, Ohio.	V.	With Burckhardt & Co.
SAMUEL M. FELTON Odd Fellows Temple., Seventh & Elm Sts., Cincinnati, Ohio.	I.	President and Receiver, Cincinnati, New Orleans, & Texas Pacific Ry.; Receiver, Columbus & Hocking R. R.; Receiver, Kentucky & Indiana Bridge Co.
FREDERICK L. FISHER 35 Howland St., Roxbury, Mass.	I.	In Insurance Business (35 Kilby St., Boston, and Medway, Mass.).
FREDERICK GUILD, JR. Hingham, Mass.	Sci. and Lit.	
W. DALE HARRIS 237 MacLaren St., Ottawa, Ont.	I.	Managing Director and Acting Chief Engineer, Ottawa & Gatineau Ry. and Pontiac Pacific Ry.; President, Montreal Island Belt Line Ry.
CLAR. L. HOWES, A.B., M.D. Hanover, Mass.	II.	Physician.
FRANK B. MORSE 7 Calle do los Flores No. 1, Mexico, Mex.	I.	Mining Engineer.
GEORGE PHILLIPPS Green Harbor, Mass.	III.	
HENRY A. PHILLIPS 120 Tremont St., Boston.	IV.	Architect.
ELLEN H. RICHARDS, A.M. Boston, Mass.	V.	Instructor in Sanitary Chemistry, Mass. Institute of Technology.
HENRY L. RIPLEY Fort Ethan Allen, Vt.	I.	Captain, Third Cavalry, U. S. A.
ROBERT A. SHAILER 138 Jackson St., Chicago, Ill.	I.	President of Shailer & Schniglau Co., Engineers and Contractors.
C. EDWARD STAFFORD South Chicago, Ill.	III.	Manager, Open Hearth and Plate Mill, Illinois Steel Co.
SAMUEL E. TINKHAM City Hall, Boston.	I.	Assistant Engineer, Engineering Department, City of Boston; Secretary, Boston Society of Civil Engineers.
FRANK W. VERY Providence, R. I.	V.	Acting Director, Ladd Observatory; Professor of Astronomy, Brown University.
WEBSTER WELLS Boston, Mass.	I.	Professor of Mathematics, Mass. Institute of Technology.

1873. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
RANDAL WHITTIER . . .	I.	(See Class of 1871.)
FRANCIS H. WILLIAMS, M.D. 505 Beacon St., Boston.	V.	Physician.
LOUIS F. WOOD . . . . . 112 St. Botolph St., Boston.	V.	Chemist and Manufacturer.

1874.

HERBERT BARROWS . . . Cedar Grove, Eldorado Co., Cal.	I.	Mining Engineer.
GEORGE H. BARRUS . . . 95 Milk St., Boston.	II.	Expert and Consulting Steam Engineer.
WILLIAM T. BLUNT . . . Toledo, Ohio.	I.	U. S. Assistant Engineer (185 Euclid Ave., Cleveland, Ohio).
GEORGE E. DOANE . . . . Middleboro, Mass.	I.	Of the Firm of J. & G. E. Doane, Hardware.
WILLIAM B. DOWSE . . . Grand St. & East River, New York, N. Y.	IV.	Of the Metropolitan Rubber Co.
JOSEPH S. EMERSON . . . Honolulu, Hawaiian Islands.	I.	Engineer and Surveyor, Office of Hawaiian Government Survey.
ELLIOT HOLBROOK . . . . P.O. Box 563, Princeton, Ind.	I.	Superintendent, Louisville, Evansville & St. Louis R.R.; President, Pittsburgh & Mansfield R.R. (Pittsburgh, Pa.).
AECHIRAU HONGMA . . . Tokio Tetsudo Cho, Tokio, Japan.	I.	Civil Engineer, Imperial Government Railways.
CHARLES P. HOWARD . . Hartford, Conn.	I.	Secretary, J. L. Howard & Co., Dealers in Railway and Car Builders' Supplies.
FRANK H. JACKSON . . . 145 So. Broadway, Los Angeles, Cal.	III.	Mining and Hydraulic Engineer, Firm of J. P. Culver & Co.
HERBERT B. PERKINS . . P. O. Box 240, Pasadena, Cal.	I.	Instructor in Higher Mathematics and Mechanical Drawing, Throop Polytechnic Institute.
FRANK H. POND . . . . . 506 Chemical Bldg. St. Louis, Mo.	II.	Mechanical Engineer; President, The Pond Machinery Co.
EDWARD S. SHAW . . . . 12 Pearl St., Boston.	I.	Consulting Engineer.
FRANCIS H. SILSBEE . . . Lawrence, Mass.	II.	Superintendent, Cotton Department, Pacific Mills.
STEPHEN H. WILDER, Sci. and Lit. Blymyer Bldg., Cincinnati, Ohio.		Attorney-at-law.

1875.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
SAMUEL E. ALLEN . . . . 67 Chauncy St., Boston.	I.	Agent for the Nashawannuck Manufacturing Co.
JAMES L. ARNOTT. Manchester, N. H.	Sci. and Lit.	
AMOS J. BOYDEN . . . . 413 Walnut St., Philadelphia, Pa.	IV.	Architect.
MOSES D. BURNET . . . . 813 James St., Syracuse, N. Y.	III.	Broker.
HENRY K. BURRISON . . . Boston, Mass.	I.	Instructor in Mechanical Drawing, Mass. Institute of Technology.
CHRISTOPHER A. CHURCH . 9 Maple St., New Bedford, Mass.	I.	Clerk in Acushnet Mills.
FRANK S. DODGE . . . . Honolulu, Hawaiian Islands.	I.	Civil Engineer and Surveyor in charge of City Work, Office of Government Survey.
EDGAR S. DORR . . . . . 28 Court Sq., Boston.	I.	Chief Engineer, Sewer Division, Street Department, City of Boston.
WILLIAM C. EDES . . . . 321 Market St., San Francisco, Cal.	I.	Principal Assistant Engineer, San Francisco & San Joaquin Valley Ry.
CHARLES W. GOODALE . . Butte City, Mont.	III.	Mine Superintendent, Colorado Smelting and Mining Co.
EDWARD A. W. HAMMATT 29 Pemberton Sq., Boston.	I.	Civil and Hydraulic Engineer.
EDWARD A. HANDY . . . 57 Cornell St., Cleveland, Ohio.	I.	Chief Engineer, Lake Shore & Michigan Southern Ry.
THOMAS HIBBARD . . . . South Boston, Mass.	II.	Treasurer, George Lawley & Son Corporation.
L. P. KINNICUTT, S.D. (Harv.) Worcester, Mass.	V.	Professor of Chemistry, Worcester Polytechnic Institute.
WILFRED LEWIS . . . . . 5901 Drexel Road, Philadelphia, Pa.	II.	Assistant Engineer, with William Sellers & Co.
SAMUEL J. MIXTER, M.D. 180 Marlborough St., Boston.	VIII.	Physician.
BENJAMIN A. OXNARD . . Adeline, La.	III.	Sugar Planter.
THOMAS D. PLIMPTON . . Walpole, Mass.	II.	In Business.
WILLIAM A. PRENTISS, Holyoke, Mass.	Sci. and Lit.	Of the Firm of George W. Prentiss & Co., Manufacturers of Wire.
FRANCIS T. SARGENT . . 1123 Broadway, New York, N. Y.	II.	Granite Quarrying and Contracting.
WELLAND F. SARGENT . . Fuller's Bldg., Springfield, Mass.	I.	Manager, Atlantic Refrigerating Co.

1875. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WILLIAM H. SHOCKLEY . . Bridgewater, Mass.	III.	Travelling.
JAMES B. STANWOOD . . . Reading Road, Cincinnati, Ohio.	II.	Director, Cincinnati Technical School; of Firm of Houston, Stanwood, & Gamble, Engine Builders.
H. L. J. WARREN	III.	
WILLIAM R. WEBSTER . . 413 Walnut St., Philadelphia, Pa.	III.	Civil Engineer.

1876.

CHARLES F. ALLEN . . . . South Duxbury, Mass.	III.	Mining Engineer and Metallurgist.
THOMAS ASPINWALL . . . 3 Hamilton Pl., Boston.	I.	Civil Engineer.
WILLIAM P. ATWOOD . . . 11 Harding St., Lowell, Mass.	V.	Chemist, Hamilton Print Works
THOMAS W. BALDWIN, A.B. Boothbay Harbor, Me.	I.	In Business.
WALTER B. BARROWS . . Agricultural College, Ingham Co., Mich.	VII.	Professor of Zoölogy and Geology, Michigan Agricultural College; Consulting Entomologist, State Experiment Station.
AARON D. BLODGETT . . . 301 Congress St., Boston.	II.	Manufacturing Electrician.
JOSHUA B. F. BREED . . . 1749 First St., Louisville, Ky.	I.	First Assistant Engineer, Bureau of Engineering.
HARRY T. BUTTOLPH . . . 1725 Amherst St., Buffalo, N. Y.	I.	Assistant Chief Engineer, Bureau of Engineers.
FREDERICK K. COPELAND . 54 No. Clinton St., Chicago, Ill.	I.	President, Sullivan Machinery Co.
WILLIAM O. CROSBY . . . Boston, Mass.	VII.	Assistant Professor of Structural and Economic Geology, Mass. Institute of Technology.
WILLIS E. DAVIS . Safe Deposit Bldg., San Francisco, Cal.	Sci. and Lit.	Mining.
CHARLES R. FLETCHER . . 82 Equitable Bldg., Boston.	V.	Consulting Chemist and Metallurgist.
JOHN R. FREEMAN . . . . 812 Banigan Bldg., Providence, R. I.	I.	President and Treasurer, Manufacturers', Rhode Island and Mechanics' Mutual Fire Insurance Cos.
FRANCIS E. GALLOUPE . . 210 Ocean St., Lynn, Mass.	II.	In Real Estate Business, and Consulting Engineer (53 Ames Bldg., Boston).

1876. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
JOHN B. HENCK, JR. . . 820 Dauphin St., Philadelphia, Pa.	VIII.	In Roadway Department, Union Traction Co.
FRANK W. HODGDON . . . 18 Wellington St., Arlington, Mass.	I.	Engineer, Harbor and Land Commissioners of Massachusetts (Room 131, State House, Boston).
SUMNER HOLLINGSWORTH . 44 Federal St., Boston.	II.	President, Hollingsworth & Whitney Co.
SILAS W. HOLMAN . . . Boston, Mass.	VIII.	Professor of Physics Emeritus, Mass. Institute of Technology.
ALFRED E. HUNT . . . . 4916 Wallingford St., Pittsburgh, Pa.	III.	President, The Pittsburgh Reduction Co.; Vice-Chairman and Treasurer, The Pittsburgh Testing Laboratory (Limited).
WILLIAM W. JACQUES, Ph.D. 4 Gloucester St., Boston.	VIII.	
SAMUEL JAMES, JR. . . . Sandy, Utah.	III.	Superintendent, Pennsylvania Smelting Co.
ALFRED C. KILHAM . . . 1245 Washington Ave., Springfield, Mo.	II.	Storekeeper, St. Louis & San Francisco R. R.
J. AUSTIN KNAPP . . . . Abington, Mass.	II.	Manufacturer.
THEODORE J. LEWIS . . . 212 No. Thirty-fourth St., Philadelphia, Pa.	II.	Secretary and Assistant Treasurer, Standard Steel Works.
ALBERT H. LOW . . . . P. O. Box 1537, Denver, Colo.	V.	Chemist and Assayer.
CHARLES T. MAIN . . . . 53 State St., Boston.	II.	Of Dean & Main, Mill and Mechanical Engineers.
ARTHUR L. MILLS . . . . 2278 Ashland Ave., Toledo, Ohio.	I.	General Superintendent, Toledo, St. Louis, & Kansas City R. R.
WILLIAM E. NICKERSON . 12 Pearl St., Boston.	V.	Chemical and Mechanical Expert.
DAVID W. PHIPPS . . . . 1607 First Ave., Seattle, Wash.	Phil.	Attorney-at-law.
CHARLES F. PRICHARD . . Lynn, Mass.	II.	General Superintendent, Lynn Gas & Electric Co.
HENRY RAEDER . . . . . 218 La Salle St., Chicago, Ill.	I.	Architect.
CHARLES L. RICH . . . . East Jaffrey, N. H.	I.	Cashier, Monadnock National Bank.
CHARLES A. SAWYER, Sci. and Lit. 107 Dearborn St., Chicago, Ill.		In Law and Real Estate Business.
THEODORE E. SCHWARZ . 4 Bank Block, Denver, Colo.	III.	Mining Engineer.

1876. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
JULIUS H. SUSMANN . . . Montreal, Que.	III.	Mining Engineer for Canadian Pacific Ry.
WALTER D. TOWNSEND . Chemulpo, Korea.	III.	Of the Firm of Townsend & Co.
CHARLES N. WAITE . . . 203 Broadway, New York, N. Y.	V.	With American Viscose Co.
HENRY M. WAITT . . . . Chicago, Ill.	I.	Bridge Engineer, with Chicago, Burlington, & Quincy R. R.
HENRY B. WOOD . . . . 11 Mt. Vernon St., Boston.	I.	Chief Engineer, Mass. Topographical Survey Commission.

1877.

JOHN ALDEN . . . . . Lawrence, Mass.	V.	Chemist, Pacific Mills.
CHARLES S. BACHELDER . Watsonville, Cal.	V.	Chemist, Western Beet Sugar Co.
GEORGE BARTOL . . . . . Cleveland, Ohio.	III.	Superintendent, Otis Steel Co. (Limited).
J. WILLIAMS BEAL . . . . 55 Kilby St., Boston.	IV.	Architect.
WILLIAM H. BEECHING . . 19 John St., Boston.	II.	Cork Manufacturer.
G. WALTER CAPEN . . . . 85 Water St., Boston.	IV.	Architect.
HENRY H. CARTER . . . 95 Milk St., Boston.	I.	Consulting Engineer.
WILLIAM E. CHAMBERLIN . 27 Clinton St., Cambridgeport, Mass.	IV.	Architect.
LINUS FAUNCE . . . . . Boston, Mass.	II.	Associate Professor of Drawing, Mass. Institute of Technology.
CHARLES H. FISHER . . . Ponkapog P. O., Canton, Mass.	II.	
MARTIN GAY . . . . . 2156 Lexington Ave., New York, N. Y.	I.	Assistant Engineer, Department of Public Works.
JOSEPH P. GRAY . . . . . 31 Milk St., Boston.	I.	Vice-President, Boston Manufacturers' Mutual Fire Insurance Co.
EDMUND GROVER . . . . East Walpole, Mass.	I.	Civil Engineer and Landscape Gardener.
RICHARD A. HALE . . . . Lawrence, Mass.	I.	Principal Assistant Engineer, Essex Water Power Co.
JOHN E. HARDMAN . . . Room 2, Windsor Hotel, Montreal, Que.	III.	Consulting Mining Engineer.

1877. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HENRY D. HIBBARD . . . Plainfield, N. J.	III.	In Business.
WALTER JENNEY . . . . 291 First St., South Boston.	III.	Superintendent, Petroleum Refinery, Jenney Manufacturing Co.
GEORGE W. KITTREDGE . . Cincinnati, Ohio.	I.	Chief Engineer, Cleveland, Cincinnati, Chicago, & St. Louis Ry.
CHARLES F. LAWTON . . . New Bedford, Mass.	I.	Superintendent of Public Works.
BENJAMIN C. MUDGE . . . 510 Summer St., Lynn, Mass.	I.	Vice-President and Secretary, Superior Fast Black and Chemical Co. (Boston); Treasurer, United States Police and Fire Alarm Telegraph Co. of Boston.
CECIL H. PEADODY . . . Boston, Mass.	II.	Professor of Marine Engineering and Naval Architecture, Mass. Institute of Technology.
ARTHUR L. PLIMPTON . . 81 Milk St., Boston.	I.	Chief Engineer, Civil Engineering Department, West End Street Ry. Co.
HARRY C. SOUTHWORTH . West Stoughton, Mass.	III.	Mining Engineer.
THOMAS F. STIMPSON . . Providence, R. I.	III.	Overseer, Printing Department, Silver Spring Bleaching and Dyeing Co.
GEORGE F. SWAIN . . . . Boston, Mass.	I.	Hayward Professor of Civil Engineering, Mass. Institute of Technology; Engineer Mass. Railroad Commission.
FREDERICK W. WOOD . . Sparrow's Point, Md.	III.	President, Maryland Steel Co.

1878.

WILLIAM B. ALLBRIGHT . Union Stock Yards, Chicago, Ill.	V.	Manager, Swift & Co., Lard Refinery.
CHARLES M. BAKER . . . Ames Bldg., Boston.	IV.	With Chase & Barstow, Stock Brokers.
TAKUMA DAN . . . . . Surugacho Nihonbashi-Ku, Tokio, Japan.	III.	Managing Director, Mitsui Mining Co.
CHARLES S. EATON . . . 219 Washington St., Boston.	IV.	In Business.
ALFRED S. HIGGINS . . . 142 Atlantic Ave., Boston.	IV.	With R. R. Higgins & Co.
JULIAN A. KEBLER . . . . 701 Boston Bldg., Denver, Colo.	I.	Second Vice-President, The Colorado Fuel and Iron Co.
EVERELL J. NICHOLS . . . 125 Ferry St., Everett, Mass.	I.	Civil Engineer.
FREDERICK H. PRENTISS . P. O. Box 1132, Chicago, Ill.	II.	President, The Buckeye Electric Co.

1878. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
JAMES RITCHIE . . . . . 625 Hickox Bldg., Cleveland, Ohio.	I.	Civil and Consulting Engineer.
JAMES W. ROLLINS, JR. . Rutledge St., West Roxbury, Mass.	I.	Of the Firm of Holbrook, Cabot, and Daly, General Contractors (Boston).
C. D. SAWIN, M.D., 349 Main St., Charlestown, Mass.	Sci. and Lit.	Physician.
PETER SCHWAMB . . . . . Boston, Mass.	II.	Professor of Mechanism, Mass. Institute of Technology.
FREDERIC P. SPALDING . . 1016 Middlesex St., Lowell, Mass.	I.	Assistant Engineer, Engineering Department, City of Boston.
ISAAC M. STORY . . . . . Somerville, Mass.	I.	Assistant Engineer, New England R. R.
LINWOOD O. TOWNE . . . Haverhill, Mass.	III.	Sub-Master, Haverhill High School.
EMILE F. WILLIAMS . . . 42 Franklin St., Boston.	I.	Of the Firm of Arthur Williams, Jr., & Co., East India and Turkish Carpets and Rugs.
JAMES G. WOOLWORTH . . 298 Fountain St., Providence, R. I.	V.	Superintendent, John D. Lewis Dyewood Extract Manufactory.

1879.

WALTER S. ALLEN . . . . 34 So. Sixth St., New Bedford, Mass.	V.	
SAMUEL T. BRALEY . . . 41 Park St., Rutland, Vt.	II.	Head Draughtsman, Foreman of Pattern Department and Mechanical Superintendent of Shops, Howe Scale Co.
JOHN W. CABOT . . . . . Capital Hotel, Johnstown, Pa.	III.	Assistant Superintendent of Blast Furnaces, Cambria Iron Co.
HARRY H. CAMPBELL . . Steelton, Pa.	III.	Superintendent, Pennsylvania Steel Co.
FREDERICK S. COFFIN . . 152 Congress St., Boston.	III.	Of the Firm of Stoddard, Haserick, Richards, & Co., Importers and Commission Merchants.
W. OTIS DUNBAR . . . . Altoona, Pa.	II.	In Charge of Test Department, Pennsylvania R. R.
GEORGE W. FABENS . . . Ottumwa, Iowa.	I.	Division Roadmaster, Chicago, Burlington, & Quincy R. R.
CHARLES S. GOODING . . . 28 School St., Boston.	II.	Mechanical Engineer and Draughtsman.
RAPHAEL M. HOSEA . . . 817 Boston Bldg., Denver, Colo.	I.	Chief Engineer, The Colorado Fuel and Iron Co.

1879. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HORACE J. HOWE . . . . 9 Chestnut St., Medford, Mass.	I.	
FREDERICK B. KNAPP . . . Duxbury, Mass.	I.	Principal, Powder Point School.
FREDERIC H. LANE . . . 49 Leonard St., New York, N. Y.	II.	With the Allen-Lane Co., Commission Merchants.
FREDERIC R. LORING . . . Pottstown, Pa.	VII.	Teacher, Pottstown High School.
WILLIAM W. MACFARLANE 613 E. Fourteenth St., Chester, Pa.	V.	Superintendent, Sharpless Dyewood Extract Co.
ARTHUR H. METCALF . . Pawtucket, R. I.	II.	Mechanical Engineer.
EDWIN C. MILLER . . . . Wakefield, Mass.	II.	Assistant Superintendent, Henry F. Miller & Sons' Piano Co. (88 Boylston St., Boston).
WILLIAM H. PICKERING . Cambridge, Mass.	VIII.	Astronomer, Harvard College Observatory.
GEORGE F. RIGGS . . . . Cooksville, Howard Co., Md.	I.	
FRANK G. STANTIAL . . . Everett, Mass.	V.	Superintendent, Cochrane Chemical Co.
WILLIAM S. STEARNS . . . Cincinnati, Ohio.	I.	Superintendent, Stearns & Foster Co.'s Cotton Factory.
ARTHUR M. WAITT . . . . Cleveland, Ohio.	II.	General Master Car Builder, Lake Shore & Michigan Southern Ry.

1880.

GEORGE H. BARTON . . . Boston, Mass.	III.	Assistant Professor of Geology, Mass. Institute of Technology.
CHARLES H. BROWN . . . Willington, Conn.	I.	Clergyman.
EDWIN E. CHASE . . . . . Mining Exchange Bldg., Denver, Colo.	I.	Mining Engineer and United States Deputy Mineral Surveyor.
FREDERICK W. CLARK . . 4 Sherman St., Chicago, Ill.	III.	President, Jonathan Clark & Sons' Co., General Contractors.
GEORGE W. HAMILTON . . 28 Court Sq., Boston.	I.	District Engineer, Sewer Division, Street Deparment, City of Boston.
LORING R. MILLEN . . . . 70 Beaver St., New York, N. Y.	III.	Wholesale Lumber Merchant.
WILLIAM T. MILLER . 88 Boylston St., Boston.	Elective.	In charge of Boston Warerooms, Henry F. Miller & Sons' Piano Co.

1881.

IRA ABBOTT . . . . . 150 Broadway, New York, N. Y.	I.	Civil Engineer.

1881. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
JOHN H. ALLEN . . . . . Elizabeth, N. J.	III.	Manager, Mountain Copper Co., Ltd.
AMOS BINNEY, A.B. . . . 53 State St., Boston.	V.	Real Estate Agent.
DAVID S. BISSELL . . . . Pittsburgh, Pa.	III.	President, Duquesne Forge Co., Iron and Steel Forgings; also of Chase & Bissell, Chemists (Versailles, Pa.).
FRANK H. BRIGGS . . . . 2 High St., Boston.	IX.	Commission Merchant, W. L. Montgomery & Co.
FRANK E. CAME . . . . . 17 Place d'Armes Hill, Montreal, Que.	I.	Manufacturer of Railway Specialties; Canadian Manager Q. & C. Co.; Chicago Railway Equipment Co.; Chicago Grain Door Co.
FRANK D. CHASE . . . . Versailles, Pa.	III.	Chemist.
BENJAMIN G. COLLINS . . Edgartown, Mass.	II.	Surveyor.
HARRY H. CUTLER . . . . 76 W. Jackson St., Chicago, Ill.	II.	President and Treasurer, The Cutler-Hammer Manufacturing Co.
F. GRAEF DARLINGTON . . 1218 No. Delaware St., Union Station, Indianapolis, Ind.	IX.	Superintendent, Indianapolis Division, Pittsburgh, Cincinnati, Chicago, & St. Louis Ry.
JOHN DUFF, M.D. . . . . 5 Dexter Row, Charlestown, Mass.	V.	Physician.
DAVID S. GODDARD . . . 26 Gardner St., Chelsea, Mass.	III.	
WALTER J. KOEHLER . . . Broken Hill, N. S. W., Australia.	V.	Chief Metallurgist, Broken Hill Proprietary Co.
EDWIN J. LEWIS, JR. . . . 9 Park St., Boston.	IV.	Architect.
WILLIAM B. LINDSAY, A.B. Carlisle, Pa.	V.	Professor of Chemistry, Dickinson College.
JAMES LUND . . . . . Everett, Mass.	V.	Superintendent, West Department, Cochrane Chemical Co.
GEORGE A. MOWER . . . 75 Queen Victoria St., London, Eng.	II.	General Manager, Sturtevant Engineering Co.
WEBSTER NORRIS . . . . 53 Franklin Ave., Brooklyn, N. Y.	III.	Assistant Superintendent, The Gutta Percha and Rubber Manufacturing Co.
EVELYN W. ORDWAY . . . New Orleans, La.	V.	Professor of Chemistry, Newcomb College, Tulane University.

1881. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
THEODORE PARKER . . . . Atlantic, Mass.	I.	In City Engineer's Office, Park Department, City of Boston.
NATHANIEL W. SHED . . . Burden, N. Y.	V.	Chemist for Hudson River Ore and Iron Co.
WILLIAM R. SNEAD . . . 318 W. Chestnut St., Louisville, Ky.	IV.	General Manager, The Snead & Co. Iron Works.
HAROLD E. STEARNS . . . Montreal, Que.	II.	Superintendent and Treasurer, Dominion Wadding Co.
EDWARD R. WARREN . . 319 No. Webber St., Colorado Springs, Colo.	VII.	Civil Engineer.
CHARLES M. WILKES . . . 1142 The Rookery, Chicago, Ill.	IV.	Sanitary Engineer.
ARTHUR WINSLOW . . . . 306 Lyceum Bldg., Kansas City, Mo.	III.	General Manager, United States and British Columbia Mining Co.

1882.

CLARA P. AMES . . . . . Northampton, Mass.	V.	Teacher, Mary A. Burnham Classical School.
THOMAS B. CARSON . . . . 709 Perry St., Davenport, Iowa.	II.	Secretary, Bettendorf Metal Wheel Co. (Davenport, Iowa, & Springfield, Ohio).
CARRIE RICE CLARK . . . P. O. Box 1609, Denver, Colo.	V.	
EDWARD F. ELY, A.B. . . 32 Westminster St., Providence, R. I.	IV.	Architect, of Firm of Hoppin & Ely.
GEORGE FAUNCE, A.B. . . Carnegie, Pa.	III.	Superintendent, Pennsylvania Lead Co
CHARLES A. FRENCH, M.D. 47 Winter St., Boston.	III.	Optician.
HOWARD V. FROST, Ph.D. Transit House, Union Stock Yards, Chicago, Ill.	V.	Chemist, Anglo-American Provision Co., and Fowler Brothers, Limited.
EDW. G. GARDINER, Ph.D. 131 Mt. Vernon St., Boston.	VII.	
FRANCIS P. HALL . . . . Emporia, Kans.	V.	Stock Raising.
GEORGE L. HEINS . . . . Temple Court, New York, N. Y.	IV.	Architect, of Firm of Heins & La Farge.
CHARLES D. JENKINS . . . 32 Hawley St., Boston.	V.	State Inspector of Gas and Gas Meters.
JAMES W. JOHNSON . . . . Riverside, Cal.	I.	City Engineer.

1882. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
JOHN F. LOW . . . . . 51 Portland St., Boston.	V.	Treasurer, The Low Art Tile Co.
HARRY G. MANNING . . . 119 Summer St., Fitchburg, Mass.	II.	Mechanical Engineer, Simonds Manufacturing Co.
GEORGE W. MANSFIELD . . So. Norwalk, Conn.	III.	Secretary and Treasurer, Norwalk Tramway Co.
FRANK C. MORRISON . . .	I.	
JAMES P. MUNROE . . . . 179 Devonshire St., Boston.	III.	Treasurer of the Munroe Felt and Paper Co., Manufacturers of Paper.
HENRY F. ROSS . . . . . 178 Devonshire St., Boston.	III.	With The Boston Thread and Twine Co.
JOHN H. ROSS . . Sci. and Lit. 178 Devonshire St., Boston.		President, The Boston Thread and Twine Co.
GRENVILLE T. SNELLING . . 111 Fifth Ave., New York, N. Y.	IV.	Of Firm of Snelling & Potter, Architects; Instructor in Architectural Engineering, School of Architecture, Columbia University.
WALTER B. SNOW . . . . Watertown, Mass.	II.	Mechanical Engineer, B. F. Sturtevant Co. (Jamaica Plain, Mass.).

1883.

HERBERT T. BARDWELL . . 11 Woodside Ave., Springfield, Mass.	I.	Civil Engineer.
GEORGE H. BRYANT . . . 15 Summer St., Newport, R. I.	II.	Principal, Townsend Industrial School.
HARVEY S. CHASE . . . . 8 Congress St., Boston.	II.	Electrical and Mechanical Engineer, Trustee the Watauga Association.
FRANK E. DAVIS . . . . Worcester, Mass.	II.	With Washburn & Moen Manufacturing Co.
JOHN G. EPPENDORFF . . 627 Main St., Buffalo, N. Y.	IV.	Decorator.
GEORGE J. FORAN . . . . 356 Harvard St., Cambridge, Mass.	II.	With The Geo. F. Blake Manufacturing Co. (185 Devonshire St., Boston).
WILLIAM B. FULLER . . . 57 Lumber District, Albany, N. Y.	I.	Resident Engineer, with Allen Hazen; Consulting Engineer (220 Broadway, New York, N. Y.).
HORACE B. GALE . . . . Natick, Mass.	II.	Consulting Mechanical and Electrical Engineer.
GEORGE H. GUSTIN . . . Elizabeth, N. J.	III.	With Bowker Fertilizer Co.

1883. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
FREDERIC O. HARRIMAN . Jaltipan, Mexico.	I.	Civil Engineer and Contractor; Land Agent.
JAMES H. HUTCHINGS . . 1672 Washington St., Boston.	II.	In Real Estate Business.
H. WARD LEONARD . . . Hoboken, N. J.	III.	President, Ward Leonard Electric Co., and Carpenter Enamel Rheostat Co.
HARVEY M. MANSFIELD . Fairfield, Me.	III.	Superintendent, Somerset Fibre Co.
ROBERT W. SCOTT . . . 917 Arch St., Philadelphia, Pa.	II.	Manager, Philadelphia Engraving Co.
GEORGE A. SMITH . . . . Chelsea, Mass.	V.	Superintendent, Thos. Strahan & Co., Branch of the National Wall Paper Co.
FRANK TENNEY . . . . . Steelton, Pa.	III.	Assistant Superintendent, The Pennsylvania Steel Co.
CHARLES H. TOMPKINS . 120 Liberty St., New York, N. Y.	III.	Civil Engineer; President, American Diamond Rock Drill Co.
GEORGE R. UNDERWOOD . Peabody, Mass.	V.	Superintendent, Upton Factory of American Glue Co.
DAVID WESSON . . . . . 39 Prospect St., Cortland, N. Y.	V.	Technical Chemist.

1884.

CHARLES B. APPLETON . . Aspinwall Ave., Brookline, Mass.	II.	
HENRY F. BALDWIN . . . Jersey City, N. J.	II.	Engineer, Maintenance of Way, Erie R. R.
FRED L. BARDWELL, B.S. . Boston, Mass.	V.	Assistant Professor of General Chemistry, Mass. Institute of Technology.
T. HARRIS BARTLETT . . . Spokane, Wash.	III.	Lawyer.
HENRY A. BOARDMAN . . Jewett City, Conn.	V.	With The Aspinook Co.
CHARLES C. BOTHFELD . . Home Bank Bldg., Detroit, Mich.	I.	Consulting Engineer on Iron and Steel Structures; Resident Manager, Pittsburgh Testing Laboratory.
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CHRISTOPHER J. CARVEN . 34 Centre St., Dorchester, Mass.	I.	Assistant Engineer, Engineering Department, City of Boston.
ROSCOE L. CHASE . . . . North Adams, Mass.	V.	Chemist, Arnold Print Works.
ALFRED O. DOANE . . . . 3 Mt. Vernon St., Boston.	III.	Assistant Engineer, Metropolitan Water Board.
ALFRED L. FITCH . . . . 135 Scoville Ave., Oak Park, Ill.	II.	

1884. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
GEORGE L. R. FRENCH . . Boston, Mass.	I.	Roadmaster, Eastern Division, Boston & Maine R.R.
AUGUSTUS H. GILL, Ph.D. Boston, Mass.	V.	Assistant Professor of Gas Analysis, Mass. Institute of Technology.
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GEORGE H. HEYWOOD . . Gardner, Mass.	III.	Treasurer, Heywood Bros. and Wakefield Company.
JAMES G. HOLDER, Ph.G. . 119 Broad St., Lynn, Mass.	V.	Apothecary.
G. FREDERICK KNAPP . . . Harrison Bldg., Philadelphia, Pa.	V.	With Oglebay, Norton, & Co., Iron Ores (Cleveland, Ohio).
D. A. LYLE, Capt. U. S. A. P. O. Box 1606, Philadelphia, Pa.	III.	Inspector of Ordnance, U. S. A.
PHILIP S. MORSE, A.B. . . Leadville, Colo.	III.	With the Arkansas Valley Smelting Works.
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THEODORE W. ROBINSON . Pueblo, Colo.	III.	General Superintendent, Colorado Fuel and Iron Co.
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1884. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ALICE BROWN TYLER . . . Newton Centre, Mass.	V.	
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NAHUM WARD . . . . . 49 An der Alster, Hamburg, Germany.	V.	Student.
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1885.

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ROBERT R. GOODRICH . . Cusihurriachic, Chihuahua, Mexico.	III.	Helena Mining Co.
WALTER K. HARRINGTON . New York, N. Y.	I.	Superintendent, Repair Shops, Consolidated Gas Co. of New York.
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HUGH MACRAE . . . . . Wilmington, N. C.	III.	President, The Wilmington Cotton Mills.
HENRY MARTIN . . . . . South Gardiner, Me.	V.	With Richards Paper Co.
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1885. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
EVERETT MORSS . . . . . 79 Cornhill, Boston.	III.	With Morss & Whyte; Vice-President, Simplex Electrical Co.
FREDERICK H. NEWELL . . Washington, D. C.	III.	Chief Hydrographer, U. S. Geological Survey.
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1886.

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1886. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
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WILLIAM F. JORDAN . . . Rochester, N. Y.	I.	Assistant Engineer, Buffalo, Rochester, & Pittsburgh R. R.
C. BELLE KENNEY . . . . Wollaston, Mass.	V.	Teacher of Science, Quincy Mansion School.
ALBERT E. LEACH . . . . State House, Boston.	II.	Assistant Analyst, Food and Drug Department, Mass. State Board of Health.
FRANK L. LOCKE . . . . Malden, Mass.	I.	Assistant Superintendent, Boston Rubber Shoe Co.
WILSON H. LOW . . . . . P. O. Box 522, Cripple Creek, Colo.	V.	Assayer and Chemist, also Assayer and Chemist for the Brodie Gold Reduction Co.
ELGOOD C. LUFKIN . . . . Snow and Roesser Aves., Buffalo, N. Y.	II.	Manager, the Snow Steam Pump Works.

1886. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
JAMES P. LYNDE . . . . . Palmer, Mass.	IX.	Druggist.
ALEX. RICE MCKIM, A.M. 106 E. Twenty-third St., New York, N. Y.	I.	Consulting Architectural Engineer.
HARRY B. MERRIAM . . . 713 Wabash Ave., Kansas City, Mo.	I.	Roadmaster, Fort Smith & Memphis R. R.
HENRY P. MERRIAM . . . 136 W. Eleventh St., New York, N. Y.	VI.	Engineer of the Standard Air Brake Co. of New York City.
EDWARD F. MILLER . . . Boston, Mass.	II.	Assistant Professor of Steam Engineering, Mass. Institute of Technology.
EDGAR H. MUMFORD . . . Elizabeth, N. J.	II.	Secretary and Treasurer, The Tabor Manufacturing Co.
ARTHUR A. NOYES, S.M., Ph.D. Boston, Mass.	V.	Associate Professor of Organic Chemistry, Mass. Institute of Technology.
EDWARD L. PIERCE, JR. . Syracuse, N. Y.	II.	With Solvay Process Co.
CHARLES F. RICHARDSON . 53 State St., Boston.	II.	Lawyer, Patent Business.
ARTHUR G. ROBBINS . . . Boston, Mass.	I.	Assistant Professor of Highway Engineering, Mass. Institute of Technology.
L. KIMBALL RUSSELL . . . Boston, Mass.	V.	Instructor in General Chemistry, Mass. Institute of Technology.
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WILLIAM E. SHEPARD . . 971 Steinway Ave., Long Island City, N. Y.	VI.	Electrical Engineer.
JAMES E. SIMPSON . . . . 163 Haverhill St., Lawrence, Mass.	III.	With J. R. Simpson & Co.
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WILLIAM M. TAYLOR . . . 740 (new) W. Washington Ave., Indianapolis, Ind.	II.	President, Chandler & Taylor Co.
CHARLES D. TURNBULL . . The Ludlow, Boston.	II.	Manager of an Estate (Providence, R. I.).

1886. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
DAVID VAN ALSTINE . . . Cloverport, Ky.	II.	Master Mechanic, Louisville, Henderson, & St. Louis Ry.
MAURICE A. VIELÉ, B.S. . Katonah, N. Y.	II.	Assistant Engineer, Croton Aqueduct Commission.
C. MORRIS WILDER . . . Neave Bldg., Cincinnati, Ohio.	VI.	Manufacturers' Agent.
ELWOOD J. WILSON . . . 1655 Champa St., Denver, Colo.	III.	Mining Engineer.
CHARLES H. WOODBURY . 192 Boylston St., Boston.	II.	Artist.
VERNOR F. WORCESTER . 40 Pine St., Rutland, Vt.	II.	Draughtsman, Howe Scale Co.
FRED R. YOUNG . . . . . 220 Devonshire St., Boston.	III.	Jobber and Importer.

