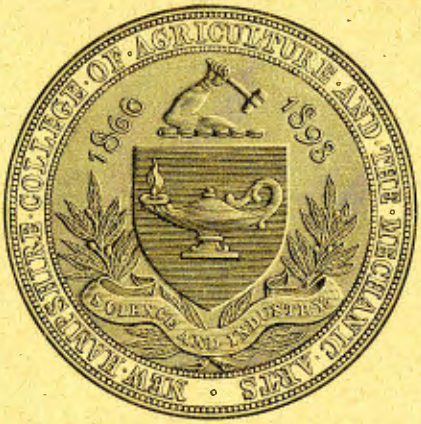
CATALOGUE

OF THE

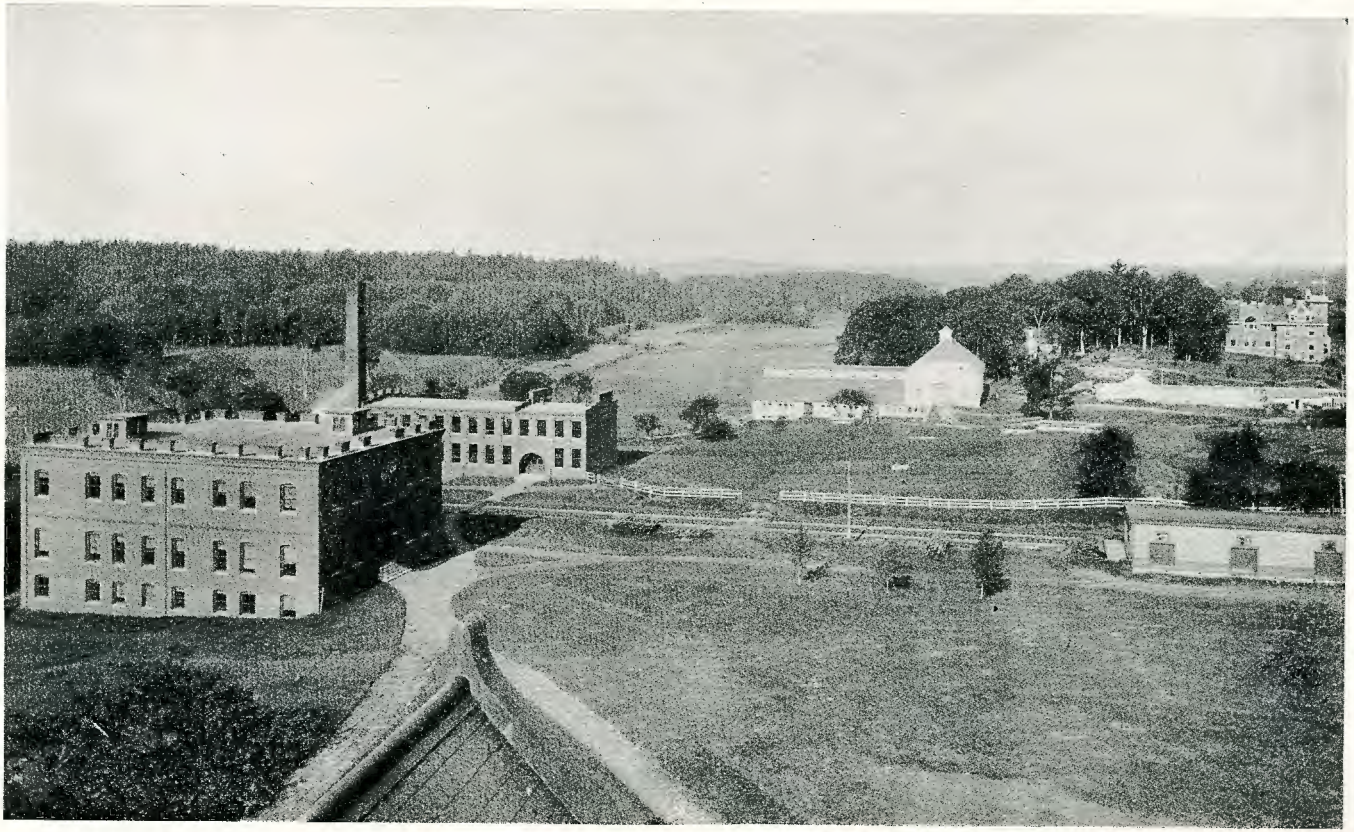
NEW HAMPSHIRE COLLEGE



OF

AGRICULTURE AND THE MECHANIC ARTS

1902--1903



CONANT HALL. SHOPS. BARN.

COLLEGE BUILDINGS LOOKING NORTHWEST.

THOMPSON HALL. GREENHOUSES. CONANT HALL. SHOPS.

COLLEGE BUILDINGS LOOKING SOUTHEAST.

CATALOGUE

OF THE

NEW HAMPSHIRE

COLLEGE

OF

AGRICULTURE AND THE MECHANIC ARTS

DURHAM, NEW HAMPSHIRE.

1902-1903.

PRINTED BY IRA C. EVANS CO., CONCORD.

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COLLEGE CALENDAR.

1902.

Sept. 2-3. Examinations for admission begin Tuesday, at 9 A. M.
Sept. 4. Regular college exercises begin Thursday, at 10 A. M.
Oct. 8. Stated meeting of Trustees.
Nov. 27. Thanksgiving recess.
Dec. 19. First term ends Friday night.

WINTER VACATION.

1903.

Jan. 6. Second term begins Tuesday, at 10 A. M.
Jan. 14. Stated meeting of Trustees.
March 13. Second term ends Friday night.

SPRING VACATION.

March 24. Third term begins Tuesday, at 10 A. M.
April 8. Stated meeting of Trustees.
May 30. Memorial day.
May 31. Baccalaureate Sermon, Sunday.
June 1-2. Examinations for admission begin Monday, at 9 A. M.
June 1. Prize Drill, Monday evening.
June 2. Annual examinations close Tuesday noon.
June 2. Stated meeting of Trustees.
June 2. Smyth Prize Reading and Speaking, Tuesday evening.
June 3. Commencement day, Wednesday.

SUMMER VACATION.

Sept. 1-2. Examinations for admission begin Tuesday, at 9 A. M.
Sept. 3. Regular college exercises begin Thursday, at 10 A. M.
Oct. 14. Stated meeting of Trustees.
Nov. 26. Thanksgiving recess.
Dec. 18. First term ends Friday night.

1904.

Jan. 5. Second term begins Tuesday, at 10 A. M.

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..... *Professor of Agriculture.*

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..... *Assistant Professor of Agriculture.*

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IVAN COMINGS WELD, *Instructor in Dairying.*

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ALBERT F. CONRADI, M. S., *Assistant in Zoölogy.*

LEMUEL POPE, JR., D. V. S., *Lecturer on Animal Pathology.*

PURCHASING AGENT.

FREDERICK C. KEITH.

ENGINEER AND CURATOR OF BUILDINGS.

OSCAR W. STRAW.

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PROF. CLARENCE W. SCOTT, *Librarian.*

EDITH A. DEMERITT, *Assistant Librarian.*

AGRICULTURAL EXPERIMENT STATION.

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HERBERT H. LAMSON, M. D., *Bacteriologist.*
CLARENCE M. WEED, D. Sc., *Entomologist.*
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LUCIEN A. HILL, B. S., *Assistant Chemist.*
HARRY F. HALL, *Assistant in Horticulture.*
ALBERT F. CONRADI, M. S., *Assistant Entomologist.*
ARTHUR L. SULLIVAN, B. S., *Assistant Chemist.*
HERBERT M. TUCKER, *Farm Foreman.*
FREDERICK C. KEITH, *Clerk.*
EDITH M. DAVIS, *Stenographer.*

FOUNDATION AND ENDOWMENT.

The New Hampshire College of Agriculture and the Mechanic Arts was incorporated by the state legislature in 1866, under the provisions of the act of Congress, approved July 2, 1862, entitled "An act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts," the grant of land having been accepted by an act of legislature, approved July 9, 1863.

The act of 1862 provides that the income from the investment of the money realized from the sale of the lands shall be appropriated "to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, * * * in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The "Morrill Bill," which was approved August 30, 1890, and received the assent of the state by an act of legislature, approved February 13, 1891, provides an appropriation for the more complete endowment and support of the colleges for the benefit of agriculture and the mechanic arts, established under the provisions of "the act of 1862."

The appropriation under the Morrill act is "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

Under an act of Congress approved March 2, 1887, which received legislative assent August 4, 1887, was established that department of the college known as the Agricultural Experiment Station, the purpose of which was "to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science."

Benjamin Thompson, who died January 30, 1890, was a resident of Durham, and a farmer by profession. He had at heart the agricultural interests of his native state, and in the furtherance of those interests he bequeathed to it at his death his whole estate with a few minor reservations.

Mr. Thompson's final statement of the object of his bequest was as follows: "My object being mainly to promote the improvement of agriculture, though willing that the college to be established should also provide for the mechanic arts, it is my will that the institution to be established by the state * * * shall be called and designated * * * The New Hampshire College of Agriculture and the Mechanic Arts, if that shall be the wish of the state; and that in addition to the instruction to be given therein, as provided by my said will, there shall be taught only such other arts or sciences as may be necessary to enable said state to fully avail itself of said donation of lands by the government in good faith, which two branches of instruction shall be the leading objects of said institution or college."

By the provisions of the will, the income from this source will not, however, become available until 1910. This endowment will amount at that time to nearly $800,000, the annual income from which will be about $32,000.

The state legislature accepted the Thompson bequest March 5, 1891, and on April tenth of the same year appropriated $100,000 for buildings. Approximately $50,000 was realized from the sale of property and from other sources. In 1893 an additional appropriation of $35,000 was made by the state

for completing and furnishing the buildings. Accordingly in 1893 the college was moved from its first home at Hanover to its present location at Durham.

The general government of the college is vested in a board of thirteen trustees. The governor of the state and the president of the college are trustees *ex officio;* the alumni of the college elect one trustee; and all other trustees are appointed by the governor of the state, with the advice and consent of the council.

The college is executing the trust reposed in it by giving instruction in the various courses described in this catalogue, which are included under the prescribed heads of "agriculture" and "the mechanic arts."

The income for the current year is from the following sources: From the federal land grant of 1862, $4,800; from the federal government under the act of 1887, $15,000, to be applied only for use of the Agricultural Experiment Station; from the same source under the act of 1890, $25,000; and from the state, $10,500; and from various other sources, about $5,000.

At the last session of the legislature the sum of $30,000 was appropriated for the erection and equipment of a new building for the agricultural and horticultural departments. This building is nearly ready for occupancy, and is notably solid and substantial, thoroughly built and equipped, so far as it has been completed.

GENERAL INFORMATION.

The New Hampshire College of Agriculture and the Mechanic Arts is a part of the public school system of the state. It stands, in its agricultural, mechanical engineering, electrical engineering, technical chemistry, and general scientific courses, in the same relation to the high schools that the high schools stand to the grammar schools, and that these in turn stand to the elementary schools. In other words, it is a continuation of the grades of the public school system of the state, with special reference to the industrial pursuits, and, in the courses that are provided as described elsewhere in this catalogue, it aims to give a practical training that shall fit the student to deal with the problems of life.

TUITION.

The tuition fee is $60 per year, although numerous scholarships give free tuition to many New Hampshire students.

SCHOLARSHIPS.

There are twenty-five Conant scholarships, each paying $40 and tuition, $60,—total, $100. These are to be assigned under the following conditions:

1. They are to be given to young men taking an agricultural course.

2. Each town in Cheshire county is entitled to one scholarship, and Jaffrey is entitled to two.

3. Scholarships not taken by students from Cheshire county, and those in excess of the number of towns, are to be assigned to agricultural students at the discretion of the faculty.

There are twenty-four senatorial scholarships,—one for each senatorial district. Each scholarship is to pay tuition, $60. Senatorial scholarships not filled can be assigned to students from other localities at the discretion of the faculty; they are open to students in all courses.

Early application should be made for these scholarships. They will be reserved for those respective towns and districts until August 1 of each year, after which they may be otherwise assigned for the year.

These scholarships are given for the purpose of aiding deserving students, and will be withdrawn from those who use tobacco or intoxicating liquors, or show themselves not deserving. Janitorships, work on the farm, etc., also furnish assistance to a considerable extent.

Through the generosity of the late Mr. Hamilton Smith, of Durham, the sum of $10,000 has been given to the college to establish the Valentine Smith scholarships.

"The income thus accruing to the college shall be given to the graduate of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission to the college; *provided*,

"That this income shall be paid to the student to whom it is awarded, in eight semi-annual payments, at the time appointed for the payment of term bills; and,

"That if the student receiving this scholarship shall at any time prove unworthy, in the judgment of the faculty, by reason of defective scholarship or character, he shall forfeit his claim to the student most deserving; and,

"That if the student receiving this scholarship shall cease to be a member of the college, the income from this fund, for the unexpired term, shall be awarded to the student most deserving, in character and scholarship."

These scholarships, yielding $500 each, became available to those applying for examination in 1898, and to one student in each succeeding class.

Competitive examinations for this scholarship will be held at the college at the time of the entrance examinations in September, and at no other time.

PRIZES.

I. *The Smyth Prizes.*—Through the generosity of the late ex-Governor Frederick Smyth, the following prizes have been offered: to the members of the senior and junior classes, two prizes, one of twenty dollars and the other of ten, for the best essays on subjects connected with agriculture or the mechanic arts; also three prizes, one of twenty, one of fifteen, and one of ten dollars, for excellence in oratory. To the members of the sophomore and freshman classes, two prizes for reading, one of fifteen and one of ten dollars. Since the death of ex-Governor Smyth the prizes have been continued by Mrs. Marion C. Smyth.

II. *Bailey Prize.*—Dr. C. H. Bailey, of Gardner, Mass., and E. A. Bailey, B. S., of Keene, N. H., offer a prize of ten dollars for proficiency in chemistry.

III. *Erskine Mason Memorial Prize.*—Mrs. Erskine Mason, of Stamford, Conn., has invested one hundred dollars as a memorial of her son, a member of the class of 1893, the income of which is to be given, for the present, to that member of the senior class who has made the greatest improvement during his course.

ESTIMATE ON EXPENSES.

Tuition	Free	$60.00
Text-books	$10.00 to	20.00
Fees*	15.00	15.00
Room rent, including fuel	18.00 to	40.00
Board, $3 to $3.50 per week, for thirty-five weeks	105.00 to	122.50
Total	$148.00	$257.50

Room rent is estimated on the supposition that two students occupy the same room or suite of rooms.

* Including all charges commonly considered for extras, except those for breakage and damage to college property.

Rooms may be obtained either furnished or unfurnished. Most of the rooms are in suites, and are in buildings provided with heating apparatus and bath-rooms.

The college has no rooms for students.

For further information, address New Hampshire College, Durham, New Hampshire.

COURSES FOR WOMEN.

Women attending the college may elect any course laid down in the curriculum, subject to the conditions prescribed for all students. They may omit manual labor on the farm and in the shop, and substitute other studies.

The general course, with its electives, is specially prepared for women, and is so planned that special courses may be arranged in literature, languages, history, philosophy, drawing, biology, and manual training.