1887.

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CHARLES A. BARTON . . . Peterboro', Ont.	II.	With Canadian General Electric Co.
WILLIAM B. BLAKE . . . Fourteenth & Main Sts., Louisville, Ky.	I.	Assistant Engineer, Maintenance of Way, Louisville Division, Pittsburgh, Cincinnati, Chicago, & St. Louis Ry.
WALTER C. BRACE. . . . Ouray, Colo.	III.	Metallurgist and Mining Engineer.
DWIGHT BRAINERD . . . . 103 St. François Xavier, Montreal, Que.	IX.	Treasurer, Hamilton Powder Co.
HENRY B. BRAINERD . . . 103 St. François Xavier, Montreal, Que.	IX.	Treasurer, Dominion Cartridge Co. (Limited).
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JULIAN A. CAMERON . . . Forge Village, Mass.	II.	With Abbot Worsted Mills.
FRANK D. CARNEY . . . . Steelton, Pa.	III.	With Pennsylvania Steel Co.

1887. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WINTHROP COLE . . . . . Hampton, Va.	II.	With the Superintending Constructor, U. S. N., at Newport News, Va.
HENRY J. CONANT . . . . 53 State St., Boston.	II.	Manager, Boston Office, Westinghouse, Church, Kerr, & Co. (Incorporated, Engineers).
HELEN COOLEY, M.D. . . 110 W. Eighty-fourth St., New York, N. Y.	V.	Physician, Assistant Surgeon N. Y. Ophthalmic Hospital.
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WILLIAM S. HADAWAY, JR. 107 Liberty St., New York, N. Y.	VIII.	Consulting and Constructing Electric and Heating Engineer.
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EDWARD A. JONES . . . . Pittsfield, Mass.	II.	With E. D. Jones & Sons' Co., Architects and Manufacturers of Paper Machinery.
CHARLES B. KENDALL . . Passaic, N. J.	V.	Superintendent, Passaic Print Works.
WILLIAM D. LIVERMORE . Lawrence, Mass.	V.	Chemist, Washington Mills.
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1887. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
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HENRY D. SEARS . . . . 7 Arch St., Boston.	VI.	With C. S. Knowles, Electric Railway and Lighting Supplies.
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HARRY E. SMITH . . . . Milwaukee, Wis.	V.	Chemist, Chicago, Milwaukee, & St. Paul R. R.
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1887. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
RALPH VOSE . . . . . Hyde Park, Mass.	VI.	Electrician.
WALTER G. WHITMORE . . 44 Broad St., New York, N. Y.	VI.	Local Engineer, New York Office, General Electric Co.
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WILLIAM A. WHITNEY . . Sunapee, N. H.	I.	Manager, Emerson Paper Co.
HERBERT A. WILCOX . . . Aspen, Colo.	III.	Mining Engineer.
SIDNEY WILLIAMS . . . . Dunmore, Pa.	I.	Comptroller, Pennsylvania Coal Co., and Erie & Wyoming Valley R. R.

1888.

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HENRY FORBES BIGELOW . 3 Hamilton Pl., Boston.	IV.	Architect, with Winslow & Wetherell.
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WINSLOW BLANCHARD . . 303 Congress St., Boston.	II.	Treasurer, Blanchard Machine Co.
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1888. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
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BERTRAM P. FLINT . . . 91 Liberty St., New York, N. Y.	II.	With The George F. Blake Manufacturing Co.
THEODORE A. FOQUE . . . Minneapolis, Minn.	II.	Assistant Mechanical Superintendent, Minneapolis, St. Paul, & Sault Ste. Marie R. R.
STEJIRO FUKUZAWA . . . 2 Second St., Mita, Tokio, Japan.	I.	With the "Jiji Shimpo."
J. EDWARD FULLER, JR. . 452 Main St., Worcester, Mass.	IV.	General Contractor.
WILLIAM H. GERRISH . . 52 School St., Somerville, Mass.	II.	Treasurer, Lancaster Slate Co.
HAROLD G. GROSS . . . 535 Fourth St., Eureka, Cal.	VII.	Physician.
GEORGE W. HAMBLET . . 506 Lowell St., Lawrence, Mass.	II.	
WILLIAM L. HARRIS . . . Gerard Lake Ranch, Towner, N. Dak.	VII.	Cattle Raising.
GEORGE L. HARVEY . . . 115 Monroe St., Chicago, Ill.	II.	Architect and Mechanical Engineer.
CHARLES F. HASTINGS . . Franklin Ave., Sta. D, Pittsburgh, Pa.	III.	With Open Hearth Department, Black Diamond Steel Works.
SAVORY C. HATHAWAY, JR. 33 S. Fountain Ave., Springfield, Ohio.	VI.	Agent, Hathaway Shoe Co.
GEORGE L. HEATH . . . . South Lake Linden, Mich.	V.	Chemist, Calumet & Hecla Smelting Works; Associate Mineral Expert, Calumet & Hecla Stamp Mills.

1888. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
EDWARD W. HERRICK . . 77 Houston St., New York, N. Y.	II.	Consulting Engineer with Baker, Smith, & Co.
EDWARD C. HOLTON . . . 100 Canal St., Cleveland, Ohio.	V.	Chemist, Sherwin-Williams Co.
HENRY J. HORN, JR. . . . Livingston, Mont.	I.	Division Superintendent, Montana Division, Northern Pacific Ry. Co.
FRANK M. JAMES . . . . 51 No. Broadway, Haverhill, Mass.	II.	
ARTHUR WINSLOW JONES . P. O. Box 3507, Boston.	VI.	Representing General Electric Co. in Australia.
EDWIN O. JORDAN, Ph.D. . Chicago, Ill.	VII.	Assistant Professor of Biology, University of Chicago.
WILLIAM T. KEOUGH . . . 234 Saratoga St., East Boston.	II.	Consulting Engineer.
GEORGE S. LEE . . . . . 57 Chatham St., Boston.	I.	Of Firm of Blake, Scott, & Lee, Wholesale Fruit & Produce.
JAMES W. LOVELAND . . . 184 Broadway, Cambridgeport, Mass.	V.	Superintendent, Curtis Davis & Co., Soap Manufacturers.
ARTHUR S. MANN . . . . 51 So. Jefferson St., Chicago, Ill.	II.	With Lammert & Mann, Engineers and Machinists.
CHARLES G. MERRELL . . P. O. Box 786, Cincinnati, Ohio.	V.	Vice-President and Superintendent, The W. S. Merrell Chemical Co.
FRANK A. MOORE . . . . 123 E. Twenty-third St., New York, N. Y.	IV.	Architect.
HENRY C. MOORE . . . . Massena, St. Lawrence Co., N. Y.	II.	With The Lehigh Construction Co., Contracting Engineers.
ADDISON D. NICKERSON . . Hyde Park, Mass.	I.	Engineer to Sewer Commissioners.
EDWIN R. PEARSON . . . Schenectady, N. Y.	VI.	Engineer, Alternating Current Department, General Electric Co.
CHARLES A. PETERSON, A.B. Cambridge, Mass.	VI.	
HERBERT F. PIERCE . . . West Newton, Mass.	I.	Assistant Engineer, City Engineer's Office, City of Newton.
GEORGE B. POOL . . . . . 20 So. Market St., Boston.	VI	Book-keeper, Pool Bros.
JOHN STITES RAY . . . . 18 Cheyenne Cañon Road Brookside, Colorado Springs, Colo.	II.	Ore Shippers' Agent.

1888. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
RUSSELL ROBB. . . . . 4 Post-Office Sq., Boston.	VI.	With Stone & Webster, Electrical Experts and Engineers.
ODIN B. ROBERTS, A.M., LL.B. 95 Milk St., Boston.	II.	Lawyer.
FRED. H. SAFFORD, A.M., Ph.D. 22 Sacramento Pl., Cambridge, Mass.	VI.	Instructor in Mathematics, Harvard University.
ALFRED H. SAWYER . . . 24 Oliver St., Boston.	II.	General Agent, B. F. Sturtevant Co. (Jamaica Plain, Mass.).
FREDERICK L. SAYER . . . 91 Liberty St., New York, N. Y.	II.	With The George F. Blake Manufacturing Co.
WALTER K. SHAW . . . . 70 Kilby St., Boston.	II.	Of Firm of E. A. Shaw & Co., Cotton Brokers.
A. W. SABINE SIEBERT, A.M. Columbus, Ohio.	VIII.	
IVAR L. SJÖSTRÖM . . . . Central Bldg., Lawrence, Mass.	I.	Civil Engineer.
CLARENCE W. SMITH, A.B. 120 Milk St., Boston.	V.	Patent Boiler Setting.
EDWARD M. Smith . . . . Union Station, Boston, Mass.	II.	Assistant Engineer, Boston & Maine R. R.
FRANK O. STETSON . . . Twenty-fourth and M Sts., Washington, D. C.	V.	Clerk, U. S. Weather Bureau.
CHARLES A. STONE. . . . 4 Post-Office Sq., Boston.	VI.	Electrical Expert and Engineer, of Firm of Stone & Webster.
JOHN M. SULLY . . . . . Chickamauga, Ga.	III.	Chief Engineer in charge of Mines, Chickamauga Coal and Coke Co.; Superintendent, Chattanooga & Durham R. R.
MARION TALBOT, A.M. . . Chicago, Ill.	IX.	Dean of the Graduate School and Associate Professor of Sanitary Science, University of Chicago.
WALTER I. TOWNE . . . 125 Milk St., Boston.	VI.	Assistant Electrical Engineer, New England Telephone and Telegraph Co.
CLARENCE B. VORCE . . . 372 Main St., Hartford, Conn.	I.	Civil and Consulting Engineer.
A. SYDNEY WARREN . . . Buffalo, N. Y.	III.	With Buffalo Smelting Works.
EDWIN S. WEBSTER . . . 4 Post-Office Sq., Boston.	VI.	Electrical Expert and Engineer, of Firm of Stone & Webster.
CHARLES L. WEIL . . . . Agricultural College, Mich.	II.	Professor of Mechanical Engineering, Michigan State Agricultural College.
ARTHUR S. WILLIAMS . . . Newton Highlands, Mass.	VI.	With American Bell Telephone Co. (42 Farnsworth St., South Boston).
JOHN E. YOUNG . . . . . 53 First St., Portland, Ore.	I.	Manufacturers' Agents, Garratt & Young.

1889.

NAME AND ADDRESS.	COURSE.	OCCUPATION.
GEORGE M. BASFORD . . . 140 Nassau St., New York, N. Y.	II.	Editor, "American Engineer."
EDWARD J. BEACH . . . . 1183 Locust St., Dubuque, Iowa.	V.	Soap Manufacturer, of Firm of James Beach & Sons.
ARTHUR B. BELLOWS . . . 116 Water St., Pittsburgh, Pa.	II.	General Manager and Member of the Firm, Pittsburgh Testing Laboratory, Limited.
WILLARD G. BIXBY . . . . 194 Hester St., New York, N. Y.	II.	With S. M. Bixby & Co., Manufacturers of Shoe Blackings.
ZENAS W. BLISS . . . . . P. O. Box 1545, Providence, R. I.	II.	In Real Estate Business.
CHARLES N. BORDEN . . . 511 Rock St., Fall River, Mass.	II.	Clerk, Richard Borden Manufacturing Co.
FREDERICK W. BRADLEY . 206 Equitable Bldg., Boston.	VI.	Agent for Steam and Electrical Supplies.
FREDERICK H. BRAINERD . Kansas City, Mo.	III.	With Swift & Co.
LUTHER W. BRIDGES . . . 163 So. Canal St., Chicago, Ill.	II.	Representing The Geo. F. Blake Manufacturing Co. and Knowles Steam Pump Works.
J. NORMAN BULKLEY . . . Schenectady, N. Y.	VI.	With General Electric Co.
FRANK H. CILLEY . . . . Care H. E. Cilley, 118 South St., Boston.	I.	
FRED CRABTREE . . . . . McKeesport, Pa.	V.	Chemist, Monongahela Furnaces.
CHARLES H. CROMWELL . . Baltimore, Md.	II.	Of Cromwell Bros., Brick Manufacturers.
ROLAND N. CUTTER . . . City Hall, Boston.	I.	In Engineering Department, City of Boston.
FRANK L. DAME . . . . . Tacoma, Wash.	VI.	General Superintendent, Tacoma Railways Co.
WILLIAM S. DAVENPORT . . Johannis allée 3, Leipsic, Germany.	V.	Student, University of Leipsic.
ARTHUR L. DAVIS . . . . St. Albans, Vt.	II.	Manager, The Vermont Construction Co.
CHARLES B. DODGE . . . . 257 Washington St., Boston.	IX.	In Real Estate Business.
NATHAN DURFEE . . . . . 78 Bedford St., Fall River, Mass.	II.	Broker. (Cotton and Cloth.)
HARRISON G. DYAR, Ph.D., Washington, D. C.	V.	In U. S. National Museum.
J. PARKER B. FISKE . . . 164 Devonshire St., Boston.	VI.	With Fiske, Homes, & Co., Architectural Clay Products and Building Materials.

1889. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ALFRED W. FRENCH . . . Old Colony Bldg., Chicago, Ill.	I.	Superintendent of Manufacturing, The National Linseed Oil Co.
EDWARD V. FRENCH . . . 31 Milk St., Boston.	II.	Inspector, Associated Factory Mutual Fire Insurance Cos.
HOLLIS FRENCH . . . . . 3 Hamilton Pl., Boston.	VI.	Consulting Engineer.
EARL W. GANNETT . . . 504 Brown Bldg., Omaha, Neb.	VI.	In Real Estate and Loans Business.
JAMES P. GILBERT . . . . Warren, Ohio.	V.	General Superintendent, New York & Ohio Co., Manufacturers of Incandescent Lamps, etc.
BENJAMIN W. GUPPY . . . Union Station, Boston.	I.	Assistant Bridge Engineer, Boston & Maine R. R.
HENRY M. HOBART . . . 83 Cannon St., E.C., London, England.	VI.	With British Thomson-Houston Co. (Limited).
FRANKLIN W. HOBBS . . 78 Chauncy St., Boston.	II.	Assistant Treasurer, Arlington Mills.
GEORGE U. G. HOLMAN . Oak Lane, Station 24, Philadelphia, Pa.	VI.	Secretary, Treasurer, and Manager, Cheltenham Electric Light, Heat, and Power Co.
RICHARD HOOKER . . . . 89 Vandergrift Bldg., Pittsburgh, Pa.	IV.	With Alden & Harlow, Architects.
FREDERICK L. HOPKINS . Providence, R. I.	V.	Night Editor, "Providence Journal."
HARRY H. HUNT . . . Equitable Bldg., Boston.	VI.	Electrical Engineer.
EDWARD S. HUTCHINS . . Bath, Me.	II.	Chief Draughtsman, Engineering Department, Bath Iron Works.
LEWIS E. JOHNSON . . . Steelton, Pa.	II.	Engineer, Bridge and Construction Department, Pennsylvania Steel Co.
WILLIAM S. JOHNSON . . State House, Boston.	I.	Assistant Engineer, Mass. State Board of Health.
WALTER H. KILHAM . . . 3 Hamilton Pl., Boston.	IV.	With Winslow & Wetherell, Architects.
ARTHUR D. KINSMAN . Ipswich, Mass.	VIII.	Farming.
LEWIS H. KUNHARDT . . . 31 Milk St., Boston.	II.	Head Draughtsman, Associated Factory Mutual Fire Insurance Cos.
GEORGE B. LAUDER . . . Concord, N. H.	VI.	Inspector, New Hampshire Board of Fire Underwriters.
FRANK A. LAWS . . . . . Boston, Mass.	VI.	Assistant Professor of Electrical Measurements, Mass. Institute of Technology.

1889. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WILLIAM W. LEWIS . . . 20 Beacon St., Boston.	II.	Assistant Engineer, Boston Transit Commission.
JOHN W. LINZEE, JR., A.B., 23 Upton St., Boston.	I.	Assistant, Boston Transit Commission.
HARRISON LORING, JR. . . 43 India St., Boston.	II.	Of Firm of R. S. Brine & Co., Truckmen.
SAMUEL H. MILDRAM . . 125 Milk St., Boston.	I.	With American Bell Telephone Co.
WILLIAM E. MOTT . . . . Ithaca, N. Y.	I.	Instructor in Civil Engineering, Cornell University.
CLAYTON W. PIKE . . . . 711 Reading Terminal Bldg., Philadelphia, Pa.	VI.	Electrical Engineer, The Falkenau Engineering Co. (Limited).
CHARLES W. POWER . . . Pittsfield, Mass.	VI.	With D. M. Collins & Co., Berkshire Knitting Mills.
FRED W. RANNO . . . . P. O. Box 609, Laporte, Ind.	I.	Resident Engineer, Lake Shore & Michigan Southern Ry.
GEORGE L. RICHARDSON . San Rafael, Cal.	I.	City Engineer and County Surveyor.
GEORGE W. ROUNDS . . . Roslindale, Mass.	VI.	Superintendent, West Roxbury & Roslindale Street Ry. Co.
FRANK E. SANBORN . . . Tufts College, Mass.	II.	Instructor in Mechanical Engineering, Tufts College.
ALBERT SAUVEUR . . . . 446 Tremont St., Boston.	III.	Metallurgist and Chemist; Manager, Boston Testing Laboratories.
EDWARD V. SHEPARD . . Washington, D. C.	I.	Assistant Examiner, U. S. Patent Office.
WILLIAM G. SNOW . . . 31 Union St., Boston.	II.	With Walker & Pratt Manufacturing Co.
DELIA STICKNEY . . . . . 19 Trowbridge St., Cambridge, Mass.	V.	Instructor in Chemistry, Cambridge English High School.
RALPH SWEETLAND . . . 55 Kilby St., Boston.	II.	With New England Insurance Exchange.
SANFORD E. THOMPSON . . Newton Highlands, Mass.	I.	Civil Engineer.
FRANK H. THORP, Ph.D. . Boston, Mass.	V.	Instructor in Industrial Chemistry, Mass. Institute of Technology.
WILLIAM B. THURBER, S.M. Central St., Lowell, Mass.	IX.	Division Superintendent, New England Telephone and Telegraph Co.
ARTHUR E. TRUESDELL . . 7 Clinton St., Newark, N. J.	VI.	With People's Light and Power Co.
WILLIAM W. UNDERHILL . 43 Milk St., Boston.	II.	With Fuller & Warren Warming and Ventilating Co.

1889. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CHARLES H. WARNER . . 11 Broadway, New York, N. Y.	VI.	Consulting and Supervising Electrical Engineer.
GEORGE C. WHIPPLE . . . Flatbush Ave. and Eastern Parkway, Brooklyn, N. Y.	I.	Biologist and Director, Mt. Prospect Laboratory, Brooklyn Water Department.
JASPER WHITING . . . . . 1041 The Rookery, Chicago, Ill.	III.	Manager, Cement and Brick Department, Illinois Steel Co.
FRANK P. WHITNEY . . . 125 Milk St., Boston.	VI.	With New England Telephone and Telegraph Co.
ROBERT C. WILLIAMS . . . Ely, Minn.	III.	Engineer, Chandler Iron Co.; also of Williams Brothers, Fruit Growers, Fla.
ARTHUR L. WILLISTON . . Columbus, Ohio.	II.	Director of Industrial Department, Ohio State University.
VICTOR WINDETT . . . . South Chicago, Ill.	II.	With Illinois Steel Co., South Works.
CAROLINE A. WOODMAN, A.M. Lewiston, Me.	VII.	Librarian, Bates College.
WALTER G. WUICHET . . 418 W. First St., Dayton, Ohio.	II.	Superintendent, A. A. Simonds & Son, Manufacturers of Knives.

1890.

ARTHUR H. ADAMS . . . 46 Avenue de Breteuil, Paris, France.	II.	Superintendent, Société de Matériel Téléphonique.
CHARLES H. ALDEN, JR. . 1024 Tremont Bldg., Boston.	IV.	Architect.
FRANK W. ATWOOD . . . 98 Commercial St., Boston.	V.	Agent for the Heller & Merz Co., American Ultramarine and Globe Aniline Works.
ARTHUR W. AYER . . . . Burlington, Vt.	II.	Professor of Mechanical Engineering, University of Vermont.
CYRUS C. BABB . . . . . Washington, D. C.	I.	Assistant Hydrographer, U. S. Geological Survey.
JOSEPH B. BAKER . . . . 125 Milk St., Boston.	VI.	With American Telephone and Telegraph Co.
HIRAM E. BALDWIN . . . Cleveland, Ohio.	I.	Chief Engineer, The Brown Hoisting and Conveying Machine Co.
SPAULDING BARTLETT . . . Webster, Mass.	V.	Assistant Superintendent, Slater Woollen Co.
JOHN L. BATCHELDER, JR. 22 Dorchester Ave., South Boston.	VII.	Of Firm of Batchelder Bros., Coal Merchants.

1890. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CHARLES B. BEASOM . . . 14 Maple Ave., Newton, Mass.	II.	
ELIZABETH E. BICKFORD, Ph.D. Poughkeepsie, N. Y.	VII.	Instructor in Biology, Vassar College.
ADELAIDE SHERMAN BLACKMER 31 Devon St., Roxbury, Mass.	V.	
JOHN BALCH BLOOD . . . Equitable Bldg., Boston.	VI.	Of the Firm of Blood & Hale, Consulting and Designing Engineers.
AUSTIN D. BOSS . . . . . 34 Morgan St., Hartford, Conn.	II.	Manager, Hartford Department, Willimantic Linen Co.
CHARLOTTE A. BRAGG . . Wellesley, Mass.	V.	Associate Professor of Chemistry, Wellesley College.
EDWARD F. BRAGG . . . 283 Devonshire St., Boston.	II.	President and General Manager, Automatic Rubber Mixer Co.
EDWARD D. BROWN . . . 15 Dey St., New York, N. Y.	VI.	With American Telephone and Telegraph Co.
ERNEST H. BROWNELL, A.B. 174 Weybosset St., Providence, R. I.	I.	With Samuel M. Gray, Consulting Engineer.
EDWARD C. BURNHAM, A.B. Providence, R. I.	II.	Associate Professor of Mechanical Engineering, Brown University.
GARY N. CALKINS . . . . New York, N. Y.	IX.	Instructor in Biology, Columbia University; Instructor in Zoölogy, Barnard College.
MORTEN CARLISLE . . . . 828-830 W. Sixth St., Cincinnati, Ohio.	VI.	With Carlisle & Finch Co., Electric Locomotive Headlights, Search Lights, Electrical Novelties, etc.
CHESTER V. CARLTON . . Rimouski, Que.	I.	Superintendent, Rimouski Lumber Co.
JAMES A. CARNEY . . . . Beardstown, Ill.	V.	Master Mechanic, St. Louis Division Chicago, Burlington, & Quincy R. R.
GEORGE D. CHAPMAN . . Fitchburg, Mass.	II.	Mechanical Engineer, Fitchburg Machine Works.
FRANK L. CHASE . . . . 1065 Story Ave., Louisville, Ky.	I.	President, The Bell & Coggeshall Co.; Bridge Engineer, The Baltimore & Ohio Southwestern Ry.
JAMES CLARK, JR. . . . . 313 W. Main St., Louisville, Ky.	VI.	Of Firm of James Clark, Jr., & Co., Electrical Supplies and Manufacturers.
WILLIAM H. COLLINS . . Providence, R. I.	V.	With Silver Spring Bleaching and Dyeing Co.
WALTER F. COOK . . . . 23 Avon St., Boston.	IX.	With T. D. Cook & Co.
JOHN G. CRANE . . . . . 348½ Sussex Ave., Newark, N. J.	I.	

1890. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
DARRAGH DE LANCEY . . . Rochester, N. Y.	II.	Manager, Kodak Park Works, Eastman Kodak Co.
ALEXANDER J. DELANO . . 125 Milk St., Boston.	I.	Draughtsman, Engineering Department, American Bell Telephone Co.
JOHN O. DEWOLF . . . . 540 Atlantic Ave., Boston.	II.	Assistant Superintendent, Boston Woven Hose and Rubber Co.
FREDERICK H. DODGE . . 10 Produce Exchange Bldg., Toledo, Ohio.	II.	Treasurer, Bissell, Dodge, & Erner Co., Electrical Supplies and Machinery, and F. H. Dodge & Co., Insurance.
FRANCIS W. DUNBAR . . . 218 LaSalle St., Chicago, Ill.	VI.	Electrical Engineer.
PIERRE S. DU PONT . . . . Wilmington, Del.	V.	With E. du Pont, De Nemours, & Co.
EDWIN F. DWELLEY . . . 25 Baltimore St., Lynn, Mass.	I.	Of Firm of Harris & Dwelley, Civil Engineers, 59 Exchange St., Lynn.
ELWOOD A. EMERY, B.L. . Grinnell, Iowa.	IV.	Director of Vocal Culture, Iowa College.
WILLIAM H. FENN . . . . 222 Whiton St., Jersey City, N. J.	I.	Chief Engineer, Hay Foundry and Iron Works (Newark, N. J.).
WILLIAM P. FLINT . . . . P. O. Box 224, East Pittsburgh, Pa.	II.	With Westinghouse Machine Co.
SAMUEL D. FLOOD . . . . 229 So. Water St., Chicago, Ill.	II.	Manager, A. H. Barber & Co., Builders of Ice and Refrigerating Machinery.
GEORGE W. FULLER . . . 549 Third St., Louisville, Ky.	V.	Chief Chemist and Bacteriologist, Louisville Water Co.
GEORGE L. GILMORE . . . Lexington, Mass.	II.	With K. M. Gilmore & Co., Middlesex Bleach, Dye, and Print Works (Somerville, Mass.).
JOHN W. GLIDDEN . . . . De Kalb, Ill.	II.	Superintendent, De Kalb Electric Co.
HARRY M. GOODWIN, Ph.D. Boston, Mass.	VIII.	Assistant Professor of Physics, Mass. Institute of Technology.
FRANK M. GREENLAW . . South Berwick, Me.	VI.	Teacher, Berwick Academy.
GEORGE E. HALE . . . Williams Bay, Wis.	VIII.	Director, Yerkes Observatory of the University of Chicago.
JOHN R. HALL . . . . . 179 Devonshire St., Boston.	VI.	
PHILIP M. HAMMETT, A.B. Boston, Mass.	II.	Master Mechanic, Boston Shop, Boston & Maine R.R.
CHARLES HAYDEN . . . . 87 Milk St., Boston.	IX.	Of Firm of Hayden, Stone, & Co., Bankers.
SOPHIA G. HAYDEN . . . Shirley St., Winthrop Beach, Mass.	IV.	

1890. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
FRANK HAYES . . . . . Lamborn Ave. and No. Third St., West Superior, Wis.	II.	Lessee and Manager, Superior Iron Works.
HARRY E. HAYES, A.B. . . 153 Cedar St., New York, N. Y.	VI.	With American Telephone and Telegraph Co.
SCHUYLER HAZARD . . . . Third and Smith Sts., Cincinnati, Ohio.	I.	Assistant Engineer, Cleveland, Cincinnati, Chicago, & St. Louis Ry.
FREDERICK S. HOLLIS, Ph.D. Newton Highlands, Mass.	V.	With Boston Water-Works.
S. ELLSWORTH HORTON . . Windsor Locks, Conn.	II.	Superintendent, The E. Horton & Son Co., Manufacturers of Horton Chucks.
FRANCIS H. KENDALL . . Court House, East Cambridge, Mass.	I.	Engineer for Middlesex County Commissioners.
HARRY A. KENNICOTT . . Minneapolis, Minn.	I.	Draughtsman, with Gillette-Herzog Manufacturing Co.
FRANKLIN KNIGHT . . . . Colorado City, Colo.	I.	Rector, Church of the Good Shepherd.
BERTRAM A. LENFEST . . New Haven, Conn.	II.	Instructor in Mathematics and Machine Toolwork, Boardman Manual Training High School.
ERNEST A. LE SUEUR. . . Rumford Falls, Me.	VI.	General Manager, The Electro-Chemical Co.
GEORGE B. MCCONNELL . 516 Warren St., Roxbury, Mass.	I.	With Board of Street Commissioners, City of Boston.
BERTRAM H. MANN . . . Somerset, Ky.	VI.	General Foreman of Signals, Chattanooga Division, Cincinnati, New Orleans, & Texas Pacific Ry.
FREDERICK METCALF . . . Providence, R.I.	II.	Superintendent, American Ship Windlass Co.
BURDETT MOODY . . . . . Lead, S. Dak.	I.	Engineer, Homestake and Associate Mining Companies.
STEPHEN W. MOORE . . . 905 No. Wahsatch Ave., Colorado Springs, Colo.	II.	Dealer in Bicycles and Supplies.
CHARLES NEAVE, A.M. . . 80 Broadway, New York, N.Y.	VI.	Of Firm of Fish, Richardson, & Storrow, Lawyers.
ALLAN H. NEWELL. . . . Wakefield Landing, Roberts Island, Stockton, Cal.	II.	Farming Tule Land.
NORMAN G. NIMS . . . . 8 Beacon St., Boston.	IV.	Draughtsman with Andrews, Jaques, & Rantoul, Architects.

1890. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ALMON E. NORRIS . . . . 29 Main St., Cambridgeport, Mass.	II.	Consulting Engineer, Rawson & Morrison Manufacturing Co.
CLARENCE G. NORRIS . . 45 Water St., Hyde-Park, Mass.	I.	With Percy M. Blake, Civil Engineer.
HARRY L. NOYES . . . . Buffalo, N. Y.	I.	Engineer, Buffalo Bridge and Iron Works.
JOSEPH K. NOYES . . . . 13 Ferry St., Binghamton, N. Y.	I.	Of the Firm of Joseph P. Noyes & Co., Manufacturers of Combs and Buttons.
GEORGE A. PACKARD . . . Mercur, Utah.	III.	Mining Engineer and Metallurgist, Boston & Mercur Gold Mining Co.
WILLIAM R. PEYTON . . . Superior, Wis.	II.	Treasurer, William Listman Milling Co.
WILLIAM B. POLAND . . . Indianapolis, Ind.	I.	Assistant Engineer, Maintenance of Way, Cleveland, Cincinnati, Chicago, & St. Louis Ry.
EDWARD B. RAYMOND . . Schenectady, N. Y.	VI.	Electrical Engineer, General Electric Co.
CALVIN W. RICE . . . . 8 Eaton St., Winchester, Mass.	VI.	Consulting Engineer.
KNIGHT C. RICHMOND, B.P. Crompton, R. I.	II.	Mechanical Engineer, Crompton Co.
WILLIAM Z. RIPLEY, Ph.D. Boston, Mass.	I.	Assistant Professor of Sociology and Economics, Mass. Institute of Technology; Lecturer on Anthropology, Columbia University.
HAROLD B. ROBERTS . . . 125 Milk St., Boston.	II.	Foreman, Construction Department, New England Telephone and Telegraph Co.
EDWARD ROBINSON . . . . Potsdam, N. Y.	II.	Professor of Drawing and Machine Design, Clarkson School of Technology.
ALLEN H. ROGERS . . . . Apartado 113, Matchuala, S. L. P., Mexico.	III.	Assayer, Negociacion minera Sta. Maria de La Paz.
MINNIE H. ROGERS . . . Trinity Court, Boston.	IX.	Private Tutor.
LOUIS SCHMIDT . . . . . 215 E. Fourth St., Cincinnati, Ohio.	V.	Chief Chemist, Ohio Dairy and Food Commission.
CHARLES W. SHERMAN . . 37 Langdon St., Cambridge, Mass.	I.	Assistant Engineer, Boston Water-Works.
EDMUND T. SIMPSON . . . 84 Middle St., Lowell, Mass.	V.	With Simpson & Rowland.

1890. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HOWARD C. SLATER . . . Menominee and Jefferson Sts., Milwaukee, Wis.	II.	Superintendent, Gas-Works.
WILLIAM LINCOLN SMITH . Boston, Mass.	VI.	Instructor in Electrical Engineering, Mass. Institute of Technology.
GEORGE A. SONNEMANN . . 10–12 Jamieson Block, Spokane, Wash.	III.	Consulting Mining Engineer; Lessee, Cumberland Mine (Silver City, Idaho).
MARTIN O. SOUTHWORTH . 220 W. Merrill St., Indianapolis, Ind.	VI.	Electrical Engineer. Commercial Electric Co.
SAMUEL STORROW, A.B. . . Wapiti, Colo.	I.	Manager, The Wapiti Mining Co.
BENTON STURGES . . . . 108 Dearborn St., Chicago, Ill.	IX.	In Real Estate and Mortgage Business.
THOMAS J. STURTEVANT . Harrison Square, Mass.	VI.	With Sturtevant Mill Co.
FREDERICK W. SWANTON . Bath, Me.	VI.	In Treasurer's Office, Eastern Steamboat Co.
JOHN HENRY TOWNE . . . 84 Chambers St., New York, N. Y.	IX.	With The Yale & Towne Manufacturing Co.
ELTON D. WALKER . . . . 12 Gillespie St., Schenectady, N. Y.	I.	Assistant Professor of Civil Engineering, Union College.
ROBERT T. WALKER . . . Tremont Bldg., Boston.	IV.	Draughtsman, with A. W. Longfellow, Jr., Architect.
FRANKLIN W. WHITE . . . 416 Marlborough St., Boston.	VII.	Physician.
WILLIS R. WHITNEY, Ph.D. Boston, Mass.	V.	Instructor in Sanitary Chemistry, Mass. Institute of Technology.
ARTHUR R. WILSON . . . 9 Macdonough Bldg., Oakland, Cal.	I.	Of Firm of Easton & Wilson, Engineers and Contractors.
ANDREW W. WOODMAN . . 272 Franklin St., Boston.	I.	Civil Engineer, with Harrington, Robinson, & Co.

1891.

CHARLES W. AIKEN . . . 149 Austin St., Cambridgeport, Mass.	II.	Consulting Engineer.
ROBERT S. BALL . . . . . 16 Norton Bldg., Louisville, Ky.	II.	Consulting Engineer.

1891. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
JOEL GRAY BARRI . . . . . 50 Ames Bldg., Boston.	I.	Expert in Mines and Consulting Engineer (Civil and Mining).
WILLIAM H. BASSETT . . 236 Maxfield St., New Bedford, Mass.	V.	Teacher of Chemistry, Swain Free School; Chemist, Pope's Island Manufacturing Corporation.
ADELAIDE BIRD . . . . . Chambersburgh, Pa.	VII.	Teacher of Biology, Wilson College.
JOHN H. BIRKS . . . . . Philips Sq., Montreal, Que.	II.	Of Firm of Henry Birks & Sons.
ETHEL B. BLACKWELL, M.D. 139 W. Sixty-fourth St., New York, N. Y.	VII.	Assistant in Histology, Woman's Medical College of New York Infirmary.
FREDERICK C. BLANCHARD. 303 Congress St., Boston.	II.	Secretary, Blanchard Machine Co.
THOMAS V. BOLAN, A.B. . Schenectady, N. Y.	VI.	Supervising Engineer, Construction Department, General Electric Co.
HENRY G. BRADLEE . . . 4 Post-Office Sq., Boston.	VI.	With Stone & Webster, Electrical Experts and Engineers.
HARRY C. BRADLEY . . . Boston, Mass.	I.	Instructor in Mechanical Drawing and Descriptive Geometry, Mass. Institute of Technology.
WALLACE H. BRAINERD . 1407 W. Eighty-seventh St., Chicago, Ill.	VI.	
HORACE L. BRAND . . . 32 Cedar St., Chicago., Ill.	II.	
DIXIE LEE BRYANT . . . Greensboro, N. C.	XII.	Teacher of Geology and Biology, State Normal and Industrial College.
WILLIAM P. BRYANT . . . 55 Kilby St., Boston.	X.	With Inspection Department, Boston Board of Fire Underwriters.
GEORGE W. BRYDEN . . . 33 Pearl St., Portland Me.	II.	With Megquier & Jones Co., Engineers.
FRANK H. BURTON . . . 40 Bassett St., Providence, R. I.	II.	Chief Draughtsman, Armington & Sims Engine Co.
GEORGE A. CAMPBELL, A.M. 42 Farnsworth St., South Boston.	I.	With American Bell Telephone Co.
BARNARD CAPEN, JR. . . . 104 Milk St., Boston.	VI.	With New England Telephone and Telegraph Co.
ANNE WHITE CARPENTER . 357 Pennsylvania St., Buffalo, N. Y.	V.	
HUGH B. CLEMENT, Ph.B. . 31 E. Seventeenth St., New York, N. Y.	IV.	Draughtsman with Cady, Berg, & See, Architects.

1891. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ALBERT L. CLOUGH . . . 181 Walnut St., Manchester, N. H.	VI.	General Manager, Brodie Electric Co.
FRED A. COLE . . . . . Rochester, N. Y.	II.	Superintendent of Construction and Power, Eastman Kodak Co.
HARRISON I. COLE . . . . East Boston, Mass.	II.	Draughtsman, The Atlantic Works.
REUBEN B. COLLINS . . . 398 High St., Dedham, Mass.	I.	Assistant Inspector, Metropolitan Water Board.
ROGER W. CONANT . . . 439 Albany St., Boston.	VI.	With Electrical Department, West End Street Ry. Co.
EDWARD CUNNINGHAM . . 70 Kilby St., Boston.	X.	With Samuel Cabot, Manufacturing Chemist.
HERBERT C. DAGGETT . . 66 Broadway, Lowell, Mass.	I.	Assistant Engineer, Office of Locks and Canals.
HOWARD A. DILL, B.S. . Richmond, Ind.	I.	Secretary and Treasurer, Richmond Bicycle Co.
EDWARD W. DONN, JR. . . 911 G St., N. W., Washington, D. C.	IV.	Architect.
LEWIS A. DUNHAM . . . Boundary, Wash.	I.	Superintendent, "The Bald Eagle Mine."
PAUL W. ENGLAND . . . 406 Market St., Philadelphia, Pa.	VI.	With Bell Telephone Co. of Philadelphia.
HORACE H. ENSWORTH . Hartford, Conn.	VI.	Of Firm of L. L. Ensworth & Son, Iron and Steel.
GEORGE W. FAVOR . . . 339 Fifth Ave., Pittsburgh, Pa.	III.	Manager, Sullivan Machinery Co.
HENRY A. FISKE . . . . 93 Water St., Boston.	X.	Inspector, Underwriters' Bureau of New England.
HOWARD C. FORBES . . . 4 State St., Boston.	X.	Manager of Boston Office, for Charles H. Davis, Engineering (New York, Philadelphia, and Boston).
LESTER G. FRENCH . . . 411 Pearl St., New York, N. Y.	II.	Editor, "Machinery."
FREDERICK W. FÜGER . . Governor's Island, New York, N. Y.	II.	Second Lieutenant, U. S. Infantry.
CHARLES GARRISON . . . 93 Federal St., Boston.	VI.	Treasurer and Manager, Shawmut Fuse Wire Co.
MEDOREM W. GREER . . 1000 Marquam Bldg., Portland, Oreg.	VI.	With U. S. Engineer Corps.
EDGAR L. HAMILTON . . 236 Randolph St., Chicago, Ill.	III.	President, American Roll Wrapping Paper Co.

1891. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CHARLES F. HAMMOND . . 1015 Hammond Bldg., Detroit, Mich.	I.	In Business.
WILLIAM HASKINS . . . . 25 Linden St., Waltham, Mass.	III.	Treasurer, Waltham Lumber Co.
ARTHUR E. HATCH . . . . 59 High St., Boston.	I.	Manager, Bay State Dredging Co.
HERBERT E. HATHAWAY . Providence, R. I.	V.	With Silver Spring Bleaching and Dyeing Co.
ERNEST A. HERSAM . . . Berkeley, Cal.	V.	Assistant Professor of Metallurgy, University of California.
GEORGE A. HOLMES . . . 95 Milk St., Boston.	X.	With Consolidated Fastener Co.
WALTER E. HOPTON . . . 616 Bergen Ave., Jersey City, N.J.	II.	Mechanical Engineer, Colgate & Co.
HARRY W. JORDAN . . . . Syracuse, N. Y.	V.	With Solvay Process Co.
MILTON H. KAUFFMAN . . 53 Dearborn St., Chicago, Ill.	V.	Consulting and Analytical Chemist.
THOMAS M. KEENE . . . . 624 Tremont Bldg., Boston.	I.	Of Firm of Keene & Foster, Civil Engineers.
WILLIAM F. KEENE . . . 84 Cross St., Central Falls, R. I.	I.	City Engineer.
HERBERT S. KIMBALL . . 7 Exchange Pl., Boston.	X.	Of Firm of Hall & Kimball, Architects and Mill Engineers.
MORRIS KNOWLES, 2d . . City Hall, Pittsburgh, Pa.	I.	Resident Engineer, Filtration Commission.
WILLIAM H. LAWRENCE . Boston, Mass.	IV.	Assistant Professor of Architecture, Mass. Institute of Technology.
WOODRUFF LEEMING . . . 87 Nassau St., New York, N. Y.	IV.	Architect.
WILLIAM E. LELAND . . . Fulton Bldg., New York, N. Y.	II.	With A. R. Wolff, Consulting Engineer.
ALEXANDER G. MCKENNA . Demmler, Pa.	V.	Chemist, Sterling Steel Works.
MARGARET E. MALTBY, Ph.D. Painesville, Ohio.	VIII.	Instructor, Lake Erie Seminary.
ARTHUR N. MANSFIELD . . 153 Cedar St., New York, N. Y.	VIII.	With American Telephone and Telegraph Co.
CLEMENT MARCH . . . . . Bridgeport, Conn.	I.	With American Graphophone Co.
PHILIP MARQUAND, A.B. . 13 Exchange St., Boston.	I.	Of Marquand & Stearns, Agents, Edge Moor Bridge Works.
GUY EDWARD MITCHELL . Medford, Mass.	II.	Chief Draughtsman, Motive Power Department, Boston & Maine R.R.

1891. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
FREDERICK CLOUSTON MOORE, Auburn, N. Y.	II.	Assistant General Superintendent, D. M. Osborne & Co., Manufacturers of Harvesting Machinery.
FRED F. MOORE . . . . . 40 Lincoln St., South Framingham, Mass.	I.	Draughtsman, Metropolitan Water Board.
ALEXANDER W. MOSELEY . Boston, Mass.	II.	Instructor in Mechanical Engineering, Mass. Institute of Technology.
WILLIAM MOSSMAN . . . Mattapan, Mass.	VI.	Assistant Superintendent, Mattapan Mills, The Tileston & Hollingsworth Co.
FRED E. NORTON . . . . Johannesburg, South African Republic.	II.	Mechanical Engineer, for Edw. P. Allis Co. (Milwaukee, Wis.).
GEORGE H. K. OXFORD . 24 Cottage St., Cambridge, Mass.	VI.	
WILLIAM I. PALMER . . . 103 Medford St., Charlestown, Mass.	VI.	With Palmer, Parker, & Co., Mahogany, Hardwood Lumber, and Veneers.
ALLAN RAMSAY . . . . . Cincinnati, Ohio.	VII.	Interne, Cincinnati Hospital.
CARLETON A. READ . . . Boston, Mass.	II.	Instructor in Mechanical Engineering, Mass. Institute of Technology.
WILLIAM C. RICHARDSON . P. O. Box 5282, Boston.	II.	Travelling.
CHARLES W. RICKER . . . 702 Ellicott Sq., Buffalo, N. Y.	VI.	Electrical Engineer.
WILLIAM J. ROBERTS, A.M. Pullman, Wash.	I.	Assistant Professor of Mathematics and Civil Engineering, Washington Agricultural College.
WILLARD H. ROOTS . . . 22 Lawrence Hall, Cambridge, Mass.	IX.	Student, Episcopal Theological School.
FREDERICK H. ROSE . . . 31 Central Viaduct, Cleveland, Ohio.	II.	Cleveland Chocolate and Cocoa Co.
A. FORREST SHATTUCK . . Detroit, Mich.	V.	Chief Chemist, The Solway Process Co.
FREDERICK T. SNYDER . . Keewatin, Ont.	VI.	Manager, Ottawa Gold Milling and Mining Co. (Limited).
THEODORE SPENCER . . . Filbert and Eleventh Sts., Philadelphia, Pa.	VI.	With Bell Telephone Co., of Philadelphia.
GEORGE H. SPOONER . . . 55 Kilby St., Boston.	VI.	Electrical Inspector, Boston Board of Fire Underwriters.

1891. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
SOLOMON H. STIX . . . . 1241 State St., Chicago, Ill.	IV.	Of the Firm of Friedlander, Brady, & Co., Manufacturers of Knitted Goods.
ARTHUR B. STODDARD . . Twenty-second St. and Stewart Ave., Chicago, Ill.	V.	With Chappelle Chemical Co.
JAMES SWAN . . . . . Boston, Mass.	II.	Instructor in Naval Architecture, Mass. Institute of Technology.
HENRY H. SYKES, Ph.B. . Tenth & Olive Sts., St. Louis, Mo.	VI.	Chief Engineer, Bell Telephone Co. of Missouri.
HERBERT A. THOMPSON . . 5 Cottage Pl., Middletown, Conn.	VIII.	Bicycle Builder.
CLIFFORD M. TYLER . . . 7 Exchange Pl., Boston.	II.	Treasurer, Aberthaw Construction Co.
LUIS F. VERGES . . . . . 37 Central St., Boston.	I.	In Business.
FRANCIS S. VIELÉ, A.B. . . Westinghouse Bldg., Pittsburgh, Pa.	VI.	With Standard Underground Cable Co.
HENRY H. WAIT . . . . 227 So. Clinton St., Chicago, Ill.	VI.	With Western Electric Co.
GEORGE M. WARNER . . . 11 Broadway, New York, N. Y.	VI.	Consulting and Supervising Engineer.
LEONARD C. WASON . . . 7 Exchange Pl., Boston.	VI.	President, Aberthaw Construction Co., Concrete Engineers and Contractors.
HENRY T. WEED. . . . . Court and Livingston Sts., Brooklyn, N.Y.	V.	Teacher of Physics and Chemistry, Manual Training High School.
WILLIAM H. WESTON . . . Melrose, Guysborough Co., N. S.	III.	Superintendent, Crows Nest Mining Co.
CHARLES P. WETHERBEE . Bath, Me.	II.	Ship Draughtsman, Bath Iron Works.
SALMON W. WILDER, JR. . Bellows Falls, Vt.	X.	With Fall Mountain Paper Co.
FRED A. WILSON . . . . Nahant, Mass.	II.	With J. T. Wilson, Building Contractor.
CHARLES H. WOOD . . . . 25 Davis Ave., Brookline, Mass.	II.	

1892.

CHARLES A. BEAL . . . . Harrison, N. J.	VI.	With General Electric Co. Incandescent Lamp Works.
ALICE H. BECKLER . . . . Thirteenth and Spring Garden Sts., Philadelphia, Pa.	VII.	Assistant in Biology, Philadelphia Normal School.

1892. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CHARLES H. BIGELOW . . 8 Broad St., Salem, Mass.	VI.	Inspector of Power Stations, West End Street Ry. (Boston).
PHILLIPS PAYSON BOURNE . Cambridgeport, Mass.	II.	With The George F. Blake Manufacturing Co.
STEPHEN BOWEN . . . . . South Boston, Mass.	II.	With Whittier Machine Co.
BERTHA MILLARD BROWN . Hyannis, Mass.	VII.	Teacher, State Normal School.
PHILIP M. BURBANK . . . 132 Church St., Waltham, Mass.	VI.	First Assistant in Office of City Engineer.
CHARLES M. BURNHAM . . 36 Beach St., Waltham, Mass.	VI.	With American Waltham Watch Co.
GUY J. BURNHAM . . . . Fitchburg, Mass.	X.	With Parkhill Manufacturing Co.
HARRY A. BURNHAM . . . Passaic, N. J.	II.	Mechanical Superintendent, Passaic Print Works.
SEVERANCE BURRAGE . . . La Fayette, Ind.	VII.	Instructor in Sanitary Science, Purdue University.
HUBER D. CARD . . . . . 807 Main St., Willimantic, Conn.	XII.	City Civil Engineer, Putnam and Willimantic.
RAUL DE R. CARVALHO . Amparoda Barra Mansa, Rio de Janeiro, Brazil.	IX.	Coffee Planter.
DOUGLAS A. CATER, M.D. New York, N. Y.	II.	Physician, Post Graduate Hospital.
CHARLES H. CHASE . . . Tufts College, Mass.	VI.	Instructor in Shopwork, Tufts College.
RICHARD D. CHASE . . . 15 Monroe Pl., Brooklyn, N. Y.	XI.	Assistant Civil Engineer, Department of City Works.
ALBERT K. CHURCH . . . McKeesport, Pa.	V.	With National Tube Works Co.
LEWIS P. CODY . . . . . 9 So. Division St., Grand Rapids, Mich.	VI.	President and Treasurer, Grand Rapids Electric Co.
CHARLES P. COGSWELL, JR. Buzzards Bay, Mass.	I.	With Roadway Department, New York, New Haven, & Hartford R. R.
JOHN M. COLBY, JR. . . . Second St., Everett, Mass.	II.	With New England Structural Co.
JOSHUA CRANE, JR., A.B. . Tremont Bldg., Boston.	VI.	Electrical Expert and Consulting Engineer.
JOHN A. CURTIN . . . . . Tremont Bldg., Boston.	I.	Attorney-at-law.

1892. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
GEORGE E. DADMUN, A.B. 1038 Drexel Bldg., Philadelphia, Pa.	II.	Engineer and Manager, Philadelphia Office, Charles H. Davis of New York; General Consulting Engineer.
GORHAM DANA . . . . . 93 Water St., Boston.	I.	Inspector, The Underwriters' Bureau of New England.
W. HARTLEY DENNETT . Richardson Park, Dorchester, Mass.	IV.	Architect.
LOUIS DERR, M.A. . . . . Boston, Mass.	VI.	Instructor in Physics, Mass. Institute of Technology.
MARGARET E. DODD . . . 58 Townsend St., Roxbury, Mass.	VII.	Teacher of Sciences, Woodward Institute (Quincy, Mass.).
WALTER B. DOUGLASS . . East Everett, Mass.	I.	Chief Engineer and General Manager, New England Structural Co.
HENRY C. DRESSER . . . Charlotte, N. C.	II.	Superintendent, Louise Mills.
BARRON P. DU BOIS . . . Care Navy Pay Office, U. S. S. Albatross, San Francisco, Cal.	VI.	Assistant Paymaster, U. S. N.
GEORGE F. ELDRIDGE . . Camden, N. J.	V.	With Camden Iron Works.
SUMNER B. ELY . . . . . Allegheny, Pa.	II.	Assistant in Steel Car Department, Schoen Pressed Steel Co.
LOGAN FELAND . . . . . 156 Fifth Ave., New York, N. Y.	IV.	With Manhattan Concrete Co.
HENRY A. FISKE	VI.	(See Class of 1891.)
HOWARD C. FORBES . . .	VI.	(See Class of 1891.)
GAYLE T. FORBUSH . . . 30 Kilby St., Boston.	X.	Special Agent, German American Insurance Co.
FREDERICK L. FRANCIS . . Fitchburg, Mass.	IV.	With H. M. Francis, Architect.
ALLEN FRENCH . . . . . 200 Commonwealth Ave., Boston.	IX.	Student.
EDWARD R. FRENCH . . . 75 Murray St., Elizabeth, N. J.	VI.	Electrical Engineer, Suburban Electric Co.
CHARLES E. FULLER . . . Boston, Mass.	II.	Instructor in Mechanical Engineering, Mass. Institute of Technology.
EDWARD P. GILL . . . . P. O. Box 626, Baltimore, Md.	IV.	In Lumber Business.
HOWARD GILMORE . . . . 58 Sawyer St., Dorchester, Mass.	II.	Manufacturer of Incandescent Lamps and Electrical Specialties, Gilmore Electric Co.

1892. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
GEORGE H. GOODELL . . Susquehanna, Pa.	II.	Mechanical Engineer, Erie R. R. Co.
WILLIAM P. GRAY . . . . 1022 W. Cary St., Richmond, Va.	VI.	Clerk.
WILLIAM W. GREEN . . . City Hall, Chicago, Ill.	I.	Assistant Engineer, Street Department, City of Chicago.
CHARLES B. GRIMES . . . Chicago, Ill.	V.	Superintendent, Western Factory, The Carter's Ink Co.
EDWARD C. HALL, JR. . . Mine Centre, Ont., and Rainy Lake, Minn.	II.	Mechanical and Mining Engineer.
HARRY A. HARWOOD . . 386 Washington St., Boston.	I.	With Harwood Brothers.
ALBERT S. HEYWOOD . . Atlanta, Ga.	VI.	Engineer, General Electric Co.
JOHN D. HILLIARD, JR. . 204 Union St., Schenectady, N. Y.	VI.	With General Electric Co.
FRANCIS C. HOLMES . . . North Plymouth, Mass.	IX.	With Plymouth Cordage Co.
PRESCOTT A. HOPKINS, S.M. Philadelphia, Pa.	IV.	Assistant Professor of Architecture, Drexel Institute.
FREDERICK J. HOXIE . . . Phenix, R. I.	VI.	President Hoxie Bros. Co.
W. SPENCER HUTCHINSON . Gibbonsville, Idaho.	III.	Local Manager, American Developing and Mining Co.
GEORGE H. INGRAHAM . . 6 Beacon St., Boston.	IV.	Architect.
ARTHUR L. JACOBS . . . . Old Court House, Boston.	VI.	Deputy Inspector, Wire Department, City of Boston.
JESSE F. JOHNSON . . . . Montreal, Que.	X.	With Hamilton Powder Co.
WILLIAM A. JOHNSTON . . Boston, Mass.	II.	Instructor in Mechanical Engineering, Mass. Institute of Technology.
WILLIAM R. KALES. . . . Cleveland, Ohio.	II.	Draughtsman, Brown Hoisting and Conveying Machine Co.
WILLIAM R. KENDALL . . 307 Delaware St., Kansas City, Mo.	VI.	Vice-President, William W. Kendall Boot and Shoe Co.
ARMAND D. KOCH . . . . Hotel Foyot, 33 Rue de Tourron, Paris, France.	IV.	Student, École des Beaux-Arts.

1892. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WILLIAM H. LANE . . . . 16 Smith St., Brooklyn, N. Y.	VI.	Engineer, New York & New Jersey Telephone Co.
ELISHA LEE, JR. . . . . Port-of-Spain, Trinidad, W. I.	I.	
WILLIAM W. LOCKE . . . 40 Clinton St., Brooklyn, N. Y.	XI.	Sanitary Engineer, Department of Health, City of Brooklyn.
JOSEPH B. LUKES . . . . 213 Fourteenth St., Washington, D. C.	VI.	With Sargent & Lunby, Mechanical and Electrical Engineers (Monadnock Block, Chicago, Ill.).
JOHN P. LYON . . . . . 21Cortlandt St., NewYork, N. Y.	I.	Assistant Engineer, Erie R. R.
WALLACE E. MCCAW . . Macon, Ga.	VI.	President, McCaw Manufacturing Co.
ELMER G. MANAHAN . . . 3 Mt. Vernon St., Boston.	XI.	Assistant, Metropolitan Water Board.
LAURENCE B. MANLEY . . 116 Mt. Vernon St., West Roxbury, Mass.	I.	Assistant Engineer, Boston Transit Commission (20 Beacon Street, Boston).
R. HERBERT MANSFIELD, JR. Hoboken, N. J.	VI.	Secretary and Treasurer, Ward Leonard Electric Co.; Secretary and Treasurer, Carpenter Enamel Rheostat Co.
ALBERT P. MATHEWS . . . Columbia University, New York, N.Y.	VII.	
GEORGE H. MAY . . . . . 11 Broadway, New York, N. Y.	V.	First Assistant Chemist, National Pegamoid Co.
GEORGE A. MERRILL . . Boston, Mass.	XI.	With Mass. Highway Commission.
WILLIAM H. MESSENGER . One Hundred and Seventy-seventh St. and Third Ave., New York, N. Y.	II.	With Department of Street Improvements of the 23d and 24th Wards.
LEONARD METCALF . . . Concord, Mass.	I.	Civil Engineer (89 State St., Boston).
HERBERT S. MILLER . . . 1025 E. Jersey St., Elizabeth, N. J.	VI.	Secretary and Electrical Engineer, Diehl Manufacturing Co.
LILLY MILLER . . . . . Medford, Mass.	V.	Assistant Chemist, Mass. State Board of Health.
HERBERT R. MOODY . . . Winsted, Conn.	V.	Instructor in Science, Gilbert School.
FREDERICK CAMPBELL MOORE 95 Pearl St., Hartford, Conn.	X.	Insurance Inspector, Factory Insurance Association.

1892. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ASA HALL MORRILL . . . Woonsocket, R. I.	I.	Assistant Roadmaster, Worcester Division, New York, New Haven, & Hartford R.R.
WALTER M. NEWKIRK . . 36 Moffat Block, Detroit, Mich.	II.	Engineer, with Smith & Conant, Consulting Mechanical and Electrical Engineers.
FRANK E. NEWMAN . . . 925 Chestnut St., Philadelphia, Pa.	IV.	With Frank Miles Day & Bro., Architects.
ARTHUR J. OBER . . . . West Medford, Mass.	I.	U. S. Inspector on River and Harbor Work, Newport District.
HAMILTON OTIS . . . . . Cazadero, Sonoma Co., Cal.	I.	Rancher.
CHARLES F. PARK . . . . Boston, Mass.	II.	Instructor in Mechanical Engineering, Mass. Institute of Technology.
J. SCOTT PARRISH . . . . Richmond, Va.	II.	Acting Treasurer, Richmond Cedar Works; Secretary, Gulf Red Cedar Co.
FRANK EDSON PERKINS . Care Seligman Frères et Cie, 32 Boulevard Haussemann, Paris, France.	IV.	Student, École des Beaux-Arts.
JOHN C. PERRY . . . . . Lynn, Mass.	II.	
HENRY M. PHILLIPS . . . 23 Bell St., Stamford, Conn.	VI.	Electrical Engineer, Yale Lock Manufacturing Co.
ARTHUR G. PIERCE . . . 3 Head Pl., Boston.	VI.	Superintendent of Stations, Edison Electric Illuminating Co.
ARTHUR W. PIERCE . . . P. O. Box 168, Bennington, N. H.	VI.	In charge of Electric Plant for the Goodell Co. (Antrim, N. H.).
MACY S. POPE . . . . . 31 Milk St., Boston.	I.	Inspector, Factory Mutual Fire Insurance Cos.
DANA M. PRATT . . . . . Brookline, Mass.	I.	With French & Bryant, Civil Engineers.
ARTHUR G. RANLETT . . . 564 Fourteenth St., Oakland, Cal.	III.	
FREDERICK L. RHODES . . 42 Farnsworth St., South Boston.	VI.	With American Bell Telephone Co.
ANDREW R. ROBERTSON . . 8 Park Circus Pl., Glasgow, Scotland.	II.	With Messrs. Watson, Laidlaw, & Co., Engineers.
DWIGHT P. ROBINSON, A.B. 308 No. Summer St., Nashville, Tenn.	VI.	Representing Stone & Webster, Electrical Experts and Engineers (Boston).

1892. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WILLIAM M. ROSEWATER, 556 Woodland Ave., Cleveland, Ohio.	II.	Draughtsman, The McMyler Manufacturing Co.
GEORGE F. ROWELL, 38 Clinton St., Brooklyn, N. Y.	I.	Assistant Sanitary Engineer, Health Department, City of Brooklyn.
HORACE F. RUGGLES, 77 Oliver St., Boston.	II.	Engineer and Contractor, Agent, Weston Engine Co.
WARD M. SACKETT, C.E., 203 Washington St., Chicago, Ill.	VI.	With Chicago Telephone Co.
HENRY J. SAGE, B.A., Rochester, Pa.	VI.	Electrical Engineer.
OSCAR F. SAGER, Lenox St., Brockton, Mass.	II.	Teacher of Manual Training, Brockton High School.
ALBERT F. SARGENT, JR., 425 Main St., Malden, Mass.	I.	With A. F. Sargent, Civil Engineer, Surveyor, and Conveyancer.
RUSSELL SELFRIDGE, 137 W. Fifty-seventh St., New York, N. Y.	IX.	
FRANK C. SHEPHERD, 20 Beacon St., Boston.	XI.	Assistant Engineer, Boston Transit Commission.
LE ROY K. SHERMAN, 225 So. Leavitt St., Chicago, Ill.	I.	Assistant Engineer, Chicago Sanitary Drainage Canal.
HARRY D. SHUTE, Pittsburgh, Pa.	VI.	With Westinghouse Electric and Manufacturing Co.
THEODORE H. SKINNER, 160 Fifth Ave., New York, N. Y.	IV.	With McKim, Mead, & White, Architects.
ARTHUR C. SMITH, Waltham, Mass.	V.	With W. E. Bright.
HENRY P. SPAULDING, 25 Beacon St., Boston.	VI.	Artist.
RALPH H. SWEETSER, Everett, Pa.	III.	Superintendent, Everett Furnace.
GEORGE P. TALLANT, Tallac, Lake Tahoe, Cal.	IX.	
ROBERT R. TAYLOR, Tuskegee, Ala.	IV.	Teacher, Tuskegee Normal and Industrial School.
WILLIAM C. THALHEIMER, Everett, Mass.	I.	Assistant Engineer, New England Structural Co.
WALTER B. TROWBRIDGE, 125 Kingston St., Boston.	II.	Treasurer and General Manager, Eppler Welt Machine Co.
ROSS F. TUCKER, 156 Fifth Ave., New York, N. Y.	IV.	Manager, Manhattan Concrete Co.

1892. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
GEORGE W. VAILLANT . . 331 W. Seventy-eighth St., New York, N. Y.	III.	With Mannesmann Tube Co.
JOHN F. VINING . . . . . South Weymouth, Mass.	IV.	Architect.
THOMAS C. WALES, JR. . . 42 Farnsworth St., South Boston.	VI.	With American Bell Telephone Co.
FRANCIS WALKER, Ph.D. . 815 No. Tejon St., Colorado Springs, Colo.	IX.	Professor of Political and Social Science, Colorado College.
CHARLES F. WALLACE . . 4 Post-Office Sq., Boston.	VI.	With Stone & Webster, Electrical Experts and Engineers.
MURRAY WARNER . . . . 1490 Old Colony Bldg., Chicago, Ill.	II.	Engineer, New England Engine Co.
JOSEPH A. WARREN . . . Cumberland Mills, Me.	XI.	With S. D. Warren & Co.
CHARLES C. WATERMAN . 153 Cedar St., New York, N. Y.	VI.	Assistant Electrician, American Telephone and Telegraph Co.
RICHARD WATERMAN, JR. . Ingleside Ave. & Fifty-fourth St., Chicago, Ill.	IX.	Principal, Charles Kozminski School.
HENRY S. WEBB . . . . . South Bethlehem, Pa.	VI.	Instructor in Electrical Engineering, Lehigh University.
EDWARD C. WELLS . . . 3 Wells Bldg., Quincy, Ill.	II.	Of the Firm of Wells & Adams, Farm Loans.
GEORGE V. WENDELL . . Albert str., 26 I, Leipsic, Germany.	VIII.	Studying abroad.
FRANK T. WESTCOTT, B.P. North Attleboro, Mass.	I.	Civil Engineer.
ARTHUR M. WORTHINGTON Harrison Ave., Boston.	VII.	House Physician, Boston City Hospital.

1893.

FREDERIC B. ABBOTT . . 256 Broad St., Lynn, Mass.	VI.	Of F. B. Abbott Co., Shoe Manufacturers.
ORTON W. ALBEE . . . . P. O. Box 1606, Philadelphia, Pa.	III.	Assistant to Inspector of Ordnance, U. S. A.
HERBERT W. ALDEN . . . Park and Laurel Sts., Hartford, Conn.	II.	Assistant Mechanical Engineer, with Motor Carriage Department, Pope Manufacturing Co.

1893. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CHARLES V. ALLEN . . . 311 Linden Ave., Pittsburgh, Pa.	VI.	With Westinghouse Electric and Manufacturing Co.
JOHN G. ANTHONY . . . . 207 No. Sixth St., Great Falls, Mont.	III.	Assistant Chemist, Boston & Montana Copper Co.
FRANK S. BADGER . . . . 66 Broadway, Lowell, Mass.	I.	With Proprietors of the Locks and Canals on Merrimack River.
FREDERIC W. BAKER . . Baltimore, Md.	II.	Hull Draughtsman, The Columbian Iron Works and Dry Dock Co.
MINARD T. BARBOUR . . . Hotel Windermere, Chicago, Ill.	II.	With Crane Elevator Co. (219 Jefferson St.).
WILLIAM T. BARNES . . . 773 Broadway, South Boston.	I.	With George S. Rice & George E. Evans, Civil and Hyraulic Engineers (95 Milk St., Boston).
ROY H. BEATTIE . . . . 573 High St., Fall River, Mass.	I.	Contractor.
ALBERT F. BEMIS . . . . 89 State St., Boston.	I.	Secretary, Bemis Brother Bag Co.; President, Home Cotton Mills Co.
MAURICE B. BISCOE . . . 53 State St., Boston.	IV.	Draughtsman with Peabody & Stearns, Architects.
EDMUND E. BLAKE . . . 204 So. Tryon St., Charlotte, N. C.	II.	With Charlotte Machine Co.
GROSVENOR TARBELL BLOOD, 125 Milk St., Boston.	VI.	With American Bell Telephone Co.
SAMUEL N. BRAMAN . . . Wayland, Mass.	II.	With Motive Power Department, Boston & Maine R. R.
JOHN CLIFFORD BROWN . 15 Dey St., New York, N. Y.	VI.	With New York Telephone Co.
ERNEST C. BRYANT, B.S. . Middlebury, Vt.	I.	Professor of Physics and Mathematics, Middlebury College.
LEONARD B. BUCHANAN . 161 High St., Boston.	VI.	With Stone & Webster, Electrical Experts and Engineers.
CHARLES E. BUCHHOLZ . . Green and Washington Sts., Buffalo, N. Y.	I.	Inspecting Engineer, Terminal Railway of Buffalo.
ARTHUR A. BUCK . . . . Washington, D. C.	VI.	Third Assistant Examiner, U. S. Patent Office.
JOHN R. BURKE . . . . . 131 State House, Boston.	I.	With Board of Harbor and Land Commissioners of Massachusetts.
DENNIS E. CALLAHAN . . 710 Albany St., Boston.	VI.	Superintendent, Third District, Eastern Division, Boston Water Department.
EDWARD B. CARNEY . . . Lowell, Mass.	II.	With City Engineer.

1893. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WILLIAM W. CARTER . . . Dedham, Mass.	X.	
HARRY L. CLAPP . . . . Washington, D. C.	X.	Assistant Examiner, U. S. Patent Office.
WILFRED A. CLAPP . . . . 24 Salcombe St., Dorchester, Mass.	I.	With Metropolitan Water Board (at Northboro, Mass.).
JOHN S. CODMAN, A.B. . . 57 Marlborough St., Boston.	VI.	With American Bell Telephone Co. (42 Farnsworth St., South Boston).
CHARLES NOURSE COOK . . Providence, R. I.	X.	With Silver Spring Bleaching and Dyeing Co.
NATHANIEL R. CRAIGHILL. 30 Tremont St., Boston.	II.	Draughtsman.
WILLIAM W. CROSBY . . . 266 Mt. Vernon St., Lowell, Mass.	II.	Superintendent, Otis Allen & Son; Professor of Mechanics, Lowell Textile School.
COURTLAND R. DARROW . 140 Grand St., Waterbury, Conn.	I.	With W. G. Smith, Civil Engineer.
ALBERT G. DAVIS . . . . Washington Loan & Trust Bldg., Washington, D. C.	VI.	Electrical Expert and Solicitor of Patents, Professor of Electrical Engineering, Bliss School of Electricity.
CAKLETON E. DAVIS . . . 95 Milk St., Boston.	I.	With George S. Rice & George E. Evans, Civil and Hydraulic Engineers.
HERBERT N. DAWES . . . 451 Atlantic Ave., Boston.	II.	With S. C. Nightingale & Childs, Magnesia Pipe and Boiler Covering and Road Building Machinery.
GEORGE K. DEARBORN . . 416 Seventh Ave., Pittsburgh, Pa.	IX.	With American Telephone and Telegraph Co.
CHARLES D. DEMOND . . . Boston, Mass.	III.	Assistant to Professor Richards, Massachusetts Institute of Technology.
EDWARD D. DENSMORE . . 7 Exchange Pl., Boston.	VI.	Of the Firm of Densmore & Le Clear, Engineers.
FREDERICK N. DILLON . . Fitchburg, Mass.	V.	With D. M. Dillon, Boiler Manufacturer.
LAURENCE B. DIXON . . . 242 So. Jefferson St., Chicago, Ill.	VI.	With Western Electric Co.
SAMUEL D. DODGE . . . . 3 Mt. Vernon St., Boston.	I.	With Massachusetts Metropolitan Water Board.
PETER F. DOLAN . . . . . 185 Chelsea St., East Boston.	VI.	Electrical Engineer, Wire Department, City of Boston (Old Court House).
THEODORE T. DORMAN . . Washington, D. C.	X.	Assistant Examiner, U. S. Patent Office.

1893. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
JAMES A. EMERY . . . . . 272 Franklin St., Boston.	I.	With Harrington, Robinson, & Co.
WILLIAM ESTY, M.A. . . . California Ave., Urbana, Ill.	VI.	Assistant Professor of Electrical Engineering, University of Illinois.
ARTHUR FARWELL . . . . Care Consolidated Bank, 450 West Strand, London, England.	VI.	Musician.
FREDERIC H. FAY, S.M. . 60 City Hall, Boston.	I.	With Engineering Department, City of Boston.
FRED B. FORBES . . . . . 502 State House, Boston.	V.	First Assistant Chemist, State Board of Health Laboratory.
ARTHUR E. FOWLE . . . . Aurora, Ill.	X.	Chemical Engineer, with Jobbins & Van Ruymbeke.
WALTER L. FRISBIE . . .	II.	
WILLIAM BURT GAMBLE . . 389 Woodward Ave., Detroit, Mich.	IX.	Secretary, Cement Creek Gold Mining Co. (Silverton, Colo.).
WALLACE K. GAYLORD . . 146 Terrace Drive, Pasadena, Cal.	V.	Instructor in Chemistry, Throop Polytechnic Institute.
HOWARD GILMORE	VI.	(See Class of 1892.)
MARVINE GORHAM . . . . Buffalo N. Y.	II.	Mechanical Engineer, with Eagle Iron Works.
FREDERICK W. HADLEY . . Arlington Heights, Mass.	VI.	With West End Street Ry. Co. (Boston).
EDW. MCKIM HAGAR, M.M.E. 554 The Rookery, Chicago, Ill.	II.	Manager, Chicago Office, Southwark Foundry and Machine Co. of Philadelphia.
GEORGE T. HANCHETT . . 1 Nassau St., New York, N. Y.	VI.	Electrical and Mechanical Engineer.
FREDERIC H. HARVEY . . Galt, Cal.	III.	Mining Engineer and Metallurgist, Managing the Estate of the late O. Harvey, M.D.
J. FRED. HINCKLEY . . . Baltimore, Md.	X.	Chemist and Overseer of Glycerine Plant, for C. Lipps, Soap Manufacturer.
WILLIAM G. HOUCK . . . 42 Delaware Ave., Buffalo, N. Y.	I.	Structural Engineer, Bureau of Buildings, Department of Public Works.
FREDERICK H. HOWLAND . Providence, R. I.	IX.	With "Providence Journal."
DANIEL D. JACKSON . . . Flatbush Ave. and Eastern Parkway, Brooklyn, N. Y.	V.	Chemist, Department of City Works, Division of Water Supply.

1893. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
LAWRENCE S. JAMES . . . 32 Hawley St., Boston.	V.	Assistant State Inspector of Illuminating Gas and Gas Meters.
ARTHUR H. JAMESON . . . South Chicago, Ill.	V.	Chemist, Cleveland Linseed and Oil Co.
SIMEON C. KEITH, JR. . . . 8 No. Market St., Boston.	VII.	Of the firm of O. Douglass Butter Culture Co.; Lecturer on Industrial Biology, Mass. Institute of Technology.
ERVIN KENISON . . . . . Boston, Mass.	II.	Instructor in Mechanical Drawing and Descriptive Geometry, Mass. Institute of Technology.
FREDERIC H. KEYES . . . Boston, Mass.	II.	Instructor in Mechanical Engineering, Mass. Institute of Technology.
WARREN D. KING . . . . Peabody, Mass.	VI.	Electrical Engineer, Broad Cove Coal Co. Limited (Mason Bldg., Boston).
WILLIS T. KNOWLTON . . . 60 Cedar St., Malden, Mass.	I.	Civil Engineer, with Edward P. Adams, Landscape Architect and Civil Engineer (1039 Exchange Bldg., Boston).
WILLIAM F. LAMB . . . . 26 Seventh Ave., Pittsburgh, Pa.	VI.	With American Telephone and Telegraph Co.
WALLACE C. LAMBERT . . . 53 State St., Boston.	I.	With J. R. Worcester, Consulting Engineer.
HARRY N. LATEY . . . . . 3625 Finney Ave., St. Louis, Mo.	VI.	Engineer, Westinghouse Electric and Manufacturing Co.
HARRY M. LATHAM . . . . Newark, N. J.	II.	With Crocker-Wheeler Electric Co.
HERBERT LEWIS, M.A. . . Washington, D. C.	VI.	Assistant Examiner, U. S. Patent Office.
JOHN W. LOGAN . . . . . Bala, Pa.	II.	With Pennsylvania Iron Works Co. (Philadelphia).
GEORGE E. MCQUESTEN . . 27 Kilby St., Boston.	VI.	In Business.
HEIICHIRO MAKI . . . . . Dotemachi, Kioto, Japan.	VI.	Consulting Electrical Engineer, Westinghouse Electric and Manufacturing Co., Pittsburgh, Pa. Hŏshyu Traction Co., Beppu Bungo, Japan. Chyn̄bon Traction Co., Kakogowa, Harima, Japan.
WILLARD A. MARCY . . . Newton Upper Falls, Mass.	II.	With Pettee Machine Co.
FRANK H. MERRILL . . . 556 Banning St., Los Angeles, Cal.	X.	Superintendent, Los Angeles Soap Co.
BENJAMIN M. MITCHELL . . Passaic, N. J.	II.	Mechanical Engineer, Manhattan Rubber Co., Resident Director, New York Lubricating Oil Co.