The courses in agriculture and chemistry afford opportunities for the study of the natural sciences, and the engineering courses offer exceptional advantages in mathematics and physics.

POST-GRADUATE STUDY.

The college offers opportunities for post-graduate study in agriculture, biology, chemistry, and engineering.

After the satisfactory completion of an appropriate amount of post-graduate work, advanced degrees will be given.

SPECIAL STUDENTS.

Any person of mature years may be admitted as a special student, by vote of the faculty, upon presenting satisfactory evidence of ability to complete the desired course of study.

ATTENDANCE.

All regular students are required to attend chapel and rhetorical exercises, and to register for the required number of exercises per week; all male students are required to attend military drill.

TERM BILLS.

Tuition and fees are payable in advance, in two equal installments: one on the first day of the fall term, and the other on the first day of the winter term, of each year.

ELECTION OF STUDIES.

Every student must, on the Saturday before the last in each term, notify in writing the secretary of the faculty of his elections for the term following. Any student who, having made his elections, desires to change, shall make application to the faculty in writing, with a statement in full of his reasons.

Any student who fails to fill out his elective slip on or before the date mentioned, must pay a fine of one dollar before he can be registered for the studies of the next term, unless he has previously obtained from the secretary of the faculty a written excuse for delay.

No student shall be registered in any class until he has completed three fourths of the work of the preceding year, and all the work required up to the beginning of that year.

SUNDAY SERVICES.

On Sunday the college chapel exercises are held at five o'clock in the afternoon. At this vesper service the president of the college usually gives a talk upon some topic of vital interest to the higher life of the student body.

Although the only church in Durham is nominally Congregational, it is attended by citizens of all denominations, and sectarian lines are never drawn. It is conveniently situated, and with its regular services, its Sunday-school, prayer-meetings, and young people's meetings, it offers ample opportunity for religious observance.

SITUATION AND RAILROAD CONNECTIONS.

Durham is situated on the Western division of the Boston & Maine railroad, sixty-two miles from Boston, and about midway between Rockingham Junction and the city of Dover, being five miles from the latter place.

BUILDINGS.

THOMPSON HALL.

Thompson Hall, the main college building, has a length of 128 feet, exclusive of a *porte-cochère* 40 feet long, and a width of 93 feet in the widest part. It is built of granite and brick, and has three stories besides the basement.

The basement contains an armory, a locker room for athletic purposes, a shower-bath, a blower-room, with apparatus for controlling the heating and ventilation of the building, a soil physics laboratory, a lavatory, and rooms used for storage.

One half of the first floor is devoted to the library, which is provided with a large, well-lighted reading-room for papers and magazines, a reference room for special work, a librarian's room, a delivery-room, and shelf space for fifty thousand volumes. The remainder of the first floor is used for offices, recitation rooms for mathematics and history, and a waiting room for women.

On the second floor are more offices, the botanical and zoölogical laboratories, the drafting-room, and recitation rooms for biology, mechanical engineering, agriculture, philosophy, and modern languages.

On the third floor is the large hall used as an auditorium, two literary society rooms, and the bell-boy's room.

The building is lighted by gas and electricity, and provided with the most approved system of heating and ventilation.

CONANT HALL.

[Chemical and Physical Laboratories.]

Conant Hall contains the laboratories and lecture rooms for instruction in chemistry, physics, and electrical engineering. It is a substantial brick building, 92 x 70 feet, and three stories high, including the basement. It is heated by

steam brought from the shops, lighted by gas and electricity, and provided with a system of thorough ventilation. Water, gas, high pressure steam, hydrogen, oxygen, vacuum and blast are supplied through pipes wherever needed, and the lecture rooms in addition have switches controlling both dynamo and battery currents, and arragements for stereopticon illustration.

The basement contains a small workshop, the battery, photometer, photographic, and comparator rooms, a clock room protected by double walls against changes in temperature, an acid room, and a water and gas laboratory provided with the necessary fixtures and appliances.

The first floor, with the exception of one room, is occupied by the physics department. It contains the mineralogical laboratory, which is provided with tile-covered desks and other facilities for blowpipe analysis; the junior physical laboratory; an apparatus room; a reading and reference room for physical and electrical books and periodicals; an electrical laboratory, from the neighborhood of which masses of iron have been excluded, so that magnetic measurements can be made with a good degree of accuracy; and the physical lecture room, which is provided with all necessary conveniences, as before mentioned. For optical experiments, the room can be darkened by means of special window-shutters, operated from one of the lecture desks. A stone pier between the two desks makes it possible to use delicate instruments.

The second floor is given up entirely to the chemical department. It contains storerooms, an organic laboratory, a qualitative laboratory, a private laboratory, a dark room for polariscopic and spectroscopic work, a lecture room provided with facilities as before described, a quantitative laboratory, and a room for the delicate chemical balances and most important reference works.

The laboratories are fitted up with the most modern accessories, and with special reference to the kind of work to be performed in each.

SHOPS.

These have been built in order to provide facilities for instruction in the working of wood and metals. The buildings are constructed on the "slow-burning" principle, with thick walls, and heavy, continuous plank floors. The rooms are all well lighted and well ventilated.

The main building is 42 x 106 feet, and two stories high, with a basement 31 x 42 feet. The basement is used as an engine room and laboratory. The largest room on the first floor is the machine shop, where there is opportunity for practice in the operation of working metals by cutting tools, both by hand work and by machinery. On this floor a lavatory is provided. The second floor is mainly occupied by a wood shop, in which the common branches of carpentry, joinery, and pattern making are taught. Practice is given in the use of carpenters' tools, and in the care and operation of the machines of most general use in wood-working.

Joined to the main shop building and on a level with its basement is a one-story building, 40 x 100 feet, containing the boiler room, repair shop, forge shop, and foundry.

There are four boilers, aggregating two hundred and forty horse-power, which furnish steam to all the college buildings, wherever needed for heating or power. A brick chimney ninety-five feet high carries away the waste gases from the furnaces.

In the forge shop instruction is given in forging, welding, tempering, and riveting, and in the foundry the student is taught to mold and cast from the various patterns made in the wood shop.

NESMITH HALL.

Nesmith Hall, a brick building two stories in height, is used for the work of the Agricultural Experiment Station. It contains offices and working rooms, a reference library, and chemical, entomological, bacteriological, and microscopical laboratories.

DAIRY.

The dairy building is a wooden structure of one and one half stories, with basement. It contains six rooms equipped for manual training in milk testing, milk and cream pasteurizing, cream ripening, butter-making, and the care and management of dairy machinery.

The first floor is used for receiving milk and for the separators. On this floor is also the office of the instructor and the laboratory for milk testing. The basement contains the ripening vats, churns, and refrigerators, together with the engine.

BARNS.

The cattle barn is a wooden structure, the main portion of which is 50 x 100 feet, two stories in height, with a large basement. It has a one story L 40 x 100 feet, with a basement under two thirds of it. This barn is a model structure, erected at an expense of about ten thousand dollars. It has accommodations for about sixty head of cattle, which are provided with sanitary stalls. There are the necessary divisions for storage of hay, grain, and seeds, and rooms for milk, scales, ensilage cutter, and repair shop. In addition there is a cold storage room and a feed room. There are two silos, each having a capacity of about one hundred and twenty-five tons.

A second barn is used by the agricultural department for storing hay and implements, and stabling the department horses.

A third barn, about 30 x 60 feet, is used at present for keeping the horses and implements employed by the horticultural department.

GREENHOUSES.

The college has two greenhouses. The main house is even span and 25 x 100 feet in dimensions. It is divided by partitions into three compartments, each of which is piped for steam and has special arrangements for controlling the temperature, so that the rooms are well adapted for experimentation with different kinds of plants. The second house is 25 x 45

feet, and is utilized for growing various kinds of foliage and flowering plants, especially those used for outdoor decorations in summer. The first house mentioned is mainly used in winter for forcing vegetables. In the fall one division is given over to chrysanthemums, and sometimes violets and carnations are grown here throughout the winter. The houses are both accessible from a good sized potting house. This also contains an office and room for seed-boxes, scales, and tools; and at one end is a room devoted to photography.

LABORATORIES AND EQUIPMENT.

AGRONOMY.

This department is provided with a collection of plants and seeds, a large number of lantern-slide illustrations, grass charts, and other illustrative material. The soil physics laboratory is equipped with balances, a soil compacting machine, apparatus for determining the specific gravity and the water holding capacity of soils. The college farm is equipped with a variety of farm implements and machinery, including cultivators, plows, wagons, planters, rollers, and harvesters. The farm with its 300 acres has a variety of soils, and offers excellent opportunities for practical demonstrations of the principles of this science.

ANIMAL HUSBANDRY.

The college barns, live stock and dairy are all utilized for the work in animal husbandry. The herd is composed of representative cattle of the following breeds: Ayrshires, Guernseys, Jerseys, Holsteins, Durhams, and grades. In the proposed new agricultural building it is expected that a live-stock room will be provided where animals may be brought before the class for inspection and criticism.

HORTICULTURE.

The greenhouses, orchards, and grounds offer opportunities for demonstrating the theories advocated in the lecture room. Many varieties of different kinds of fruits are to be found in

the orchards. These are young, but some are coming into bearing. The past year the plum orchard of some sixty varieties yielded a heavy crop. Grapes, peaches, apples, cherries, and small fruits are all being grown at the Experiment Station. Many vegetables are raised, and much attention is given to methods of culture and varieties. Propagation of fruits, shrubs, and floricultural plants is practiced. A fine collection of Vilmorin charts is owned by this department. A collection of lantern slides illustrating the work in horticulture is continually being enlarged.

COLLEGE FOREST.

A beautiful tract of sixty acres of old forest growth is owned by the college. It is located close at hand, and offers exceptional opportunities for studying forestry. The country about Durham presents forestry conditions typical of New England, and the transplanting of trees, sowing of seeds, and general questions of forestry management may here be studied in Nature's laboratory.

DAIRY.

Through the courtesy of leading manufacturers of dairy and creamery appliances all available space is filled with various forms of cream separators, milk coolers, churns, and other appliances. Reid's latest pasteurizer, and the Disbrow combined churn and worker,—the only machines of the kind in New Hampshire,—have also been secured for the benefit of dairy students. The most approved appliances for milk testing form a part of the regular equipment. Steam is supplied by the large boilers at the power-house, and a new twelve horse-power engine adds to the efficiency of the department. In addition to the product of the college herd milk is received from about twenty-five farms in Durham and vicinity. Through this arrangement the college is able to furnish plenty of milk for practice work, and to provide for a most thorough and practical training in dairy and creamery management.

MECHANICAL ENGINEERING.

The basement and westerly rooms of the main shop building are used as engine room and mechanical laboratories, and contain the forty horse-power engine which furnishes power for the shops and electric lighting of the college buildings; a shaft-governor, slide-valve engine; a direct acting steam pump; and the large compound duplex pump which receives water under a head of fifteen feet through an eight-inch pipe from a reservoir one half mile distant, and forces it through underground mains to the various hydrants and buildings, or through nozzles for measurements during tests. This pump, with its long supply pipe, a ten-inch stand-pipe, and a 6,000-gallon stand-pipe, furnish apparatus for an extensive series of hydraulic experiments. It is fitted with indicator motions and other necessary equipment for complete duty tests.

Among other apparatus is a 50,000-pound Olsen machine with the necessary tools and measuring instruments for tension, compression, and transverse tests; a 2,000-pound wire machine; an indicator tester; a marine gas engine; a Westinghouse air-brake pump; steam and gas engine indicators; a surface condenser with a capacity of 2,000 pounds of steam per hour, fitted with a $5\frac{1}{2}$ x 8 x 7 air pump; and the usual supply of scales, gauges, thermometers, and small apparatus. The three sectional boilers, and the one hundred horse-power horizontal return tubular boiler, with the 95-foot brick stack are used for boiler tests and flue gas analysis by means of an Orsat gas apparatus, a pyrometer, and thermometers reading to 1,000 F. The ventilating fans and engines of the various buildings, as well as the new engines at the creamery and in the electrical laboratory, are available for testing. Opportunity is given for the student not only to test the machine or engine, but to become familiar with its construction and operation.

In addition to the instruction given in the laboratory, excursions are made to various outside power plants, and when practicable, tests are made, thus enabling the student to become familiar with various types of engineering practice.

WOOD SHOP.

This occupies the larger part of the second story of the main building. It is supplied with benches and the necessary tools to accommodate twenty students at one time. Other equipment consists of a circular saw, board planer, buzz-planer, jig-saw, speed-lathes, a large pattern maker's lathe with molding and boring attachments. A stock and pattern room on the same floor provides storage for lumber, patterns and unfinished work. The course in woodwork consists of practice in carpentry, joinery, cabinet-making and turning. Much of the advanced work consists of making apparatus and cabinets for use about the college. Following this work is the course in pattern-making, special attention being given to methods of design.

MACHINE SHOP.

The equipment is as follows: seven engine lathes, a 14-inch x 6-foot speed-lathe, built by students; a vertical drill, built by students; a 30-inch Flather planer; a universal milling machine with gear-cutting and spiral attachments; shaper; power hack saw; twelve benches with vises; and a large number of small tools, including micrometer, calipers, and gauges necessary for accurate work. The lathes in the wood shop were built here, and several more are in process of construction.

FORGE SHOP.

This contains thirteen Sturtevant down-draft forges with anvils and necessary tools. The blast to the forges is furnished by a No. 4 blower, and the smoke carried away by a 60-inch exhauster. These are driven by a 3 x 5 vertical engine. The student is taught the principles of forging, welding, and tempering of iron and steel. Special attention is given to accuracy of dimensions as well as of shape and finish.

FOUNDRY.

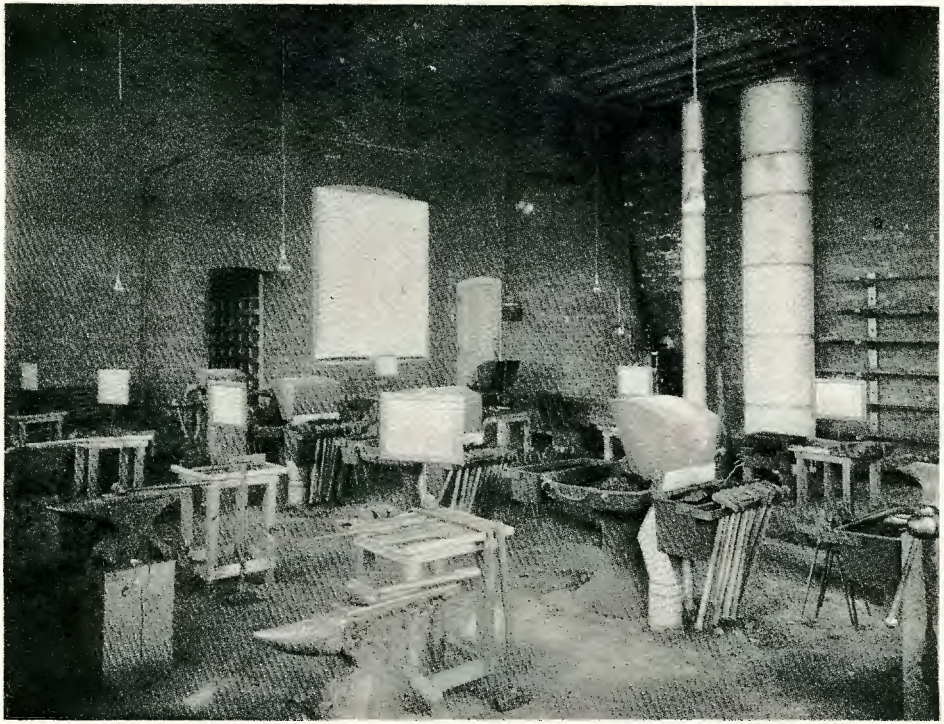
The foundry is supplied with a furnace, molding benches, flasks, and bench tools. Foundry work is taken in connection with the course in pattern-making, and the student molds and casts from the patterns he has constructed in the wood shop. Castings are made in iron, brass, and alloy, and tests are made on "test bars" of each.