1893. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HENRY A. MORSS . . . . . 79 Cornhill, Boston.	VI.	With Morss & Whyte, Wire Workers.
HENRY W. NICHOLS . . . Chicago, Ill.	XII.	Assistant Curator of Geology, Field Columbian Museum.
CHARLES L. NORTON . . . Boston, Mass.	VI.	Instructor in Physics, Mass. Institute of Technology.
FRANCIS C. NORTON . . . Rockland, Me.	IX.	With the Cobb Lime Co.
CHARLES L. NUTTER . . . . East Bridgewater, Mass.	II.	Mechanical Engineer, Carver Cotton-Gin Co.
CECIL E. PAINE . . . . . Bath, Me.	II.	With Hyde Windlass Co.
JOSEPH Y. PARCE, JR. . . . Denver, Colo.	II.	Teacher, Manual Training High School.
OREN E. PARKS . . . . . 82 No. Elm St., Westfield, Mass.	I.	Town Engineer.
HARRY M. PHILLIPS . . . . 133 William St., New York, N. Y.	II.	Secretary and Treasurer, Columbian Ball Nozzle Co.
LEO W. PICKERT . . . . . Granite St., South Boston.	V.	Chemist, American Sugar Refining Co.
JAMES H. REED, JR. . . . . 124 Pearl St., Boston.	VI.	With National Sewing Machine Co.
WILLIAM S. RESOR . . . . 314 Vine St., Cincinnati, Ohio.	VI.	Inspector, American Telephone and Telegraph Co.
HARRY L. RICE . . . . . Norfolk, Va.	X.	Superintendent City Gas Co.
FRANK D. RICHARDSON . . 15 Dey St., New York, N. Y.	II.	With American Telephone and Telegraph Co.
HAROLD A. RICHMOND. . . Edge Hill Road, Brookline, Mass.	II.	Treasurer of "The Ball Bearing Co." (Watson St., Boston).
FENWICK F. SKINNER . . . Boston, Mass.	I.	In City Engineer's Office, Park Department, City of Boston.
A. BLAKELEY SMITH . . . . 24 Davis St., Providence, R. I.	IX.	With Albert W. Smith, Dealer in Foreign and Domestic Wools, branch office (125 Federal St., Boston).
FREDERICK D. SMITH . . . 25 Waverly St., Malden, Mass.	I.	Assistant Engineer, Metropolitan Sewerage Commission.
JOHN I. SOLOMON . . . . . 136 Liberty St., New York, N. Y.	VI.	With Bryan-Marsh Company, Manufacturers of Incandescent Lamps.
J. RAMSEY SPEER . . . . Pittsburgh, Pa.	II.	Manager Blast Furnace Department, Shoenberger Steel Co.
CHARLES M. SPOFFORD . . . Boston, Mass.	I.	Instructor in Civil Engineering, Mass. Institute of Technology.
GEORGE W. STOSE . . . . . Washington, D.C.	I.	Editor of Geologic Maps, U. S. Geological Survey.

1893. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
LOVELL BAKER STOWE . . . Y. M. C. A. Bldg., Burlington, Vt.	VI.	With New England Telephone and Telegraph Co.
FRED B. STUDLEY . . . . . North Duxbury, Mass.	VI.	
FREDERICK C. SUTTER . . . Pittsburgh, Pa.	VI.	With Westinghouse Electric and Manufacturing Co.
WALTER I. SWANTON . . . . Kneeland St., Boston.	I.	Bridge Inspector, Boston & Albany R. R. Co.
KILBURN S. SWEET . . . . Boston, Mass.	I.	Instructor in Civil Engineering, Mass. Institute of Technology.
CHARLES WILSON TAINTOR . 123 Mulberry St., Springfield, Mass.	VI.	Travelling.
CHARLES M. TAYLOR . . . Weymouth Heights, Mass.	II.	
WINTHROP P. TENNEY . . 85 Water St., Boston.	VI.	With Scull & Field, Insurance.
ALFRED C. THOMAS . . . 15 Dey St., New York, N. Y.	VI.	With New York Telephone Co.
PERCY H. THOMAS . . . . East Pittsburgh, Pa.	VI.	With Bureau of Engineering and Design.
WINTHROP L. TIDD . . . . Taunton, Mass.	II.	With Oakland Mills.
JOHN F. TOMFOHRDE . . . 24 Mt. Vernon St., Charlestown, Mass.	II.	Counsellor-at-law.
CHARLES A. TRIPP . . . . P. O. Box 20, Hudson, Mass.	VI.	Hudson Electric Manufacturing Co., Manager, Municipal Light & Power Station.
WILLIAM A. TUCKER . . . Lake Linden, Mich.	III.	With Calumet & Hecla Mining Co.
LOUIS B. VINING . . . . . 534 Columbus Ave., Boston.	VI.	With Gamewell Fire Alarm Telegraph Co. (Newton Upper Falls, Mass.).
A. B. WADSWORTH, M.D. . St. Luke's Hospital, Cathedral Heights, New York, N. Y.	VII.	Physician.
S. PAYSON WALDRON . . . Steelton, Pa.	I.	With Pennsylvania Steel Co.
CHARLES R. WALKER . . . 39 Lake View Park, Rochester, N. Y.	V.	Chemist, Eastman Kodak Co.
GEORGE L. WALKER, B.S. . 234 W. One hundred and fourth St., New York, N. Y.	I.	Master Mechanic, Street Cleaning Department, New York City.
FREDERIC A. WALLACE . . Lawrence, Mass.	II.	Chief Engineer, Pacific Mills.

1893. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ROBERT N. WALLIS . . . . Fitchburg, Mass.	IX.	Treasurer, Fitchburg & Leominster Street Ry.
HARRY C. WATERMAN . . . 55 Kilby St., Boston.	IV.	Draughtsman with J. Williams Beal, Architect.
S. EDGAR WHITAKER, A.M. 58 Oliver St., Fitchburg, Mass.	VI.	Electrical Contractor.
PARKER H. WILDER . . . 215 W. Fourth St., Cincinnati, Ohio.	VI.	Manager, Cincinnati Gas Saving Co.
JONATHAN E. WOODBRIDGE 253 Broadway, New York, N. Y.	VI.	Associate Editor, "Electrical World."
HENRY T. WOODS . . . . 31 State St., Boston.	II.	Connected with Sturtevant, Norton, & Co., Wholesale Coal Merchants.
GEORGE M. YORKE . . . . 105 Quincy St., Chicago, Ill.	VI.	With American Telephone and Telegraph Co.

1894.

CHARLES G. ABBOT, S.M. Washington, D. C.	VIII.	Aid Acting in Charge, Astrophysical Observatory, Smithsonian Institution.
RALEIGH B. ADAMS . . . 2 Gleason St., Dorchester, Mass.	X.	With Boston Belting Co.
GEORGE H. ANDERSON . . 176 High St., Newburyport, Mass.	X.	Assistant Chemist, Carnegie Steel Co., Limited, Lucy Furnaces (Pittsburgh, Pa.).
EDMUND L. ANDREWS . . 105 Quincy St., Chicago, Ill.	VI.	Inspector, American Telephone and Telegraph Co.
FRED C. BAKER . . . . . 107 Adams St., Waltham, Mass.	II.	Draughtsman, The George F. Blake Manufacturing Co. (East Cambridge).
GEORGE E. BARSTOW . . . 416 Union St., Lynn, Mass.	II.	Designer for E. E. Winkley & Co., Mechanical Engineers.
HOWARD R. BARTON . . . 153 Cedar St., New York, N. Y.	VI.	With American Telephone and Telegraph Co.
HARRY R. BATES . . . . North Weymouth, Mass.	Y.	Chemist, Bradley Fertilizer Co.
WALTER V. BATSON . . . 3 Hamilton Pl., Boston.	VI.	With Hollis French, Consulting Engineer.
CHARLES BURR BEACH . . 1183 Locust St., Dubuque, Iowa.	X.	Chemical Engineer, J. Beach & Sons, Soap Manufacturers.
IRVING EVERETT BEACH . . Lawrence, Mass.	V.	Of Beach Soap Co.
NORWIN S. BEAN . . . . . 23 Prospect St., Manchester, N. H.	VI.	With Second National Bank.
VALLETTE L. BENEDICT . . 722 Union St., Shenectady, N. Y.	VI.	With General Electric Co.

1894. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HEREFORD BERRY . . . . 511 W. Thirteenth St., New York, N. Y.	VI.	With The Eureka Tempered Copper Works.
GROSVENOR T. BLOOD, S.B.	II.	(See Class of 1893.)
CHARLES R. BOSS . . . . 34 Broad St., New London, Conn.	IX.	Manufacturer.
WILLIAM H. BOVEY . . . 12 So. Thirteenth St., Minneapolis, Minn.	VI.	With Washburn-Crosby Co., Merchant Millers.
S. ALEC BREED . . . . . 9 Portland Street, Lynn, Mass.	II.	Superintendent of Mill, S. N. Breed & Co.
WALTER V. BROWN . . . . 19 W. Twenty-first St., New York, N. Y.	VI.	With Pattison Bros., Electrical Engineers.
WILLIAM W. CARTER, S.B. .	VI.	(See Class of 1893.)
MASON S. CHACE . . . . . Newport News, Va.	II.	Assistant Inspector of Battleships. Newport News Shipbuilding and Dry Dock Co.
JOHN WINSLOW CHAPMAN, JR. 240 Laurel St., Hartford, Conn.	II.	Draughtsman, Pope Manufacturing Co., Motor Carriage Department.
NATHAN C. W. CHAPMAN . 19 Franklin St., Providence, R. I.	II.	Draughtsman, Brown & Sharpe Manufacturing Co.
HAROLD M. CHASE . . . . Wilmington, N. C.	X.	In charge of Dyeing Department, Wilmington Cotton Mills.
ALAN A. CLAFLIN . . . . Littleton, Mass.	V.	Superintendent, Avery Chemical Co.
EDWARD D. CLARKE . . . 249 Linwood Ave., Buffalo, N. Y.	VI.	Superintendent, Buffalo Bolt Co.
FRED H. CLARKE . . . . City Hall, Boston.	I.	With City Engineer, City of Boston.
ARTHUR A. CLEMENT . . . Room 211, Produce Exchange, New York, N. Y.	X.	Chemist, W. J. Wilcox Lard and Refining Co. (Guttenberg, N. J.).
PRESCOTT H. COOLIDGE . . 57 Bathmie St., New York, N. Y.	I.	With Western Electric Co.
HENRY F. COPELAND . . . 357 W. Fortieth St., New York, N. Y.	I.	Member of Firm, Rodda Piano Co.
NATHANIEL R. CRAIGHILL, S.B.	VI.	(See Class of 1893.)
HORACE A. CRARY . . . . Sheffield, Warren Co., Pa.	I.	General Superintendent, Horton, Crary & Co.
CHARLES H. CUTLER . . . 15 Dey St., New York, N. Y.	VI.	With Construction Department, New York Telephone Co.
NELSON W. DALTON . . . Bath, Steuben Co., N. Y.	VI.	Treasurer and General Manager, Bath Electric Illuminating and Power Co.
HENRY B. DATES . . . . . Potsdam, N. Y.	VI.	Professor of Electrical Engineering and Physics, Clarkson School of Technology.

1894. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
T. CLIVE DAVIES . . . . . Honolulu, Hawaiian Islands.	II.	In Business.
LEON K. DAVIS . . . . . Bridgeport, Conn.	X.	Chemist, in charge of Glycerine Plant, Fairchild & Shelton.
NATHAN B. DAY, A.B. . . . 280 Newbury St., Boston.	II.	With Standard Rope and Twine Co.
HARRIET GALLUP DELANCEY. 63 So. Washington St., Rochester, N. Y.	V.	
CHARLES W. DICKEY . . . Honolulu, Hawaiian Islands.	IV.	Architect.
HARRY S. DUCKWORTH . . Dover, N. H.	V.	Chemist, Cocheco Manufacturing Co.
H. BELIN DU PONT . . . . Wilmington, Del.	X.	With E. I. du Pont, De Nemours, & Co.
JOHN ELLIS . . . . . Lonsdale, R. I.	VI.	Manager, Lonsdale Co.'s Electric Light Plant.
ARTHUR J. FARNSWORTH . 33 Anderson St., New Rochelle, N. Y.	VI.	Chief Engineer, Larchmont Electric Co. (Mamaroneck, N. Y.).
JOHN N. FERGUSON . . . . 3 Mt. Vernon St., Boston.	I.	With Metropolitan Water Board.
FREDERICK E. FOWLE, JR. . 1925 Fourth St., N. W., Washington, D. C.	VIII.	Assistant, Astrophysical Observatory, Smithsonian Institution.
HARRY W. GARDNER . . . Boston, Mass.	IV.	Instructor in Architecture, Mass. Institute of Technology.
J. HOWLAND GARDNER . . Harlem River Station, New York, N. Y.	II.	Assistant Engineer, Lighterage Department, New York, New Haven, & Hartford R.R.
R. WALDO GILKEY . . . . 9 Irving St., Watertown, Mass.	II.	With Metropolitan Water Board.
LEWIS S. GREENLEAF . . . Maiden Lane and Chapel St., Albany, N. Y.	VI.	Electrician, Hudson River Telephone Co.
SARAH ABBIE HALL . . . . Hotel Adelphi, Roxbury, Mass.	VIII.	Teacher, The Cambridge School for Girls.
BURT S. HARRISON . . . . 16 So. Canal St., Chicago, Ill.	IV.	Travelling Engineer, Western Branch of B. F. Sturtevant Co.
HARRY P. HASTINGS . . . South Framingham, Mass.	I.	In Business.
GEORGE B. HAVEN . . . . Boston, Mass.	II.	Instructor in Mechanical Engineering, Mass. Institute of Technology.
WILLIAM Reed HILL . . . 67 Moffat Block, Detroit, Mich.	IV.	With John Scott & Co., Architects.

1894. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
CHARLES F. HOPEWELL . . City Hall, Cambridge, Mass.	VI.	Inspector of Wires; Superintendent of Lamps, Fire Alarms, and Police Telegraph, City of Cambridge.
THEODORE HORTON . . . . 1 Mt. Vernon St., Boston.	XI.	Assistant Engineer, Metropolitan Sewerage Commission.
CLIFTON A. HOWES . . . 55 Kilby St., Boston.	VI.	Inspector, Boston Board of Fire Underwriters.
WILLIAM S. HULSE . . . . Buenos Ayres, Argentine Republic, S. A.	VI.	Electrical Engineer, Fort Wayne Electric Corporation.
ALBERT F. HUNT, JR. . . . 18 W. Ninth St., New York, N. Y.	I.	Assistant Master Mechanic, Street Cleaning Department.
EDWARD M. HUNT . . . . City Hall, Portland, Me.	I.	Secretary, Commission of Public Works, City of Portland.
NED H. JANVRIN . . . . . Steelton, Pa.	I.	With Pennsylvania Steel Co.
CHARLES H. JOHNSON . . . 85 Water St., Boston.	I.	Engineer and General Superintendent, with Frank B Gilbreth, Building Contractor.
HERBERT E. JOHNSON . . . Coe and Hamilton Sts., Cleveland, Ohio.	VI.	Electrical Engineer, with Electrical Consignment and Commission Co.
ALBERT L. KENDALL . . . 31 Milk St., Boston.	II.	Surveyor and Draughtsman, Associated Factory Mutual Fire Insurance Cos.
JOSEPH H. KIMBALL . . . . West Newton, Mass.	XI.	In office of City Engineer, City of Newton.
WILLIAM HERBERT KING . . 166 W. One-hundred-and-twenty-sixth St., New York, N. Y.	IX.	With Dickerson and Brown, Attorneys (253 Broadway).
ROBERT H. KIRK . . . . . 650 Summit Ave., St. Paul, Minn.	II.	With American Hoist and Derrick Co.
JOHN W. KITTREDGE. . . . Victor, Colo.	II.	Civil and Mining Engineers, U. S. Deputy Mineral Surveyor.
CHARLES R. KNAPP . . . . 1709 First St., Louisville, Ky.	IV.	With Louisville Bridge and Iron Co.
HENRY O. LACOUNT . . . . 31 Milk St., Boston.	II.	Assistant Electrical Inspector, Associated Factory Mutual Fire Insurance Cos.
LUCIUS PAGE LANE, A.M. . Albany, N. Y.	IX.	Student, State Library School.
FREDERICK M. LEONARD . . P. O. Box 43, Jamaica Plain, Mass.	I.	Engineer in charge, Arlington Sewerage System.
ROBERT LORING . . . . . 192 Devonshire St., Boston.	X.	Salesman and Assistant to New England Agent, R. Hoe & Co., of New York.
FRANK W. LOVEJOY . . . . Kodak Park, Rochester, N. Y.	X.	With Eastman Kodak Co.

1894. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
GUY LOWELL, A.B. . . . . 3 Rue Soufflot, Paris, France.	IV.	Student, École des Beaux-Arts.
PATRICK M. LYNCH . . . . 276 Dwight St., Holyoke, Mass.	I.	Civil Engineer.
COLBERT A. MACCLURE . . 716 Ferguson Bldg., Pittsburgh, Pa.	IV.	In charge of Pittsburgh Office, Peabody & Stearns, Architects.
HENRY K. MCGOODWIN, B.S. 319 Main St., Bowling Green, Ky.	IV.	Architect.
WILLIAM D. MCJENNETT . 114 Columbia Heights, Brooklyn, N. Y.	X.	Chemist for D. S. Brown & Co., Soap Manufacturer (Fifty-first St. and Eleventh Ave., New York, N. Y.).
ANGUS R. MACKAY . . . . Deadwood, S. Dak.	III.	With Horseshoe Mining and Milling Co.
FRANK P. MCKIBBEN . . . Boston, Mass.	I.	Instructor in Civil Engineering, Mass. Institute of Technology.
MARION L. MAHONY . . . 281 W. Adams St., Chicago, Ill.	IV.	Draughtsman with Frank L. Wright, Architect.
FREDERICK M. MANN, C.E., S.M. Philadelphia, Pa.	IV.	Instructor in Architectural Design, University of Pennsylvania.
VIRGINIUS A. MAYER . . . 185 Franklin St., Boston.	VI.	Of the Firm of Taber and Mayer, Manufacturers of Telephones.
CHARLES A. MEADE . . . 303 E. Eighteenth St., New York, N. Y.	I.	Superintendent, Final Disposition, Street Cleaning Department, New York City.
LESLIE K. MOORE . . . . Gaisbergstr. 36, Heidelberg, Germany.	V.	Student of Heidelberg University.
LUTHER R. NASH . . . . 4 Post-Office Sq., Boston.	VI.	With Stone & Webster, Electrical Experts and Engineers.
PARKER C. NEWBEGIN . . . Patten, Me.	I.	Superintendent, Patten & Sherman R. R.
HENRY L. NEWHOUSE . . 4630 Prairie Ave., Chicago, Ill.	IV.	Architect.
FREDERIC M. NOA . . . . Aurora, N. Y.	IX.	Instructor in Modern Languages, Cayuga Lake Military Academy.
JOHN C. NOWELL . . . . 406 Market St., Philadelphia, Pa.	VI.	With Bell Telephone Co., of Philadelphia.
GEORGE OWEN, JR. . . . . 93 Benefit St., Providence, R. I.	II.	Assistant Inspector of Ordnance, U. S. A.
EDWIN M. PARKER . . . . West Acton, Mass.	IV.	In Business.
WALTER W. PATCH . . . . Marlboro, Mass.	I.	Assistant Engineer, Sudbury Department, Metropolitan Water Works.
JOSEPH W. PHELAN . . . Boston, Mass.	V.	Instructor in General Chemistry, Mass. Institute of Technology.

1894. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WALTER E. PIPER . . . . Fells, Mass.	V.	Assistant Superintendent, Boston Rubber Shoe Co.
CLARENCE D. POLLOCK . . Municipal Bldg., Brooklyn, N. Y.	I.	Assistant Civil Engineer, Department of City Works.
WILLIAM H. PRATT . . . . 60 Eastern Ave., Lynn, Mass.	VI.	Electrical Engineer, with General Electric Co.
SAMUEL C. PRESCOTT . . . Boston, Mass.	V.	Instructor in Biology, Mass. Institute of Technology.
RAYMOND BEACH PRICE . . Hampshire and Portland Sts., Cambridgeport, Mass.	X.	Chemical Engineer.
RICHARD W. PROCTOR . . . Cincinnati, Ohio.	V.	Assistant Superintendent, William S. Merrell Chemical Co.
LOUIS W. PULSIFER, A.B. . Care Perier Mercet et Cie., Paris, France.	IV.	Student, École des Beaux-Arts.
NARCISO T. QUEVEDO, B.S. . 6ª Avenida Sur 45, Guatemala, Central America.	II.	Mechanical Engineer and Importer of Machinery.
SAMUEL G. REED . . . . . 93 Oliver St., Boston.	II.	With Crosby Steam Gauge Co.
HOWARD S. REYNOLDS . . Randolph, Mass.	VI.	New York Agent, Gilmore Electric Co. of Boston.
ROBERT D. REYNOLDS . . . 45 Orchard St., Jamaica Plain, Mass.	II.	Draughtsman, B. F. Sturtevant Co.
THOMAS G. RICHARDS . . . Cambridgeport, Mass.	II.	Manager of Textile Department, Boston Woven Hose and Rubber Co.
HENRY F. RIPLEY . . . . 459 Blue Hill Ave., Roxbury, Mass.	II.	In Business.
FRANKLIN H. ROBBINS . . 13 Waterhouse St., Cambridge, Mass.	II.	Transitman, Boston Water Works (Brighton).
ARTHUR S. ROGERS . . . . Eighteenth and Douglas Sts., Omaha, Neb.	VI.	With American Telephone and Telegraph Co.
S. ANTHONY SAVAGE . . . 117 Hawthorne St., Chelsea, Mass.	II.	Assistant Superintending Engineer, U. S. Light House Service.
ALBERT H. SAWYER . . . . 19 Pearl St., Boston.	IX.	With Industrial Development Co.
WILLIAM H. SAYWARD, JR. . 69 Monadnock St., Dorchester, Mass.	VII.	Student, Harvard Medical School (Boston).

1894. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
FERDINAND ALFRED SCHIERTZ III. Lock Box 1, Auburndale, Mass.		With Anglo Mexican Mining Co. (San José de Gracia Sinoloa, Mexico).
WALTER O. SCOTT, S.M. . . . P. O. Box 556, Providence, R. I.	V.	
GEORGE W. SHERMAN . . . 29 Hampshire St., Cambridgeport, Mass.	X.	Master Mechanic, Boston Woven Hose and Rubber Co.
ARTHUR A. SHURTLEFF, B.S. 9 W. Cedar St., Boston.	II.	With F. L. & J. C. Olmstead, Landscape Architects.
FREDERIC P. SIMONDS . . . 55 Kilby St., Boston.	IV.	Draughtsman with J. Williams Beal, Architect.
WILLIAM A. SOLEY . . . . Maple St., Chelsea, Mass.	III.	Clerk with J. Soley, Building Mover and Contractor.
FRANCIS M. SOUTHARD. . . 11 Broadway, New York, N. Y.	VI.	Timber Merchant, Southard & Co.
AUSTIN SPERRY . . . . . . 2100 Pacific Ave., San Francisco, Cal.	II.	Naval Architect.
JOHN CONYNGHAM STEVENS . 1914 Rittenhouse Sq., Philadelphia, Pa.	XI.	With Guarantee Trust & Safe Deposit Co. (318 Chestnut St.).
HENRY A. SWANTON . . . . 350 Franklin St., Elizabeth, N. J.	II.	Draughtsman, Crescent Ship Yard.
GEORGE AYMAR TABER . . . New York, N. Y.	I.	District Superintendent, Street Cleaning Department.
GEORGE TAYLOR . . . . . . 70 Kilby St., Boston.	II.	With Mexican Central Ry. Co.
ALBERT B. TENNEY . . . . 35 Fremont Ave., Everett, Mass.	II.	Mechanical Engineer, with the N. V. Perry Manufacturing Co. (18 Arch St., Boston).
JOSEPH E. THROPP, JR. . . . Everett, Bedford Co., Pa.	III.	Superintendent, Everett Furnace and Mines.
ARTHUR W. TIDD . . . . . 109 Walnut St., Clinton, Mass.	I.	In Dam and Aqueduct Department, Metropolitan Water Works.
TOROS H. TOROSSIAN, B.A. . Rustchuk, Bulgaria.	I.	Civil Engineer.
THEODORE VARNEY . . . . 157 La Salle St., Chicago, Ill.	VI.	Electrical Inspector National Board of Fire Underwriters.
HENRY E. WARREN . . . . Newton Centre, Mass.	VI.	Electrical Engineer.
RIGBY WASON. . . . . . 8 Sussex Gardens, Hyde Park, London, W., England.	VI.	Electrical Engineer (3 Cable St., Liverpool).
WILLIAM R. WESTCOTT, A.B. 42 Farnsworth St., South Boston.	VI.	With American Bell Telephone Co.
ROBERT C. WHEELER . . . 4 Mt. Vernon St., Boston.	I.	Assistant Engineer, Mass. Highway Commission.

1894. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
KENNETH F. WOOD . . . . Saylesville, R. I.	II.	In charge of Construction and Repairs, Sayles Bleacheries.
C. NELSON WRIGHTINGTON . Ludlow, Mass.	II.	Mechanical Engineer, Ludlow Manufacturing Co.

1895.

LOUIS ANDREW ABBOT . . Boston, Mass.	II.	In Engineers Department, Mass. State Board of Health.
BENJAMIN ADAMS . . . . 134 So. Fourth St., Philadelphia, Pa.	VI.	Inspector, American Telephone and Telegraph Co.
CHARLES M. ADAMS . . . 59 Waverley St., Roxbury, Mass.	VI.	With Metropolitan Water Board, 3 Mt. Vernon St., Boston.
EDWIN CLEMENT ALDEN . 26 Seventh Ave., Pittsburgh, Pa.	VI.	With American Telephone and Telegraph Co.
AZEL AMES, JR. . . . . 354 Andover St., South Lawrence, Mass.	I.	With Road Department, Western Division, Boston & Maine R. R.
ERNEST FRANKLIN BADGER . Lawrence, Mass.	V.	In Experiment Station, Mass. State Board of Health.
LATIMER W. BALLOU . . . 16 Harris Ave., Woonsocket, R. I.	II.	Agent of The Guerin Spinning Co.
LAWRENCE BARR, A.B. . . Telephone Bldg., Pittsburgh, Pa.	VI.	Engineer, Central District and Printing Telegraph Co.
HAROLD K. BARROWS . . . West Newton, Mass.	I.	With H. D. Woods, City Engineer, City of Newton.
EDMUND D. BARRY . . . Bowdoin St., Dorchester, Mass.	XIII.	Draughtsman with U. S. Naval Constructor (at Wm. Cramp & Sons, Philadelphia, Pa.).
ETHEL BARTHOLOMEW, B.L. Chariton, Iowa.	IV.	
FRANCIS W. BELKNAP . . . Care of Commander Belknap, U. S. Naval Academy, Annapolis, Md.	I.	Civil Engineer, Nicaragua Canal Survey.
CHARLES W. BERRY . . . . Düstere Eichenweg 20, Göttingen, Germany.	VI.	Student in the University of Göttingen.
S. LAWRENCE BIGELOW, A.B. Ferdinand Rhodestr., Leipsic, Germany.	V.	Student in the University of Leipsic.
GEORGE L. BIXBY . . . . . Foxboro', Mass.	X.	
WALTER D. BLISS . . . . . 160 Fifth Ave., New York, N. Y.	IV.	With McKim, Mead, & White, Architects.
PERLEY H. BLODGETT . . . 117 Seventh St., McKeesport, Pa.	V.	With National Tube Works Co.

1895. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
JOHN BOEDEKER . . . . . 8 Atwood Pl., Springfield, Mass.	VI.	Draughtsman, Duryea Motor-Carriage Co.
EDGAR A. BOESEKE . . . . Indianapolis, Ind.	II.	With Nordyke & Marmon Co., Manufacturers of Flour Mill Machinery.
THOMAS B. BOOTH . . . . 52 Niles St., Hartford, Conn.	VI.	With Motor-Carriage Department, Pope Manufacturing Co.
FRANK A. BOURNE, S.M. . 364 Columbus Ave., Boston.	IV.	With Shepley, Rutan, & Coolidge, Architects (122 Ames Bldg.).
JESSE H. BOURNE . . . . . Greensboro', N. C.	II.	Teacher, Agricultural and Mechanical College.
WALLACE C. BRACKETT . . State House, Boston.	XI.	Assistant Engineer, Mass. State Board of Health.
ALLEN P. BROWN . . . . . Salem, Mass.	IX.	Instructor, Salem High School.
ARTHUR L. CANFIELD . . . Hyde Park, Mass.	II.	With Boston Blower Co.
H. W. CHAMBERLAIN, B.Sc., S.M. 22 Rutland Sq., Boston.	IV.	Draughtsman, with Cabot, Everett, & Mead, Architects (62 Devonshire St.).
WALTER S. CHASE . . . . 78 Lexington St., East Boston.	IV.	With The Quincy Market Cold Storage Co.
WILLIAM B. CLAFLIN . . . 160 Fifth Ave., New York, N. Y.	IV.	With McKim, Mead, & White, Architects.
SIDNEY K. CLAPP . . . . . 179 Boston St., South Boston.	I.	With Metropolitan Water Board (3 Mt. Vernon St.).
ARTHUR H. CLARK . . . . P. O. Box M., Riverside, Cal.	VI.	Fruit Raising.
CARL H. CLARK . . . . Boston, Mass.	XIII.	Instructor in Naval Architecture, Mass. Institute of Technology.
SCHUYLER S. CLARK . . American House, Bethlehem, Pa.	VIII.	Instructor in Physics, Lehigh University.
ARTHUR S. COBURN . . . . 49 Oak St., Lowell, Mass.	III.	With C. B. Coburn & Co.
LUTHER CONANT, JR. . . . 17 Beaver St., New York, N. Y.	IX.	With "Journal of Commerce and Commercial Bulletin."
CHARLES P. COOKE . . . . Victor, Colo.	VI.	U. S. Deputy Mineral Surveyor.
J. WILLIAMSON COOKE . . 3 Head Pl., Boston.	VI.	With Edison Electric Illuminating Co., Generating Department.
J. WINFIELD COOKE . . . . 256 Essex St., Lawrence, Mass.	VI.	With Lawrence Gas Co.
FREDERIC E. COX . . . . . Board of Education, Ninth and Locust Sts., St. Louis, Mo.	IV.	Draughtsman, with Wm. B. Ittner, Supervising Architect of Board of Education.

1895. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WALTER N. CRAFTS, A.B. Thurlow, Pa.	III.	With American Steel Casting Co.
HENRY M. CRANE . . . . 42 Farnsworth St., South Boston.	II.	With American Bell Telephone Co.
GEORGE A. CUTTER . . . . Dover, N. H.	II.	With Cocheco Manufacturing Co.
WILLIAM E. DAVIS, JR. . . 904 Chestnut St., Philadelphia, Pa.	IV.	Lucical Engineer, American Luxfer Prism Co.
ARTHUR D. DEAN . . . . . 18 Tremont St., Malden, Mass.	VI.	Teacher of Manual Training, Malden High School.
GEORGE DEFREN, S.M. . . . 449 Eighth St., South Boston.	V.	New England Representative, Klaus-Merkel Malting Co.
ALFRED L. DEJONGE . . . . Stapleton, N. Y.	II.	
EDWARD E. DENISON . . . 390 Congress St., Portland, Me.	X.	Clerk.
JUDSON C. DICKERMAN . . . 10 Minot St., Woburn, Mass.	X.	Chemical Engineer, Merrimac Chemical Co. (South Wilmington, Mass.).
BENJAMIN C. DONHAM . . . 42 Market St., San Francisco, Cal.	I.	With San Francisco Bridge Co.
JOHN THOMPSON DORRANCE, Ph.D. Bristol, Pa.	V.	
ALBERT W. DRAKE . . . . 134 So. Fourth St., Philadelphia, Pa.	VI.	With American Telephone and Telegraph Co.
FRED W. DRAPER . . . . . 87 So. Fourth St., Aurora, Ill.	III.	With Chicago & Aurora Smelting and Refining Co.
WILLIAM J. DRISKO . . . . Boston, Mass.	VIII.	Instructor in Physics, Mass. Institute of Technology.
ALBERT DUNBAR. . . . . 17 Central St., Boston.	V.	Superintendent of Construction, The C. H. Eglee Construction Co.
ROLFE M. ELLIS . . . . . McKeesport, Pa.	V.	With National Tube Works Co.
WALTER H. ELLIS . . . . 50 Prospect St., Woonsocket, R. I.	I.	With J. W. Ellis, Civil Engineer.
CHARLES F. EVELETH . . . South Lincoln, Mass.	VI.	
ROBERT D. FARQUHAR, A.B. 3 Rue Soufflot, Paris, France.	IV.	Student, École des Beaux-Arts.
FRANCIS E. FAXON. . . . . Auburn, N. Y.	II.	Draughtsman and Assistant in Experimental Department, D. M. Osborne & Co., Manufacturers of Harvesting Machinery.

1895. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
MILTON L. FISH. . . . . 106 Nordyke Ave., Indianapolis, Ind.	VI.	With Nordyke & Marmon Co.
F. A. J. FITZ GERALD, B.A. . Niagara Falls, N. Y.	VI.	With Carborundum Co.
ANDREW D. FULLER . . . . 28 Court Sq., Boston.	I.	With Street Department, City of Boston.
JOHN H. GARDINER . . . . Stonington, Conn.	II.	With Atwood Machine Co.
CHARLES M. GAY, JR., A.B. 3 Rue Soufflot, Paris, France.	IV.	Student, École des Beaux-Arts.
PERLEY F. GILBERT . . . . Andover, Mass.	IV.	Draughtsman, Quincy Market Cold Storage Co. (Boston).
WATSON E. GOODYEAR . .	VI.	
FRANCIS C. GREEN . . . . 100 William St., New York, N. Y.	XI.	With Rudolph Hering, Civil and Sanitary Engineer.
JOHN H. GREGORY . . . . 57 Lumber District, Albany, N. Y.	I.	With Allen Hazen, Consulting Engineer (St. Paul Bldg., New York).
WILLIAM T. HALL . . . . 30 Exeter St., Boston.	V.	Clerk, Adams House.
FREDERICK A. HANNAH . . Boston, Mass.	II.	Instructor in Mechanical Engineering, Mass. Institute of Technology.
FREDERICK W. HARRIS . . West Boylston, Mass.	XI.	With Metropolitan Water Board, Reservoir Department.
HARRY M. HAVEN . . . . Somerville, Mass.	II.	With Quincy Market Cold Storage Co. (Boston).
GEORGE W. HAYDEN . . . 493 Warren St., Roxbury, Mass.	VI.	With American Telephone and Telegraph Co. (134 So. Fourth St., Philadelphia, Pa.).
HENRY A. HOLDREGE . . . 203 Washington St., Chicago, Ill.	VI.	With Chicago Telephone Co.
LEMUEL F. HOWARD . . . 142 Post Office Bldg., Boston.	VI.	Superintendent, U. S. Lighthouse Department, 1st and 2d Districts.
GEORGE R. HOWARTH . . . Shawmut Beach, R. I.	II.	Draughtsman, Mossberg & Granville Manufacturing Co. (Providence, R. I.).
GEORGE E. HOWE . . . . 20 Wesley Park, Somerville, Mass.	I.	With Metropolitan Water Board (3 Mt. Vernon St., Boston).
SAMUEL P. HUNT . . . 7600 Frankstown Ave., Pittsburgh, Pa.	VI., X.	Inspector, American Telephone and Telegraph Co.
E. LAURENCE HURD . . . 8 Butler St., Dorchester, Mass.	II.	With L. Burge, Hayes, & Co.
EDWARD H. HUXLEY . . . 275 Devonshire St., Boston.	II.	With Boston Woven Hose and Rubber Co.

1895. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HERMANN KOTZSCHMAR, JR. Boston, Mass.	II.	Assistant Engineer, U. S. Steamer "Manning."
HENRY O. LACOUNT, S.B. .	VI.	(See Class of 1894.)
RALPH R. LAWRENCE . . Boston, Mass.	VI.	Assistant in Physics, Mass. Institute of Technology.
MAURICE LE BOSQUET . . 328 E. Eagle St., East Boston.	V.	Superintendent Wm. H. Swift & Co., Manufacturers of Chemicals.
DORVILLE LIBBY, JR. . . . 3144 Twenty-first St., San Francisco, Cal.	VI.	With Pelton Water Wheel Co. (121 Main St.).
ALFRED V. LINCOLN, JR. . . 32 Cordis St., Charlestown, Mass.	II.	
ANDREW J. G. LOGAN . . . Bangor, Me.	I.	Tie Inspector, Maine Central R. R.
ERNEST J. LORING . . . . . 53 State St., Boston.	IV.	Draughtsman, with Loring & Phipps, Architects.
THOMAS MARK LOTHROP . . South Framingham, Mass.	II.	Manager, New England Telephone and Telegraph Co.
JAMES T. R. MCMANUS . . . Macleod, Alberta, N. W. T.	I.	Levelman, Canadian Pacific Ry.
DWIGHT N. MARBLE, A.B. . 416 Seventh Ave., Pittsburgh, Pa.	VI.	With American Telephone and Telegraph Co.
WALTER C. MARMON . . . . Indianapolis, Ind.	II.	With Nordyke & Marmon Co.
FRANK B. MASTERS . . . . Belvidere St., Boston.	II.	Instructor in Drawing, Mechanic Arts High School.
FRANÇOIS E. MATTHES . . . Denison, Tex.	I.	Topographic Draughtsman, U. S. Geological Survey.
GERARD H. MATTHES . . . Washington, D. C.	I.	Hydrographic Aid, U. S. Geological Survey.
GEORGE F. C. MERRISS . . . Denison, Tex.	I.	Draughtsman, U. S. Geological Survey.
CHARLES A. MESERVE . . . Karlstr. 54 A, Munich, Germany.	V.	Student in the University of Munich.
FRANKLIN T. MILLER . . . 146 Franklin St., Boston.	XIII.	Secretary, The F. W. Dodge Co.
JOHN D. J. MOORE . . . . . Lewiston, Me.	II.	Master Mechanic, Lewiston Bleachery and Dye Works.
RICHARD MOREY . . . . . Sedalia, Mo.	I.	City Engineer.
ARTHUR F. NESBIT, A.B. . . Durham, N.H.	VI.	Instructor in Physics and Electrical Engineering, New Hampshire College of Agriculture and the Mechanic Arts.
JOHN L. NEWELL . . . . . 139 Milk St., Boston.	X.	With Page, Newell, & Co., Iron and Steel Merchants.