PHYSICS AND ELECTRICITY.

The physical laboratory is equipped with a good collection of the usual apparatus for laboratory work and lecture room illustration, to which will be continually added pieces purchased or made in the college shop.

In the junior laboratory of physics there has been added apparatus for studying absorption phenomena and the comparison of spectra of films, liquids, metals, etc.; for measuring the angles of crystals and indices of refraction; for verifying the laws of refraction and total reflection of light; for determining the moment of inertia of various forms of specimens.

In electricity and magnetism, the equipment includes instruments of high precision and of the latest forms, such as: a magnetometer for studying the intensity of the earth's magnetism; a universal tangent galvanometer capable of assuming a variety of forms and measuring currents from a small fraction of an ampere to one hundred amperes; a high grade four-spool Thomson reflecting galvanometer; a Ryan electrometer for tracing pressure and current waves; a standard ballistic galvanometer; an Ayrton & Perry's variable standard of self-induction, as well as others of less accuracy for elementary work; a complete photometer equipment for comparing incandescent and arc lamps, and the distribution of light from the latter for both open and inclosed arcs; a small low-potential testing unit, consisting of a universal alternator belted to a direct current motor, and capable of adjustment to be driven from either the direct or alternating side; a low-potential transformer, either side arranged to be



FORGE SHOP.

connected to the universal alternator or to the secondary of the transformer on the lighting system; a bank of lamps for illustrating the various methods of distributing from mains for lighting systems, or affording loads in obtaining characteristics, efficiencies, etc.; and standard forms of voltmeters and ammeters.

For more strictly electrical engineering work, the department has the five-hundred-light alternator used in lighting the college buildings, a direct current "exciter" dynamo, all the apparatus of a complete fifty-five-light Edison isolated electric lighting plant, arc and incandescent lamps, and standard forms of voltmeter, ammeter, and transformer.

In the dynamo laboratory, a Westinghouse junior engine has been installed. It is capable of developing about twenty-three-brake horse-power under one hundred pounds steam pressure. This engine, being on a practically independent line of steam pipe, is expected to maintain good speed regulation of the main line shaft to which it is belted, and from which power is delivered to countershafts, and thence to the various dynamos and workshops of the department. A set of wood and metal working tools, and a 14-inch, 8-foot bed Flather engine lathe, with complete attachments, have been purchased for this shop.

CHEMISTRY.

The several chemical laboratories are modern in design, commodious, and well equipped. Each is supplied with the latest forms of apparatus required for its particular kind of work. Besides all necessary glass and porcelain ware, this includes water baths, drying ovens, combustion, muffle and assay furnaces, platinum dishes and crucibles, polariscope, spectroscope, balances, lantern, and other lecture appliances, etc.

ZOOLOGY.

The zoölogical laboratory is well supplied with aquaria, microscopes, dissecting tools, charts, reference books, and collections. The latter include a representative display of the birds of New Hampshire, and a very large collection of

the insects of the state arranged in glass covered boxes. New tables have recently been added to the equipment of this laboratory.

BOTANY.

The botanical laboratory is supplied with a good herbarium, microscopes, and the other necessary appliances.

SURVEYING.

The surveying instruments are sufficient in number and of the most approved pattern.

DRAWING.

For free-hand model-drawing and for mathematical drawing there is a good supply of geometric models; and for free-hand industrial drawing the nucleus of a good collection exists, consisting of geometric vase forms, plaster casts of historic ornament, details of human form, antique sculpture, as well as vases and common objects. The models for machine-drawing are few, but the various machines of other departments are available for this work.

There is the beginning of a good working library.

MUSEUM.

The museum had for a nucleus the collections made during the state geological survey. To this additions have been made from various sources. Many specimens are being collected to illustrate zoölogy, especially entomology.

LIBRARY.

The library of the college consists of about ten thousand bound volumes and six thousand pamphlets. A considerable part of these are new and expensive books, making good working libraries for the different departments of instruction, including economic science and English and American literature.

Students also have the free use of the Durham public library of about seven thousand well selected volumes.

The college supports a reading-room, which is well supplied with the leading American and foreign periodicals.

FOUR YEARS' COURSES.

AGRICULTURAL COURSE.

This course is arranged especially for the general education and scientific training of students to fit them in various economic branches, such as agronomy, animal husbandry, biology, agricultural chemistry, entomology, forestry, horticulture, veterinary science, etc. Graduates are supposed to be qualified to take positions such as farm superintendents, foremen, stock raisers, dairy farmers, creamery managers, dairymen, superintendents of estates, parks or cemeteries, fruit growers, gardeners, florists, nurserymen, landscape gardeners, foresters, poultrymen, ranchmen, etc.

It is expected that these same men will be equally prepared, depending upon individual tastes, to take positions as teachers and assistants in colleges and experiment stations.

The aim is to give a broad general foundation of pure and applied science. Laboratory methods are used in connection with lecture and recitation work. Seminary courses are also given, especially for seniors and advanced students.

BIOLOGICAL DIVISION OF THE AGRICULTURAL COURSE.

The biological division of the agricultural course is for the benefit of those students who desire to make a special study of some phase of natural history. It leads to such positions as teachers of botany and geology in high schools and colleges, entomologists for experiment stations, state inspectors of nursery grounds, etc. During the first two years the student pursues the regular studies of the agricultural course, but in his junior year he begins to specialize in botany and zoölogy, a considerable proportion of his time during the rest of his course being given to these subjects.

CHEMICAL DIVISION OF THE AGRICULTURAL COURSE.

The work of this division is especially intended to give a thorough grounding in the principles of chemistry as applied to agriculture and agricultural chemical analyses, and to train the student thoroughly in all kinds of manipulation required of the chemist in experiment stations, large dairy establishments, fertilizer works, etc.

Instruction is given mainly by personal supervision in the laboratory, accompanied by lectures, themes, recitations; and, as in the course in technical chemistry, the studies are arranged to meet the needs of the individual. Students wishing to take this course will elect, with the advice of the instructors in charge, seven hours per week of chemical work during the junior year, and eight hours per week during the senior year. Two years of German will be required, and French is recommended to be taken by students intending to enter the division.

COURSE IN MECHANICAL ENGINEERING.

Mechanical engineering is concerned with the design, construction, care, and operation of machinery.

The special studies are: mathematical, including a large amount of drawing; technical, pertaining directly to the professional work of the engineer; and general.

The study of the scientific principles underlying the work of the engineer is accompanied throughout the course by actual practice in mechanical operations and scientific research, by training in the use of tools for working wood and metals, and by experimental tests and demonstrations in the mechanical, chemical, and physical laboratories.

ELECTRICAL ENGINEERING COURSE.

The electrical engineering course is intended to meet the demands of a young man fitting himself for practical and professional engineering, in connection with the various applications of electricity.

By means of lectures, recitations, and laboratory work, the subjects of the course are brought to the attention of the student in such a manner as to emphasize not only the present needs of the practician and engineer, but to give him the groundwork that will enable him to grasp and understand the constantly increasing number of problems that require solution.

The instruction aims to impart a complete practical and theoretical knowledge of the best modern types of electrical machines and appliances, and the methods of designing building, and operating them.

The rapid progress in recent years in applying electricity to commercial uses, renders it difficult, if not impossible, for one without a technical education to gain prominence and be intrusted with its more responsible positions.

COURSE IN TECHNICAL CHEMISTRY.

This course is intended to fit for the career of a professional chemist or chemical engineer, and to give a good foundation for original and independent chemical research.

Instruction is imparted by lectures, recitations, and a large amount of carefully supervised laboratory work. The laboratory course is largely an individual one, and the work of each student is conducted with reference not only to the particular object he may have in view, but also to the acquirement of a broad knowledge of chemical science. The student is given a thorough training in German and French, to enable him to read with ease the chemical literature; a thorough grounding in mathematics, necessary for advanced theoretical chemistry or chemical engineering; a somewhat limited amount of special engineering work, both mechanical and electrical; and a thorough undergraduate training in theoretical and applied chemistry. He is encouraged to develop the power of solving chemical problems by independent thought through the aid of the reference works and chemical periodicals which the library contains. The large and well furnished laboratories afford unusual facilities for chemical work.

GENERAL COURSE.

The general course in its original form was established in response to the demand that special provisions should be made for women. It has been broadened and improved by additional studies, and by an extensive scheme of elections, until in its present form it offers to either men or women "a liberal education upon a scientific basis."

REQUIREMENTS FOR ADMISSION TO FOUR YEARS' COURSES.

All candidates for admission to college must present satisfactory testimonials of good moral character.

I. Arithmetic, including the metric system.

II. Algebra through quadratic equations, including radicals, and fractional and negative exponents.

III. Plane and Solid Geometry.

IV. Physics.—Gage's or Carhart & Chute's, or an equivalent.

V. Botany.—Gray's Lessons, sections 1 to 15 (inclusive), and sections 18 and 19, or an equivalent, with some knowledge of classification, and experience in the analysis of our common flowering plants.

VI. Physical Geography.

VII. History of the United States.—Channing's Students' History of the United States, or an equivalent, with four hundred pages additional reading. Constitution of the United States. This is to represent not less than three exercises per week during one year of the high school course.

VIII. History of Greece.—Myers' larger work, or an equivalent.

IX. History of Rome to 814.—An adequate preparation would be represented by Myers' Rome, its Rise and Fall, and Chapters I to VI, of Myers' Middle Ages; or by Allen's Roman People, and Emerton's Introduction to the Middle Ages.

X. French or German.—Grammar. Translation of simple prose. Composition.

It is expected that the student will give two years to the preparation of the language offered. The requirements are as follows:

In French the applicant is expected to be familiar with the whole subject of French grammar, and to be able to translate from English into French simple connected passages based on one of the books read. More stress, however, is placed on the translation from French into idiomatic English. The student should read at least four hundred pages. The following books are recommended:

1. Laboulaye Contes Bleus (Heath); Colin, Contes et Sayñetes (Ginn & Co.); Super, French Reader; Rollins, French Reader (Allyn & Bacon).
2. Halévy, L'Abbé Constantin; Mérimée, Colomba; Erckmann-Chatrain Le Conscrit de 1813; Dumas, LaTulipe Noire; Daudet, La Belle Nivernaise; Berthet, Le Pacte de Famine; Sand, La Mare au Diable.

In German the student will be held responsible for the conjugations of strong and weak verbs, the declensions of articles, nouns, adjectives, and pronouns, the elements of syntax, the uses of the modal auxiliaries, and the translation from English into German of simple connected passages. In addition the applicant must have translated at least two hundred pages of simple German prose. The following books are recommended:

1. Huss, German Reader (D. C. Heath & Co.); Andersen, Märchen; Brandt, German Reader (Allyn & Bacon).
2. Hillern, Höher als die Kirche; Riehl, Der Fluch der Schönheit; Storm, Immensee; Gerstäcker Irrfahrten (Henry Holt); Heine, Die Harzreise; Freytag, Aus dem Staat Friedrichs des Grossen.

XI. English.—Two sets of books are prescribed for preparation in English, one for reading, the other for more careful study. No candidate will be admitted whose work is notably defective in points of spelling, punctuation, idiom, or division into paragraphs. The examinations will consist of two parts:

1. Reading.—A certain number of books will be set for reading. The candidate will be required to present evidence of a general knowledge of the subject-matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two

on each of several topics to be chosen by the candidate from a considerable number — perhaps ten or fifteen — set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the book. In preparation for this part of the requirement it is important that the candidate shall have been instructed in the fundamental principles of rhetoric.

The books set for this part of the examination will be:

In 1903–1905, The Sir Roger de Coverley Papers in "The Spectator"; Goldsmith's Vicar of Wakefield; Tennyson's Princess; Scott's Ivanhoe; George Eliot's Silas Marner; Coleridge's Rime of the Ancient Mariner; Shakespeare's Merchant of Venice and Julius Cæsar; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal.

2. Study and Practice.— This part of the examination presupposes the thorough study of each of the works named in this division. In addition the candidate may be required to answer questions involving the essentials of English grammar and composition. Inability to answer such questions will be considered a sufficient ground for refusing admission.

The books set for this part of the examination will be:

In 1903–1905, Shakespeare's Macbeth; Burke's Speech on Conciliation with America; Macaulay's Essays on Milton and Addison; Milton's L'Allegro, Il Penseroso, Lysidas, and Comus.

Preparation is advised in Plane Trigonometry, also.

Admission will be refused to candidates failing in English, or showing marked deficiencies in spelling and punctuation.

Candidates for advanced standing are also examined in the studies that have been pursued by the class which they propose to enter.

A certificate from an academy or a high school will be accepted in place of an examination, upon any subject required for admission. Every certificate must state the amount of work done by the student, his proficiency, and the text-books used; and in case it is not evident that the student is thoroughly prepared, an examination will be required.

Certificate forms will be furnished on application.

In place of an examination, the college will accept a certificate indicating the satisfactory completion of the second, third, or fourth of the courses of study for high schools recommended by the State Educational Council, and adopted by the State Teachers' Association at its meeting in Manchester, October, 1901, provided such high school is on the list approved by the State Superintendent of Public Instruction.

The times for examination are the Monday and Tuesday before Commencement, and the Tuesday and Wednesday before the beginning of the first term. Candidates will present themselves with their credentials on the first day of the examination. See Calendar.

REQUIREMENTS FOR GRADUATION FROM FOUR YEARS' COURSES.

The degree of Bachelor of Science will be conferred upon those who complete a four years' course or its equivalent.

The regular work of the senior class, including the regular final examinations, is completed at 4 P. M. on the Tuesday of the week preceding Commencement; and each member of the class may receive a statement of his standing at the office of the secretary of the faculty at 2 P. M. on the next day, Wednesday. All work required for graduation must be completed by 6 P. M. of the Saturday of the same week.

Each candidate for a degree must prepare a thesis on some subject relating to the studies he has taken.

DESCRIPTION OF STUDIES.

For the Courses of Study see page 60 et seq.

AGRICULTURE.

The rapid development of this science has made it necessary to divide the broad subject of Agriculture into more specific heads. Accordingly these studies will be found in the following groups: Agronomy, animal-husbandry, dairy-husbandry, forestry, and horticulture.