1895. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
FRANKLIN A. PARK . . . . Winchendon, Mass.	II.	With Baxter D. Whitney, Manufacturer of Wood-working Machinery.
WINTHROP D. PARKER . . . 6 Beacon St., Boston.	IV.	Draughtsman, with Stephen Codman, Architect.
CHARLES L. PARMELEE . . Care Commissioners of Water Works, Cincinnati, Ohio.	I., XI.	First Assistant Engineer to Chief Chemist and Bacteriologist.
WILLIAM F. PATTEN . . . . 125 Milk St., Boston.	VI.	With American Bell Telephone Co.
WALTER C. POWERS . . . . 116 Pearl St., Springfield, Mass.	X.	With Powers Paper Co. (Holyoke, Mass.).
WALTER W. REED . . . . 68 Ames Bldg., Boston.	VI.	With United Electric Securities Co.
FREDERICK L. RICHARDS . 217 Summer St., Somerville, Mass.	X.	
WALTER J. RICKEY . . . . Danbury, Conn.	II.	Assistant Superintendent, The T. & B. Tool Co.
GEORGE A. ROCKWELL . . The Warren, Roxbury, Mass.	X.	Student, Boston University Law School.
LOUIS K. ROURKE . . . . Colon, Central America.	I.	Assistant Roadmaster, Panama R. R.
HAROLD N. RUST . . . . . 19 No. Franklin St., Wilkes-Barre, Pa.	VI.	Electrical Contractor and Dealer in Electrical Supplies.
SAMUEL S. SADTLER . . . . 336 W. Franklin St., Germantown, Philadelphia, Pa.	V.	Chemist, U. S. Appraisers' Office.
CLIFFORD B. SANBORN . . . 24 Farwell Pl., Cambridge, Mass.	IX.	Student, Harvard University Law School.
FRANK C. SCHMITZ . . . . Pittsburgh, Pa.	I.	Assistant Engineer, Pennsylvania Lines west of Pittsburgh.
EDWARD P. SCHOENTGEN . Council Bluffs, Iowa.	IV.	
ROBERT K. SHEPPARD . . . 94 Grove St., Worcester, Mass.	X.	With Washburn & Moen Manufacturing Co.
RICHARD G. B. SHERIDAN . Cleveland, Ohio.	XIII.	With The Brown Hoisting and Conveying Machine Co.
JOHN C. SHERMAN . . . . 111 Fifth Ave., New York, N. Y.	VI.	Associate Editor, Munsey's Magazine.
ALFRED L. SIMMONS . . . Nash, Mass.	I.	In Office of Chief Engineer, New England Railroad (Boston).
ALFRED P. SLOAN, JR. . . . 240 Garfield Pl., Brooklyn, N. Y.	VI.	Secretary, Hygienic Refrigeration Co.
WALTER F. STEVENS . . . Newton Highlands, Mass.	II.	With Freeman Wight (25 Hayward Pl., Boston).

1895. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WILLIAM E. SWIFT . . . . 3 Mt. Vernon St., Boston.	I.	In Engineering Department, Metropolitan Water Board.
GERARD SWOPE . . . . . 242 So. Jefferson St., Chicago, Ill.	VI.	Electrical Engineer.
CHARLES C. TAFT . . . . . 2300 Hamilton St., Philadelphia, Pa.	X.	With the E. H. Godshalk Co.
JAMES W. THOMAS . . . . Wyoming, Pa.	II.	With Wyoming Shovel Works.
STURGIS H. THORNDIKE, A.B. 60 City Hall, Boston.	I.	With City Engineer, City of Boston.
CHARLES F. TILLINGHAST . 260 Angell St., Providence, R. I.	II.	With Granger Foundry and Machine Co.
EDWARD A. TUCKER . . . 10 E. Worcester St., Worcester, Mass.	I.	Draughtsman with Norcross Bros.
HUGH M. TUCKER . . . . 214 E. Pike's Peak Ave., Colorado Springs, Colo.	II.	With Ernest Flagg, Construction Department.
LOREN G. WAITE . . . . . 105 Beltran St., Malden, Mass.	VI.	With General Electric Co. (Lynn, Mass.).
JOSEPH E. WALWORTH . . Lawrence, Mass.	V.	Student, University of Leipsic (Germany).
WILLARD H. WATKINS . . 33 Fisher St., Dover, N. H.	V.	With Sawyer Woollen Mills.
DAVID B. WESTON . . . . Watertown, Mass.	V.	Chemist, Crystal Springs Manufacturing Co.
RALPH N. WHEELER . . . Municipal Bldg., Brooklyn, N. Y.	I.	Assistant Engineer, Department of City Works.
THOMAS H. WIGGIN . . . 154 Mountain Ave., Malden, Mass.	I.	With Metropolitan Water Board (Boston).
CHARLES G. WILLIAMS . . 55 E. Main St., Norwalk, Ohio.	I.	Travelling.
ROGER J. WILLIAMS . . . Canton, Mass.	IX.	With Draper Brothers' Co.
WALTER S. WILLIAMS . . . P. O. Box 928, Webster, Mass.	X.	Assistant Superintendent, H. N. Slater, Cambric Works (East Webster).
WILLIAM H. WINKLEY . . 58 Kilby St., Boston.	XIII.	Special Agent, Hartford Fire Insurance Co.
JOHN J. C. WOLFE . . . . 716 Chamber of Commerce Bldg., Chicago, Ill.	II.	With W. H. Colvin, Real Estate and Loans.
LUTHER K. YODER . . . . Cleveland, Ohio.	II.	Draughtsman, with Cleveland Rolling Mill Co.

1895. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HENRY YOERG . . . . . 215 W. Isabel St., St. Paul, Minn.	II.	Draughtsman, Great Northern R. R.
ALFRED E. ZAPF . . . . . 89 State St., Boston.	IV.	With Coolidge & Wright, Architects.

1896.

BUTLER, AMES . . . . . U. S. Bunting Co., Lowell, Mass.	II.	Agent of Wamesit Power Co.
WILLIAM P. ANDERSON . . 600 E. Third St., Cincinnati, Ohio.	III.	
WILLIAM M. ANDREW . . 213 Liberty St., Schenectady, N. Y.	VI.	With General Electric Co.
GEORGE F. ASHTON . . . 39 Church St., Salem, Mass.	II.	Of Firm of Metcalf & Ashton, Civil Engineers.
ERNEST C. ATKINS . . . . 196 Walker St., Lowell, Mass.	II.	Draughtsman, Lamson Consolidated Store Service Co.
THOMAS W. BAILEY . . . 20 Beacon St., Boston.	I.	With Boston Transit Commission.
REUBEN E. BAKENHUS . . 3 Mt. Vernon St., Boston.	I.	With Metropolitan Water Board.
E. ARTHUR BALDWIN . . Schenectady, N. Y.	VI.	With General Electric Co.
CHARLES E. BATCHELDER . 572 First Ave., New York, N. Y.	VI.	Draughtsman, New York Electric Equipment Co.
DANIEL M. BATES, JR. . . Wilmington, Mass.	X.	With Joseph Bancroft & Sons Co.
DAVID W. BEAMAN . . . . 26 Seventh St., New Bedford, Mass.	VI.	Superintendent, Edison System, New Bedford Gas and Edison Light Co.
FRANCIS P. BLAKE . . . . Jasper, Ala.	III.	Assistant Engineer, Elliott & Carrington, Contracting Engineers (Birmingham, Ala.).
GEORGE S. BOWES . . . . 673 E. Main St., Rochester, N. Y.	II.	With The Wellman Seaver Engineering Co., Cleveland, Ohio.
AUGUSTUS J. BOWIE, JR., A.B. Sixth and H Sts., Sacramento, Cal.	II., VI.	Assistant Electrician, Sacramento Electric Gas and Railway Co.
E. RAYMOND BRACKETT . . 150 Schermerhorn St., Brooklyn, N. Y.	V.	Chemist, Simonds & Wainwright Chemical & Mining Engineers (20 Platt St., New York, N. Y.).
EDWARD M. BRAGG . . . Boston, Mass.	XIII.	Assistant in Mechanical Engineering, Mass. Institute of Technology.

1896. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
LEWIS B. BREED . . . . . 604 Wood St., Wilkinsburg, Pa.	VI.	With Westinghouse Electric and Manufacturing Co.
JOHN F. BROOKS . . . . . 47 Main St., North Hanover, Mass.	II.	In Business.
HARRY W. BROWN . . . . Lynn, Mass.	VI.	Assistant Engineer, General Electric Co., Meter Department.
HARRY P. BROWNE . . . . 92 W. Berry St., Fort Wayne, Ind.	VI.	With Fort Wayne Electric Corporation.
RUSSELL S. BUCHER . . . 220 Devonshire St., Boston.	IV.	Draughtsman, with Francis R. Allen, Architect.
GEORGE K. BURGESS . . Boston, Mass.	VIII.	Assistant in Physics, Mass. Institute of Technology.
JOHN G. CALLAN . . . . . Lynn, Mass.	VI.	With General Electric Co., Alternating Department.
LEWIS T. CANNON . . . . Logan City, Utah.	IV.	Professor of Mathematics and Drawing, Utah Agricultural College.
HELEN CHAMBERLIN . . . 146 Franklin St., Boston.	IV.	Draughtsman, Library Bureau.
WINTHROP H. CHENERY . . Belmont, Mass.	IV.	Student, Harvard University.
JOSEPH W. CLARY . . . Newport News, Va.	XIII.	Assistant Draughtsman with Superintending Constructor, U. S. N.
ALBERT E. CLUETT, A.B. . Chapel St. and Maiden Lane, Albany, N. Y.	VI.	With Hudson River Telephone Co.
JOHN L. COLEY . . . . . Westport, Conn.	II.	
WILLARD H. COLMAN . . . 812 So. Sixth St., La Crosse, Wis.	II.	
FRANCIS M. CONANT . . . Niagara Falls, N. Y.	X.	Chemist, Mathieson Alkali Works, Castner Electrolytic Plant.
WILLIAM D. COOLIDGE . . Sophienstr. 17, Leipsic, Germany.	VI.	Student, University of Leipsic.
WINTHROP COOLIDGE . . . 4752 Kimbark Ave., Chicago, Ill.	III.	Chemist, Chicago Copper Refining Co.
EDWIN C. CRAMER . . . . 285 Lyon St., Milwaukee, Wis.	IV.	Draughtsman with H. C. Koch & Co.
HENRY M. CRANE	VI.	(See Class of 1895.)
STEPHEN D. CRANE . . . . 330 Fulton St., Brooklyn, N. Y.	VI.	With Engineering Department, New York & New Jersey Telephone Co.
CARL I. CROCKER . . . . . 23 Pinckney St., Boston.	I.	With Street Department, City of Boston.

1896. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
RALPH W. CROSBY . . . Newport News, Va.	XIII.	Assistant Draughtsman, with Superintending Constructor U. S. N.
HENRY CUMMINGS, JR. . . 199 St. Botolph St., Boston.	IV.	Architect (1147 Tremont Bldg.).
NATHAN H. DANIELS, JR. . 13 Joy St., Boston.	VI.	
FRANKLIN H. DAVIS . . . P. O. Box 1606, Philadelphia, Pa.	III.	Assistant to the Inspector of Ordnance, U. S. A.
ROBERT A. DAVIS . . . . 104 Milk St., Boston.	VI.	With Engineering Department, New England Telephone and Telegraph Co.
HAROLD W. DE LONG . Bristol, R. I.	XIII.	With Herreshoff Manufacturing Co.
LEONARD D. P. DICKINSON 7600 Frankstown Ave., Pittsburgh, Pa.	VI.	With American Telephone and Telegraph Co.
WILLIAM T. DORRANCE, A.B. 180 Summer St., Boston.	I.	With Boston Terminal Co.
JAMES M. DRISCOLL . . . . Northborough, Mass.	I.	Rodman, Metropolitan Water Works, Dam and Aqueduct Department.
JOSEPH DRISCOLL . . . . 2 Mt. Vernon St., Boston.	I.	Assistant in Construction, Boston Transit Commission.
ALPHONSUS L. DRUM . . . Middleboro, Mass.	VI.	General Manager, Middleboro Gas and Electric Plant.
FREDERICK E. FIELD . . . City Hall, Boston	XI.	Assistant with City Engineer, Water Department.
ELIZABETH F. FISHER . . . 142 Trenton St., East Boston.	XII.	Instructor in Geology, Wellesley College (Wellesley, Mass.).
HARRY G. FISK . . . . . Taylor St., Springfield, Mass.	IX.	With Davis Electrical Co.
FREDERICK E. FORSTER . . New Bedford, Mass.	X.	With Acushnet Mills Corporation.
GEORGE FRESCH, JR. . . . 22 Holborn St., Roxbury, Mass.	IV.	Draughtsman.
MYRON L. FULLER . . . . Boston, Mass.	XII.	Assistant in Geology, Mass. Institute of Technology.
ROBERT L. FULLER . . . . 452 Main St., Worcester, Mass.	IV.	Draughtsman with Fuller, Delano, & Frost, Architects.
STEPHEN DEM. GAGE . . . Lawrence, Mass.	V.	Biologist, Mass. State Board of Health, Lawrence Experiment Station.
HENRY GARDNER . . . . . 24 Chestnut St., Salem, Mass.	II.	Draughtsman, Boston & Maine R. R. Co. (Boston Shops).
ABRAM GARFIELD, A.B. . . Garfield Bldg., Euclid Ave., Cleveland, Ohio.	IV	Draughtsman with Granger & Meade, Architects.
LEONARD H. GOODHUE . . Boston, Mass.	V.	Assistant in Analytical Chemistry, Mass. Institute of Technology.

1896. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
EDWARD B. GORDON, JR. . 174 Lewis St., Lynn, Mass.	II.	Draughtsman, The Paul System Co. (10 Federal St., Boston).
AMADEUS W. GRABAU . . . 194 River St., Cambridgeport, Mass.	XII.	Graduate Student, Harvard University.
ANDREW H. GREEN, A.B. . 403 La Salle Ave., Chicago, Ill.	I.	Vice-President, Green's Dredging Co.
NATHAN C. GROVER, B.C.E. Orono, Me.	I.	Associate Professor of Civil Engineering, University of Maine.
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FRANK E. GUPTILL . . . . 42 Farnsworth St., South Boston.	VI.	With New England Telephone and Telegraph Co.
WALTER A. HALL . . . . New Britain, Conn.	VI.	Electrician for Russell & Erwin Manufacturing Co.
JOHN S. HALLARAN . . . . 1203 Madison St., Toledo, Ohio.	I.	Inspector, Toledo, St. Louis, & Kansas City, R. R.
CHARLES W. HAPGOOD . . 17 Abattoir St., Brighton, Mass.	V.	With Learnard, Bird, Oil Works.
ROBERT S. HARDY . . . . 16 No. High St., Bangor, Me.	VI.	Foreman, Car-House, Bangor Street Ry.
GEORGE E. HARKNESS . . . 73 Charles River Ave., Boston.	I.	With Boston Transit Commission (on New Charlestown Bridge).
JOSEPH HARRINGTON . . . 4*a* Providencia 10, Mexico, Mexico.	II.	Mechanical Engineer.
HIRAM B. HARTWELL . . . 57 Palfrey St., Watertown, Mass.	II.	Draughtsman, Boston Woven Hose and Rubber Co. (Cambridgeport).
JAMES H. HASTE . . . . . Kodak Park, Rochester, N. Y.	V.	With Eastman Kodak Co.
HARVEY F. HAWLEY . . . Baldwinsville, N. Y.	I.	Transitman, Topographical Survey Commission (11 Mt. Vernon St., Boston).
HARRISON W. HAYWARD . Boston, Mass.	X.	Assistant in Industrial Chemistry, Mass. Institute of Technology.
HENRY R. HEDGE . . . . 12 Central St., Boston	IX.	With Johnson & Higgins, Insurance Brokers and Adjusters.
WILLIAM R. HEDGE . . . 12 Central St., Boston.	IX.	With Johnson & Higgins, Insurance Brokers and Adjusters.
FREDERICK M. HEERMANN . 31 Milk St., Boston.	II.	Surveyor and Draughtsman, Associated Factory, Mutual Fire Insurance Cos.
JAMES B. HENDERSON . . . P. O. Box 261, Northborough, Mass.	II.	With Metropolitan Water Board.

1896. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
RALPH C. HENRY, M.S. 160 Fifth Ave., New York, N. Y.	IV.	With McKim, Mead, & White, Architects.
JOSEPH HEWETT . . . . 32 Allen St., Brockton, Mass.	VIII.	With City Engineer.
WALTER M. HOLLIS . . . 73 Newhall St., Lynn, Mass.	VI.	With General Electric Co.
JAMES C. HOPKINS . . . . 3 Hamilton Pl., Boston.	IV.	Draughtsman, with Winslow & Wetherell, Architects.
FRANK A. HOWARD . . . 26 Cortlandt St., New York, N. Y.	I.	With Engineering Department, Erie R. R.
JOSEPH M. HOWE	I.	
EUGENE C. HULTMAN . . . 439 Albany St., Boston.	I.	With West End Street Ry., Engineering Department.
BENJAMIN HURD . . . . . Care The Steel Motor Co., Johnstown, Pa.	VI.	With Blood & Hale, Designing and Consulting Engineers (Boston, Mass.).
CHARLES G. HYDE . . . . 140 State House, Boston.	XI.	With Mass. State Board of Health, Engineering Department.
CHARLES H. INGALLS . . . 3 Head Pl., Boston.	II.	With Edison Electric Illuminating Co., Meter Department.
WALTER H. JAMES . . . . Waltham, Mass.	VI.	Draughtsman, Waltham Bleachery and Dye Works.
MINOR S. JAMESON . . . . Boston, Mass.	I.	Assistant in Civil Engineering, Mass. Institute of Technology.
HOWARD K. JONES . . . . 89 Vandergrift Bldg., Pittsburgh, Pa.	IV.	Draughtsman, with Alden & Harlow, Architects.
THEODORE I. JONES . . . . 15 Dey St., New York, N. Y.	VI.	With American Telephone and Telegraph Co.
WILLIAM H. KEITH . . . St. Augustine, Fla.	VI.	In Business.
JOSEPH H. KNIGHT . . . . 81 Oxford St., Cambridge, Mass.	IX.	Student, Harvard Law School.
LEEBERT L. LAMBORN, B.S. 64 W. Rutland Sq., Boston.	V.	Chemist, Curtis Davis & Co., Soap Makers & Glycerine Refiners, Cambridgeport.
CHARLES E. LAWRENCE, M.A. 16 Smith St., Brooklyn, N. Y.	VI.	With New York and New Jersey Telephone Co., Engineering Department.
EUGENE H. LAWS . . . . Spanish Town, Jamaica, W. I.	V.	Chemist, West Indies Chemical Works.
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WALTER S. LELAND . . . San Francisco, Cal.	XIII.	With U. S. Naval Constructor, Union Iron Works.

1896. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
MARION L. LEWIS . . . . Boston, Mass.	IV.	In Boston Public Library, Fine Arts Department.
PAUL W. LITCHFIELD . . . 29 Winnisimmet St., Chelsea, Mass.	X.	With L. C. Chase & Co.
CHARLES E. LOCKE . . . . Boston, Mass.	III.	Assistant to Professor Richards, Mass. Institute of Technology.
JOHN E. LONNGREN . . . Joliet, Ill.	II.	Engineering Department, Illinois Steel Co.
ALF C. LOOTZ . . . . . 116 St. Botolph St., Boston.	I.	With Boston Water Works (49 City Hall).
GEORGE W. LYMAN . . . 104 Columbia Heights, Brooklyn, N. Y.	VI.	With New York Telephone Co.
HERMANN C. LYTHGOE . . Winthrop, Mass.	V.	Chemist, Hub Rubber Co. (Boston).
WILLIAM H. MCALPINE . . 3 Mt. Vernon St., Boston.	XI.	With Metropolitan Water Board.
FRANK G. MCCANN . . . . 44 Dey St., New York, N. Y.	II.	Draughtsman for Evans, Almirall, & Co., Heating and Ventilation Engineers and Contractors.
JOHN H. MANAHAN . . . . 13 Monadnock Block, Chicago, Ill.	VI.	With Sargent & Lundy, Mechanical and Electrical Engineers.
EDWARD S. MANSFIELD . . 3 Head Pl., Boston.	VI.	With the Edison Electric Illuminating Co.
JAMES G. MELLUISH . . . . Court House, McLean Co., Bloomington, Ill.	IX.	Of Firm of Bell & Melluish, Civil and Sanitary Engineers.
IRVING S. MERRELL . . . . 340 W. Fayette St., Syracuse, N. Y.	II.	Draughtsman, Merrell-Soule Co.
GEORGE E. MERRYWEATHER, Providence, R. I.	II.	With Brown & Sharpe Manufacturing Co.
CHARLES P. MOAT . . . . 70 Middle St., Portsmouth, N. H.	V.	With Hub Rubber Co.
CHARLES MORRIS, JR. . . . Fort Wadsworth, New York Harbor, N. Y.	VI.	With New York Telephone Co.
CHARLES K. B. NEVIN . . . 220 Devonshire St., Boston.	IV.	With Francis R. Allen and J. McArthur Vance, Architects.
HERBERT D. NEWELL . . . Boston, Mass.	I.	Transitman and Sextant Observer, U. S. Engineer's Office.
CHARLES S. NEWHALL . . . Tuscarora, Elko Co., Nev.	III.	Assistant Engineer, Loder Concentrating Co.

1896. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
FRED B. OWEN 17 Bassett St., Providence, R. I.	VI.	Electrician, Narragansett Electric Lighting Co.
KARL A. PAULY 21 Hall St., Somerville, Mass.	VI.	Inspector, New England Telephone and Telegraph Co. (Cambridge, Mass.).
WALTER O. PENNELL Easton, Pa.	VI.	Instructor in Electrical Engineering, Lafayette College.
CLARENCE W. PERLEY 35 Hamilton Ave., Lynn, Mass.	VII.	
JOEL H. PILLSBURY 4 Mt. Vernon St., Boston.	I.	With Mass. Highway Commission.
EDWIN D. PINGREE 817 Banigan Bldg., Providence, R. I.	II.	Draughtsman, Associated Factory Mutual Insurance Cos.
HARRY A. PRESSEY, B.S. 14 Third St., N. E., Washington, D. C.	I.	Inspector, U. S. War Department.
JOHN L. PUTNAM 105 Quincy St., Chicago, Ill.	VI.	With American Telephone and Telegraph Co.
HARRY D. RAWSON 710 Clark St., Evanston, Ill.	IV.	With J. L. Silsbee, Architect (1532 Murqutte Bldg., Chicago, Ill.).
JAMES W. RAYNOLDS Santa Fé, N. Mex.	III.	Assistant Territorial Secretary.
DANIEL A. RICHARDSON 14 Craigie St., Cambridge, Mass.	II.	Graduate Student, Harvard University.
EDWIN H. ROBERTS Perry Park, Colo.	II.	Plaster Manufacturer.
J. ARNOLD ROCKWELL, JR. 42 Rockwell St., Norwich, Conn.	VII.	Student, Boston University Medical School (Boston).
WILLIAM L. ROOT Boston, Mass.	X.	Assistant in Oil and Gas Analysis, Mass. Institute of Technology.
ALBERT F. RUCKGABER Amber Club, East End, Pittsburgh, Pa.	VI.	Apprentice, Westinghouse Electric and Manufacturing Co.
A. LE BARON RUSSELL 28 State St., Boston.	IX.	Note Broker.
NORMAN F. RUTHERFORD 47 John St., New York, N. Y.	VI.	With New York Telephone Co.
LAWRENCE K. SAGER 116 School St., Somerville, Mass.	VI.	
NATHAN H. SANDERSON 70 Kilby St., Boston.	I.	Draughtsman, Boston Bridge Works.
MORITZ SAX 1108 Exchange Bldg., Boston.	IV.	Draughtsman, with Loring & Phipps, Architects.
FREDERICK F. SCHALLER South Natick, Mass.	VI.	With Boston & Albany R. R., Engineering Department (Boston).

1896. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
DONALD C. SCOFIELD . . . 338 Erie St., Cleveland, Ohio.	IV.	Draughtsman, with L. T. Scofield, Architect.
JOHN C. SCOVEL, JR. . . . 883 Winthrop Ave., Chicago. Ill.	II.	Mechanical Engineer, with Fred W. Wolf Co., Manufacturers of the Linde Ice Machines.
HENRY K. SEARS . . . . . Danvers, Mass.	IX.	With Eaton & Sears, Shoe Manufacturers.
MORTIMER A. SEARS . . . Athol, Mass.	III.	
GEORGE F. SHEPARD, JR. . 53 State St., Boston.	IV.	Draughtsman, with Peabody & Stearns, Architects.
FRANK N. SMALLEY . . . Stanford University, Cal.	V.	Instructor in Chemistry, Leland Stanford, Jr., University.
SAMUEL T. SMETTERS, Ph.B. 4545 Oakenwald Ave., Chicago, Ill.	I.	Mechanical and Civil Engineer, with Nelson, Morris, & Co., Union Stock Yards.
FRED H. SMITH . . . . . Hartford, Conn.	X.	With Hartford Rubber Works Co., Experimental Department.
HERBERT E. SMITH . . . . Tremont Temple, Boston.	IV.	Sanitary Architect.
HOWARD E. SMITH . . . . Framingham, Mass.	XI.	With Boston Transit Commission (20 Beacon St., Boston).
ALBERT E. SMYSER . . . . Boston, Mass.	II.	Graduate Student, Mass. Institute of Technology.
FREDERICK W. SMYSER . . 1738 M St., Lincoln, Neb.	II.	With Motive Power Department, Burlington & Missouri River R. R. in Nebraska.
JAMES S. SMYSER . . . . . Boston, Mass.	II.	Graduate Student, Mass. Institute of Technology.
WALTER M. STEARNS . . . 478 Main St., Waltham, Mass.	VI.	Assistant Superintendent, Waltham Gas and Electric Light Co.
HAROLD C. STEVENS . . . 3 Mt. Vernon St., Boston.	I.	With Metropolitan Water Board.
JOSEPH W. STICKNEY . . . 47 John St., New York, N. Y.	VI.	With New York Telephone Co., Construction Department.
CHARLES H. H. STONE . . 465 Centre St., Newton, Mass.	V.	
ESTHER STONE . . . . . 49 Westminster St., Providence, R. I.	IV.	Draughtsman, with Stone, Carpenter, & Wilson, Architects.
BRADLEY STOUGHTON, Ph.B. 409 W. Fifty-seventh St., New York, N. Y.	III.	Private Assistant with Prof. H. M. Howe, Columbia University.
MEYER J. STURM . . . . . 13 Lane Pl., Chicago, Ill.	IV.	Architect.
GEORGE W. SUMNER . . . 256 E. Ontario St., Chicago, Ill.	VI.	With Western Electric Co., Telephone Department.

1896. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HARRISON S. TAFT, B.P. . Newport News, Va.	II.	With U. S. N[illegible]al Constructor.
LEWIS H. TAPPAN . . . . 9 Cod[illegible]ng St., Providence, R. I.	II.	With Builders Iron Foundry.
WILLIAM B. TAYLOR . . . Walnut St., Brookline, Mass.	II.	
FRANK A. THANISCH . . . Gibbonsville, Idaho.	III.	Surveyor, American Developing and Mining Co. (Butte, Mont.).
WILLIAM H. THOMAS, JR. . Lynn, Mass.	V.	
ALBERT W. THOMPSON . . Manchester, N. H.	II.	With Amoskeag Manufacturing Co.
LUCY D. THOMSON, A.B. . 88 Federal St., Springfield, Mass.	IV.	Draughtsman.
SAMUEL F. THOMSON . . . 16 W. Eighty-fourth St., New York, N. Y.	I.	Assistant to Master Mechanic, Department of Street Cleaning, New York City.
JOHN TILLEY . . . . . 15 Dey St., New York, N. Y.	VI.	With New York Telephone Co., Engineering Department.
HENRY H. TOZIER . . . . 502 State House, Boston.	V.	Analyst for Mass. State Board of Health, Water Laboratory.
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CHARLES W. TUCKER . . 501 State House, Boston.	V.	Assistant Analyst for Mass. State Board of Health, Food and Drug Department.
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GRACE A. VAN EVEREN . 841 Jefferson Ave., Brooklyn, N. Y.	V.	Instructor in Science, Erasmus Hall.
HERMANN V. VON HOLST, A.B. 1780 Old Colony Bldg., Chicago, Ill.	IV.	Draughtsman, with Shepley, Rutan, & Coolidge, Architects.
WILLIAM G. WALL . . . . 800 Tryon St., Charlotte, N. C.	VI.	
ROBERT S. WASON . . . . 61 Chatham St., Boston.	V.	With Wason & Co., Wholesale Grocers.
HENRY A. WATERMAN . . 9 Roanoke St., Providence, R. I.	II.	Assistant to Mechanical Engineer, Brown & Sharpe Manufacturing Co.
JACOB L. WAYNE . . . . 18 Cortlandt St., New York, N. Y.	VI.	With New York Telephone Co., Engineering Department.
ALBERT J. WELLS . . . . 205 York St., Quincy, Ill.	II.	With Smith-Hill Elevator Co.
CHARLES A. WENTWORTH . Fitchburg, Mass.	I.	Assistant Engineer, Maintenance of Way Department, Fitchburg R. R.

1896. — *Continued.*

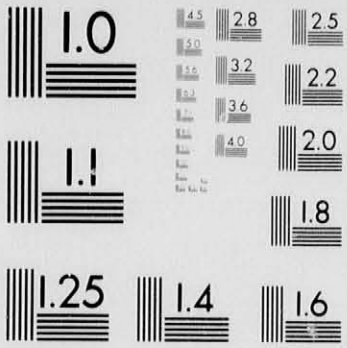
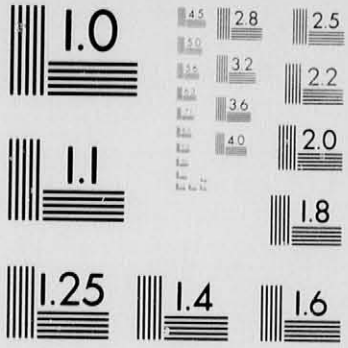
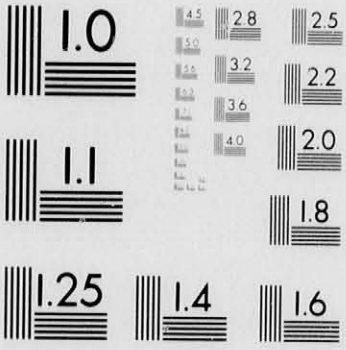
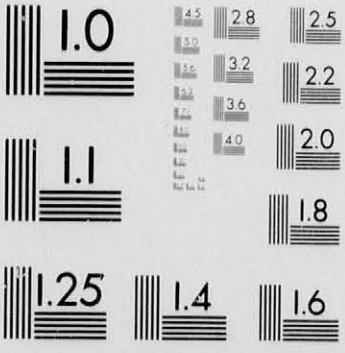
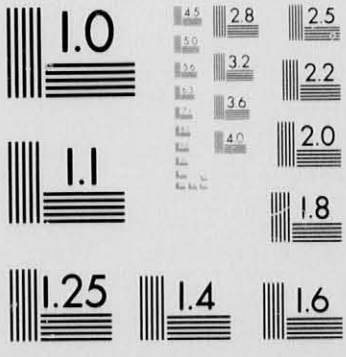
NAME AND ADDRESS.	COURSE.	OCCUPATION.
LAMBERT N. WHITNEY . . 15 Dey St., New York, N. Y.	VI.	With American Telephone and Telegraph Co.
WILLIAM H. WHITTEN, JR. 63 Ashland St., Roslindale, Mass.	VIII.	Teacher, High School (Leominster, Mass.).
JOHN H. WILLIS, A.B. . . Windsor Road, Waban, Mass.	IV.	Graduate Student, Mass. Institute of Technology.
WILLETT A. WOOD . . . 652 Fourth Ave., Detroit, Mich.	VI.	Electrical Engineer.
JULIAN E. WOODWELL . . 7 Burlington Ave., Boston.	II.	Mechanical Engineer, with S. H. Woodbridge, Heating and Ventilation.
CONRAD H. YOUNG . . . 17 Marlborough St., Boston.	II.	With Keck, Mosser & Co., Cut Soles and Leather (84 High St.).

1897.

JOHN T. ALDEN . . . . . 547 Centre St., Newton, Mass.	II.	
WILLIAM H. ALLEN, JR. . . 67 Chauncy St., Boston.	XIII.	
ROBERT ANDERSON, Ph.B. . 6 The Ortiz, Cincinnati, Ohio.	VI.	With Bullock Electric Manufacturing Co. (Broadway and Hunt St.).
THOMAS C. ATWOOD . . . 362 Cross St., Malden, Mass.	I.	With Metropolitan Water Board (Boston).
CHARLES F. BALDWIN, JR. . Jefferson St., Chicago, Ill.	VI.	With Western Electric Co.
HENRY W. BALLOU . . . . 63 Princeton Ave., Providence, R. I.	I.	
WILFRED BANCROFT . . . 1600 Hamilton St., Philadelphia, Pa.	II.	With Wm. Sellers & Co. (Incorporated).
EDGAR L. BARKHOUSE . . 231 Union St., Schenectady, N. Y.	VI.	In Testing Department, General Electric Co.
WARREN H. BARNES . . . 90 Brimsmead St., Marlboro, Mass.	I.	With Road Department, Boston & Maine R. R.
BERNARD BARROWS . . . . Reading, Mass.	X.	
HENRY P. BEERS . . . . . 218 La Salle St., Chicago, Ill.	IV.	With M. L. Beers, Architect.
WILLIAM BINLEY, JR. . . . Glasgow, Scotland.	XIII.	Student, University of Glasgow.
PERCY E. BLOOD . . . . . Graniteville, Mass.	I.	

1897. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HUGH BORLAND . . . . . 30 Tremont St., Boston.	I.	In Sewer Division, Street Department, City of Boston.
EDGAR C. BOWEN, JR. . . . 698 Dayton Ave., St. Paul, Minn.	II.	Student.
RALPH A. BOWEN . . . . Cranford, N. J.	V.	With American Viscose Co.
JOHN BOYD . . . . . 72 Marshall St., North Adams, Mass.	V.	With Arnold Print Works.
CHARLES W. BRADLEE . . 113 Beacon St., Boston.	IX.	
EDWIN A. BRAINERD . . . 85 Water St., Boston.	I.	With Sumner Hollingsworth.
CHARLES T. BRAMHALL . . 29 Main St., Cambridgeport, Mass.	II.	Draughtsman, Rawson & Morrison Manufacturing Co.
CHARLES B. BREED . . . . Boston, Mass.	I.	In Civil Engineering Department, Boston & Albany R. R., Kneeland St. Station.
E. PERCY BROWN . . . . North Brookfield, Queens Co., N. S.	III.	Assayer and Chemist, Brookfield Mining Co.
JAMES M. BROWN . . . . 343 No. Main St., Mansfield, Ohio.	II.	In Engineering Department, Aultman & Taylor Machinery Co.
WARREN D. BROWN, A.B. . 103 E. Thirty-ninth St., New York, N. Y.	VI.	
HOWARD H. BURDICK . . 303 Main St., Hartford, Conn.	II.	Draughtsman for F. H. Richards, Patent Solicitor.
FRED E. BUSBY . . . . . 14 Hoosac St., Adams, Mass.	V.	
WALTER M. BUSH . . . . 50 Broadway, New York, N. Y.	II.	Inspector for R. W. Hildreth & Co., Inspecting Engineers.
JOHN E. CARTY . . . . . 30 Tremont St., Boston.	I.	Draughtsman, Sewer Division, Street Department, City of Boston.
CHARLES B. CLARK, A.B. . Cleveland, N. C.	I.	On Engineering Force, Southern R. R.
HENRY A. CLARK . . . . Lee, Mass.	II.	With Clark & Spencer Machine Works.
EZRA A. COLEMAN . . . . 193 W. Newton St., Boston.	VI.	Inspector of Underground Cables, Edison Electric Illuminating Co.
JOHN A. COLLINS, JR. . . . 73 Cottage St., Fall River, Mass.	X.	Graduate Student, Mass. Institute of Technology.
LUZERNE S. COWLES . . . 70 Kilby St., Boston.	I.	Draughtsman, Estimating Department, Boston Bridge Works.