AGRONOMY.

1. Elementary Agriculture. *Sixty exercises.*

Lectures, recitations, and practical exercises on the fundamental principles of general agriculture. This course forms the foundation for the courses that follow it.

2. General Agriculture. *Twenty exercises.*

Lectures, recitations, and practical exercises on the general field of agriculture and the fundamental principles.

3. Farm Equipment. *Forty-five exercises.*

Lectures and recitations upon selecting, planning, and equipping farms; planning and erecting farm buildings; farm vehicles and machinery; power, water, and drainage; practical exercises in drawing plans of farms and farm buildings; leveling and laying drains; dynamometer tests of wagons and farm implements, etc.

4. Soils and Fertilizers. *Twenty exercises.*

Lectures, recitations upon the origin, formation, kinds, and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage, and irrigation. Practical exercises in testing physical properties of several soils, determining the relation of soils to heat, moisture, air, and fertilizers, and making mechanical analysis.

5. Farm Crops. *Thirty exercises.*

Lectures and recitations upon the history, production, marketing, and harvesting of farm crops. Practical exercises with growing and dried specimens of farm crops, including grasses, clovers, and other forage crops.

6. Agricultural Seminary. *Thirty exercises.*

This course consists of the study of current agricultural literature. Each student will prepare abstracts, reports, or essays upon assigned articles, books, bulletins, and various agricultural problems.

7. History of Agriculture and Rural Economics. *Twenty exercises.*

Lectures upon the history of agriculture, present agricultural methods in various countries, cost and relative profits of various farm operations and systems.

ANIMAL INDUSTRY.

1. Sheep, Mutton, Wool, Swine, and their products. *Thirty exercises.*

A comparative study of the breeds; selection, care, and management of sheep under various conditions; different grades of wool, and their uses and value, the comparative quality and value of the various portions of the mutton carcass; the raising of early lambs.

A study of the breeds and types of swine; the selection and management of breeding stock; the preparation of swine for exhibition; the influence of food upon pork products; bacon and ham curing. Lectures, recitations, and practice in judging.

2. Breeds of Beef Cattle. *Forty-five exercises.*

A study of the breeds and breed type; a study of beef type from the standpoint of the demands of the market; the method of beef production; the preparation of cattle for sale and exhibition; the common diseases of cattle, and their treatment. Lectures, recitations, and judging practice.

3. Breeds of Horses. *Thirty exercises.*

The history, development, and characteristics of draft horses; outlines of heavy horses demanded by the market; the production and preparation of draft horses for the market; the training and the proper method of harnessing and hitching.

Light horses, their history, development, characteristics, and uses; the breeding, training, fitting, and marketing bus, cab, and saddle horses; the selection of stallions; the care and management of brood mares; the care of the foal. Lectures, recitations, and judging practice.

4. Principles of Stock Feeding. *Thirty exercises.*

The laws of nutrition, conditions affecting the palatability and assimilation of foods; the effect of foods upon animals and animal products; the digestibility of foods, and conditions affecting digestibility. Lectures, recitations, and laboratory work.

5. Breeds of Dairy Cattle. *Forty-five exercises.*

A history and development of the breeds of dairy cattle; the formation of herds; the value of pedigree in the selection of dairy cattle; the rearing of the dairy calf; the common diseases, their cause and treatment. Lectures, recitations, and practice in judging.

6. Principles of Breeding. *Thirty exercises.*

The value of selection in improving and maintaining a high standard of excellence in farm stock; variation, its extent and cause; heredity, and its operation under various conditions, etc. Lectures, recitations, and assigned readings.

7. Stable Management and Hygiene. *Twenty exercises.*

Stables, stable equipment and management, ventilation, drainage; grooming; care of harness and wagons, etc. Lectures.

BOTANY.

1. Structural Botany. *Thirty exercises.*

Lectures and laboratory work on the minute structure and physiology of plants, with special reference to the higher forms.

Open only to those who have taken the preparatory Botany or its equivalent.

2. Plant Diseases. *Twenty exercises.*

A study by means of lectures and laboratory work of some of the more important fungous diseases of cultivated plants, and the means of preventing their injuries.

Open only to students who have completed Botany 1.

3. Advanced Courses.

a. Forty-five exercises. *b. Thirty exercises.*
c. Thirty exercises.

Open only to those who have shown special proficiency in Botany.

CHEMISTRY.

1. Inorganic Chemistry. *Forty-five exercises.*

Lectures and recitations on general and theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solutions of chemical problems will be required.

2. Inorganic Chemistry. *Thirty exercises.*

Course 2 is a continuation of Course 1, but the time will be mainly spent on the metallic elements, their metallurgy, salts, etc.

Open only to students who have completed Course 1.

3. Organic Chemistry. *Twenty exercises.*

Course 3 will consist of lectures and recitations on the chemistry of the carbon compounds, together with the study of their properties by means of specimens.

Open only to students who have completed Courses 1 and 2.

4. Qualitative Chemical Analysis.

Course 4 consists of laboratory practice, with occasional lectures. The student is expected to become proficient in the separation and detection of the common acids and bases, and to keep a full set of notes. He will have practice in the writing of reactions, and will fill out numerous slips containing questions bearing upon his work.

Open only to students who have completed Course 1.

5. *a.* Chemistry of Plant Growth. *Forty-five exercises.*

The composition of plants at different stages of growth, and the conditions necessary for their development. This subject must be preceded by Chemistry Courses 1, 2, and 3.

b. Food and Nutrition. *Twenty exercises.*

These subjects include the composition of foods, and the animal body; the assimilation of the former by the latter, and the principles underlying a rational diet. This subject should be preceded by Course 5*a*.

6. *a*. Industrial Chemistry. *Twenty exercises.*

Course 6*a* consists of lectures on chemical manufactures, such as sugar, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, etc. The lectures will be illustrated by lantern views; and trips to the leading New England cities, to examine important chemical manufactures, will be taken as far as practicable.

b. Metallurgy. *Twenty exercises.*

Course 6*b* consists of lectures describing the processes employed in the smelting of the ores of iron, lead, copper, zinc, silver, gold, etc., and upon the methods used in refining these metals. The lectures are illustrated by stereopticon and by specimens of metallurgical products.

Open only to those who have completed Courses 1 and 2.

7. Advanced Quantitative Analysis.

Course 7 extends through the year, and is intended to fit the student for work in the laboratories of agricultural experiment stations, fertilizer works, iron works, sugar refineries, etc., and for the duties of the public analyst. This course will be made to fit the end which each has in view, and will be largely an individual one. For those students in the Chemical Division of the Agricultural Course the analyses made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, foodstuffs, sugars, etc. For the student wishing to enter metallurgical works, the analyses will be in the main upon iron, steel, and other metals, ores, limestones, slags, alloys, fuels, etc. As a preparation for the study of medicine, work will be done on poisons, foods, drugs, urine, etc. Other lines will be arranged to meet the wants of the individual student. Each student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary, and industrial chemistry, in order to lay a foundation for any future work which may be required of him. A short course in gas analysis will also be provided. A portion of the time of the last two terms is given to work bearing upon the preparation of a graduating thesis.

Open only to students who have completed Course 4.

8. Organic Chemistry. *Thirty exercises.*

Course 8, for students in the Chemical Division of the Agricultural Course, and in the Technical Chemistry Course, consists of laboratory practice by the students in preparing and purifying products relating to their respective lines of work.

Open only to those who have completed Course 3.

9. Chemical Journals, Methods, etc. *Thirty-five exercises.*

The work consists of the study of current chemical literature, which is mainly in the German language, with recitations once a week throughout the year. Each student will be expected to prepare abstracts, reports, criticisms, etc., upon assigned articles.

Open to students taking Course 7.

10. *a*. Physical Chemistry, Lectures. *Twenty exercises.*
b. Theoretical Chemistry, Lectures. *Twenty exercises.*

The work consists of advanced study of chemical theory. Practical experiments will be performed, with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, molecular, and atomic volume, the chemistry of space, etc., will take up much of the time.

Course 10 comes in alternate years with Course 6, and is open to students who have completed Courses 1, 2, and 3.

DAIRY HUSBANDRY.

1. The Study of Dairy Breeds. *Forty-five exercises.*

Recitations and lectures on the origin, history, distribution, characteristics, adaptability, and standards of excellence of pedigreed breeds of cattle, with special reference to the selection of breeds and individual animals for the dairy herd.

2. The Study of Dairy Feeding. *Thirty exercises.*

Recitations and lectures on animal nutrition, the composition and value of various foods, and the kind and amount of food best adapted for milk production. Students are required to prepare proper feeding rations.

3. Milk. *Twenty exercises.*

Lectures and recitations on the secretion, nature, and composition of milk, its uses and value as an article of food. It also deals with causes and conditions influencing the quality of milk and the care of milk on the farm.

4. Milk Testing. *Forty-five exercises.*

Lectures and recitations on the history and principles of the Babcock test and its application on the dairy farm, and in the creamery or milk inspector's laboratory. Under the guidance of the instructor the student will practice testing milk and its products until competent to perform the work for himself or for others. In connection with the lactometer the test will be made the subject of practice in estimating milk solids.

5. Dairy Bacteriology. *Forty-five exercises.*

Lectures, recitations, and demonstrations covering the more important facts in the relation of bacteria to dairying. Instruction and practice in pasteurizing milk and cream for market and for butter-making; also in making and using starters, and ripening cream.

6. Management of Dairy Machinery. *Forty-five exercises.*

Lectures on the construction, operation, and care of dairy and creamery appliances. Each student is required to take apart and assemble leading makes of cream separators and to operate them carefully and efficiently, and present a written description of each, with a record of capacity and efficiency under his management.

7. Butter-making. *Forty-five exercises.*

Text-book study, recitations and lectures are supplemented by practice in the creamery. The student is trained to perform all parts of the work and to thoroughly understand the details which make possible the production of fine butter.

8. Creamery and Dairy Management.

Students are taught the method of keeping creamery and dairy accounts, and will be required to present sample accounts covering a period of one month. Plans of dairy buildings and creameries are also required, with estimates for building and equipment.

DRAWING.

These courses are of an industrial nature, and include both free-hand and mathematical branches of this subject. They aim to cultivate accurate observation, careful thinking in applying the underlying theories, and manual dexterity in making the graphic records. The immense value of drawing as a means of expression is coming to be more and more fully recognized.

Two and one half hours' work is counted as one exercise.

The work of the first two terms is required of all regular students. This includes elementary free-hand industrial drawing, and mathematical drawing, by means of instruments. The advanced mathematical and machine drawing is prescribed for engineering courses. The advanced free-hand drawing is elective, and may be taken only by those with adequate preparation.

1. Industrial Drawing.

a. Fifty-three exercises. *b. Thirty-five exercises.*

Additional Course for Women.*

c. Twenty-two exercises. *d. Fifteen exercises.*

Free-hand drawing in outline and in light and shade, from geometric models, common objects, and casts of historic ornament; use of instruments; geometrical drawing; lettering and figuring; orthographic projection; elementary perspective; working drawings.

2. Industrial Drawing.*

a. Twenty exercises. *b. Thirty exercises.*

Light and shade drawing from the cast and from still life; pencil sketching; design; details of building construction; projection drawing.

3. Descriptive Geometry and Drawing.

a. Thirty exercises. *b. Twenty exercises.*
c. Thirty exercises.

Recitations and drawing exercises in the solution of problems in plane and solid geometry, by means of orthographic projections.

d. Twenty exercises.

Recitations on shades, shadows and perspective, with exercises in perspective drawing.

Course 3 is open only to those who have passed Mathematics 2.

4. Mechanical Drawing. *a. Thirty exercises.*

Orthographic projection; lettering and figuring; working drawings; tracings and blue-prints.

b. Seventy-five exercises. *c. Thirty exercises.*
d. Thirty exercises.

Working drawings and drafting-room practice.

5. Industrial Drawing.*

a. Forty-five exercises. *b. Fifty exercises.*
c. Thirty exercises.

Study of architectural detail; design; use of color; pencil sketching; perspective; historic ornament.

* Elective.

6. Drawing and History of Painting.

a. Forty-five exercises. *b. Thirty exercises.*
c. Thirty exercises.

Antique figure from casts, pencil sketching, charcoal drawing, use of water colors; study of the history of painting.

ENGINEERING.

1. Surveying. *Thirty exercises.*

Recitations, field-work, and plotting, including compass, transit, plane-table, and level work.

2. Mechanism.

a. Thirty exercises. *b. Twenty exercises.*
c. Twenty exercises.

Recitations, and exercises in drawing outlines of elementary combinations of parts of machines, with special reference to the relative motion of the parts, their forms and modes of connection.

Course 2 is open only to those who have taken Drawing 3.

3. Mechanics of Engineering.

a. Thirty exercises. *b. Fifty exercises.*
c. Fifty exercises.

Courses 3*a* and 3*b* are devoted to recitations in Statics and Dynamics; Course 3*c* to Mechanics of Materials.

Course 3 is open only to those who have taken Mathematics 1 to 5, inclusive.

4. Materials of Construction. *Sixty exercises.*

Recitations on the production, properties, uses, and preservation of engineering materials.

Course 4 is open only to those who have taken Course 3c and Chemistry 2.

5. Steam Engineering.

a. Forty-five exercises. *b. Thirty exercises.*
c. Thirty exercises.

Recitations and lectures on Thermodynamics, Boilers, and Valve Gears.

Course 5 is open only to those who have taken Courses 3a, 3b, and Physics 1 and 2.

6. Hydraulics. *Forty-five exercises.*

Course 6 is open only to those who have taken Course 5.

7. Dynamos and Electro-motors.

a. Forty-five exercises. *b. Thirty exercises.*
c. Thirty exercises.

Lectures and quizzes on the construction and theory of dynamos and electro-motors, direct current and alternating.

Course 7 is open only to those who have taken Physics 1 to 4 and Mathematics 1 to 5.

8. Mechanical Laboratory.

a. Thirty exercises. *b. Thirty exercises.*
c. Twenty exercises.

Tests of materials, boilers, engines, pumps, indicators, etc.

Course 8 is open only to those who have taken Courses 1 to 5.

9. Machine Design. *Forty exercises.*

Course 9 is open only to those who have taken Courses 3 and 4.

10. Mechanical Engineering.

a. Multiple expansion engines. *Thirty exercises.*
b. Gas and Hot Air Engines and Refrigerating Machinery. *Thirty exercises.*

11. Roads, Streets, and Pavements. *Thirty exercises.*

Recitations and lectures on construction and maintenance of paved, macadamized, and gravel roads, with discussion of laws relating thereto.

12. Electrical Engineering.

a. Forty-five exercises. *b. Sixty exercises.*
c. Forty-exercises.

A careful study is made of the principles and methods employed in telegraphy, telephony, and electric signaling; the transmission of electric energy for lighting and power purposes, by direct current, single phase, and multiphase systems; the electric railway, its installation and operation, and the practical management of dynamos and motors.

In connection with this course it is intended to make excursions to representative stations and plants, as a supplement to the class-room work.

Course 12 is open to those who have taken Engineering 7 and Physics 7, a to c.