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1897. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ALLEN S. CROCKER . . . . 28 E. Brookline St.. Boston.	II.	With The George F. Blake Manufacturing Co. (E. Cambridge).
CHARLES R. CURRIER . . . 282 Lamartine St., Jamaica Plain, Mass.	II.	
ARTHUR V. CURTIS . . . . 49 Elm St., Quincy, Mass.	XIII.	With Knowles-Blake Pump Co. (Cambridgeport).
WILLIAM H. CUTLER . . . Chestnut Pl., Brookline, Mass.	IV.	With Dwight & Chandler, Architects (6 Beacon St., Boston).
JERE R. DANIELL . . . . . Franklin Falls, N. H.	XIII.	
HENRY M. DEAVITT . . . . Poughkeepsie, N. Y.	V.	Instructor in Mathematics and Science, Riverview Military Academy.
LEONARD M. DEMERITT . . 60 Congress St., Boston.	II.	With Walter H. Sawyer, Civil Engineer.
ARTHUR S. DEWOLF . . . Melrose Highlands, Mass.	II.	
EDWIN S. DODGE . . . . . 71 High St., Newburyport, Mass.	IV.	Student (Paris, France).
FRANKLIN W. DOLIBER . . 291 Atlantic Ave., Boston.	IX.	With The Doliber-Goodale Co.
JOHN A. DONOVAN . . . . 256 Branch St., Lowell, Mass.	IX.	Teacher, Lowell High School.
ALFRED R. DOTEN . . . . 8 Mayflower St., Plymouth, Mass.	II.	
PROCTOR L. DOUGHERTY . . 77 Lake View Ave., Cambridge, Mass.	VI.	With Hollis French, Consulting Engineer (3 Hamilton Pl., Boston).
ALFRED K. DOWNES . . . Ware, Mass.	I.	Assistant Foreman, Road Department, Southern Division, Boston & Maine R. R.
IRÉNÉE DU PONT . . . . . Boston, Mass.	X.	Graduate Student, Mass. Institute of Technology.
JOHN R. DWYER . . . . . 422 Holland Bldg., St. Louis, Mo.	IV.	Architect and Builder.
CHARLES H. EAMES . . . 13 Fayette St., Milford, Mass.	VI.	With The Light, Heat, and Power Co.
WILLIAM W. EATON . . . 222 Rochelle Ave., Wissahickon, Pa.	II.	With Pencoyd Iron Works (Pencoyd, Pa.).
FREDERICK L. EDMANDS . Boston, Mass.	II.	Assistant in Mechanical Drawing, Mass. Institute of Technology.
ARTHUR ELSON, A.B. . . . Greeneville, Conn.	X.	With Norwich Bleaching, Dyeing, and Printing Co.
FRANK W. EVERETT . . . 531 Mass. Ave., Boston.	VI.	Graduate Student, Mass. Institute of Technology.

1897. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
MALCOLM F. EWEN . . . . 1127 Rookery Bldg., Chicago, Ill.	IV.	With the Luxfer Prism Co.
WILLIAM C. EWING . . . 9 Bainbridge St., Roxbury, Mass.	VI.	With C. H. W. Wood, Civil Engineer and Surveyor (2380 Washington St., Boston).
JOHN S. EYNON . . . . . 170 Willis Ave, New York, N. Y.	VI.	With Metropolitan Street Ry. Co., Construction Department.
WILLIAM A. FAXON . . . 401 Main St., Buffalo, N. Y.	V.	With Faxon, Williams, & Faxon, Wholesale and Retail Grocers.
FRANK G. FEELEY . . . . Kodak Park, Rochester, N. Y.	II.	With Eastman Kodak Co.
ROBERT M. FERRIS, JR. . . 160 Market St., Newark, N. J.	VI.	In Engineering Department, New York & New Jersey Telephone Co.
JOHN W. FITZGERALD, S. B. Grand Rapids, Mich.	VI.	
MORTIMER FRANK . . . . Wabash, Ind.	I.	Assistant Engineer, Michigan Division, Cleveland, Cincinnati, Chicago, & St. Louis R. R.
FREDERIC W. FULLER . . . Fuller's Block, Springfield, Mass.	VI.	Special Agent, Mutual Life Insurance Co. of New York.
JAMES L. FYFE . . . . . 417 Home Ave., Oak Park, Ill.	IV.	
LAWRENCE L. GAILLARD . 330 Fulton St., Brooklyn, N. Y.	VI.	With New York and New Jersey Telephone Co.
J. MONROE GILMORE, B.L., B.S. Renne Ave., Pittsfield, Mass.	VI.	With Stanley Electric Manufacturing Co.
WALTER A. GLEASON . . . Waterloo, Iowa.	I.	Civil Engineer, with Illinois Central R. R.
GEORGE M. GOODSPEED . . McKeesport, Pa.	V.	With National Tube Works Co.
SUMNER GOWEN . . . . . Phoenixville, Pa.	I.	Draughtsman, Phoenix Bridge Co.
OWEN H. GRAY . . . . . 1814 E. Thirty-first St., Kansas City, Mo.	VI.	With W. T. Osborn & Co., Electrical Engineers.
ROBERT G. HALL . . . . 4621 Liberty Ave., Pittsburgh, Pa.	V.	Tinner and House Furnisher.
ALFRED STARR HAMILTON . 111 Trowbridge St., Cambridge, Mass.	IX.	Student, Harvard Law School.
CHARLES L. HAMMOND . . Care Nicaragua Canal Commission, Army Building, New York, N. Y.	I.	Assistant on Engineering Force in Field (Nicaragua, C. A.).
CHARLES N. HASKINS . . . Boston, Mass.	VIII.	Assistant in Physics, Mass. Institute of Technology.
ISRAEL HATCH, JR. . . . . Kodak Park, Rochester, N. Y.	X.	With Eastman Kodak Co., Folio Department.

1897. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
EDGAR M. HAWKINS . . . Steelton, Pa.	II.	Machinist, Pennsylvania Steel Co.
NATHAN HAYWARD, A.B. . Boston, Mass.	VI.	Assistant in Physics, Mass. Institute of Technology.
ROYAL H. HAYWARD . . . 18 Holborn St., Roxbury, Mass.	VI.	
FREDERICK E. HEALY . . . East Providence, R. I.	II.	
FREDERICK J. HEMMINGS . 12 Pearl St., Boston.	V.	Chemist, with Henry Carmichael, Analytical and Consulting Chemist.
WILLIAM G. HILL, JR. . . 84 Converse Ave., Malden, Mass.	V.	Chemist, Boston Rubber Shoe Co.
ARTHUR T. HOPKINS . . . 9 Flint Ave., Somerville, Mass.	XI.	Graduate Student, Mass. Institute of Technology.
ROGER F. HOSFORD . . . 86 Hancock St., Dorchester, Mass.	V.	With American Bell Telephone Co. (42 Farnsworth St., South Boston).
ETHAN H. HOWARD . . . Youngstown, N. Y.	VI.	
BENJAMIN A. HOWES . . . 20 Broad St., New York, N. Y.	VI.	With Sprague Electric Co., Engineering Department.
CHESTER D. HUBBARD . . Guilford, Conn.	VI.	With New York, New Haven, & Hartford R. R.
WALTER HUMPHREYS . . . Humphreys Pl., Dorchester, Mass.	II.	Draughtsman, Boston Shops, Boston & Maine R. R.
FREDERICK A. HUNNEWELL . Cambridge, Mass.	XIII.	Instructor in Woodworking, Cambridge Manual Training School.
HARRY B. HUNT . . . . . Hotel Langford, Susquehanna, Pa.	II.	Special Apprentice, Erie R. R. Co.
HARRY D. HUNT . . . . . North Attleboro, Mass.	IX.	
JOHN P. ILSLEY, JR. . . . . Willow St., Fitchburg, Mass.	II.	With Simonds Rolling Machine Co.
ELBRIDGE C. JACOBS . . . Boston, Mass.	III.	Assistant in Mining Engineering, Mass. Institute of Technology.
ARTHUR L. JENNINGS . . . 1103 Broadway, Logansport, Ind.	II.	Special Apprentice, Motive Power Department, Pan Handle System, Pennsylvania R. R.
FRANK H. KEISKER . . . 430 Walnut St., Philadelphia, Pa.	IV.	Draughtsman.
WILLIAM A. KENT . . . . 625 E. Capitol St., Washington, D. C.	I.	With U. S. Geological Survey (Black Hills, South Dakota).
JAMES W. KILLAM . . . . Reading, Mass.	I.	With Metropolitan Water Board (3 Mt. Vernon St., Boston).

1897. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
ALBERT E. KIMBERLY . . . Lawrence, Mass.	V.	Assistant Bacteriologist, Mass. State Board of Health, Lawrence Experiment Station.
GEORGE H. KNIGHT . . . Hudson, Mass.	II.	With Hudson Electric Manufacturing Co.
AUGUSTUS C. LAMB . . . . South Lee, Mass.	X.	With Hurlbut Paper Manufacturing Co.
GEORGE S. LAWLER . . . . 259 Webster St., East Boston.	VI.	Electrician, Halpine Torpedo Co.
WILLIAM H. LEACH, JR. . . 42 Park St., Bridgeport, Conn.	II.	With Union Metallic Cartridge Co.
ERNEST F. LEARNED . . . 15 Irving St., Watertown, Mass.	VI.	With Metropolitan Water Board (3 Mt. Vernon St., Boston).
FREDERIC N. LEBARON . . Middleboro', Mass.	IV.	With Little & Browne, Architects (70 Kilby St., Boston).
JAMES E. LEWIS . . . . . 13 Exchange St., Boston.	I.	With Engineering Department, Metropolitan Park Commission.
HENRY M. LOOMIS . . . . Niagara Falls, N. Y.	V.	Assistant Chemist, Mathieson Alkali Works.
BENJAMIN A. LOVELAND . Clinton, Mass.	I.	With Metropolitan Water Board.
ROBERT S. LUNT . . . . . 19 Pond St., Newburyport, Mass.	X.	
GEORGE H. MCCARTHY . . W. Fuller St., Dorchester, Mass.	IX.	
EDMUND B. MCCORMICK . Normal, Ill.	II.	
JOHN F. MCMILLAN . . . Petrolia, Ont.	X	
THOMAS F. J. MAGUIRE . . 8 Beale St., Boston.	VI.	With Boston Board of Survey.
JOSEPH M. MAHONEY . . . 21 Bailey St., Dorchester, Mass.	VI.	With West End Street Ry. Co., Electrical Department.
EDWARD S. MANSON, JR. . 7 Holiday St., Dorchester, Mass.	VIII.	Graduate Student, Mass. Institute of Technology.
HERMAN W. MARSHALL . Boston, Mass.	VII.	Assistant in Biology, Mass. Institute of Technology.
EARL P. MASON . . . . . Halidon Hall, Newport, R. I.	II.	
GEORGE A. MORAN . . . . P. O. Box 248, South Framingham, Mass.	V.	
EDWARD R. MOTCH . . . 304 Second St., Hamilton, Ohio.	II.	Apprentice, Niles Tool Works.
HAROLD T. MULHALL . . 125 Milk St., Boston.	VI.	With New England Telephone and Telegraph Co.

1897. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
HOWARD A. NOBLE . . . Twenty-first and Liberty Sts., Pittsburgh, Pa.	II.	In Mechanical Department, A. French Spring Co.
ALBERT P. NORRIS . . . . Lawrence, Mass.	V.	Assistant Chemist, Pacific Mills.
EDWIN R. OLIN . . . . . 29 St. James St., Roxbury, Mass.	X.	
HUGH ORR . . . . . 186 Devonshire St., Boston.	IV.	With Wm. Gibbons Preston, Architect.
EDWIN P. OSGOOD . . . . Key West Barracks, Key West, Fla.	XI.	Inspector and Junior Engineer on Fortifications for Defence of Key West.
CHARLES B. PAINE . . . Augusta, Me.	IV.	With Hallowell Granite Works (Hallowell, Me.).
W. THORNTON PARKER, JR. 14 Thayer Hall, Cambridge, Mass.	IX.	Student, Harvard Law School.
ARCHIBALD L. PARSONS . Derry, N. H.	I.	With Metropolitan Water Board (Clinton, Mass.).
JOHN SHELLEY PECHIN . . 587 Prospect St., Cleveland, Ohio.	II.	With the Kilby Manufacturing Co.
VERNON M. PEIRCE . . . 30 Tremont St., Boston.	I.	With Sewer Division, Street Department, City of Boston.
CHARLES L. W. PETTEE . Hartford, Conn.	V.	With Pope Manufacturing Co., Department of Tests.
OTTO S. PIKE . . . . . 13 Garnet St., Malden, Mass.	II.	With Batcheller Pneumatic Tube Co. (628 Tremont Bldg., Boston).
WILLIAM C. POTTER . . . 17 Van Buren St., Chicago, Ill.	III.	Mining Engineer.
GILBERT H. PRATT . . . . 502 State House, Boston.	V.	With Mass. State Board of Health.
ACHILLES H. PUGH, JR. . . Madison Ave., Cincinnati, Ohio.	X.	
WILLIAM E. REED . . . . Hotel de France et Choiseule, Rue St. Honoré, Paris, France.	VI.	In the Laboratory of Prof. Moissau.
WILLIAM S. RHODES . . . 38 Oakdale St., Jamaica Plain, Mass.	XII.	Surveyor.
LOUIS J. RICHARDS . . . . 3 Mt. Vernon St., Boston.	XI.	With Metropolitan Water Board.
ELMER H. ROBINSON . . . 61 Woburn St., Reading, Mass.	VI.	In Construction Department, New England Telephone and Telegraph Co.
JOHN R. ROGERSON . . . . 26 So. Main St., Mansfield, Mass.	I.	

1897. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
WARREN A. ROOKE . . . . 18 W. One-hundred-and-eighteenth St., New York, N. Y.	IV.	With John B. Snook & Sons (261 Broadway, New York).
JAMES C. ROYCE . . . . . Davenport, Ont.	II.	
WALTER B. RUSSELL . . . Boston, Mass.	II.	Assistant in Mechanical Engineering, Mass. Institute of Technology.
LUTHER R. SAWIN . . . . 34 Robbins St., Waltham, Mass.	V.	With Mass. State Board of Health.
DAVID SCHWARTZ . . . . Savannah, Ga.	V.	Assistant Chemist, Southern Cotton Oil Co.
CARL SCHUTTLER . . . . . 287 W. Adams St., Chicago, Ill.	II.	With Fraser & Chalmers, Builders of Mining Machinery, Engines, and Boilers.
WILLIAM H. SELLEW . . . 608 Forest Ave., Avondale, Cincinnati, Ohio.	II.	With Chicago, Hamilton, & Dayton R. R.
HENRY A. SHERMAN . . . 537 Mass. Ave., Boston.	III.	With Sewer Division, Street Department, City of Boston.
JESSE W. SHUMAN . . . . 1401 Chicago Ave., Minneapolis, Minn.	VI.	With Twin City Rapid Transit Co.
HARRISON W. SMITH, A.B. 40 Mill St., Dorchester, Mass.	II.	
JAMES W. SMITH . . . . . Boston, Mass.	XIII.	Assistant in Mechanical Engineering, Mass. Institute of Technology.
OREN B. SMITH, JR. . . . 15 Massasoit St., Northampton, Mass.	III.	
PERCY M. SMITH . . . . . Lowell, Mass.	II.	Draughtsman, Lowell Textile School.
W. FRANKLIN SMITH . . . Lewiston, Me.	II.	Principal, Manual Training School.
WALTER E. SPEAR . . . . Lawrence, Mass.	XI.	Assistant Engineer, Essex Water Power Co.
ARTHUR D. SPIESS . . . . 2 E. Fifteenth St., New York, N. Y.	IV.	
RUSSELL C. SPRING . . . . 6 Beacon St., Boston.	IV.	Draughtsman.
GEORGE F. STARBUCK . . . 53 State St., Boston.	II.	Draughtsman, with Arthur F. Gray, Architect and Mill Engineer.
CHARLES B. STEBBINS . . . Marblehead, Mass.	XIII.	Draughtsman, Marblehead Yacht Yard.
KLAUS J. STEINER . . . . Pittsburgh, Pa.	III.	With Shoenberger Steel Co.

1897. — *Continued.*

NAME AND ADDRESS.	COURSE.	OCCUPATION.
PERCY G. STILES . . . . . Boston, Mass.	VII.	Assistant in Biology, Mass. Institute of Technology.
HARRISON S. TAFT., B.P .	XIII.	(See Class of 1896.)
JOHN TAYLOR . . . . . 294 Walnut St., Brookline, Mass.	VI.	With New England Telephone and Telegraph Co., Northern Division.
EDGAR L. TINKHAM, B.P. . 357 Westminster St., Providence, R. I.	VI.	With Walter Thurber, Electrical Construction.
JAY E. TONE . . . . . 109 Court Ave., Des Moines, Iowa.	X.	With Tone Bros., Manufacturers Flavoring Extracts.
MORRIS K. TRUMBULL . . 34 W. Congress St., Detroit, Mich.	I.	With Board of Engineers, for Deep Waterways.
LUCIUS S. TYLER . . . . 43 So. Market St., Boston.	VI.	With Geo. Tyler & Co.
T. ERNEST VIDETO . . . . Boston, Mass.	IV.	Graduate Student, Mass. Institute of Technology.
RALPH S. VINAL . . . . . 6 Beacon St., Boston.	IV.	Draughtsman, with Walter J. Paine, Architect.
GEORGE R. WADLEIGH . . 10 Summer St., Dover, N. H.	II.	With Somersworth Machine Co.
THURLOW WASHBURN . . 24 Hill St., Morristown, N. J.	III.	Mining Engineer.
FRANCIS H. WATTS . . . Boston, Mass.	I.	Assistant in Civil Engineering, Mass. Institute of Technology.
THOMAS R. WEYMOUTH . 56 W. Main St., Lock Haven, Pa.	VI.	
DAVID T. WHITON . . . Hingham Centre, Mass.	II.	
FLORENCE A. WOOD . . . 9 Bainbridge St., Roxbury, Mass.	VIII.	Instructor in Mathematics, Wheaton Seminary (Norton, Mass.).
WILLIAM R. WOOD . . . Ojitlau, Oaxaca, Mexico.	XIII.	With "La Estrella Coffee Co."
ALPHEUS G. WOODMAN . . Boston, Mass.	V.	Assistant in Sanitary Chemistry, Mass. Institute of Technology.
GEORGE M. WOODMAN . . Woodsville, N. H.	I.	With the Boston & Maine R. R.
E. HAROLD WOODWORTH . Boston, Mass.	V.	Private Assistant to Prof. Noyes, Mass. Institute of Technology.
ERNEST WOODYATT . . . 1142 The Rookery, Chicago, Ill.	IV.	With D. H. Burnham & Co., Architects.

Alumni will confer a favor by informing the Secretary of the Faculty of any change of address or occupation.

Other persons who have been connected with the Institute for one year or more will also confer a favor by informing the Secretary of the Faculty of their address and occupation.

It should be noticed that the graduates comprise but about one-third of all the students who have in the past been connected with the Institute.

NUMBER OF GRADUATES BY CLASSES.

Class of 1868	14	Class of 1883	19
" " 1869	5	" " 1884	36
" " 1870	10	" " 1885	27
" " 1871	17	" " 1886	59
" " 1872	12	" " 1887	58
" " 1873	26	" " 1888	77
" " 1874	18	" " 1889	75
" " 1875	27	" " 1890	102
" " 1876	43	" " 1891	103
" " 1877	32	" " 1892	133
" " 1878	19	" " 1893	129
" " 1879	23	" " 1894	138
" " 1880	8	" " 1895	144
" " 1881	28	" " 1896	188
" " 1882	24	" " 1897	179

Total	1,773
Deduct names counted twice	11
	1,762

ALPHABETICAL LIST OF GRADUATES.

NAME.	COURSE.	CLASS.
Abbot, Charles G.	VIII.	1894
Abbot, Louis A.	II.	1895
Abbott, Frederic B.	VI.	1893
Abbott, Ira	I.	1881
Aborn, George P.	II.	1886
Adams, Arthur H.	II.	1890
Adams, Benjamin	VI.	1895
Adams, Charles M.	VI.	1895
Adams, Raleigh B.	X.	1894
Aiken, Charles W.	II.	1891
Albee, Orton W.	III.	1893
Alden, Charles H., Jr.	IV.	1890
Alden, Edwin C.	VI.	1895
Alden, Herbert W.	II.	1893
Alden, John	V.	1877
Alden, John T.	II.	1897
Allbright, William B.	V.	1878
Allen, C. Frank	I.	1872
Allen, Charles F.	III.	1876
Allen, Charles R.	V.	1885
Allen, Charles V.	VI.	1893
*Allen, Henry W. (July 2, '97)	X.	1897
Allen, John H.	III.	1881
Allen, Samuel E.	I.	1875
Allen, Walter S.	V.	1879
Allen, William H., Jr.	XIII.	1897
Ames, Azel	I.	1895
Ames, Butler	II.	1896
Ames, Clara P.	V.	1882
Anderson, George H.	X.	1894
Anderson, Robert	VI.	1897
Anderson, William P., Jr.	III.	1896
Andrew, William M.	VI.	1896
Andrews, Edmund L.	VI.	1894
Anthony, Arthur C.	III.	1886
Anthony, John G.	III.	1893
Appleton, Charles B.	II.	1884
Appleton, Ellery C.	III.	1868
Armington, George A.	II.	1887
Arnott, James L.	Sci. and Lit.	1875
Ashton, George F.	II.	1896
Aspinwall, Thomas	I.	1876
Atkins, Ernest C.	II.	1896
*Atkinson, James S. (Dec. 17, '83)	II.	1881
Atwood, Frank W.	V.	1890
Atwood, Thomas C.	I.	1897
Atwood, William P.	V.	1876
Austin, Amory	V.	1873
Ayer, Arthur W.	II.	1890
Babb, Cyrus C.	I.	1890
Bachelder, Charles S.	V.	1877
Badger, Ernest F.	V.	1895
Badger, Frank S.	I.	1893
Bailey, Thomas W.	I.	1896
Bakenhus, Reuben E.	I.	1896
Baker, Charles M.	IV.	1878
Baker, David	III.	1885
Baker, Fred C.	II.	1894
Baker, Frederic W.	II.	1893
Baker, Joseph B.	VI.	1890
Baker, William H.	I.	1869
Baldwin, Charles F., Jr.	VI.	1897
Baldwin, E. Arthur	VI.	1896
Baldwin, Henry F.	II.	1884
Baldwin, Hiram E.	I.	1890
Baldwin, Thomas W.	I.	1876
Ball, Robert S.	II.	1891
*Ballard, Hetty O. (Dec. 20, '97)	XII.	1893
Ballou, Henry W.	I.	1897
Ballou, Latimer W.	II.	1895
Bancroft, Wilfred	II.	1897
Barbour, Minard T.	II.	1893
Bardwell, Fred L.	V.	1884
Bardwell, Herbert T.	I.	1883
Barkhouse, Edgar L.	VI.	1897
Barnes, Warren H.	I.	1897
Barnes, William T.	I.	1893
Barr, Lawrence	VI.	1895
Barri, Joel G.	I.	1891
Barrows, Bernard	X.	1897
Barrows, Harold K.	I.	1895
Barrows, Herbert	I.	1874
Barrows, Walter B.	VII.	1876
Barrus, George H.	II.	1874
Barry, Edmund D.	XIII.	1895
Barstow, George E.	II.	1894
Bartholomew, Ethel	IV.	1895
Bartlett, Dana P.	VI.	1886
Bartlett, Sidney R.	VII.	1887
Bartlett, Spaulding	V.	1890
Bartlett, T. Harris	III.	1884
Bartol, George	III.	1877
Barton, Charles A.	II.	1887
Barton, George H.	III.	1880
Barton, Howard R.	VI.	1894
Basford, George M.	II.	1889

* Deceased.

NAME.	COURSE.	CLASS.
Bassett, William H.	V.	1891
Batchelder, Charles E.	VI.	1806
Batchelder, John L., Jr.	VII.	1890
Batcheller, Birney C.	II.	1886
Bates, Daniel M., Jr.	X.	1896
Bates, Harry R.	V.	1894
Bates, Henry D.	IV.	1888
Batson, Walter V.	VI.	1894
Beach, Charles B.	X.	1894
Beach, Edward J.	V.	1889
Beach, Irving E.	V.	1894
Beal, Charles A.	VI.	1892
Beal, Foster E. L.	I.	1871
Beal, J. Williams	IV.	1877
Beaman, David W.	VI.	1896
Bean, Norwin S.	VI.	1894
Beasom, Charles B.	II.	1890
Beattie, Roy H.	I.	1893
Beckler, Alice H.	VII.	1892
Beeching, William H.	II.	1877
Beers, Herbert P.	IV.	1897
Belknap, Francis W.	I.	1895
Bellows, Arthur B.	II.	1889
Bemis, Albert F.	I.	1893
Benedict, Vallette L.	VI.	1894
Benton, Edward R.	IV.	1885
Berry, Charles W.	VI.	1895
Berry, Hereford	VI.	1894
Bickford, Elizabeth E.	VII.	1890
Bigelow, Charles H.	VI.	1892
Bigelow, Henry F.	IV.	1888
Bigelow, Samuel L.	V.	1895
Binley, William, Jr.	XIII.	1897
Binney, Amos	V.	1881
Bird, Adelaide	VII.	1891
Bird, Herbert S.	V.	1888
Birks, John H.	II.	1891
Biscoe, Maurice B.	IV.	1893
Bissell, David S.	III.	1881
Bixby, George L.	X.	1895
Bixby, Willard G.	II.	1889
Blackmer, Adelaide S.	V.	1890
Blackwell, Ethel B.	VII.	1891
Blake, Edmund E.	II.	1893
Blake, Francis P.	III.	1896
Blake, William B.	I.	1887
Blanchard, Frederick C.	II.	1891
Blanchard, Winslow	II.	1888
Bliss, Walter D.	IV.	1895
Bliss, Zenas W.	II.	1889
Blodgett, Aaron D.	II.	1876
Blodgett, George W.	I.	1873
Blodgett, Perley H.	V.	1895
Blood, Grosvenor T.	II.	1894
Blood, John B.	VI.	1890
Blood, Percy E.	I.	1897
Blunt, William T.	I.	1874
Boardman, Henry A.	V.	1884
Boedeker, John	VI.	1895
Boeseke, Edgar A.	II.	1895
Bolan, Thomas V.	VI.	1891
Booth, Thomas B	VI.	1895
Borden, Charles N.	II.	1889
Borland, Hugh	I.	1897
Boss, Austin D.	II.	1890
Boss, Charles R.	IX.	1894
Bothfeld, Charles C.	I.	1884
Bourne, Frank A.	IV.	1895
Bourne, Jesse H.	II.	1895
Bourne, Phillips P.	II.	1892
Boveri, Marcella O.	IX.	1885
Bovey, William H.	VI.	1894
Bowen, Edgar C., Jr.	II.	1897
Bowen, Ralph A.	V.	1897
Bowen, Stephen	II.	1892
Bowes, George S.	II.	1896
Bowie, Augustus J., Jr.	II.	VI. 1896
Boyd, John	V.	1897
Boyden, Amos J.	IV.	1875
Brace, Walter C.	III.	1887
Brackett, E. Raymond	V.	1896
Brackett, Wallace C.	XI.	1895
Bradlee, Arthur T.	II.	1888
Bradlee, Charles W.	IX.	1897
Bradlee, Henry G.	VI.	1891
Bradley, Frederick W.	VI.	1889
Bradley, Harry C.	I.	1891
Bragg, Charlotte A.	V.	1890
Bragg, Edward F.	II.	1890
Bragg, Edward M.	XIII.	1896
Brainerd, Dwight	IX.	1887
Brainerd, Edwin A.	I.	1897
Brainerd, Frederick H.	III.	1889
Brainerd, Henry B.	IX.	1887
Brainerd, Wallace H.	VI.	1891
Brainerd, William L.	IV.	1886
Braley, Samuel T.	II.	1879
Braman, Samuel N.	II.	1893
Bramhall, Charles T.	II.	1897
Brand, Horace L.	II.	1891
Breed, Charles B.	I.	1897
Breed, Joshua B. F.	I.	1876
Breed, Lewis B.	VI.	1896
Breed, S. Alec	II.	1894
Brewster, Benjamin E.	III.	1872
Bridges, Luther W.	II.	1889
Briggs, Frank H.	IX.	1881
Brooks, John F.	II.	1896
Brotherton, William E.	V.	1873
Brown, Alice I. (*see* Tyler).		
Brown, Allen P.	IX.	1895
Brown, Bertha M.	VII.	1892

NAME.	COURSE.	CLASS.
Brown, Charles H.	I.	1880
Brown, Edward D.	VI.	1890
Brown, Edward P.	III.	1897
Brown, Harry W.	VI.	1896
Brown, James M.	II.	1897
Brown, John C.	VI.	1893
Brown, Walter V.	VI.	1894
Brown, Warren D.	VI.	1897
Browne, Harry P.	VI.	1896
Brownell, Ernest H.	I.	1890
Bryant, Dixie L.	XII.	1891
Bryant, Ernest C.	I.	1893
Bryant, George H.	II.	1883
Bryant, Henry F.	I.	1887
Bryant, William P.	X.	1891
Bryden, George W.	II.	1891
Buchanan, Leonard B.	VI.	1893
Bucher, Russell S.	IV.	1896
Buchholz, Charles E.	I.	1893
Buck, Arthur A.	VI.	1893
Bulkley, J. Norman	VI.	1889
Burbank, Philip M.	VI.	1892
Burdick, Howard H.	II.	1897
Burgess, Frank G.	I.	1887
Burgess, George K.	VIII.	1896
Burgess, John K.	II.	1886
Burke, John R.	I.	1893
Burlinham, Charles L.	III.	1886
Burnet, Moses D.	III.	1875
Burnham, Charles M.	VI.	1892
Burnham, Edward C.	II.	1890
Burnham, Guy J.	X.	1892
Burnham, Harry A.	II.	1892
Burrage, Severance	VII.	1892
Burrison, Henry K.	I.	1875
Burton, Frank H.	II.	1891
Busby, Fred E.	V.	1897
Bush, Walter M.	II.	1897
Buttolph, Benjamin G.	II.	1888
Buttolph, Harry T.	I.	1876
Cabot, John W.	III.	1879
Calkins, Gary N.	IX.	1890
Callan, John G.	VI.	1896
Callahan, Dennis E.	VI.	1893
Came, Frank E.	I.	1881
Cameron, Julian A.	II.	1887
Campbell, George A.	I.	1891
Campbell, Harry H.	III.	1879
Canfield, Arthur L.	II.	1895
Cannon, Lewis T.	IV.	1896
Capen, Barnard, Jr.	VI.	1891
Capen, G. Walter	IV.	1877
Card, Huber D.	XII.	1892
Carleton, Elbridge S.	IV.	1888
Carlisle, Morten	VI.	1890
Carlton, Chester V.	I.	1890
Carney, Edward B.	II.	1893
Carney, Frank D.	III.	1887
Carney, James A.	V.	1890
Carpenter, Anne White	V.	1891
Carr, W Frank	I.	1884
Carson, Howard A.	I.	1869
Carson, Thomas B.	II.	1882
Carter, Henry H.	I.	1877
Carter, William W.	VI. 1894. X.	1893
Carty, John E.	I.	1897
Carvalho, Raul deR.	IX.	1892
Carven, Christopher J.	I.	1884
Cater, Douglas A.	II.	1892
Center, David A.	VI.	1888
Chace, Mason S.	II.	1894
Chadbourn, William H., Jr.	III.	1886
Chamberlain, Herbert W.	IV.	1895
Chamberlin, Helen	IV.	1896
Chamberlin, William E.	IV.	1877
*Chapman, George (Jan. 21, '79)	II.	1877
Chapman, George D.	II.	1890
Chapman, John W., Jr.	II.	1894
Chapman, Nathan C. W.	II.	1894
Chase, Charles H.	VI.	1892
Chase, Edwin E.	I.	1880
Chase, Frank D.	III.	1881
Chase, Frank L.	I.	1890
Chase, Harold M. V. 1896.	X.	1894
Chase, Harvey S.	II.	1883
Chase, Richard D.	XI.	1892
Chase, Roscoe L.	V.	1884
Chase, Walter S.	IV.	1895
Chenery, Winthrop H.	IV.	1896
*Childs, Edward L. (Mar. 3, '94)	II.	1891
Childs, Stephen	I.	1888
Church, Albert K.	V.	1892
Church, Christopher A.	I.	1875
Church, William L.	VI.	1886
Cilley, Frank H.	I.	1889
Claflin, Alan A.	V.	1894
Claflin, George E.	VI.	1888
Claflin, William B.	IV.	1895
Clapp, Harry L.	X.	1893
Clapp, Sidney K.	I.	1895
Clapp, Wilfred A.	I.	1893
Clark, Arthur H.	VI.	1895
Clark, Carl H.	XIII.	1895
Clark, Carrie Rice	V.	1882
Clark, Charles B.	I.	1897
*Clark, Edward K. (Sept. 10, '78)	II.	1870
Clark, Frederick W.	III.	1880
Clark, Henry A.	II.	1897
Clark, James, Jr.	VI.	1890
Clark, Schuyler S.	VIII.	1895
Clarke, Edward D.	VI.	1894
Clarke, Fred H.	I.	1894

* Deceased.

NAME.	COURSE.	CLASS.
Clary, Joseph W.	XIII.	1896
Clement, Arthur A.	X.	1894
Clement, Hugh B.	IV.	1891
Clifford, Harry E.	VI.	1886
Clough, Albert L.	VI.	1891
Cluett, Albert E.	VI.	1896
Cobb, Louis R.	I.	1886
Cobb, Sylvanus H.	VI.	1888
Coburn, Arthur S.	III.	1895
Cochran, Heywood	II.	1885
Codman, John S.	VI.	1893
Cody, Lewis P.	VI.	1892
Coffin, Fred S.	III.	1879
Cogswell, Charles P., Jr.	I.	1892
Colby, John M., Jr.	II.	1892
Colby, Russell H	V.	1888
Cole, Fred A.	II.	1891
Cole, Fred B.	II.	1888
Cole, Harrison I.	II.	1891
Cole, Winthrop	II.	1887
Coleman, Ezra A.	VI.	1897
Coley, John L.	II.	1896
Collins, Benjamin G.	II.	1881
Collins, Bertrand R. T.	II.	1888
Collins, Edward, Jr.	VI.	1888
Collins, John A., Jr.	X.	1897
Collins, Reuben B.	I.	1891
Collins, William H.	V.	1890
Colman, Willard H.	II.	1896
Conant, Francis M.	X.	1896
Conant, Henry J.	II.	1887
Conant, Luther, Jr.	IX.	1895
Conant, Roger W.	VI.	1891
Conant, Whitney	III.	1868
Conner, Arthur J.	V.	1888
*Connor, Addison (Jan. 4, '91)	I.	1871
Cook, Charles N.	X.	1893
Cook, Walter F.	IX.	1890
Cooke, Charles P.	VI.	1895
Cooke, J. Williamson	VI.	1895
Cooke, J. Winfield	VI.	1895
Cooley, Helen	V.	1887
Coolidge, Prescott H.	I.	1894
Coolidge, William D.	VI.	1896
Coolidge, Winthrop	III.	1896
Copeland, Frederick K.	I.	1876
Copeland, Henry F.	I.	1894
Cowles, Luzerne S.	I.	1897
Cox, Frederic E.	IV.	1895
Crabtree, Fred	V.	1889
Crafts, Walter N.	III.	1895
Craighill, Nathaniel R. VI. 1894.	II.	1893
*Craigin, Henry A. (Nov. 27, '96)	II.	1889
Cramer, Edwin C.	IV.	1896
*Crane, Francis H. (Apr. 15, '93)	VI.	1886
Crane, Henry M. . . VI. 1896.	II.	1895
Crane, John G.	I.	1890
Crane, Joshua, Jr.	VI.	1892
Crane, Stephen D.	VI.	1896
Crary, Horace A.	I.	1894
Crocker, Allen S.	II.	1897
Crocker, Carl I.	I.	1896
Cromwell, Charles H.	II.	1889
Crosby, Ralph W.	XIII.	1896
Crosby, William O.	VII.	1876
Crosby, William W.	II.	1893
Cross, Charles R.	Sci. and Lit.	1870
Cummings, Henry, Jr.	IV.	1896
Cunningham, Edward	X.	1891
Currier, Charles R.	II.	1897
Curtin, John A.	I.	1892
Curtis, Arthur V.	XIII.	1897
Curtis, Ralph E.	II.	1887
*Curtis, Russell H. (June 8, '97)	I.	1870
Cushing, William C.	I.	1887
Cutler, Charles H.	VI.	1894
Cutler, Harry H.	II.	1881
*Cutler, Henry M. (May 16, '77)	I.	1871
Cutler, William H.	IV.	1897
Cutter, George A.	II.	1895
Cutter, Louis F.	I.	1886
Cutter, Roland N.	I.	1889
Dadmun, George E.	II.	1892
Daggett, Herbert C.	I.	1891
Dalton, Nelson W.	VI.	1894
Dame, Frank L.	VI.	1889
Dan, Takuma	III.	1878
Dana, Gorham	I.	1892
Daniell, Jere R.	XIII.	1897
Daniels, Nathan H., Jr.	VI.	1896
Darlington, F. Graef	IX.	1881
Darrow, Courtland R.	I.	1893
Dates, Henry B.	VI.	1894
Davenport, William S.	V.	1889
Davies, T. Clive	II.	1894
Davis, Albert G.	VI.	1893
Davis, Arthur L.	II.	1889
Davis, Carleton E.	I.	1893
Davis, Frank E.	II.	1883
Davis, Franklin H.	III.	1896
Davis, Leon K.	X.	1894
Davis, Robert A.	VI.	1896
Davis, William E., Jr.	IV.	1895
Davis, Willis E.	Sci. and Lit.	1876
Dawes, Herbert N.	II.	1893
Day, Nathan B.	II.	1894
Day, Sarah L.	V.	1887
Dean, Arthur D.	VI.	1895
Dearborn, George K.	IX.	1893
Deavitt, Henry M.	V.	1897
Defren, George	V.	1895
Dejonge, Alfred L.	II.	1895

* Deceased.

NAME.	COURSE.	CLASS.
de Lancey, Darragh	II.	1890
deLancey, Harriet Gallup	V.	1894
Delano, Alexander J.	I.	1890
DeLong, Harold W.	XIII.	1896
Demeritt, Leonard M.	II.	1897
Demond, Charles D.	III.	1893
Denison, Edward E.	X.	1895
*Dennett, Clarence L. (June 6, '78)	II.	1876
Dennett, W. Hartley	IV.	1892
Densmore, Edward D.	VI.	1893
Derr, Louis	VI.	1892
Devens, Richard	II.	1888
De Wolf, Arthur S.	II.	1897
De Wolf, John O.	II.	1890
Dewson, Edward H., Jr.	II.	1885
Dickerman, Judson C.	X.	1895
Dickey, Charles W.	IV.	1894
Dickinson, Leonard D. P.	VI.	1896
Dill, Howard A.	I.	1891
Dillon, Frederick N.	V.	1893
Dixon, Laurence B.	VI.	1893
Doane, Alfred O.	III.	1884
Doane, George E.	I.	1874
Dodd, Margaret E.	VII.	1892
Dodge, Charles B.	IX.	1889
Dodge, Edwin S.	IV.	1897
Dodge, Frank S.	I.	1875
Dodge, Frederick H.	II.	1890
Dodge, Samuel D.	I.	1893
Dodge, William B.	I.	1872
Doe, Charles C.	VII.	1886
Dolan, Peter F.	VI.	1893
Doliber, Franklin W.	IX.	1897
Donham, Benjamin C.	I.	1895
Donn, Edward W., Jr.	IV.	1891
Donovan, John A.	IX.	1897
Doolittle, Orrin S.	V.	1886
Dorman, Theodore T.	X.	1893
Dorr, Edgar S.	I.	1875
*Dorr, Frank H. (Jan. 8, '97)	VI.	1891
Dorrance, John T.	V.	1895
Dorrance, William T.	I.	1896
Doten, Alfred R.	II.	1897
Dougherty, Proctor L.	VI.	1897
Douglass, Walter B.	I.	1892
Downes, Alfred K.	I.	1897
Dowse, William B.	IV.	1874
Drake, Albert W.	VI.	1895
Draper, Fred W.	III.	1895
Dresser, Henry C.	II.	1892
Driscoll, James M.	I.	1896
Driscoll, Joseph	I.	1896
Drisko, William J.	VIII.	1895
Drum, Alphonsus L.	VI.	1896
Du Bois, Barron P.	VI.	1892
Duckworth, Harry S.	V.	1894
Duff, James C.	V.	1896
Duff, John	V.	1881
Dunbar, Albert	V.	1895
Dunbar, Francis W.	VI.	1890
Dunbar, W. Otis	II.	1879
Dunham, Lewis A.	I.	1891
du Pont, Henry B.	X.	1894
du Pont, Irénée	X.	1897
du Pont, Pierre S.	V.	1890
Durfee, Nathan	II.	1889
Dutton, Edgar F.	VI.	1888
Dwelley, Edwin F.	I.	1890
Dwyer, John R.	IV.	1897
Dyar, Harrison G.	V.	1889
Eames, Charles H.	VI.	1897
Eastman, Henry F.	II.	1888
Eaton, Charles S.	IV.	1878
Eaton, William W.	II.	1897
Edes, William C.	I.	1875
Edmands, Frederick L.	II.	1897
Edmands, J. Rayner	II.	1869
*Edwards, Arthur V. (Aug. 3, '97)	IV.	1889
Eldridge, George F.	V.	1892
Ellis, John	VI.	1894
Ellis, Rolfe M.	V.	1895
Ellis, Walter H.	I.	1895
*Ellsworth, Alfred B. (Jan. 10, '93)	I.	1888
Elson, Arthur	X.	1897
Ely, Edward F.	IV.	1882
Ely, Sumner B.	II.	1892
Emerson, Joseph S.	I.	1874
Emery, Elwood A.	IV.	1890
Emery, James A.	I.	1893
Emmerton, Frederic A.	V.	1872
England, Paul W.	VI.	1891
Ensworth, Horace H.	VI.	1891
Eppendorff, John G.	IV.	1883
Eppes, Richard, Jr.	II.	1888
Esty, William	VI.	1893
Eveleth, Charles F.	VI.	1895
Everett, Frank W.	VI.	1897
Ewen, Malcolm F.	IV.	1897
Ewing, William C.	VI.	1897
Eynon, John S.	VI.	1897
Fabens, George W.	I.	1879
*Fabens, S. A., Jr. (Mar. 14, '75)	I.	1873
Farmer, George W.	II.	1886
Farnsworth, Arthur J.	VI.	1894
Farquhar, Robert D.	IV.	1895
Farwell, Arthur	VI.	1893
*Faunce, Elmer (July 6, '82)	III.	1871
Faunce, George	III.	1882
Faunce, Linus	II.	1887
Favor, George W.	III.	1891
Faxon, Francis E.	II.	1895
Faxon, William A.	V.	1897

*Deceased.

NAME.	COURSE.	CLASS.
Fay, Frederic H.	I.	1893
Feeley, Frank G.	II.	1897
Feland, Logan	IV.	1892
Felton, Samuel M.	I.	1873
Fenn, William H.	I.	1890
Ferguson, John N.	I.	1894
Ferguson, Louis A.	VI.	1888
Ferris, Robert M., Jr.	VI.	1897
Field, Frederick E.	XI.	1896
*Firth, Frank R. (June 9, '72)	I.	1868
Fish, Milton L.	VI.	1895
Fish, Walter C.	VI.	1887
Fisher, Charles H.	II.	1877
Fisher, Elizabeth F.	XII.	1896
Fisher, Frederick L.	I.	1873
Fisk, Harry G.	IX.	1896
Fiske, Henry A. . . . VI.	1892	X. 1891
Fiske, J. Parker B.	VI.	1889
Fitch, Alfred L.	II.	1884
Fitz Gerald, Francis A. J.	VI.	1895
Fitz Gerald, John W.	VI.	1897
Fletcher, Charles R.	V.	1876
Flint, Bertram P.	II.	1888
*Flint, Wm. C. (June 14, '81)	III.	1877
Flint, William P.	II.	1890
Flood, Samuel D.	II.	1890
Foote, Edward H.	I.	1871
Foque, Theodore A.	II.	1888
Foran, George J.	II.	1883
Forbes, Eli	Sci. and Lit.	1868
Forbes, Fred B.	V.	1893
Forbes, Howard C. . . VI.	1892	X. 1891
Forbush, Gayle T.	X.	1892
Forster, Frederick E.	X.	1896
*Foss, Edward S. (Oct. 3, '90)	V.	1886
Foss, Fred E.	I.	1886
*Foss, Harry A. (Aug. 19, '85)	II.	1882
*Foster, Theodore R. (Apr. 15, '97)	II.	1886
Fowle, Arthur E.	X.	1893
Fowle, Frederick E., Jr.	VIII.	1894
Fox, Frederick	V.	1885
Fox, John M.	VI.	1887
Francis, Frederick L.	IV.	1892
Frank, Mortimer	I.	1897
Freeman, John R.	I.	1876
French, Alfred W.	I.	1889
French, Allen	IX.	1892
French, Charles A.	III.	1882
French, Edward R.	VI.	1892
French, Edward V.	II.	1889
French, George L. R.	I.	1884
French, Hollis	VI.	1889
French, Lester G.	II.	1891
Fresch, George, Jr.	IV.	1896
Frisbie, Walter L.	II.	1893
Frost, Howard V.	V.	1882

NAME.	COURSE.	CLASS.
Fry, Thomas W.	II.	1885
Füger, Frederick W.	II.	1891
Fukuzawa, Stejiro	I.	1888
Fuller, Andrew D.	I.	1895
Fuller, Charles E.	II.	1892
Fuller, Frank L.	I.	1871
Fuller, Frederic W.	VI.	1897
Fuller, George W.	V.	1890
Fuller, J. Edward, Jr.	IV.	1888
Fuller, Myron L.	XII.	1896
Fuller, Robert L.	IV.	1896
Fuller, William B.	I.	1883
*Furber, Pierce P. (Apr. 7, '93)	IV.	1877
Fyfe, James L.	IV.	1897
Gage, Stephen D.	V.	1896
Gaillard, Lawrence L.	VI.	1897
Gale, Horace B.	II.	1883
Galloupe, Francis E.	II.	1876
Gallup, Harriet T. (*see* de Lancey).		
Gamble, William B.	IX.	1893
Gannett, Earl W.	VI.	1889
Gardiner, Edward G.	VII.	1882
Gardiner, John H.	II.	1895
Gardner, Harry W.	IV.	1894
Gardner, Henry	II.	1896
Gardner, J. Howland	II.	1894
Garfield, Abram	IV.	1896
Garfield, Alexander S.	II.	1886
Garrison, Charles	VI.	1891
Gay, Charles M.	IV.	1895
Gay, Joseph B.	IV.	1887
Gay, Martin	I.	1877
Gaylord, Wallace K.	V.	1893
Gerrish, William H.	II.	1888
Gilbert, James P.	V.	1889
Gilbert, Perley F.	IV.	1895
Gilkey, R. Waldo	II.	1894
Gill, Augustus H.	V.	1884
Gill, Edward P.	IV.	1892
Gilman, Charles C.	III.	1868
Gilmore, George L.	II.	1890
Gilmore, Howard . . VI.	1893	II. 1892
Gilmore, Jonathan M.	VI.	1897
Gleason, Walter A.	I.	1897
Gleason, Walter H.	V.	1887
Glidden, John W.	II.	1890
*Glover, Marie O. (*see* Holman).		
Goddard, David S.	III.	1881
Goodale, Charles W.	III.	1875
Goodell, George H.	II.	1892
Goodhue, Leonard H.	V.	1896
Gooding, Charles S.	II.	1879
Goodrich, Robert R.	III.	1885
Goodspeed, George M.	V.	1897
Goodwin, Harry M.	VIII.	1890
Goodyear, Watson E.	VI.	1895

* Deceased.

NAME.	COURSE.	CLASS.
Gordon, Edward B., Jr.	II.	1896
Gorham, Marvine	II.	1893
*Gould, Robert H. (Nov. 19,'78)	Metall.	1876
Gowen, Sumner	I.	1897
Grabau, Amadeus W.	XII.	1896
Gray, Joseph P.	I.	1877
Gray, Owen H.	VI.	1897
Gray, William P.	VI.	1892
Green, Andrew H.	I.	1896
Green, Francis C.	XI.	1895
Green, William W.	I.	1892
Greene, Charles E.	I.	1868
*Greene, Irving G. (Feb. 24, '91)	I.	1888
Greenlaw, Frank M.	VI.	1890
Greenleaf, Lewis S.	VI.	1894
Gregory, John H.	I.	1895
Greer, Medorem W.	VI.	1891
Grimes, Charles B.	V.	1892
Gross, Harold G.	VII.	1888
Grover, Edmund	I.	1877
Grover, Nathan C.	I.	1896
Grush, Henry G.	VI.	1896
Guild, Frederick, Jr.	Sci. and Lit.	1873
Guppy, Benjamin W.	I.	1889
Guptill, Frank E.	VI.	1896
Gustin, George H.	III.	1883
Hadaway, William S., Jr.	VIII.	1887
Hadley, Frederick W.	VI.	1893
Hagar, Edward McK.	II.	1893
Haines, Frank M.	III.	1884
Hale, George E.	VIII.	1890
Hale, Richard A.	I.	1877
Hall, Albert F.	II.	1868
Hall, Edward C., Jr.	II.	1892
Hall, Francis P.	V.	1882
Hall, John R.	VI.	1890
Hall, Robert G.	V.	1897
Hall, Sarah A.	VIII.	1894
Hall, Walter A.	VI.	1896
Hall, William T.	V.	1895
Hallaran, John S.	I.	1896
Hamblet, George W.	II.	1888
Hamilton, Alfred S.	IX.	1897
Hamilton, Edgar L.	III.	1891
Hamilton, George W.	I.	1880
Hammatt, Edward A. W.	I.	1875
Hammett, Philip M.	II.	1890
Hammond, Charles F.	I.	1891
Hammond, Charles L.	I.	1897
Hanchett, George T.	VI.	1893
Handy, Edward A.	I.	1875
Hannah, Frederick A.	II.	1895
Hapgood, Charles W.	V.	1896
Hardman, John E.	III.	1877
Hardy, Robert S.	VI.	1896
Harkness, George E.	I.	1896
Harriman, Frederic O.	I.	1883
Harrington, Joseph	II.	1896
Harrington, Walter K.	I.	1885
Harris, Frederick W.	XI.	1895
Harris, W. Dale	I.	1873
Harris, William L.	VII.	1888
Harrison, Burt S.	IV.	1894
*Hartwell, Ernest G. (Sept. 22, '89)	IV.	1879
Hartwell, Hiram B.	II.	1896
Harvey, Frederic H.	III.	1893
Harvey, George L.	II.	1888
*Harwood, F. W., Jr. (Oct. 18, '95)	VI.	1894
Harwood, Harry A.	I.	1892
Haskins, Charles N.	VIII.	1897
Haskins, William	III.	1891
Haste, James H.	V.	1896
Hastings, Charles F.	III.	1888
Hastings, Harry P.	I.	1894
Hatch, Arthur E.	I.	1891
Hatch, Israel, Jr.	X.	1897
Hathaway, D. Lewis K.	II.	1886
Hathaway, Herbert E.	V.	1891
Hathaway, Savory C., Jr.	VI.	1888
Haven, George B.	I.	1894
Haven, Harry M.	II.	1895
Hawkins, Edgar M.	II.	1897
Hawley, Harvey F.	I.	1896
Hayden, Charles	IX.	1890
Hayden, George W.	VI.	1895
Hayden, Sophia G.	IV.	1890
Hayes, Frank	II.	1890
Hayes, Harry E.	VI.	1890
Hayward, Harrison W.	X.	1896
Hayward, Nathan	VI.	1897
Hayward, Royal H.	VI.	1897
Hazard, Schuyler	I.	1890
*Head, James H. (Aug. 18, '75)	II.	1875
Healy, Frederick E.	II.	1897
Heath, George L.	V.	1888
Hedge, Henry R.	IX.	1896
Hedge, William R.	IX.	1896
Heermann, Frederick M.	II.	1896
Heins, George L.	IV.	1882
Hemmings, Frederick J.	V.	1897
Henck, John B., Jr.	VIII.	1876
Henderson, James B.	II.	1896
Henry, Ralph C.	IV.	1896
Herrick, Edward W.	II.	1888
Herrick, James A.	V.	1872
Hersam, Ernest A.	V.	1891
Hewett, Joseph	VIII.	1896
Heywood, Albert S.	VI.	1892
Heywood, George H.	III.	1884
*Heywood, Lincoln C. (Dec. '94)	I.	1891
Hibbard, Henry D.	III.	1877
Hibbard, Thomas	II.	1875

* Deceased.

NAME.	COURSE.	CLASS.
Higgins, Alfred S.	IV.	1878
Higgins, Edward E.	VI.	1886
Hildreth, William O.	II.	1887
Hill, William G., Jr.	V.	1897
Hill, William R.	IV.	1894
Hilliard, John D., Jr.	VI.	1892
Hinckley, J. Fred	X.	1893
Hinman, Charles W.	III.	1870
Hobart, Henry M.	VI.	1889
Hobart, James C.	II.	1887
Hobbs, Franklin W.	II.	1889
Hodgdon, Frank W.	I.	1876
Hodge, James M.	III.	1872
Holbrook, Elliot	I.	1874
Holder, James G.	V.	1884
Holdrege, Henry A.	VI.	1895
Hollingsworth, Sumner	II.	1876
Hollis, Frederick S.	V.	1890
Hollis, Walter M.	VI.	1896
Holman, George U. G.	VI.	1889
*Holman, Marie G. (May 5, '85)	V.	1881
Holman, Silas W.	VIII.	1876
Holmes, Francis C.	IX.	1892
Holmes, George A.	X.	1891
Holton, Edward C.	V.	1888
Homer, Eleazer B.	IV.	1885
Hongma, Aechirau	I.	1874
Hooker, Richard	IV.	1889
Hopewell, Charles F.	VI.	1894
Hopkins, Arthur T.	XI.	1897
Hopkins, Frederick L.	V.	1889
Hopkins, James C.	IV.	1896
Hopkins, Prescott A.	IV.	1892
Hopkins, William J.	VI.	1886
Hopton, Walter E.	II.	1891
Horn, Henry J., Jr.	I.	1888
Horton, S. Ellsworth	II.	1890
Horton, Theodore	XI.	1894
Hosea, Raphael M.	I.	1879
Hosford, Roger F.	V.	1897
Houck, William G.	I.	1893
Howard, Charles P.	I.	1874
Howard, Ethan H.	VI.	1897
Howard, Frank A.	I.	1896
Howard, Lemuel F.	VI.	1895
Howarth, George R.	II.	1895
Howe, George E.	I.	1895
Howe, Henry M.	III.	1871
Howe, Horace J.	I.	1879
Howe, Joseph M.	I.	1896
Howes, Benjamin A.	VI.	1897
Howes, Clarence L.	II.	1873
Howes, Clifton A.	VI.	1894
Howland, Albert H.	I.	1871
Howland, Frederick H.	IX.	1893
Hoxie, Frederick J.	VI.	1892
Hoyt, William E.	I.	1868
Hubbard, Chester D.	VI.	1897
Hulse, William S.	VI.	1894
Hultman, Eugene C.	I.	1896
Humphreys, Walter	II.	1897
Hunnewell, Frederick A.	XIII.	1897
Hunt, Albert F., Jr.	I.	1894
Hunt, Alfred E.	III.	1876
Hunt, Edward M.	I.	1894
Hunt, Harry B.	II.	1897
Hunt, Harry D.	IX.	1897
Hunt, Harry H.	VI.	1889
Hunt, Samuel P.	VI., X.	1895
*Huntington, W. F. (Aug. 7, '77)	I.	1875
Hurd, Benjamin	VI.	1896
Hurd, E. Lawrence	II.	1895
Hussey, Oren S.	II.	1887
Hutchings, James H.	II.	1883
Hutchins, Edward S.	II.	1889
Hutchinson, W. Spencer	III.	1892
Huxley, Edward H.	II.	1895
Hyde, Charles G.	XI.	1896
Ilsley, John P., Jr.	II.	1897
Ingalls, Charles H.	VI.	1896
Ingalls, Walter R.	III.	1886
Ingraham, George H.	IV.	1892
Jackson, Daniel D.	V.	1893
Jackson, Frank H.	III.	1874
Jacobs, Arthur L.	VI.	1892
Jacobs, Elbridge C.	III.	1897
Jacques, William W.	VIII.	1876
James, Frank M.	II.	1888
James, Lawrence S.	V.	1893
James, Samuel, Jr.	III.	1876
James, Walter H.	II.	1896
Jameson, Arthur H.	V.	1893
Jameson, Minor S.	I.	1896
Janvrin, Ned H.	I.	1894
Jenkins, Charles D.	V.	1882
Jenney, Walter	III.	1877
Jennings, Arthur L.	II.	1897
*Jewett, William P. (Jan. 4, '84)	I.	1873
Johnson, Charles H.	I.	1894
Johnson, Herbert E.	VI.	1894
Johnson, James W.	I.	1882
Johnson, Jesse F.	X.	1892
Johnson, Lewis E.	II.	1889
Johnson, William S.	I.	1889
Johnston, William A.	II.	1892
Jones, Arthur W.	VI.	1888
Jones, Edward A.	II.	1887
Jones, Howard K.	IV.	1896
Jones, Theodore I.	VI.	1896
Jordan, Edwin O.	VII.	1888
Jordan, Harry W.	V.	1891
Jordan, William F.	I.	1886

* Deceased.

NAME.	COURSE.	CLASS.
Kales, William R.	II.	1892
Kauffman, Milton H.	V.	1891
Kebler, Julian A.	I.	1878
Keene, Thomas M.	I.	1891
Keene, William F.	I.	1891
Keisker, Frank H.	IV.	1897
Keith, Simeon C., Jr.	VII.	1893
Keith, William H.	VI.	1896
Kendall, Albert L.	II.	1894
Kendall, Charles B.	V.	1887
Kendall, Francis H.	I.	1890
Kendall, William R.	VI.	1892
Kenison, Ervin	II.	1893
Kenney, C. Belle	V.	1886
Kennicott, Harry A.	I.	1890
Kent, William A.	I.	1897
Keough, William T.	II.	1888
Keyes, Frederic H.	II.	1893
Kilham, Alfred C.	II.	1876
Kilham, Walter H.	IV.	1889
Killam, James W.	I.	1897
Kimball, Herbert S.	X.	1891
Kimball, Joseph H.	XI.	1894
*Kimball, William A. (Dec. '87)	II.	1873
Kimberly, Albert E.	V.	1897
King, Warren D.	VI.	1893
King, William H.	IX.	1894
Kinnicutt, Leonard P.	V.	1875
Kinsman, Arthur D.	VIII.	1889
*Kirk, Joseph (July, '86)	II.	1877
Kirk, Robert H.	II.	1894
Kittredge, George W.	I.	1877
Kittredge, John W.	II.	1894
Knapp, Charles R.	IV.	1894
Knapp, Frederick B.	I.	1879
Knapp, George F.	V.	1884
Knapp, J. Austin	II.	1876
Knight, Franklin	I.	1890
Knight, George H.	II.	1897
Knight, Joseph H.	IX.	1896
Knowles, Morris, 2d	I.	1891
Knowlton, Willis T.	I.	1893
Koch, Armand D.	IV.	1892
Koehler, Walter J.	V.	1881
Kotzschmar, Hermann, Jr.	II.	1895
Kunhardt, Lewis H.	II.	1889
Lacount, Henry O. . VI. 1895.	II.	1894
Lamb, Augustus C.	X.	1897
Lamb, William F.	VI.	1893
Lambert, Wallace C.	I.	1893
Lamborn, Leebert L.	V.	1896
Lane, Fred H.	II.	1879
Lane, Lucius P.	IX.	1894
Lane, William H.	VI.	1892
Latey, Harry N.	VI.	1893
Latham, Harry M.	II.	1893
Lauder, George B.	VI.	1889
Lawley, George S.	VI.	1897
Lawrence, Charles E.	VI.	1896
*Lawrence, J. A. M. (Jan. 18, '93)	II.	1886
Lawrence, Ralph R.	VI.	1895
Lawrence, William H.	IV.	1891
Laws, Eugene H.	V.	1896
Laws, Frank A.	VI.	1889
Lawton, Charles F.	I.	1877
Leach, Albert E.	II.	1886
Leach, William H., Jr.	II.	1897
Learned, Ernest F.	VI.	1897
LeBaron, Frederic N.	IV.	1897
Le Bosquet, Maurice	V.	1895
Lee, Elisha, Jr.	I.	1892
Lee, George S.	I.	1888
Leeming, Woodruff	IV.	1891
Leighton, Marshall O.	VII.	1896
Leland, Walter S.	XIII.	1896
Leland, William E.	II.	1891
Lenfest, Bertram A.	II.	1890
Leonard, Frederick M.	I.	1894
Leonard, H. Ward	III.	1883
Le Sueur, Ernest A.	VI.	1890
Lewis, Edwin J., Jr.	IV.	1881
Lewis, Herbert	VI.	1893
Lewis, James E.	I.	1897
Lewis, Marion L.	IV.	1896
Lewis, Theodore J.	II.	1876
Lewis, Wilfred	II.	1875
Lewis, William W.	II.	1889
Libby, Dorville, Jr.	VI.	1895
Lincoln, Alfred V., Jr.	II.	1895
Lincoln, G. Russell	III.	1871
Lindsay, William B.	V.	1881
Linzee, John W., Jr.	I.	1889
Litchfield, Paul W.	X.	1896
Livermore, William D.	V.	1887
Locke, Bradford H.	III.	1872
Locke, Charles E.	III.	1896
Locke, Frank L.	I.	1886
Locke, William W.	XI.	1892
Logan, Andrew J. G.	I.	1895
Logan, John W.	II.	1893
Lonngren, John E.	II.	1896
Loomis, Henry M.	V.	1897
Lootz, Alf C.	I.	1896
*Lord, Frank H. (Dec. 31, '90)	II.	1885
Loring, Ernest J.	IV.	1895
Loring, Frederic R.	VII.	1879
Loring, Harrison, Jr.	II.	1889
Loring, Robert	X.	1894
Lothrop, Thomas M.	II.	1895
Lovejoy, Frank W.	X.	1894
Loveland, Benjamin A.	I.	1897
Loveland, James W.	V.	1888

* Deceased.

NAME.	COURSE.	CLASS.
Low, Albert H.	V.	1876
Low, John F.	V.	1882
Low, Wilson H.	V.	1886
Lowell, Guy	IV.	1894
Lufkin, Elgood C.	II.	1886
Lukes, Joseph B.	VI.	1892
*Lund, Amy Stantial (Feb. '88)	V.	1884
Lund, James	V.	1881
Lunt, Robert S.	X.	1897
Lyle, David A.	III.	1884
Lyman, George W.	VI.	1896
Lynch, Patrick M.	I.	1894
Lynde, James P.	IX.	1886
Lyon, Joseph P.	I.	1892
Lyon, Tracy	II.	1885
Lythgoe, Hermann C.	V.	1896
McAlpine, William H.	XI.	1896
McCann, Frank G.	II.	1896
McCarthy, George H.	IX.	1897
McCaw, Wallace E.	VI.	1892
MacClure, Colbert A.	IV.	1894
McConnell, George B.	I.	1890
McCormick, Edmund B.	II.	1897
Macfarlane, William W.	V.	1879
McGoodwin, Henry K.	IV.	1894
McJennett, William D.	X.	1894
Mackay, Angus R.	III.	1894
McKenna, Alexander G.	V.	1891
McKibben, Frank P.	I.	1894
McKim, Alexander R.	I.	1886
*McLaughlin, G. V. (Aug. 14, '92)	V.	1888
McManus, James T. R.	I.	1895
McMillan, John P.	X.	1897
McQuesten, George E.	VI.	1893
MacRae, Hugh	III.	1885
Maguire, Thomas F. J.	VI.	1897
Mahoney, Joseph M.	VI.	1897
Mahony, Marion L.	IV.	1894
Main, Charles T.	II.	1876
Maki, Heiichiro	VI.	1893
Maltby, Margaret E.	VIII.	1891
Manahan, Elmer G.	XI.	1892
Manahan, John H.	VI.	1896
Manley, Laurence B.	I.	1892
Mann, Arthur S.	II.	1888
Mann, Bertram H.	VI.	1890
Mann, Frederick M.	IV.	1894
Manning, Harry G.	II.	1882
Mansfield, Arthur N.	VIII.	1891
Mansfield, Edward S.	VI.	1896
Mansfield, George W.	III.	1882
Mansfield, Harvey M.	III.	1883
Mansfield, R. Herbert, Jr.	VI.	1892
Manson, Edward S., Jr.	VIII.	1897
Marble, Dwight N.	VI.	1895
March, Clement	I.	1891
Marcy, Willard A.	II.	1893
Marmon, Walter C.	II.	1895
Marquand, Philip	I.	1891
Marshall, Herman W.	VII.	1897
Martin, Henry	V.	1885
Mason, Earl P.	II.	1897
Mason, Sampson D.	I.	1870
Masters, Frank B.	II.	1895
Mathews, Albert P.	VII.	1892
Maithes, François E.	I.	1895
Matthes, Gerard H.	I.	1895
May, George H.	V.	1892
*May, William C. (Mar. 11, '78)	V.	1873
Mayer, Virginius A.	VI.	1894
Meade, Charles A.	I.	1894
Melluish, James G.	IX.	1896
Merrell, Charles G.	V.	1888
Merrell, Irving S.	II.	1896
Merriam, Harry B.	I.	1886
Merriam, Henry P.	VI.	1886
*Merrick, George E. (April 23, '92)	V.	1890
Merrill, Allyne L.	II.	1885
*Merrill, Eben G. (Oct. 12, '87)	I.	1885
Merrill, Frank H.	X.	1893
Merrill, George A.	XI.	1892
Merrill, N. Frederick	V.	1870
Merryweather, George E.	II.	1896
Merriss, George F. C.	I.	1895
Meserve, Charles A.	V.	1895
Messenger, William H.	II.	1892
Metcalf, Arthur H.	II.	1879
Metcalf, Frederick	II.	1890
Metcalf, Leonard	I.	1892
*Meyer, Jos. A., Jr. (Dec. 20, '94)	IV.	1891
Mildram, Samuel H.	I.	1889
Millen, Loring R.	II.	1880
Miller, Edward F.	XI.	1886
Miller, Edwin C.	II.	1879
Miller, Franklin T.	XIII.	1895
Miller, Herbert S.	VI.	1892
Miller, Lilly	V.	1892
Miller, William T.	Elective.	1880
Mills, Arthur L.	I.	1876
Minot, Charles S.	V.	1872
Mitchell, Benjamin M.	II.	1893
Mitchell, Guy E.	II.	1891
Mixter, Samuel J.	VIII.	1875
Moat, Charles P.	V.	1896
Moody, Burdett	I.	1890
Moody, Herbert R.	V.	1892
Moore, Frank A.	IV.	1888
Moore, Fred F.	I.	1891
Moore, Frederick Campbell	X.	1892
Moore, Frederick Clouston	II.	1891
Moore, Henry C.	II.	1888
Moore, John D. J.	II.	1895

* Deceased.

NAME.	COURSE.	CLASS.
Moore, Leslie R.	V.	1894
Moore, Stephen W.	II.	1890
Moran, George A.	V.	1897
Morey, Richard	I.	1895
*Morgan, Frank H. (Dec. 5, '89)	V.	1878
Morrill, Asa H.	I.	1892
Morris, Charles, Jr.	VI.	1896
Morrison, Frank C.	I.	1882
Morse, Frank B.	I.	1873
Morse, Philip S.	III.	1884
Morss, Everett	III.	1885
Morss, Henry A.	VI.	1893
Moseley, Alexander W.	II.	1891
Mosman, Philip A.	III.	1887
Mossman, William	VI.	1891
Motch, Edward R.	II.	1897
Mott, William E.	I.	1889
Mower, George A.	II.	1881
Mudge, Benjamin C.	I.	1877
Mulhall, Harold T.	VI.	1897
Mulliken, Samuel P.	V.	1887
Mumford, Edgar H.	II.	1886
Munroe, James P.	III.	1882
*Myrick, Willis H. (Oct. 17, '75)	II.	1874
Nash, Luther R.	VI.	1894
Neave, Charles	VI.	1890
Nesbit, Arthur F.	VI.	1895
Nevin, Charles K. B.	IV.	1896
Newbegin, Parker C.	I.	1894
Newell, Allan H.	II.	1890
Newell, Frederick H.	III.	1885
Newell, Herbert D.	I.	1896
Newell, John L.	X.	1895
Newhall, Charles S.	III.	1896
Newhouse, Henry L.	IV.	1894
Newkirk, Walter M.	II.	1892
Newman, Frank E.	IV.	1892
Nichols, Everell J.	I.	1878
Nichols, Henry W.	XII.	1893
*Nichols, William R. (July 14, '86)	V.	1869
Nickerson, Addison D.	I.	1888
Nickerson, William E.	V.	1876
Nims, Norman G.	IV.	1890
Noa, Frederic M.	IX.	1894
Noble, Howard A.	II.	1897
Norris, Albert P.	V.	1897
Norris, Almon E.	II.	1890
Norris, Clarence G.	I.	1890
Norris, George L.	III.	1887
Norris, Webster	III.	1881
Norton, Charles L.	VI.	1893
Norton, Francis C.	IX.	1893
Norton, Fred E.	II.	1891
Nowell, John C.	VI.	1894
Noyes, Arthur A.	V.	1886
Noyes, Harry L.	I.	1890
Noyes, Joseph K.	I.	1890
Nute, Joseph E.	I.	1885
Nutter, Charles L.	II.	1893
Ober, Arthur J.	I.	1892
O'Grady, Marcella I. (*see* Boveri)		
Olin, Edwin R.	X.	1897
Ordway, Evelyn W.	V.	1881
Orr, Hugh	IV.	1897
Osgood, Edwin P.	XI.	1887
Otis, Hamilton	I.	1892
*Owen, E. H., Jr. (July 3, '90)	II.	1879
Owen, Fred B.	VI.	1896
Owen, G., Jr.	II.	1894
Oxford, George H. K.	VI.	1891
Oxnard, Benjamin A.	III.	1875
Packard, George A.	III.	1890
Paine, Cecil E.	II.	1893
Paine, Charles B.	IV.	1897
Palmer, William I.	VI.	1891
*Paraschos, N. T. (Mar. 22, '93)	I.	1892
Parce, Joseph Y., Jr.	II.	1893
Park, Charles F.	II.	1892
Park, Franklin A.	II.	1895
Parker, Edwin M.	IV.	1894
Parker, Theodore	I.	1881
Parker, Winthrop D.	IV.	1895
Parker, W. Thornton, Jr.	IX.	1897
Parks, Oren E.	I.	1893
Parmelee, Charles L.	I., XI.	1895
Parrish, J. Scott	II.	1892
Parsons, Archibald L.	I.	1897
*Parsons, Charles O. (Oct. 5, '94)	III.	1873
Patch, Maurice B.	III.	1872
Patch, Walter W.	I.	1894
Patten, William F.	VI.	1895
Patterson, George W., Jr.	VI.	1887
Pauly, Karl A.	VI.	1896
Peabody, Cecil H.	II.	1877
Pearson, Edwin R.	VI.	1888
Pechin, John S.	II.	1897
Peirce, Vernon M.	I.	1897
Pennell, Walter O.	VI.	1896
Perkins, Frank E.	IV.	1892
Perkins, Herbert B.	I.	1874
Perley, Clarence W.	VII.	1896
Perry, John C.	II.	1892
*Peters, Quintard (Aug. 2, '94)	IX.	1887
Peterson, Charles A.	VI.	1888
Pettee, Charles L. W.	V.	1897
Peyton, William R.	II.	1890
Phelan, Joseph W.	V.	1894
Phillips, Harry M.	II.	1893
Phillips, Henry A.	IV.	1873
Phillips, Henry M.	VI.	1892
Phillipps, George	III.	1873
Phipps, David W.	Phil.	1876

* Deceased.

NAME.	COURSE.	CLASS.
Pickering, William H.	VIII.	1879
Pickernell, Frank A.	VI.	1885
Pickert, Leo W.	V.	1893
Pierce, Arthur G.	VI.	1892
Pierce, Arthur W.	VI.	1892
Pierce, Edward L., Jr.	II.	1886
Pierce, Herbert F.	I.	1888
Pierce, Richard H.	VI.	1885
Pike, Clayton W.	VI.	1889
Pike, Otto S.	II.	1897
*Pike, William A. (Oct. '95)	I.	1871
Pillsbury, Joel H.	I.	1896
Pingree, Edwin D.	II.	1896
Piper, Walter E.	V.	1894
Plimpton, Arthur L.	I.	1877
Plimpton, Thomas D.	II.	1875
Poland, William B.	I.	1890
Pollock, Clarence D.	I.	1894
Pond, Frank H.	II.	1874
Pool, George B.	VI.	1888
Pope, Macy S.	I.	1892
Potter, William C.	III.	1897
Power, Charles W.	VI.	1889
Powers, Walter C.	X.	1895
Pratt, Dana M.	I.	1892
Pratt, George H.	V.	1871
Pratt, Gilbert H.	V.	1897
Pratt, William H.	VI.	1894
Prentiss, Frederick H.	II.	1873
Prentiss, Wm. A.	Sci. and Lit.	1875
Prescott, Charles O.	V.	1884
Prescott, Samuel C.	V.	1894
Pressey, Harry A.	I.	1896
Price, Raymond B.	X.	1894
Prichard, Charles F.	II.	1876
Proctor, Richard W.	V.	1894
Puffer, William L.	III.	1884
Pugh, Achilles H.	X.	1897
Pulsifer, Louis W.	IV.	1894
Purinton, Arthur J.	II.	1884
Putnam, John L.	VI.	1896
Quevedo, Narciso T.	II.	1894
Raeder, Henry	I.	1876
Ramsey, Allan	VII.	1891
Randall, Newbert M.	III.	1885
Ranlett, Arthur G.	III.	1892
Ranno, Fred W.	I.	1889
Rawson, Harry D.	IV.	1896
Ray, J. Stites	II.	1888
Raymond, Edward B.	VI.	1890
Raynolds, James W.	III.	1896
Read, Carleton A.	II.	1891
Reed, James H., Jr.	VI.	1893
Reed, Samuel G.	II.	1894
Reed, Walter W.	VI.	1895
Reed, William E.	VI.	1897
Resor, William S.	VI.	1893
*Reynolds, George F. (Jan. 9, '91)	II.	1886
Reynolds, Howard S.	VI.	1894
Reynolds, Robert D.	II.	1894
Rhodes, Frederick L.	VI.	1892
Rhodes, William S.	XII.	1897
Rice, Calvin W.	VI.	1890
Rice, Carrie (*see* Clark).		
Rice, Harry L.	X.	1893
Rich, Charles L.	I.	1876
Rich, William J.	III.	1884
Richards, Ellen H.	V.	1873
Richards, Franklin B.	III.	1884
Richards, Frederick L.	X.	1895
Richards, Louis J.	XI.	1897
Richards, Robert H.	III.	1868
Richards, Thomas G.	II.	1894
Richardson, Charles F.	II.	1886
Richardson, Daniel A.	II.	1896
Richardson, Frank D.	II.	1893
Richardson, George L.	I.	1889
Richardson, Herbert A.	V.	1887
Richardson, William C.	II.	1891
Richmond, Harold A.	II.	1893
Richmond, Knight C.	II.	1890
Ricker, Charles W.	VI.	1891
Rickey, Walter J.	II.	1895
Riggs, George F.	I.	1879
Ripley, Henry F.	II.	1894
Ripley, Henry L.	I.	1873
*Ripley, William T. (Aug. 26, '93)	II.	1882
Ripley, William Z.	I.	1890
Ritchie, James	I.	1878
Robb, Russell	VI.	1888
Robbins, Arthur G.	I.	1886
Robbins, Franklin H.	II.	1894
Roberts, Edwin H.	II.	1896
Roberts, Harold B.	II.	1890
Roberts, Odin B.	II.	1888
Roberts, William J.	I.	1891
Robertson, Andrew R.	II.	1892
Robinson, C. Snelling	III.	1884
Robinson, Dwight P.	VI.	1892
Robinson, Edward	II.	1890
Robinson, Elmer H.	VI.	1897
Robinson, Theodore W.	III.	1884
*Robinson, Thos. W. (Nov. 3, '80)	III.	1876
Rockwell, George A.	X.	1895
Rockwell, J. Arnold, Jr.	VII.	1896
Rogers, Allen H.	III.	1890
Rogers, Arthur S.	VI.	1894
Rogers, Minnie H.	IX.	1890
Rogerson, John R.	I.	1897
Rollins, Edward W.	III.	1871
Rollins, James W., Jr.	I.	1878
Rooke, Warren A.	IV.	1897

* Deceased.