ENGLISH.

1. Rhetoric.

a. Thirty exercises. *b. Twenty exercises.*

c. Twenty exercises.

2. Three Themes. *One each term.*

Required of all students registered in the Sophomore class.

3. Three Original Declamations. *One each term.*

Required of all students registered in the Junior class.

4. Three Original Declamations. *One each term.*

Required of all students registered in the Senior class.

5. Early English. *Forty-five exercises.*

Study of authors.

6. Elizabethan Writers. *Twenty exercises.*

Study of authors.

7. Writers of the Restoration and the French Influence. *Twenty exercises.*

8. Victorian Writers. *Forty-five exercises.*

9. American Literature. *Fifty exercises.*

Lectures and study of authors.

FORESTRY.

1. Arboriculture and Forestry. *Twenty exercises.*

The use of trees for shelter, shade, and ornament, and their propagation. Value of trees for timber. How to improve existing woodlands. Influence of forests upon soils, crops, and climate. Establishment and management of plantations of forest trees.

2. Advanced Forestry. *Thirty exercises.*

Theoretical and practical work to enable a student to prepare for forestry practice.

Open only to students having taken Course 1.

a. Arboriculture and Forestry. *Twenty exercises.*

One afternoon is reserved each week for a practical exercise to accompany this course.

FRENCH.

*Courses 1, 2, and 3 are taken in Freshman year by students who offer German for admission.

1. Essentials of French Grammar and reading with practice in speaking and writing French. Dictation. *Forty-five exercises.*

2. Grammar continued. Simple stories, committing of poems to memory. Dictation. *Thirty exercises.*

3. Reading of Modern French Prose, translation from English into French of connected narrative. Dictation. *Thirty exercises.*

4. Reading and translation of Modern Prose, Composition, Poems. *Forty-five exercises.*

5. Reading, Translation, and Composition continued. *Thirty exercises.*

6. French Prose, History, and Travel; Composition based on some book read in class. *Thirty exercises.*

7. French Prose, Sight Reading. *Forty-five exercises.*

Hugo, Balzac, Sand.

8. Classical French. *Thirty exercises.*

Corneille, Racine, and Molière.

9. General Review of French Literature. Outside reading; sight work.

GEOLOGY.

1. Elementary Geology. *Thirty exercises.*

2. Mineralogy. *Thirty exercises.*

A short course in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value.

Course 2 is open only to those who have taken Chemistry 1 and 2.

GERMAN.

*Courses 1, 2, and 3 are taken in Freshman year by students who offer French for admission.

1. German Grammar. Declension of articles, nouns, adjectives, and pronouns; verbs, weak and strong. Reading of simple stories; conversation. Dictation.

Forty-five exercises.

2. Verbs, model auxiliaries, essentials of syntax. Composition, Reading, and Translation; Poems. Dictation.

Thirty exercises.

3. Reading, Translation, and Composition; Sight Translation. Dictation. *Thirty exercises.*

4. German Prose of the Nineteenth Century. Composition based on some book read in class. *Forty-five exercises.*

5. German Prose of the Nineteenth Century continued. Composition, outside reading. *Thirty exercises.*

6. Easier works of Lessing and Schiller. Composition.

Thirty exercises.

7. Masterpieces of German Literature. Lessing and Schiller.

8. Goethe. German Ballads and Lyrics.

9. General review of German Literature, outside reading.

HISTORY.

In the courses in history an important place is given to historical reading carried on in the reference room. In some cases a considerable part of the work is written.

Courses 1 to 3 and Courses 4 to 6 are given on alternate years.

*The aim throughout the courses in French and German will be to train the students to make practical use of these languages. Considerable stress is laid, therefore, on reading aloud, dictation, and paraphrasing the assigned texts.

1. History of Europe from 814 to 1598. Recitations and collateral reading. *Forty-five exercises.*

2. History of Europe from 1598 to 1715. Recitations and collateral reading. *Thirty exercises.*

3. History of Europe from 1715 to 1789. Recitations and collateral reading. *Thirty exercises.*

4. Political and Constitutional History of England. Recitations and collateral reading. *Sixty exercises.*

5. History of Europe from 1789 to 1815. The French Revolution. Recitations and collateral reading. *Thirty exercises.*

6. History of Europe since 1815. Recitations and collateral reading. *Thirty exercises.*

7. Political and Constitutional History of the United States from 1783 to 1850. *Sixty exercises.*

8. Political and Constitutional History of the United States since 1850. *Thirty exercises.*

HORTICULTURE.

1. Principles of Horticulture. *Twenty exercises.*

Lectures, recitations, and practical exercises on the fundamental principles of general horticulture. This course forms the foundation of the courses that follow it.

2. Olericulture and Seed Growing. *Forty-five exercises.*

Lectures and recitations. References: Green's Vegetable Gardening, Henderson's Gardening for Profit, Brill's Seed Growing, and various special pamphlets.

Open only to those having completed Botany 1.

3. Greenhouse Management. *Twenty exercises.*

The construction and management of greenhouses; crops of the vegetable forcing-house. References: Bailey's Forcing Crops, Taft's Greenhouse Construction.

4. Pomology and Viticulture. *Forty-five exercises.*

References: Downing's Fruit and Fruit Trees of America, Thomas' American Fruit Culturist, Barry's Fruit Garden, Fuller's Small Fruit Culturist.

Open only to those having completed Botany 2 and Zoology 3.

5. Plant Breeding and Evolution of Domesticated Plants. *Twenty exercises.*

Lectures and recitations upon the laws governing plant life.

6. Horticultural Seminary. *Twenty exercises.*

This course consists of the study of current horticultural literature and various advanced horticultural problems not heretofore touched upon.

7. Landscape Gardening and Floriculture. *Twenty exercises.*

The principles of æsthetics as applied to natural scenery; the adornment of home grounds, including management of house plants, climbing vines, and flowering bulbs.

a. Principles of Plant Growth. *Forty-five exercises.*

This course is elementary, and points to the fundamentals of horticulture. One afternoon each week is reserved for a practical exercise to accompany this course.

b. Vegetable Gardening and Seed Growing. *Forty-five exercises.*

This course aims to familiarize the student with modern methods of vegetable growing. Soils, varieties, culture, marketing, enemies, etc., are studied. Lectures, recitations, and laboratory work.

c. Greenhouse Management. *Thirty exercises.*

The aim of this course is to fit men to understand and become familiar with the practical as well as the theoretical principles of running a greenhouse. The more common forcing and general greenhouse crops and plants are studied. Lectures, recitations, and laboratory work.

d. Fruit Growing. *Forty-five exercises.*

The culture, classification, and identification of our leading commercial fruits are taken up for study in this course, the object being to familiarize the student with modern fruit growing, both the large or orchard fruits and the small or berry fruits. Lectures, recitations, and laboratory work.

MATHEMATICS.

1. Algebra completed. *Seventy-five exercises.*

2. *Solid Geometry, with advanced course. *Forty exercises.*

3. Plane and Spherical Trigonometry. *Fifty exercises.*

4. Analytic Geometry. *Seventy-five exercises.*

5. (*a*) Differential Calculus, (*b*) Integral Calculus. *One hundred exercises.*

6. Astronomy. *Forty exercises.*

7. Differential Equations. *Thirty exercises.*

8. Quaternions. *Twenty exercises.*

METEOROLOGY.

1. Meteorology. *Thirty exercises.*

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes, and methods of prediction of atmospheric changes.

MILITARY SCIENCE AND TACTICS.

1. Military Drill.

Practical instruction in drill and gymnastic exercises.

Four exercises per week throughout the course.

2. Military Tactics.

Theoretical instruction in drill regulations and the elementary principles of military science.

One exercise per week throughout the Freshman, Sophomore, and Junior years.

PHILOSOPHY.

1. Logic. *Thirty exercises.*

Lectures and recitations.

2. Psychology. *Forty-five exercises.*

Open only to students who have maintained a high average in Course 1.

* Elective for those entering unprepared in this subject.

3. Ethics. *Thirty exercises.*

Lectures and recitations.

Open only to students who have maintained a high average in Courses 1 and 2.

4. Elements of Philosophy. *Fifty exercises.*

Open only to students who have maintained a high average in Courses 1 and 2.

5. History of Philosophy. *Forty exercises.*

Open only to students who have maintained a high average in Course 4.

PHYSICS.

1. Mechanics. *Thirty exercises.*

2. (*a*) Heat, (*b*) Light. *Forty-five exercises.*

3. Sound. *Twenty exercises.*

4. Electricity and Magnetism. *Forty exercises.*

Courses 1, 2, 3, and 4 are a general introduction to the subject. The instruction is given by recitations and lectures, the latter being illustrated by experiments and stereopticon.

5. Elements of Least Squares and the Precision of Measurements. *Forty-five exercises.*

6. Physical Laboratory.

a. Thirty exercises. *b. Thirty exercises.*

The work consists in the experimental verification of the laws of physics and the determination of physical constants, a few of the investigations being the following: The analytical balance, the law of the pendulum, harmonic motions of translation and rotation, specific heats, latent heats, expansion of gases, law of lenses, candle-power of lights, velocities of sound in air and metals, the intensity of the earth's magnetism, the resistance of wires and voltaic cells, the e. m. f. of batteries, etc.

Courses 5 and 6 are taken consecutively and are open only to those who have passed in Courses 1, 2, 3, and 4. Students in engineering must also have passed in Mathematics 1 to 5, inclusive.

7. Theoretical Electricity.

a. Forty-five exercises. *b. Thirty exercises.*
c. Thirty exercises. *d. Forty-five exercises.*
e. Thirty exercises.

The course includes the subjects of electro-statics, magnetism, and electro-dynamics, as treated mathematically, the study of electrical measuring instruments and methods, and the theory of periodic currents.

Course 7 is open only to those who have passed Courses 1 to 6.

8. Applications of Electricity.

a. Forty-five exercises. *b. Thirty exercises.*

The principles and methods employed in electrical measurements — such as resistance of wires and batteries, e. m. f. of batteries, current measurement by ammeter and electrolysis, use of the voltmeter, etc.— will be carefully considered. A brief study will be made of the dynamo, motor, transformer, primary and secondary batteries, arc and incandescent lamps, and the general principles of electrical distribution.

Course 8 is open to those who have taken Courses 1 to 4.

9. Electrical Laboratory.

a. Twenty exercises. *b. Twenty exercises.*

This work consists of the various uses of the Wheatstone Bridge; the calibration of galvanometers, ammeters, etc.; the measurement of high resistances, capacities, and inductances; the determination of the candle-power of incandescent and arc lamps; the study of direct and alternating current dynamos and motors; the efficiencies of a transformer under different loads; power measurements by watt-meter, etc.

Course 9 is open only to those who have passed in Physics 1 to 7, and Engineering 7.

See also Engineering.

POLITICAL SCIENCE.

1. Political Economy. *Fifty exercises.*

An elementary course, with lectures upon some of the practical questions of the day.

2. Laws of Business. *Thirty-three exercises.*

Recitations supplemented by lectures and the discussion of cases.

3. American Constitutional Law. *Forty-two exercises.*

Use is made of Pomeroy's Constitutional Law, which is supplemented by the decisions of the United States Supreme Court. Special attention is given to the connections between American constitutions and American political history.

4. Advanced Political Economy. *Thirty exercises.*

A consideration of such subjects as banking, bimetallism, and tariff legislation.

Open only to those who have taken Course 1.

5 Advanced Political Economy. *Thirty exercises.*

Open only to those who have taken Courses 1 and 4.

6. International Law. *Thirty exercises.*

SHOP WORK.

Three hours' work in the shop is reckoned as one exercise.

1. Work in Wood Shop.

a. Thirty-seven exercises. *b. Twenty-five exercises.*
c. Thirty exercises.

Exercises in carpentry work, joinery, and pattern making.

2. Work in Machine Shop, Forge Shop, and Foundry.

Exercises in bench work, machine work, and shop measurements, forging, molding, and casting.

a. Forty-five exercises. *b. Thirty exercises.*
c. Thirty exercises. *d. Thirty exercises.*
e. Twenty exercises. *f. Twenty exercises.*
g. Forty-five exercises. *h. Thirty exercises.*
i. Thirty exercises.

ZOOLOGY.

1. Introductory Zoölogy. *Forty-five exercises.*

A general introduction to the study of animal life, by means of lectures and laboratory dissections of the principal types.

2. Animal Biology. *Twenty exercises.*

A general study of the nature and processes of animal life, with special attention to heredity, variation, development, and mental powers.

Open to students who have taken Course 1.

3. Entomology. *Thirty or fifty exercises.*

A review of the classification, structural characters, and biological relations of insects, with a special study of those injurious to cultivated crops and domestic animals, and of the means of preventing their injuries.

Open only to those who have taken Courses 1 and 2.

4. Economic Ornithology. *Thirty exercises.*

Lectures on the relations of birds to agriculture, and their relations to each other and to other organisms.

Course 4 is open only to students who have taken Courses 1, 2, and 3.

5. Comparative Anatomy. *Twenty exercises.*

Lectures on anatomy and physiology of domestic animals.

6. Advanced Zoölogy.
Averaging four exercises a week for a year.

Course 6 is intended for those students who elect Zoology for their senior year. It will usually be modified to suit individual needs. Open only to those who have completed all preceding Courses, and shown special proficiency in Zoology.

7. Zoölogical Bibliography.
One exercise a week for a year.

Open only to students taking Course 6.

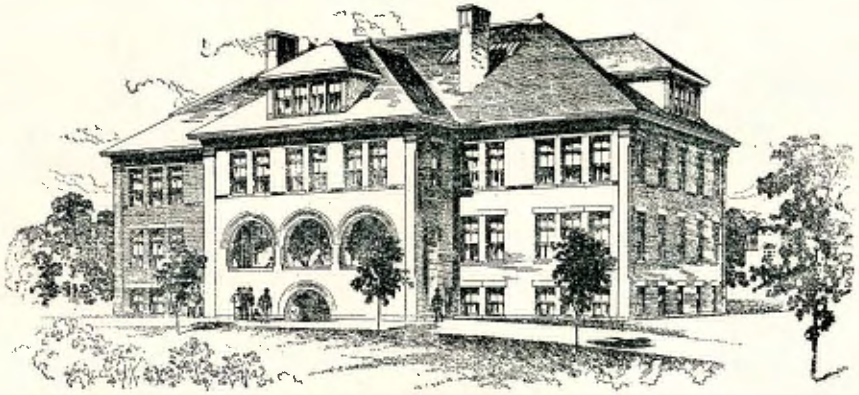
COURSE OF STUDY AND SCHEDULE OF HOURS.

For details see Description of Studies.

Chapel exercises: 11.50 daily, except that on Sundays the exercises are held at 5 P. M. Attendance is required of all students.

Military drill: Military Science 1. M., T., Th., F., 12 to 12.30. Attendance is required of all male students.

Rhetoricals: Wednesdays, 12 to 12.30. Attendance is required of all students.



MORRILL HALL.
New Building for Agriculture and Horticulture.

FRESHMAN YEAR.

FOR ALL FOUR-YEAR COURSES.

FIRST TERM.