NAME.	COURSE.	CLASS.
Root, William L.	X.	1891
Roots, Willard H.	IX.	1896
Rose, Frederick H.	II.	1891
Rosewater, William M.	II.	1892
Ross, Henry F.	III.	1882
Ross, John H.	Sci. and Lit.	1882
Rotch, A. Lawrence	II.	1882
Rounds, George W.	VI.	1889
Rourke, Louis K.	I.	1895
Rowell, George F.	I.	1892
Royce, James C.	II.	1897
Ruckgaber, Albert F.	VI.	1896
Ruggles, Horace F.	II.	1892
*Russel, Richard L. (July 31, '94)	I.	1889
Russell, A. LeBaron	IX.	1896
Russell, L. Kimball	V.	1886
Russell, Walter B.	II.	1897
Rust, Harold N.	VI.	1895
Rutherford, Norman F.	VI.	1896
Ryder, Josiah P.	V.	1884
Sabine, Annie W. (*see* Siebert).		
Sackett, Ward M.	VI.	1892
Sadtler, Samuel S.	V.	1895
Safford, Frederick H.	VI.	1888
Sage, Henry J.	VI.	1892
Sager, Lawrence K.	VI.	1896
Sager, Oscar F.	II.	1892
Sanborn, Clifford B.	IX.	1895
Sanborn, Frank E.	II.	1889
Sanderson, Nathan H.	I.	1896
Sargent, Albert F., Jr.	I.	1892
Sargent, Francis T.	II.	1875
Sargent, Welland F.	I.	1875
*Saunders, Robert T. (Sept. 15, '96)	I.	1892
Sauveur, Albert	III.	1889
Savage, S. Anthony	II.	1894
Sawin, Charles D.	Sci. and Lit.	1878
Sawin, Luther R.	V.	1897
Sawyer, Albert H.	IX.	1894
Sawyer, Alfred H.	II.	1888
Sawyer, Charles A.	Sci. and Lit.	1876
Sax, Moritz	IV.	1896
Sayer, Frederick L.	II.	1888
Sayward, William H., Jr.	VII.	1894
Schaller, Frederick F.	VI.	1896
Schiertz, Ferdinand A.	III.	1894
Schmidt, Louis	V.	1890
Schmitz, Frank C.	I.	1895
Schoentgen, Edward P.	IV.	1895
Schuttler, Carl	II.	1897
Schwamb, Peter	II.	1878
Schwartz, David	V.	1897
Schwarz, Franz H.	II.	1887
Schwarz, Theodore E.	III.	1876
Scofield, Donald C.	IV.	1896
Scott, Robert W.	II.	1883
Scott, Walter O.	V.	1894
Scovel, John C., Jr.	II.	1896
Sears, Henry D.	VI.	1887
Sears, Henry K.	IX.	1896
Sears, Mortimer A.	III.	1896
Sears, Walter H.	I.	1868
Seavey, John F.	II.	1886
Selfridge, Russell	IX.	1892
Sellew, William H.	II.	1897
Shailer, Robert A.	I.	1873
Shattuck, A. Forrest	V.	1891
Shaw, Edward S.	I.	1874
Shaw, Walter K.	II.	1888
Shed, Nathaniel W.	V.	1881
Shepard, Edward V.	I.	1889
Shepard, Frank E.	II.	1887
Shepard, George F., Jr.	IV.	1896
Shepard, Walter	I.	1872
Shepard, William E.	VI.	1886
Shepherd, Frank C.	XI.	1892
Sheppard, Robert K.	X.	1895
Sheridan, Richard G. B.	XIII.	1895
Sherman, Adelaide (*see* Blackmer).		
Sherman, Charles W.	I.	1890
Sherman, George W.	X.	1894
Sherman, Henry A.	III.	1897
Sherman, John C.	VI.	1895
Sherman, LeRoy K.	I.	1892
Shockley, William H.	III.	1875
Shuman, Jesse W.	VI.	1897
Shurtleff, Arthur A.	II.	1894
Shute, Harry D.	VI.	1892
Siebert, Annie W.	VIII.	1888
Silsbee, Francis H.	II.	1874
Simmons, Alfred L.	I.	1895
Simonds, Frederic P.	IV.	1894
Simpson, Edmund T.	V.	1890
Simpson, James E.	III.	1886
Sjöström, Ivar L.	I.	1888
Skinner, Fenwick F.	I.	1893
Skinner, Theodore H.	IV.	1892
Slater, Howard C.	II.	1890
Sloan, Alfred P., Jr.	VI.	1895
*Small, Nathaniel C. (July 14, '80)	V.	1880
Smalley, Frank N.	V.	1896
Smetters, Samuel T.	I.	1896
Smith, A. Blakeley	IX.	1893
Smith, Arthur C.	V.	1892
*Smith, Charles A. (Feb. 4, '84)	I.	1868
Smith, Charles P.	II.	1887
Smith, Clarence W.	V.	1888
Smith, Edward M.	II.	1888
Smith, Fred H.	X.	1896
Smith, Frederick D.	I.	1893
Smith, George A.	V.	1883
Smith, Harrison W.	II.	1897

* Deceased.

NAME.	COURSE.	CLASS.
Smith, Harry E.	V.	1887
Smith, Herbert E.	IV.	1896
Smith, Howard E.	XI.	1896
Smith, James W.	XIII.	1897
Smith, J. Waldo	I.	1887
Smith, Oren B., Jr.	III.	1897
Smith, Percy M.	II.	1897
*Smith, Walter W. (July 30, '96)	II.	1871
Smith, William F.	II.	1897
Smith, William L.	VI.	1890
Smyser, Albert E.	II.	1896
Smyser, Frederick W.	II.	1896
Smyser, James S.	II.	1896
Snead, William R.	IV.	1881
Snelling, Grenville T.	IV.	1882
Snow, Walter B.	II.	1882
Snow, William G.	II.	1889
Snyder, Frederick T.	VI.	1891
Soley, William A.	III.	1894
Solomon, John I.	VI.	1893
Sonnemann, George A.	III.	1890
Soule, Richard H.	II.	1872
Southard, Francis M.	VI.	1894
Souther, Henry, Jr.	III.	1887
Southworth, Harry C.	III.	1877
Southworth, Martin O.	VI.	1890
Spalding, Frederic P.	I.	1878
Spaulding, Henry P.	VI.	1892
Spaulding, Hollon C.	II.	1887
Spear, Walter E.	XI.	1897
Speer, J. Ramsey	II.	1893
Spencer, Theodore	VI.	1891
Sperry, Austin	II.	1894
Spiess, Arthur D.	IV.	1897
Spofford, Charles M.	I.	1893
Spooner, George H.	VI.	1891
Sprague, Timothy W.	III.	1887
Spring, Russell C.	IV.	1897
Stafford, C. Edward	III.	1873
*Stantial, Amy M. (*see* Lund).		
Stantial, Frank G.	V.	1879
Stantial, Otis T.	III.	1885
Stanwood, James B.	II.	1875
*Stanwood, James H. (May 24, '96)	I.	1887
Starbuck, George F.	II.	1897
Stearns, Harold E.	II.	1881
Stearns, Walter M.	VI.	1896
Stearns, William S.	I.	1879
Stebbins, Alfred, Jr.	III.	1884
Stebbins, Charles B.	XIII.	1897
Stebbins, Theodore	VI.	1886
Steiner, Klaus J.	III.	1897
Stetson, Frank O.	V.	1888
Stevens, Harold C.	I.	1896
Stevens, John C.	XI.	1894
Stevens, Walter F.	II.	1895

NAME.	COURSE.	CLASS.
*Steward, Charles E. (Oct. 7, '77)	I.	1877
Stickney, Delia	V.	1889
Stickney, Joseph W.	VI.	1896
Stiles, Percy G.	VII.	1897
Stimpson, Thomas F.	III.	1877
Stix, Solomon H.	IV.	1891
Stoddard, Arthur B.	V.	1891
Stoddard, Henry F.	II.	1887
Stone, Charles A.	VI.	1888
Stone, Charles F.	III.	1871
Stone, Charles H. H.	V.	1896
Stone, Esther	IV.	1896
*Stone, G. Goodwin (Mar. 4, '93)	III.	1889
Stone, Joseph	I.	1868
Storrow, Samuel	I.	1890
Story, Isaac M.	I.	1878
Stose, George W.	I.	1893
Stoughton, Augustus B.	II.	1886
Stoughton, Bradley	III.	1896
Stowe, Lovell B.	VI.	1893
Studley, Fred B.	VI.	1893
Sturges, Benton	IX.	1890
Sturgis, Elliot T.	III.	1884
Sturm, Meyer J.	IV.	1896
Sturtevant, Thomas J.	VI.	1890
Sully, John M.	III.	1888
Sumner, George W.	VI.	1896
Susmann, Julius H.	III.	1876
Sutter, Frederick C.	VI.	1893
Swain, George F.	I.	1877
Swallow, Ellen H. (*see* Richards).		
Swan, James	II.	1891
Swanton, Frederick W.	VI.	1890
Swanton, Henry A.	II.	1894
Swanton, Walter I.	I.	1893
Sweet, Kilburn S.	I.	1893
Sweetland, Ralph	II.	1889
*Sweetser, Arthur W. (Apr. 10, '78)	I.	1874
Sweetser, Ralph H.	III.	1892
Swift, William E.	I.	1895
Swope, Gerard	VI.	1895
Sykes, Henry H.	VI.	1891
Taber, George A.	I.	1894
Taft, Charles C.	X.	1895
Taft, Harrison S.	XIII. 1897.	II. 1896
Taintor, Charles W.	VI.	1893
Taintor, Giles	VI.	1887
Talbot, Henry P.	V.	1885
Talbot, Marion	IX.	1888
Tallant, George P.	IX.	1892
*Taney, Edmund (May 1, '90)	I.	1878
Tappan, Lewis H.	II.	1896
Taylor, Charles M.	II.	1893
Taylor, George	II.	1894
*Taylor, Harry B. (June 8, '97)	V.	1891
Taylor, John	VI.	1897

* Deceased.

NAME.	COURSE.	CLASS.
Taylor, Robert R.	IV.	1892
Taylor, William B.	II.	1896
Taylor, William M.	II.	1886
Tenney, Albert B.	II.	1894
Tenney, Frank	III.	1883
Tenney, Winthrop P.	VI.	1893
Thalheimer, William C.	I.	1892
Thanisch, Frank A.	III.	1896
Thomas, Alfred C.	VI.	1893
Thomas, Edward G.	II.	1887
Thomas, James W.	II.	1895
Thomas, Percy H.	VI.	1893
Thomas, William H., Jr.	V.	1896
Thompson, Albert W.	II.	1896
Thompson, Frederick	I.	1887
Thompson, Herbert A.	VIII.	1891
Thompson, Sanford E.	I.	1889
Thompson, Walter S.	I.	1887
Thomson, Lucy D.	IV.	1896
Thomson, Samuel F.	I.	1896
Thorndike, Sturgis H.	I.	1895
Thorp, Frank H.	V.	1889
Thropp, Joseph E., Jr.	III.	1894
Thurber, William B.	IX.	1889
Tidd, Arthur W.	I.	1894
Tidd, Winthrop L.	II.	1893
Tilden, Bryant P.	III.	1868
Tilley, John	VI.	1896
Tillinghast, Charles F.	II.	1895
Tillinghast, Theodore F.	I.	1870
Tinkham, Edgar L.	VI.	1897
Tinkham, Samuel E.	I.	1873
Tolman, James P.	III.	1868
Tomfohrde, John F.	II.	1893
Tompkins, Charles H., Jr.	III.	1883
Tone, Jay E.	X.	1897
Torossian, Toros H.	I.	1894
Towne, John H.	IX.	1890
Towne, Linwood O.	III.	1878
Towne, Walter I.	VI.	1888
Townsend, Walter D.	III.	1876
Tozier, Henry H.	V.	1896
Tripp, Charles A.	VI.	1893
Trout, Charles E.	I.	1896
*Trowbridge, A., Jr. (Dec. 5, '78)	II.	1871
Trowbridge, Walter B.	II.	1892
Truesdell, Arthur E.	VI.	1889
Trumbull, Morris K.	I.	1897
Tucker, Charles W.	V.	1896
Tucker, Edward A.	I.	1895
Tucker, Greenleaf R.	V.	1887
*Tucker, H. Judson (Aug. 17, '96)	VI.	1887
Tucker, Hugh M.	II.	1895
Tucker, Ross F.	IV.	1892
Tucker, William A.	III.	1893
Turnbull, Charles D.	II.	1886
Turner, Edmund K.	I.	1870
Twombly, Alexander H.	II.	1887
Tyler, Alice Brown	V.	1884
Tyler, Clifford M.	II.	1891
Tyler, Harry W.	V.	1884
Tyler, Lucius S.	VI.	1897
Underhill, Arthur P	VI.	1896
Underhill, William W.	II.	1889
Underwood, George R.	V.	1883
Vaillant, George W.	III.	1892
Van Alstine, David	II.	1886
Van Everen, Grace A.	V.	1896
Vanier, George P.	III.	1885
Varney, Theodore	VI.	1894
Verges, Luis F.	I.	1891
Very, Frank W.	V.	1873
Videto, Theodore E.	IV.	1897
Vielé, Francis S.	VI.	1891
Vielé, Maurice A.	II.	1886
Vinal, Ralph S.	IV.	1897
Vining, John F.	IV.	1892
Vining, Louis B.	VI.	1893
von Holst, Hermann V.	IV.	1896
Vorce, Clarence B.	I.	1888
Vose, Ralph	VI.	1887
Wadleigh, George R.	II.	1887
Wadsworth, Augustus B.	VII.	1893
Wait, Henry H.	VI.	1891
Waite, Charles N.	V.	1876
Waite, Loren G.	VI.	1895
Waitt, Arthur M.	II.	1879
Waitt, Henry M.	I.	1876
Waldron, S. Payson	I.	1893
Wales, Thomas C., Jr.	VI.	1892
Walker, Charles R.	V.	1893
Walker, Elton D.	I.	1890
Walker, Francis	IX.	1892
Walker, George L.	I.	1893
Walker, Robert T.	IV.	1890
Wall, William G.	VI.	1896
Wallace, Charles F.	VI.	1892
Wallace, Frederic A.	II.	1893
Wallis, Robert N.	IX.	1893
Walton, Evelyn M. (*see* Ordway).		
Walworth, Joseph E.	V.	1895
Ward, Clarence S.	III.	1872
Ward, Nahum	V.	1884
*Ware, Robert C. (June 25, '83) Phil. 1876. Sci. and Lit.		1874
Warner, Charles H.	VI.	1889
Warner, George M.	VI.	1891
Warner, Murray	II.	1892
Warren, A. Sydney	III.	1888
Warren, Edward R.	VII.	1881
Warren, Henry E.	VI.	1894
Warren, H. L. J.	III.	1875

* Deceased.

NAME.	COURSE.	CLASS.
Warren, Joseph A.	XI.	1892
Washburn, Thurlow	III.	1897
Wason, Leonard C.	VI.	1891
Wason, Rigby	VI.	1894
Wason, Robert S.	V.	1896
Waterman, Charles C.	VI.	1892
Waterman, Harry C.	IV.	1893
Waterman, Henry A.	II.	1896
Waterman, Richard, Jr.	IX.	1892
Watkins, Willard H.	V.	1895
Watts, Francis H.	I.	1897
Wayne, Jacob L.	VI.	1896
Webb, Henry S.	VI.	1892
Webster, Edwin S.	VI.	1888
Webster, William R.	III.	1875
Weed, Henry T.	V.	1891
Weeks, Isaiah S. P.	I.	1871
Weil, Charles L.	II.	1888
Wells, Albert J.	II.	1896
Wells, Edward C.	II.	1892
Wells, Webster	I.	1873
Wendell, George V.	VIII.	1892
Wentworth, Charles A.	I.	1896
Wesson, David	V.	1883
Westcott, Frank T.	I.	1892
Westcott, William R.	VI.	1894
Weston, David B.	V.	1895
Weston, William H.	III.	1891
Wetherbee, Charles P.	II.	1891
Weymouth, Thomas R.	VI.	1897
Wheeler, Ralph N.	I.	1895
Wheeler, Robert C.	I.	1894
Whipple, George C.	I.	1889
Whitaker, Channing	II.	1869
Whitaker, S. Edgar	VI.	1893
*White, A. C. (Dec. 27, '93)	VIII.	1882
White, Annie E. (*see* Carpenter).		
White, Franklin W.	VII.	1890
Whiting, Jasper	III.	1889
Whitmore, Walter G.	VI.	1887
Whitney, Frank P.	VI.	1889
Whitney, Granger	III.	1887
Whitney, Lambert N.	VI.	1896
Whitney, William A.	I.	1887
Whitney, William M.	II.	1884
Whitney, Willis R.	V.	1890
Whiton, David T.	II.	1897
Whitten, William H., Jr.	VIII.	1896
Whittier, Randal . . . I. 1873.	V.	1871
*Wiggin, Frank E. (Dec. 21, '90)	I.	1877
Wiggin, Thomas H.	I.	1895
Wilcox, Herbert A.	III.	1887
Wilder, C. Morris	VI.	1886
Wilder, Parker H.	VI.	1893
Wilder, Salmon W., Jr.	X.	1891
Wilder, Stephen H.	Sci. and Lit.	1874
Wilkes, Charles M.	IV.	1881
Willard, Daniel W.	II.	1870
Williams, Arthur S.	VI.	1888
Williams, Charles G.	I.	1895
Williams, Emile F.	I.	1878
Williams, Francis C., Jr.	I.	1884
Williams, Francis H.	V.	1873
Williams, Robert C.	III.	1889
Williams, Roger J.	IX.	1895
Williams, Sidney	I.	1887
Williams, Walter S.	X.	1895
Willis, John H.	IV.	1896
Williston, Arthur L.	II.	1889
Wilson, Arthur R.	I.	1890
Wilson, Elwood J.	III.	1886
Wilson, Fred A.	II.	1891
Windett, Victor	II.	1889
Winkley, William H.	XIII.	1895
Winslow, Arthur	III.	1881
Wolfe, John J. C.	II.	1895
*Wood, Charles (Nov. 28, '95)	I.	1886
Wood, Charles H.	II.	1891
Wood, Florence A.	VIII.	1897
Wood, Frederick W.	III.	1877
Wood, Henry B.	I.	1876
Wood, Kenneth F.	II.	1894
Wood, Louis F.	V.	1873
Wood, Willett A.	VI.	1896
Wood, William R.	XIII.	1897
Woodbridge, Jonathan E.	VI.	1893
Woodbury, Charles H.	II.	1886
Woodman, Alpheus G.	V.	1897
Woodman, Andrew W.	I.	1890
Woodman, Caroline A.	VII.	1889
Woodman, George M.	I.	1897
Woods, Henry T.	II.	1893
*Woodward, A. E. (Sept. '91)	III.	1888
Woodwell, Julian E.	II.	1896
Woodworth, Edward H.	V.	1897
Woodyatt, Ernest	IV.	1897
Woolworth, James G.	V.	1878
Worcester, Vernor F.	II.	1886
Worthington, Arthur M.	VII.	1892
Worthington, Erastus, Jr.	I.	1885
Wrightington, C. Nelson	II.	1894
Wrinkle, Laurence F. J.	III.	1870
Wuichet, Walter G.	II.	1889
Yoder, Luther K.	II.	1895
Yoerg, Henry	II.	1895
Yorke, George M.	VI.	1893
Young, Conrad H.	II.	1896
Young, Fred R.	III.	1886
Young, John E.	I.	1888
Zapf, Alfred E.	IV.	1895

* Deceased.

Titles of Theses

OF SUCCESSFUL CANDIDATES FOR GRADUATION, JUNE, 1897.

Candidates for the Degree of Master of Science.

GEORGE LINDER BIXBY, S.B.

An Investigation of the Corrosive Action of Soft Waters upon Boilers.

RALPH COOLIDGE HENRY, S.B.

The Work and Influence of Bramante.

HERBERT EDWARDS SMITH, S.B.

The Sanitary Architecture of Schoolhouses, including an Investigation on Expired Air.

WILLIAM HENRY WHITTEN, JR., S.B.

The Vortex Ring Theory of Atoms.

Candidates for the Degree of Bachelor of Science.

JOHN TROTT ALDEN,

An Experimental Investigation of the Distribution of Power in a Modern Newspaper Plant. (*With C. R. Currier.*)

HENRY WALTER ALLEN,

A Design of an Apparatus to Determine the Heat of Combustion of Coal.

WILLIAM HENRY ALLEN, JR.

Progressive Speed Tests on the Police Boat "Guardian" of the City of Boston.

ROBERT ANDERSON, PH.B.

An Experimental Study of the Polar Diagram of the Transformer. (*With Nathan Hayward.*)

THOMAS CLARK ATWOOD,

Tests on the Crushing Strength of Cast Iron Water Pipe.

CHARLES FOWLER BALDWIN, JR.

A Study of the Efficiency of an Electrical Plant. (*With E. L. Barkhouse.*)

HENRY WELCOME BALLOU,

A Comparison of the Shore Line and Air Line Routes for Traffic between Boston and New York.

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EDGAR LOUIS BARKHOUSE,

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WARREN HAMMOND BARNES,

A Plan for the Separation of the Grades of the Fitchburg R.R. and Main Street, at Waltham, Mass. (*With J. W. Killam.*)

BERNARD BARROWS,

The Specific Heat of Calcium Chloride Brines at Low Temperatures. (*With Irénée du Pont.*)

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A Monumental Entrance to a River Tunnel.

WILLIAM BINLEY, JR.

The Resistance of a Ship from Model Experiments.

PERCY ERFORD BLOOD,

A Study of the Methods Employed for Carrying Water Mains across Open Cuts.

HUGH BORLAND,

An Experimental Study of the Loss of Head in Pipes, attending Sudden Contraction. (*With J. E. Carty.*)

EDGAR CAMPBELL BOWEN, JR.

Stresses and Distortions in Iron Rings.

CHARLES WALTER BRADLEE,

Occupations, etc., of Mayors, Aldermen, and Common Councilmen of Boston since 1822.

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Report on a Nova Scotia Gold Mine and Experiments on the Treatment of Concentrates therefrom.

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A Comparative Test on Ohio Coals to Determine their Efficiency for Boiler Use.

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A Test of a 500 K. W. Street Railway Generator. (*With F. W. Everett.*)

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Tests on the Framing Joints of Timber Trusses. (*With W. M. Bush.*)

FRED EDWARD BUSBY,

The Action of Halogens upon Diethylene Disulphoxide.

WALTER MEIGGS BUSH,

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JOHN EDWARD CARTY,

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Distribution of Power and Belting Tests in the Cotton Mill of the Warren Manufacturing Co., at Warren, R. I. (*With F. E. Healy.*)

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The Stability of a Battleship under Damaged Conditions. (*With J. R. Daniell.*)

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A Country Inn.

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The Stability of a Battleship under Damaged Conditions. (*With A. V. Curtis.*)

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The Action of Sulphonyl Chlorides on Sodium Aceto-acetic Ester and on Sodium Malonic Ester.

LEONARD MORSE DEMERITT,

The Longitudinal Shearing of Timber. (*With A. R. Doten.*)

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Blast Furnace Slag Cement. (*With K. J. Steiner.*)

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Changes in Agricultural Conditions in Massachusetts, 1850 to 1890.

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Factory Legislation in Massachusetts and its Enforcement.

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The Specific Heat of Calcium Chloride Brines at Low Temperatures. (*With Bernard Barrows.*)

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The Design and Study of a Three-Phase Wattmeter. (*With P. L. Dougherty.*)

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Tests on a Twelve-foot Limestone Arch. (*With E. M. Hawkins.*)

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The Standardization of the Steam Engine Indicator.

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The Reducing Power of Wool.

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An Investigation of the Cause of Distortion of the Current in a Transformer Primary. (*With T. F. J. Maguire.*)

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A Test of a Boston Cupola and Forge Blower, using an Electric Motor as a Transmission Dynamometer. (*With J. M. Mahoney.*)

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Uses of Sulphuric Acid in Organic Analysis.

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A Test upon an Oil Gas Plant at Stoughton, Mass.

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A Court for the Exhibition of the Fine and Industrial Arts, to be Located in the Parkway, Boston.

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The Use of Bromine, Ferric Chloride, and Acetyl Chloride as Reagents in Qualitative Organic Analysis.

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The Velocity and Density of the Jet Delivered by a Steam Injector. (*With G. H. Knight.*)

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Crushing and Concentration Tests on a Galena Ore from Missouri. (*With Thurlow Washburn.*)

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The Preparation of Silicic Ether and its Action on Organic Acids.

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The Determination of Nitrates in Water by Napthol Sulphonic Acid.

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A Sanitary Survey of the French River, with a Study of the Sewage Disposal Problem of Webster, Mass.

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A Study of the Field of a Polyphase Induction Motor. (*With L. S. Tyler.*)

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Stamping and Amalgamation of a Gold Ore, and the Concentration and Beneficiation of the Sulphurets.

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The Relation of Oxygen to Vagus Inhibition.

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Comparative Tests of Two Radically Different Propellers.

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An Investigation of a Small Single-phase Synchronous Induction Motor.

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Tests of a Rotary Converter. (*With G. S. Lawler.*)

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A Study of the Field of a Polyphase Induction Motor. (*With J. W. Shuman.*)

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A Grand Hotel for a Winter Resort in the South.

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Crushing and Concentration Tests on a Galena Ore from Missouri. (*With W. C. Potter.*)

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A Discussion of Methods of Constructing and Operating Swing Bridges with Reference to the Apparatus for Lifting, Turning, and Locking, and the Methods of Securing Discontinuity when Closed.

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An Efficiency Test of the 600 K. W. Induction Regulator at the Carborundum Works, Niagara Falls, N. Y. (*With E. H. Howard.*)

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The Design and Construction of a Tow-Line Dynamometer for Determining the Resistance of a Vessel.

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The Influence of Dissociation upon the Color of Solutions.

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The Determination of the Resistance of a Ship by Means of a Model.

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A Study of the Reactions of Hypophosphorous Acid with Certain of the Metals.

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A Plan for the Abolition of a Grade Crossing at Readville, Mass. (*With C. L. Hammond.*)

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An Investigation of the Reciprocal Solubility Effects of Di-ionic and Tri-ionic Salts.

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A Design for a Ferry Station.

Alphabetical Index.

PAGE

Administrative Officers 10
Admission, Requirements for 61
Admission to Advanced Standing, Requirements for 62, 73
Admission to Lowell School of Design, Requirements for 206
Advanced Courses 56, 88
Age of Applicants for Admission . 63, 74
Algebra, Requirements in, for Admission 63, 64
Alumni, Associations of 209
Applied Mechanics, Instruction in . 79, 129
Architects, Boston Society of 111
Architectural Library 111
Architectural Museum 110
Architecture, Instruction in . . 36, 110, 151
Arts, Society of 10
Attendance Card 159
Attendance, Requirements in regard to 157, 164

Bachelor of Science, Degree of . . . 26, 76
Biological Laboratory 114
Biology, Instruction in 42, 112, 155
Board, Cost of 164
Bond, Requirements in regard to . . 159
Books, etc., Cost of 164
Breakage, Rules in regard to . . 160, 164
Buildings, Description of 12

Calendar 2, 157
Certificates from Teachers 62
Change of Requirements 71
Charter 8
Chemical Engineering, Instruction in, 48, 86
Chemical Laboratories 76
Chemistry, Instruction in . . . 38, 82, 137
Chemistry, Requirements in, for admission 70
Chemistry, Special Students in . . . 70, 85
Civil Engineering, Instruction in, 31, 93, 144
College Graduates, Admission of . . 73

PAGE

Committees of the Corporation 14
"Conditions" at Examinations . . . 158
Conduct 164
Corporation, Committees of 14
Corporation, Members of 13
Corporation, The 9
Courses, Choice of 26, 159
Courses, Five-Year 27, 56
Courses, Graduate 27, 56, 96
Courses of Instruction 25
Courses, Schedules of 29
Cummings Laboratory of Mining Engineering and Metallurgy 106

Damage to Apparatus 160
Dates of Examinations 158
Degrees, Advanced 56, 96
Degrees, Requirements for 56, 76
Deposit, Requirements in regard to . 159
Descriptive Geometry, Instruction in, 80, 130
Design, Lowell School of 10, 205
Dismissal, Honorable 76
Divided Examinations 72
Drawing, Instruction in 80, 130
Drill, Instruction in 123
Dynamical Geology 115, 153

Economics, Instruction in 121, 135
Elective Requirements 68
Electrical Engineering, Instruction in, 40, 90, 142
Engineering Laboratories 102
English, Instruction in 46, 119, 132
English Language and Literature, Requirements in, for Admission . . 66, 69
Entrance, Requirements for 61
Equipment 12
Evening Courses 202
Examinations for Admission 61
Examinations for Admission, Divided, 72
Examinations for Admission in other Cities 61

PAGE

Examinations for Conditioned Students, 158
Examinations for Graduation . . . 76, 158
Examinations for Lowell School of Design 206
Examinations, Intermediate 158
Examinations, Nature of 77
Examinations, Semi-annual 158
Excursions . . . 84, 87, 93, 94, 109, 115, 117
Expenses 159, 163

Faculty, List of Members 24
Fees 97, 159
Fees for Entrance Examinations . . . 61
Fellowships 163
Fine Arts, Museum of 81, 111
First-Year Courses 29
Five-Year Regular Courses 27, 56
Foundation 7
Free Courses of Instruction 202
French, Instruction in 118, 133
French, Requirements in, for Admission, 65, 69

General Studies, Instruction in, 46, 118, 132
Geodesy, Instruction in 30, 97
Geography, Physical, Instruction in, 115, 153
Geological Laboratory 117
Geology, Instruction in 52, 114, 153
Geometry, Requirements in, for Admission 64, 69
German, Instruction in 118, 133
German, Requirements in, for Admission 65
Graduate Courses 27, 56, 96
Graduate Scholarships 163
Graduates, Alphabetical List of . . . 209
Graduates of Colleges, Privileges granted to 73
Graduates, Register of 201
Graduation, Requirements for 76
Gymnasium 12, 124
Gymnastics, Instruction in 124

Historical Sketch 7
History, Instruction in 46, 120, 134
History, Requirements in, for Admission, 68, 69
Holidays 157
Hours of Attendance 164
Hydraulic Engineering, Instruction in 30, 94, 145

Instruction, Officers of 16
Instruction, Subjects and Methods of . 77
Italian, Instruction in 119, 133

PAGE

Kidder Laboratories of Chemistry . . 85

Laboratories . . 85, 89, 93, 102, 106, 114, 117
Language, Instruction in 118, 133
Latin, Preparation in 60
Lectures for the Current Year 23
Lectures, Occasional 91, 99
Libraries, Private 90, 124
Library, Architectural 110
Library, Biological 114
Library, Boston Public 125
Library, Engineering 106
Library, General 124
Library, Mining 106
Library of American Statistical Association 124
Library of Boston Society of Natural History 114, 124
Library, Physical 90
Library, Wm. Ripley Nichols Chemical, 86
Literature and Language, Instruction in 118, 132
Literature, Requirements in, for Admission 65
Location 11
Lowell Free Courses of Instruction . 202
Lowell School of Practical Design . 10, 205

Mathematics, Instruction in 77, 127
Mechanical Drawing, Requirements in, for Admission 70
Mechanical Engineering, Instruction in, 32, 97, 147
Mechanics, Theoretical and Applied, Instruction in 79, 129
Metallurgical Laboratory 106
Metallurgy, Instruction in . . . 34, 106, 150
Methods of Instruction 77
Metric System, Preparation in 65
Military Science and Tactics, Instruction in 123
Mineralogy, Instruction in 114, 153
Mining Engineering, Instruction in, 34, 106, 150
Mining Laboratory 106
Modern Languages, Instruction in . 118, 133
Museum of Fine Arts 81, 111

Natural History, Boston Society of, 114, 118, 124
Natural Sciences, Instruction in . 112, 153
Naval Architecture, Instruction in, 54, 100, 149
Nichols, William Ripley, Library . . 86

Officers, Administrative 16
Officers of Instruction 16
Options 27

PAGE

Payments 160
Physical Geography, Instruction in, 115, 153
Physics, Instruction in 44, 87, 140
Physics, Library of 90
Physics, Requirements in, for admission 70
Physics, Rogers Laboratory of . . . 89
Political Science, Instruction in, 44, 120, 135
Preparation for the Institute 62
Proceedings of Society of Arts . . . 10
Publications, List of . . . . . cover

Quarterly, Technology 10

Railroad Engineering, Instruction in, 30, 94, 145
Register of Graduates 211
Register of Students 165, 207
Regular Courses 29
Regular Students, becoming Special . 158
Regulations 157
Reports of Standing 159
Residence 163
Rogers Laboratory of Physics 89
Rogers, President William B. 7
Rooms, Cost of 164

Sanitary Engineering, Instruction in, 50, 95, 145
Schedule of Courses 29
Schedule of Topics 125
Scholarships 160, 162
Scholarships, Graduate 163
Scholarships, State of Massachusetts . 160

PAGE

School of Industrial Science 10
Shops, Description of 12, 81
Shopwork 81, 131
Shopwork, Requirements in, for admission 70
Society of Arts 10
Spanish, Instruction in 119, 133
Special Courses, Requirements for Admission 74, 85, 114
Special Students 58, 74
Special Students, becoming Regular . 158
Status of Students, Determination of . 157
Students, Lowell School of Design, Register of 207
Students, Register of 165
Subjects and Methods of Instruction, 28, 77
Summer Courses . . 31, 59, 97, 109, 111, 118

Teachers, Facilities offered to . 59, 75, 113
Technology Quarterly 10
Theses 76, 315
Topics, Schedule of 125
Tuition fees 159

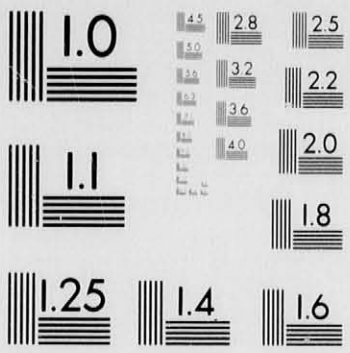
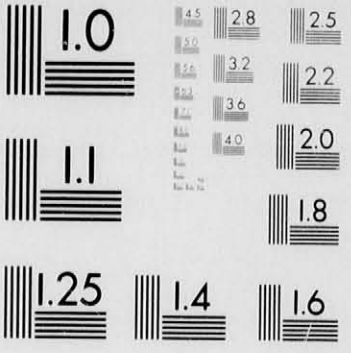
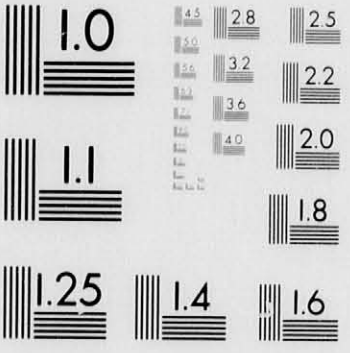
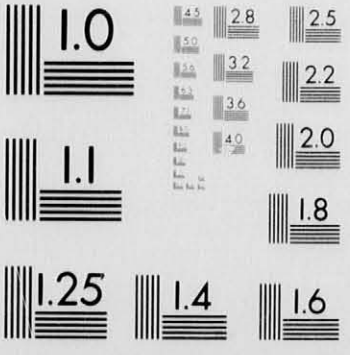
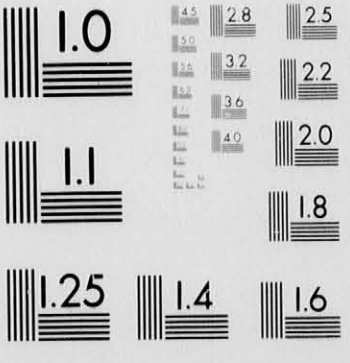
Uniforms for Drill 123

Vacation 157
Visiting Committees 15

Women, Admission of 26
Workshops 12, 81

Year, School 157

Zoölogy, Instruction in 112, 155


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