	Exercises per week.
Rhetoric—English 1*a*	2
Algebra—Mathematics 1	5
Shop Work and Drawing—Shop Work 1*a* and Drawing 1*a*	5
Drawing—Drawing 1*a*	1
†History—History 1 or 4	3
French—French 1 or German—German 1	3
*Solid Geometry—Mathematics 2	3
Military Tactics—Military Science 2	1

SECOND TERM.

Rhetoric—English 1*b*	2
Trigonometry—Mathematics 3	5
Shop Work and Drawing—Shop Work 1*b* and Drawing 1*b*	5
Drawing—Drawing 1*b*	1
†History—History 2 or 5	3
French—French 2 or German—German 2	3
Military Tactics—Military Science 2	1

THIRD TERM.

Rhetoric—English 1*c*	2
†Surveying—Engineering 1	3
Mechanics—Physics 1	3
†Botany—Botany 1	3
†Shop Work—Shop Work 1*c*	3
†Agronomy—Agronomy 2	2
†Horticulture—Horticulture 1	2
†Drawing—Drawing 4*a*	3
†History—History 3 or 6	3
French—French 3 or German—German 3	3
Military Tactics—Military Science 2.	

* Optional.

† In the first and second terms History is taken by women in place of Shop Work. It is also taken by students who are prepared for advanced work. In the third term Shop Work and Drawing are taken by students intending to complete either of the Engineering Courses or the Course in Technical Chemistry; Botany is taken by all other students. Agriculture and Horticulture are taken by students intending to complete the Agricultural Course. History is taken by students intending to complete the General Course. Students in the General Course also elect between Surveying and Horticulture.

COURSE IN AGRICULTURE.

Sophomore Year.

FIRST TERM.

	Exercises per week.
Farm Equipment—Agronomy 3	3
Olericulture—Horticulture 4	3
Introductory Zoölogy—Zoölogy 1	3
Heat and Light—Physics 2	3
Inorganic Chemistry—Chemistry 1	3
German—German 4	3
Military Tactics—Military Science 2	1
One Theme—English 2.	

SECOND TERM.

Soil Physics—Agronomy 4	2
Arboriculture and Forestry—Forestry 1	2
Animal Biology—Zoölogy 2	2
Comparative Anatomy—Zoölogy 5	2
Sound and Electricity—Physics 3 and 4	3
Inorganic Chemistry—Chemistry 2	3
German—German 5	3
Greenhouse Management—Horticulture 3	2
Military Tactics—Military Science 2	1
One Theme—English 2.	

THIRD TERM.

Stock Feeding—Animal Husbandry 2	3
Entomology—Zoölogy 3	5
Plant Diseases—Botany 2	2
Organic Chemistry—Chemistry 3	2
Electricity and Magnetism—Physics 4	3
German—German 6	3
Military Tactics—Military Science 2	1
One Theme—English 2.	

Junior Year.

*Technical studies may be elected in place of courses in English and Philosophy of Junior and Senior years in the Agricultural Course.

FIRST TERM.

Pomology—Horticulture 4	3
Chemistry of Plant Growth—Chemistry 5*a*	3
Ornithology—Zoölogy 4	1

French—French 4 3
or Am. Political History—History 4 4
Chemical Laboratory—Chemistry 4 3
*Early English—English 5 3
Physiological Anatomy—Animal Husbandry 5 2
Military Tactics—Military Science 2 1
One Original Declamation—English 3.

SECOND TERM.

Food and Nutrition—Chemistry 5*b* 2
*Logic—Philosophy 1 3
Geology—Geology 1 3
French—French 5 3
or Am. Political History—History 5 3
Chemical Laboratory—Chemistry 4 3
*Elizabethan Writers—English 6 2
General and Special Pathology—Animal Husbandry 6 2
Greenhouse Management—Horticulture 3 2
Military Tactics—Military Science 2 1
One Original Declamation—English 3.

THIRD TERM.

Farm Crops 7—Agronomy 5 3
Political Economy—Political Science 1 5
*English Literature—English 7 2
French—French 6 3
or Modern History—History 3 3
Mineralogy—Geology 2 3
Military Tactics—Military Science 2 1
One Original Declamation—English 3.

SENIOR YEAR.

FIRST TERM.

Breeds of Live Stock—Animal Husbandry 4 3
Agricultural Seminary—Agronomy 6 2
Constitutional Law—Political Science 3
Laws of Business—Political Science 2 } 5
*English Literature—English 8 3
*Psychology—Philosophy 2 3
One Original Declamation—English 4.

SECOND TERM.

Principles of Breeding—Animal Husbandry 4 3
Plant Breeding—Horticulture 5 2
Dairy Husbandry 2
International Law—Political Science 6 3
or Astronomy—Mathematics 6 4
or Elements of Philosophy—Philosophy 4 5
*Ethics—Philosophy 3 3
Advanced Political Science 4 3
One Original Declamation—English 4.

THIRD TERM.

Rural Economics—Agronomy 7 2
Agricultural or Horticultural Seminary—Agronomy 6 or Horticulture 6 2
Landscape Gardening—Horticulture 7 3
†Roads—Engineering 11 3
†History of Philosophy—Philosophy 5 4
†Meteorology—Meteorology 1 3
†Advanced Political Economy—Political Science 5 3
†Advanced Forestry—Forestry 2 3
One Original Declamation—English 4.

COURSES IN ENGINEERING.

SOPHOMORE YEAR.

FIRST TERM.

Exercises per week.

Analytic Geometry—Mathematics 4 5
Descriptive Geometry—Drawing 3*a* 2
Heat and Light—Physics 2 3
German—German 4 3
Shop Work—Shop Work 2*a* 3
Mechanism—Engineering 2*a* 2
Military Tactics—Military Science 2 1
One Theme—English 2.

SECOND TERM.

Differential Calculus—Mathematics 5*a* 5
Descriptive Geometry—Drawing 3*b* 2
Sound and Electricity—Physics 3 and 4 3
German—German 5 3
Shop Work—Shop Work 2*b* 3
Mechanism—Engineering 2*b* 2
Military Tactics—Military Science 2 1
One Theme—English 2.

†Elect 9 exercises.

THIRD TERM.

Integral Calculus—Mathematics 5*b*	5
Electricity and Magnetism—Physics 4	3
German—German 6	3
Descriptive Geometry and Perspective Drawing—Drawing 3*c* and 3*d*	5
Mechanism—Engineering 2*c*	2
Military Tactics—Military Science 2	1

One Theme—English 2.

JUNIOR YEAR.

Throughout the year Shop Work is taken by Mechanical Engineering students and Theoretical Electricity by Electrical Engineering students.

FIRST TERM.

Mechanics of Engineering—Engineering 3*a*	4
Inorganic Chemistry—Chemistry 1	3
Theoretical Electricity—Physics 7*a*	3
Least Squares and Precision of Measurements—Physics 5	3
Steam Engineering—Engineering 5*a*	3
Dynamos and Electro-Motors—Engineering 7*a*	3
Shop Work—Shop Work 2*d*	2
Military Tactics—Military Science 2	1

One Original Declamation—English 3.

SECOND TERM.

Mechanics of Engineering—Engineering 3*b*	4
Inorganic Chemistry—Chemistry 2	3
Physical Laboratory—Physics 6*a*	3
Steam Engineering—Engineering 5*b*	3
Dynamos and Electro-Motors—Engineering 7*b*	3
Theoretical Electricity—Physics 7*b*	3
Shop Work—Shop Work 2*e*	2
Military Tactics—Military Science 2	1

One Original Declamation—English 3.

THIRD TERM.

Mechanics of Engineering—Engineering 3*c*	4
Mineralogy—Geology 2	3
Physical Laboratory—Physics 6*b*	3
Steam Engineering—Engineering 5*c*	3
Dynamos and Electro-Motors—Engineering 7*c*	3
Theoretical Electricity—Physics 7*c*	3
Shop Work—Shop Work 2*f*	2
Military Tactics—Military Science 2	1

One Original Declamation—English 3.

COURSE IN MECHANICAL ENGINEERING.

Senior Year.

FIRST TERM.

	Exercises per week.
Materials of Construction—Engineering 4	4
Hydraulics—Engineering 6	3
or French—French 4	3
Mechanical Drawing—Drawing 4*b*	5
Mechanical Laboratory—Engineering 8*a*	2
Chemical Laboratory—Chemistry 4	2
Shop Work—Shop Work 2*g*	3
One Original Declamation—English 4.	

SECOND TERM.

Machine Design—Engineering 9	4
Mechanical Laboratory—Engineering 8*b*	3
Mechanical Engineering—Engineering 10*a*	3
or French—French 5	3
Chemical Laboratory—Chemistry 4	2
Drawing—Drawing 4*c*	3
Shop Work—Shop Work 2*h*	3
One Original Declamation—English 4.	

THIRD TERM.

Mechanical Engineering—Engineering 10*b*	3
or French—French 6	3
Mechanical Laboratory—Engineering 8*c*	2
Political Economy—Political Science 1	5
Thesis	3
Drawing—Drawing 4*d*	3
Shop Work—Shop Work 2*i*	3
One Original Declamation—English 4.	

COURSE IN ELECTRICAL ENGINEERING.

SENIOR YEAR.

FIRST TERM.

	Exercises per week.
Materials of Construction—Engineering 4	4
Theoretical Electricity—Physics 7*d*	3
Mechanical Drawing—Drawing 4*b*	2
Mechanical Laboratory—Engineering 8*a*	2
Electrical Engineering—Engineering 12*a*	3
or French—French 4	3
Hydraulics—Engineering 6	3
Chemical Laboratory—Chemistry 4	2
One Original Declamation—English 4.	

SECOND TERM.

Electrical Laboratory—Physics 9a	2
Electrical Engineering—Engineering 12*b*	6
Mechanical Laboratory—Engineering 8*b*	3
Theoretical Electricity—Physics 7*e*	3
Chemical Laboratory—Chemistry 4	2
Mechanical Engineering—Engineering 10*a*	3
or French—French 5	3
One Original Declamation—English 4.	

THIRD TERM.

Mechanical Laboratory—Engineering 8*c*	2
Electrical Engineering—Engineering 12*c*	4
or French—French 6	3
Electrical Laboratory—Physics 9*b*	2
Thesis	3
Political Economy—Political Science 1	5
Mechanical Engineering—Engineering 10*b*	3
One Original Declamation—English 4.	

COURSE IN TECHNICAL CHEMISTRY.

SOPHOMORE YEAR.

FIRST TERM.

	Exercises per week.
Analytic Geometry—Mathematics 4	5
Descriptive Geometry—Drawing 3*a*	2
German—German 4	3
Inorganic Chemistry—Chemistry 1	3
Heat and Light—Physics 2	3
Military Tactics—Military Science 2	1
One Theme—English 2.	

SECOND TERM.

Differential Calculus—Mathematics 5*a*	5
Descriptive Geometry—Drawing 3*b*	2
German—German 5	3
Inorganic Chemistry—Chemistry 2	3
Sound and Electricity—Physics 3 and 4	3
Military Tactics—Military Science 2	1
One Theme—English 2.	

THIRD TERM.

Integral Calculus—Mathematics 5*b*	5
Mineralogy—Geology 2	3
German—German 6	3
Organic Chemistry—Chemistry 3	2
Electricity and Magnetism—Physics 4	3
Military Tactics—Military Science 2	1
One Theme—English 2.	

JUNIOR YEAR.

FIRST TERM.

Chemistry of Plant Growth—Chemistry 5*a*	3
Shop Work—Shop Work 2*a*	2
French—French 4	3
Mechanics of Engineering—Engineering 3*a*	4
Chemical Laboratory—Chemistry 4 and 7	6
Military Tactics—Military Science 2	1
One Original Declamation—English 3.	

SECOND TERM.

Chemical Laboratory—Chemistry 7	7
Industrial Chemistry—Chemistry 6*a*	2
Mechanics of Engineering—Engineering 3*b*	4
French—French 5	3
Military Tactics—Military Science 2	1
One Original Declamation—English 3.	

THIRD TERM.

Chemical Laboratory—Chemistry 7	7
Metallurgy—Chemistry 6*b*	2
Mechanics of Engineering—Engineering 3*c*	5
French—French 6	3
Military Tactics—Military Science 2	1
One Original Declamation—English 3.	

SENIOR YEAR.

FIRST TERM.

Chemical Laboratory—Chemistry 7	7
Organic Chemistry—Chemistry 8	2
Chemical Journals—Chemistry 9	1
Steam Engineering—Engineering 5*a*	3
Application of Electricity—Physics 8*a*	3
One Original Declamation—English 4.	

SECOND TERM.

Chemical Laboratory—Chemistry 7 and Thesis	7
Steam Engineering—Engineering 5*b*	3
Chemical Journals—Chemistry 9	1
Physical Chemistry—Chemistry 10*a*	2
Applications of Electricity—Physics 8*b*	3
One Original Declamation—English 4.	

THIRD TERM.

Chemical Laboratory—Chemistry 7 and Thesis	5
Chemical Journals—Chemistry 9	1
Theoretical Chemistry—Chemistry 10*b*	2
Political Economy—Political Science 1	5
Meteorology—Meteorology 1	3
One Original Declamation—English 4.	

GENERAL COURSE.

Sophomore Year.

FIRST TERM.

	Exercises per week.
Introductory Zoölogy—Zoölogy 1	3
German—German 4	3
Inorganic Chemistry—Chemistry 1	3
Heat and Light—Physics 2	3
History—History 1 or 4, or Analytic Geometry—Mathematics 4	4 or 5
Military Tactics—Military Science 2	1
One Theme—English 2.	

SECOND TERM.

German—German 5	3
Inorganic Chemistry—Chemistry 2	3
Sound and Electricity—Physics 3 and 4	3
*History—History 2 or 5	3
*Animal Biology—Zoölogy 2	2
*Industrial Drawing—Drawing 2*a*	2
*Differential Calculus—Mathematics 5*a*	5
*Forestry—Forestry 1	2
Military Tactics—Military Science 2	1
One Theme—English 2.	

* Elect 17 exercises.

THIRD TERM.

German—German 6	3
Electricity and Magnetism—Physics 4	3
*History—History 3 or 6	3
*Entomology—Zoölogy 3	3
*Organic Chemistry—Chemistry 3	2
*Industrial Drawing—Drawing 2*b*	3
*Integral Calculus—Mathematics 5*b*	5
Military Tactics—Military Science 2	1
One Theme—English 2.	

* Elect 10 exercises.

Junior Year.

FIRST TERM.

French—French 4.	3
American Political History—History 7	4
*Early English—English 5	3
*German—German 7	3
*Chemistry of Plant Growth—Chemistry 5*a*	3
*Economic Ornithology—Zoölogy 4	1
*Chemical Laboratory—Chemistry 4	3
*Least Squares and Precision of Measurements—Physics 5	3
*Drawing—Drawing 5*a*	3
*Differential Equations—Mathematics 7	2
Military Tactics—Military Science 2	1
One Original Declamation—English 3.	

* Elect 9 exercises.

SECOND TERM.

French—French 5	3
American Political History—History 8	3
*Elizabethan Writers—English 6	2
Logic—Philosphy 1	3
*German—German 8	3
*Geology—Geology 1	3
*Food and Nutrition—Chemistry 5*b*	2
*Chemical Laboratory—Chemistry 4	3
*Physical Laboratory—Physics 6*a*	3
*Drawing—Drawing 5*b*	2 or 5
*Quaternions—Mathematics 8	2
Military Tactics—Military Science 2	1
One Original Declamation—English 3.	

* Elect 8 exercises.

THIRD TERM.

French—French 6	3
*Mineralogy—Geology 2	3
*Writers of Restoration—English 7	2
Political Economy—Political Science 1	5
Military Tactics—Military Science 2	1
One Original Declamation—English 3.	
*Drawing—Drawing 5*c*	3
*Chemical Laboratory—Chemistry 7	3
*Physical Laboratory—Physics 6*b*	3
*German—German 9	3

* Elect 9 exercises.

Senior Year.

FIRST TERM.

English 4 required; sixteen exercises elective.

Constitutional Law—Political Science 3 Laws of Business—Political Science 2	5
French—French 7	3
Victorian Writers—English 8	3
Psychology—Philosophy 2	3
Chemical Laboratory—Chemistry 7	3
Advanced Zoölogy—Zoölogy 6	4
Advanced Botany—Botany 3	3
Drawing and History of Painting—Drawing 6*a*	3
One Original Declamation—English 4.	
Thesis work	2

SECOND TERM.

English 4 required; sixteen exercises elective.

French—French 8	3
Astronomy—Mathematics 6	4
International Law—Political Science 6	3
Elements of Philosophy—Philosophy 4	5
Ethics—Philosophy 3	3
Advanced Political Economy—Political Science 4	3
Chemical Laboratory—Chemistry 7	3
Advanced Zoölogy—Zoölogy 6	3
Advanced Botany—Botany 3	3
Drawing and History of Painting—Drawing 6*b*	3
One Original Declamation—English 4.	
Thesis work	1 or 2

THIRD TERM.

English 4 required; fourteen exercises elective.

American Literature—English 9	5
French—French 9	3
Meteorology—Meteorology 1	3
Roads—Engineering 11	3
History of Philosophy—Philosophy 5	4
Advanced Political Economy—Political Science 5	3
Chemical Laboratory—Chemistry 7	3
Advanced Zoölogy—Zoölogy 6	3
Advanced Botany—Botany 3	3
Drawing and History of Painting—Drawing 6*c*	3
Landscape Gardening—Horticulture 7	3
Advanced Forestry—Forestry 2	3
One Original Declamation—English 4.	
Thesis Work.	

HOURS OF STUDY.

Term	Day	Section	8-9	9-10	10-11
First	Mon.	I			Mathematics 1...
		II			
	Tues.	I	German 1.....	French 1.....	Mathematics 1...
		II			
	Wed.	I	Drawing 1a.....	Drawing 1a.....	
		II			English 1a.....
	Thu.	I	German 1.....	French 1.....	Mathematics 1...
		II			Military Sci. 2...
	Fri.	I		History 1 or 4.....	Mathematics 1...
		II	Drawing 1a.....	Drawing 1a.....	English 1a.....
	Sat.	I	German 1.....	French 1.....	Mathematics 1...
		II			
Second	Mon.	I			Mathematics 3...
		II			
	Tues.	I	German 2.....	French 2.....	Mathematics 3...
		II			
	Wed.	I	Drawing 1b.....	Drawing 1b.....	Mathematics 3...
		II			English 1b.....
	Thu.	I	German 2.....	French 2.....	Mathematics 3...
		II			Military Sci. 2...
	Fri.	I			
		II	Drawing 1b.....	Drawing 1b.....	English 1b.....
	Sat.	I	German 2.....	French 2.....	Mathematics 3...
		II			
Third	Mon.	.....		Drawing 4c.....	Physics 1 .....
		.....			
	Tues.	.....	German 3.....	Botany 1.....	Botany 1.....
		.....		French 3.....	
				Drawing 4a.....	Drawing 4a.....
				French 3.....	
	Wed.	.....	Military Sci. 2...	English 1c.....	Physics 1 .....
		.....	English 1c.....	Military Science 2...	
	Thu.	.....	German 3.....	Botany 1.....	Botany 1.....
		.....		French 3.....	
				Drawing 4a.....	Drawing 4a.....
				French 3.....	
	Fri.	.....		English 1c.....	Physics 1 .....
		.....	English 1c.....		
	Sat.	.....	German 3.....	Botany 1.....	Botany 1.....
		.....		French 3.....	
				Shop-work 1c.....	Shop-work 1c....
				French 3.....	

ALL FOUR YEARS' COURSES.

Day	Section	11–11.50.	1.30–2.30.	2.30–4.
Mon.	I	.....	Drawing 1a.....	Drawing 1a
	II	Mathematics 1.....	Shop-work 1a.....	Shop-work 1a
Tues.	I	.....	Drawing 1a.....	Drawing 1a
	II	Mathematics 1.....	Shop-work 1a.....	Shop-work 1a
Wed.	I	English 1a	Drawing 1a or.....	Shop-work 1a
	II	History 1 or 4	Shop-work 1a or.....	Drawing 1a
Thurs.	I	Military Science 2...	Shop-work 1a or	History 1 or 4
	II	Mathematics 1	Drawing 1a	Drawing 1a
Fri.	I	English 1a.....	Shop-work 1a...	Shop-work 1a
	II	Mathematics 1.....	Drawing 1a.....	Drawing 1a
Sat.	I	.....	.....	.....
	II	Mathematics 1.... ..	.....	.....
Mon.	I	.....	Drawing 1b.....	Drawing 1b
	II	Mathematics 3	Shop-work 1b or.....	History 2 or 5
Tues.	I	.....	Drawing 1b	Drawing 1b
	II	Mathematics 3	Shop-work 1b or	History 2 or 5
Wed.	I	English 1b	Drawing 1b or.....	Shop-work 1b
	II	Mathematics 3	Shop-work 1b or.....	Drawing 1b
Thurs.	I	Military Science 2...	Shop-work 1b.....	Shop-work 1b
	II	Mathematics 3.....	Drawing 1b	Drawing 1b
Fri.	I	English 1b	Shop-work 1b.....	Shop-work 1b
	II	History 2 or 5	Drawing 1b.....	Drawing 1b
Sat.	I	.....	.....	.....
	II	Mathematics 3	.....	....
Mon.	.....	History 3 or 6	Engineering 1.....	Engineering 1
	.....	.....	.....	.....
Tues.	.....	Botany 1	Engineering 1.....	Engineering 1
	.....	Drawing 4a	.....	.....
Wed.	.....	Horticulture 3.....	Engineering 1	Engineering 1
	.....	.....	.....	.....
Thurs.	.....	Botany 1.....	Shop-work 1c.....	Shop-work 1c
	.....	Drawing 4a.....	History 3 or 6	History 3 or 6
Fri.	.....	Horticulture 3.....	Shop-work 1c.....	Shop-work 1c
	.....	.....	History 3 or 6.....	History 3 or 6
Sat.	.....	Botany 1.....	.....	....
	.....	Shop-work 1c.....	.....	.....

AGRICULTURE.— SOPHOMORE CLASS.

Term	Day	8-9	9-10	10-11	11-11.50	1.30-2.30	2.30-4
First	Monday	.....	.....	Chemistry 1	Chemistry 3	Zoölogy 1	Zoölogy 1
	Tuesday	Horticulture 2	Horticulture 2	Physics 2	German 4	Agronomy 3	Agronomy 3
	Wednesday	.....	Agronomy 3	Chemistry 1	Chemistry 3	Zoölogy 1	Zoölogy 1
	Thursday	Military Science 2	.....	Physics 2	German 4	Horticulture 2	Horticulture 2
	Friday	.....	Agronomy 3	Chemistry 1	.....	Zoölogy 1	Zoölogy 1
	Saturday	Horticulture 2	Horticulture 2	Physics 2	German 4	.....	.....
Second..	Monday	.....	.....	Chemistry 2	.....	Forestry 1	.....
	Tuesday	.....	Forestry 1	Physics 3 & 4	German 5	Zoölogy 5	.....
	Wednesday	Horticulture 3	Horticulture 3	Chemistry 2	Agronomy 4	Zoölogy 2	Zoölogy 2
	Thursday	Military Science 2	Forestry 1	Physics 3 & 4	German 5	Forestry 1	Forestry 1
	Friday	Horticulture 3	Horticulture 3	Chemistry 2	Agronomy 4	Zoölogy 2	Zoölogy 2
	Saturday	Zoölogy 5	.....	Physics 3 & 4	German 5	.....	.....
Third ...	Monday	.....	Botany 2	Botany 2	Chemistry 3	Zoölogy 3	Zoölogy 3
	Tuesday	.....	Animal Husbandry 1	Physics 4	German 6	Zoölogy 3	Zoölogy 3
	Wednesday	.....	Botany 2	Botany 2	.....	Zoölogy 3	Zoölogy 3
	Thursday	Military Science 2	Animal Husbandry 1	Physics 4	German 6	Zoölogy 3	Zoölogy 3
	Friday	....	Animal Husbandry 1	Animal Husbandry 1	Chemistry 3	Zoölogy 3	Zoölogy 3
	Saturday	.....	.....	Physics 4	German 6	....	.....

AGRICULTURE.—JUNIOR CLASS.

Term	Day	8-9	9-10	10-11	11-11.50	1.30-2.30	2.30-4
First...	Monday	.....	Military Science 2	English 5	French 4	Chemistry 4	Chemistry 4
	Tuesday	Chemistry 5a	.....	History 4 Horticulture 6	History 4 Horticulture 6	Chemistry 4	Chemistry 4
	Wednesday	Chemistry 5a	Animal Industry 2	English 5	French 4	Chemistry 4	Chemistry 4
	Thursday	.....	Horticulture 4	History 4 Horticulture 4	History 4 Horticulture 4	Animal Industry 2	Animal Industry 2
	Friday	Chemistry 5a	....	English 5	French 4	History 4	History 4
	Saturday	Zoölogy 4	Animal Industry 2	History 4 Horticulture 4	History 4	.....	....
Second.	Monday	.....	.....	Philosophy 1	French 5	Chemistry 4	Chemistry 4
	Tuesday	Animal Industry 3	History 5	History 5	Geology 1	Chemistry 4	Chemistry 4
	Wednesday	Chemistry 5b	English 6	Philosophy 1	French 5	Chemistry 4	Chemistry 4
	Thursday	Animal Industry 3	History 5	History 5	Geology 1	.....	....
	Friday	Chemistry 5b	English 6	Philosophy 1	French 5	Animal Industry 3	Animal Industry 3
	Saturday	Military Science 2	History 5	History 5	Geology 1	.....	.....
Third..	Monday	.....	Geology 2	Geology 2	French 6	.....	....
	Tuesday	Political Science 1	.....	Animal Industry 4	English 7	History 3	History 3
	Wednesday	Political Science 1	Geology 2	Geology 2	French 6	....	.....
	Thursday	Political Science 1	....	Animal Industry 4	English 7	History 3	History 3
	Friday	Political Science 1	Geology 2	Geology 2	French 6	History 3	History 3
	Saturday	Political Science 1	....	Animal Industry 4	Military Science 2	.....	.....

ENGINEERING.— SOPHOMORE CLASS.

Term	Day	8–9	9–10	10–11	11–11.50	1.30–2.30	2.30–4
First....	Monday	.....	Drawing 3a	Drawing 3a	Drawing 3a	Shop-work 2a	Shop-work 2a
	Tuesday	Mathematics 4	.....	Physics 2	German 4	.....	.....
	Wednesday	Mathematics 4	.....	Drawing 3a	Drawing 3a	Shop-work 2a	Shop-work 2a
	Thursday	Mathematics 4	Military Science 2	Physics 2	German 4	.....	.....
	Friday	Mathematics 4	Engineering 2a	Engineering 2a	Engineering 2a	Shop-work 2a	Shop-work 2a
	Saturday	Mathematics 4	Engineering 2a	Physics 2	German 4	.....	.....
Second..	Monday	... .	Drawing 3b	Drawing 3b	Drawing 3b	Shop-work 2b	Shop-work 2b
	Tuesday	Mathematics 5a	Engineering 2b	Physics 3 & 4	German 5	.....	.....
	Wednesday	Mathematics 5a	.....	Drawing 3b	Drawing 3b	Shop-work 2b	Shop-work 2b
	Thursday	Mathematics 5a	Military Science 2	Physics 3 & 4	German 5	....	.....
	Friday	Mathematics 5a	Engineering 2b	Engineering 2b	Engineering 2b	Shop-work 2b	Shop-work 2b
	Saturday	Mathematics 5a	.....	Physics 3 & 4	German 5	.....	.....
Third....	Monday	.....	Engineering 2c	Engineering 2c	Engineering 2c	Drawing 3c & 3d	Drawing 3c & 3d
	Tuesday	Mathematics 5b	.....	Physics 4	German 6	Drawing 3c & 3d	Drawing 3c & 3d
	Wednesday	Mathematics 5b	Engineering 2c	Engineering 2c	Engineering 2c	Drawing 3c & 3d	Drawing 3c & 3d
	Thursday	Mathematics 5b	Military Science 2	Physics 4	German 6	Drawing 3c & 3d	Drawing 3c & 3d
	Friday	Mathematics 5b	.....	.....	....	Drawing 3c & 3d	Drawing 3c & 3d
	Saturday	Mathematics 5b	.....	Physics 4	German 6	....	....

ENGINEERING.— JUNIOR CLASS.

Term	Day	8-9	9-10	10-11	11-11.50	1.30-2.30	2.30-4
First....	Monday	....	Engineering 7a	Chemistry 1	Physics 7a	Physics 5	Physics 5
	Tuesday	....	Engineering 3a	.....	Engineering 5a	Physics 5	Physics 5
	Wednesday	Military Science 2	Engineering 3a	Chemistry 1	Physics 7a	Physics 5	Physics 5
	Thursday	Engineering 7a	.....	.....	Engineering 5a	Shop-work 2d	Shop-work 2d
	Friday	Engineering 7a	Engineering 3a	Chemistry 1	Physics 7a	Shop-work 2d	Shop-work 2d
	Saturday	.....	Engineering 3a	.....	Engineering 5a	.....	.....
Second..	Monday	.....	Engineering 7b	Chemistry 2	Physics 7b	Physics 6a	Physics 6a
	Tuesday	.....	Engineering 3b	.....	Engineering 5b	Physics 6a	Physics 6a
	Wednesday	Engineering 7b	Engineering 3b	Chemistry 2	Physics 7b	Physics 6a	Physics 6a
	Thursday	Engineering 7b	Engineering 3b	.....	Engineering 5b	Shop-work 2e	Shop-work 2e
	Friday	.....	.....	Chemistry 2	Physics 7b	Shop-work 2e	Shop-work 2e
	Saturday	Military Science 2	Engineering 3b	.....	Engineering 5b	.....	.....
Third...	Monday	.....	Geology 2	Geology 2	Physics 7c	Physics 6b	Physics 6b
	Tuesday	Engineering 3c	.....	Engineering 5c	Engineering 7c	Physics 6b	Physics 6b
	Wednesday	Engineering 3c	Geology 2	Geology 2	Physics 7c	Physics 6b	Physics 6b
	Thursday	Engineering 3c	.....	Engineering 5c	Engineering 7c	Shop-work 2f	Shop-work 2f
	Friday	Engineering 3c	Geology 2	Geology 2	Physics 7c	Shop-work 2f	Shop-work 2f
	Saturday	.....	Engineering 7c	Engineering 5c	Military Science 2	.....	.....

MECHANICAL ENGINEERING.— SENIOR CLASS.

Term	Day	8–9	9–10	10–11	11–11.50	1.30–2.30	2.30–4
First	Monday	... .	.....	Engineering 4	French 4 or Engineer'g 6	Chemistry 4	Chemistry 4
	Tuesday	Engineering 4	.....	Engineering 6	.....	.....	.....
	Wednesday	.....	.....	Engineering 4	French 4	Chemistry 4	Chemistry 4
	Thursday	.....	Engineering 6	Engineering 4	.....	Engineering 8a	Engineering 8a
	Friday	Drawing 4d	Drawing 4d	Drawing 4d	French 4	Engineering 8a	Engineering 8a
	Saturday	Drawing 4d	Drawing 4d	Drawing 4d	.....	.....	.....
Second ..	Monday	.....	.....	.....	Engine'g 10a or French 5	Chemistry 4	Chemistry 4
	Tuesday	Engineering 9	.....	.....	.....	Chemistry 4	Chemistry 4
	Wednesday	.....	.....	Engineering 9	Engine'g 10a or French 5	Engineering 8b	Engineering 8b
	Thursday	....	.....	Engineering 9	.....	Engineering 8b	Engineering 8b
	Friday	.....	.....	.....	Engine'g 10a or French 5	Engineering 8b	Engineering 8b
	Saturday	.....	.....	Engineering 9	.....	.....	.....
Third ...	Monday	.....	.....	.....	Engine'g 10b or French 6	Engineering 8c	Engineering 8c
	Tuesday	Political Science 1	.....	.....	.....	Engineering 8c	Engineering 8c
	Wednesday	Political Science 1	.....	.....	French 6	Thesis	Thesis
	Thursday	Political Science 1	....	... .	.....	Thesis	Thesis
	Friday	Political Science 1	.....	.....	Engine'g 10b or French 6	Thesis	Thesis
	Saturday	Political Science 1	Engineering 10b	.....	.....	.....	.....

ELECTRICAL ENGINEERING.— SENIOR CLASS.

TERM	Day	8-9	9-10	10-11	11-11.50	1.30-2.30	2.30-4
First	Monday	Engineering 12a	.....	Engineering 4	Engineering 6 or French 4	Chemistry 4	Chemistry 4
	Tuesday	Engineering 4	....	Engineering 6	Physics 7d	....	.....
	Wednesday	Engineering 12a	Physics 7d	Engineering 4	French 4	Chemistry 4	Chemistry 4
	Thursday	.....	Engineering 6	Engineering 4	Engineering 12a	Engineering 8a	Engineering 8a
	Friday	Drawing 4d	Drawing 4d	Drawing 4d	French 4	Engineering 8a	Engineering 8a
	Saturday	Drawing 4d	Drawing 4d	Drawing 4d	Physics 7d	.....	.....
Second..	Monday	.....	.....	Physics 7e	Engineering 10a or French 5	Chemistry 4	Chemistry 4
	Tuesday	.....	Physics 9a	Physics 9a	Engineering 12b	Chemistry 4	Chemistry 4
	Wednesday	.....	Engineering 12b	Physics 7e	Engineering 10a or French 5	Engineering 8b	Engineering 8b
	Thursday	.....	Physics 9a	Physics 9a	Engineering 12b	Engineering 8b	Engineering 8b
	Friday	.....	Engineering 12b	Physics 7e	Engineering 10a or French 5	Engineering 8b	Engineering 8b
	Saturday	Engineering 12b	.....	.....	Engineering 12b	.....	.....
Third...	Monday	....	Engineering 12c	.....	Engineering 10b or French 6	Engincering 8c	Engineering 8c
	Tuesday	Political Science 1	Engineering 12c	.....	.....	Engineering 8c	Engineering 8c
	Wednesday	Political Science 1	Thesis	Thesis	Engincering 10b or French 6	Physics 9b	Physics 9b
	Thursday	Political Science 1	Thesis	Thesis	Thesis	Physics 9b	Physics 9b
	Friday	Political Science 1	Engineering 12c	.....	French 6	Thesis	Thesis
	Saturday	Political Science 1	Engineering 10b	....	Engineering 12c	.....	.....

TECHNICAL CHEMISTRY.—SOPHOMORE CLASS.

Term	Day	8-9	9-10	10-11	11-11.50	1.30-2.30	2.30-4
First	Monday	.....	Drawing 3a	Drawing 3a Chemistry 1	Drawing 3a	....	....
	Tuesday	Mathematics 4	.....	Physics 2	German 4	.....	.....
	Wednesday	Mathematics 4	.....	Drawing 3a Chemistry 1	Drawing 3a	.....	.....
	Thursday	Mathematics 4	Military Science 2	Physics 2	German 4	....	.....
	Friday	Mathematics 4	.....	Chemistry 1	.....	.....	.....
	Saturday	Mathematics 4	....	Physics 2	German 4	.....	.....
Second..	Monday	.....	Drawing 3a	Drawing 3a Chemistry 2	Drawing 3a	.....	.....
	Tuesday	Mathematics 5a	.....	Physics 3 & 4	German 5	.....	.....
	Wednesday	Mathematics 5a	.....	Drawing 3a Chemistry 2	Drawing 3a	.....	.....
	Thursday	Mathematics 5a	Military Science 2	Physics 3 & 4	German 5	.....	.....
	Friday	Mathematics 5a	.....	Chemistry 2	.....	.....	.....
	Saturday	Mathematics 5a	.....	Physics 3 & 4	German 5	.....	.....
Third....	Monday	.....	Geology 2	Geology 2	.....	.....	.....
	Tuesday	Mathematics 5b	.....	Physics 4	German 6	.....	....
	Wednesday	Mathematics 5b	Geology 2	Geology 2	Chemistry 3	.....	.....
	Thursday	Mathematics 5b	Military Science 2	Physics 4	German 6	.....	.....
	Friday	Mathematics 5b	Geology 2	Geology 2	Chemistry 3	.....	.....
	Saturday	Mathematics 5b	.....	Physics 4	German 6	.....	.....

TECHNICAL CHEMISTRY.— JUNIOR CLASS.

Term	Day	8–9	9–10	10–11	11–11.50	1.30–2.30	2.30–4
First ...	Monday	Military Science	Military Science 2	.....	French 4	Chemistry 4 & 7	Chemistry 4 & 7
	Tuesday	Chemistry 5a	Engineering 3a	.....	.....	Chemistry 4 & 7	Chemistry 4 & 7
	Wednesday	Chemistry 5a	Engineering 3a	.....	French 4	Chemistry 4 & 7	Chemistry 4 & 7
	Thursday	Shop-work 2a	Shop-work 2a	Shop-work 2a	Shop-work 2a	Chemistry 4 & 7	Chemistry 4 & 7
	Friday	Chemistry 5a	Engineering 3a	.....	French 4	Chemistry 4 & 7	Chemistry 4 & 7
	Saturday	....	Engineering 3a	Chemistry 4 & 7	Chemistry 4 & 7	.....	.....
Second..	Monday	.....	Chemistry 7	Chemistry 7	French 5	Chemistry 7	Chemistry 7
	Tuesday	.....	Engineering 3b	Chemistry 6a	.....	Chemistry 7	Chemistry 7
	Wednesday	.....	Engineering 3b	Chemistry 6a	French 5	Chemistry 7	Chemistry 7
	Thursday	.....	Engineering 3b	.....	.....	Chemistry 7	Chemistry 7
	Friday	Chemistry 7	Chemistry 7	Chemistry 7	French 5	Chemistry 7	Chemistry 7
	Saturday	Military Science 2	Engineering 3b	.....	....	....	.....
Third....	Monday	.....	Chemistry 7	.....	French 6	Chemistry 7	Chemistry 7
	Tuesday	Engineering 3c	.....	.....	Chemistry 6b	Chemistry 7	Chemistry 7
	Wednesday	Engineering 3c	.....	.....	French 6	Chemistry 7	Chemistry 7
	Thursday	Engineering 3c	Chemistry 7	Chemistry 7	Chemistry 6b	Chemistry 7	Chemistry 7
	Friday	Engineering 3c	....	.....	French 6	Chemistry 7	Chemistry 7
	Saturday	Military Science 2	Chemistry 7	Chemistry 7	Military Sci. 2	.....	.....

TECHNICAL CHEMISTRY.—SENIOR CLASS.

Term	Day	8-9	9-10	10-11	11-11.50	1.30-2.30	2.30-4
First....	Monday	.....	.....	.....	Physics 8a	Chemistry 7	Chemistry 7
	Tuesday	Chemistry 7	Chemistry 7	Chemistry 7	Engineering 5a	Chemistry 8	Chemistry 8
	Wednesday	Physics 8a	Chemistry 7	Chemistry 7	....	Chemistry 7	Chemistry 7
	Thursday	.....	Chemistry 7	Chemistry 7	Engineering 5a	Chemistry 8	Chemistry 8
	Friday	.....	Chemistry 7	Chemistry 7	Physics 8a	Chemistry 7	Chemistry 7
	Saturday	.....	Chemistry 9	.....	Engineering 5a	.....	.....
Second..	Monday	.....	.....	.....	Physics 8b	.....	.....
	Tuesday	....	.....	Chemistry 10a	Engineering 5b	.....	.....
	Wednesday	Chemistry 7	and	Thesis	Physics 8b	.....	.....
	Thursday	.....	.....	Chemistry 10a	Engineering 5b	Chemistry 7	and Thesis
	Friday	Chemistry 7	and	Thesis	Physics 8b	.....	.....
	Saturday	Chemistry 7	and Thesis	Chemistry 9	Engineering 5b	Chemistry 7	and Thesis
Third...	Monday	... .	.....	.....	.....	Chemistry 7	and Thesis
	Tuesday	Political Science 1	.....	Meteorology 1	Chemistry 10b	Chemistry 7	and Thesis
	Wednesday	Political Science 1	....	.....	.....	Chemistry 7	and Thesis
	Thursday	Political Science 1	....	Meteorology 1	Chemistry 10b	Chemistry 7	and Thesis
	Friday	Political Science 1	.....	.....	.....	Chemistry 7	and Thesis
	Saturday	Political Science 1	.....	Meteorology 1	Chemistry 9	.....	.....

GENERAL COURSE.—SOPHOMORE CLASS.

Term	Day	8-9	9-10	10-11	11-11.50	1.30-2.30	2.30-4
First...	Monday	.....	.....	Chemistry 1	.....	Zoölogy 1	Zoölogy 1
	Tuesday	Mathematics 4	.....	Physics 2	German 4	History 1 or 4	History 1 or 4
	Wednesday	Mathematics 4	.....	Chemistry 1	History 1 or 4	Zoölogy 1	Zoölogy 1
	Thursday	Military Science 2 Mathematics 4	Military Science 2	Physics 2	German 4	History 1 or 4	History 1 or 4
	Friday	Mathematics 4	History 1 or 4	Chemistry 1	.....	Zoölogy 1	Zoölogy 1
	Saturday	Mathematics 4	.....	Physics 2	German 4	.....	.....
Second..	Monday	.....	.....	Chemistry 2	English 10	History 2 or 5	History 2 or 5
	Tuesday	Mathematics 5a Military Science 2	Forestry 1 Military Science 2	Physics 3 & 4	German 5	History 2 or 5	History 2 or 5
	Wednesday	Mathematics 5a Drawing 2a	Drawing 2a	Chemistry 2	English 10	Zoölogy 2	Zoölogy 2
	Thursday	Mathematics 5a	Forestry 1	Physics 3 & 4	German 5	Forestry 1	Forestry 1
	Friday	Mathematics 5a Drawing 2a	Drawing 2a	Chemistry 2	History 2 or 5	Zoölogy 2	Zoölogy 2
	Saturday	Mathematics 5a	.....	Physics 3 & 4	German 5	.....	.....
Third...	Monday	.....	Drawing 2b	Drawing 2b	History 3 or 6	Zoölogy 3	Zoölogy 3
	Tuesday	Mathematics 5b	.....	Physics 4	German 6	English 11	English 11
	Wednesday	Mathematics 5b Military Science 2	Drawing 2b Military Science 2	Drawing 2b	Chemistry 3	Zoölogy 3	Zoölogy 3
	Thursday	Mathematics 5b	English 11	Physics 4	German 6	History 3 or 6	History 3 or 6
	Friday	Mathematics 5b	Drawing 2b	Drawing 2b	Chemistry 3	History 3 or 6 Zoölogy 3	History 3 or 6 Zoölogy 3
	Saturday	Mathematics 5b	.....	Physics 4	German 6	.....	.....

GENERAL COURSE.—JUNIOR CLASS.

TERM	Day	8-9	9-10	10-11	11-11.50	1.30-2.30	2.30-4
First	Monday	.....	Military Science 2	English 5	French 4	Chemistry 4 Physics 5	Chemistry 4 Physics 5
	Tuesday	Drawing 5a Chemistry 5a	Drawing 5a	History 7	History 7	Chemistry 4 Physics 5	Chemistry 4 Physics 5
	Wednesday	Chemistry 5a German 7 Military Science 2	.....	English 5	French 4	Chemistry 4 Physics 5	Chemistry 4 Physics 5
	Thursday	.....	Drawing 5a	History 7	History 7	Drawing 5a	Drawing 5a
	Friday	Chemistry 5a German 7	.....	English 5	French 4	History 7	History 7
	Saturday	Zoölogy 4	.....	History 7	History 7	.....	.....
Second..	Monday	.....	.....	Philosophy 1	French 5	Chemistry 4 Physics 6a	Chemistry 4 Physics 6a
	Tuesday	Drawing 5b Chemistry 5b	History 8	History 8	Geology 1	Chemistry 4 Physics 6a	Chemistry 4 Physics 6a
	Wednesday	German 8	English 6	Philosophy 1	French 5	Chemistry 4 Physics 6a	Chemistry 4 Physics 6a
	Thursday	Drawing 5b	History 8	History 8	Geology 1	Drawing 5b	Drawing 5b
	Friday	Chemistry 5b German 8	English 6	Philosophy 1	French 5	Drawing 5b	Drawing 5b
	Saturday	Drawing 5b	History 8	History 8	Geology 1	Chemistry 7 Physics 6b	Chemistry 7 Physics 6b
Third ..	Monday	.....	Geology 2	Geology 2	French 6	Chemistry 7 Physics 6b	Chemistry 7 Physics 6b
	Tuesday	Political Science 1	Drawing 5c	Drawing 5c	English 7	Chemistry 7 Physics 6b	Chemistry 7 Physics 6b
	Wednesday	German 9 Political Science 1	Geology 2	Geology 2	French 6	.....	.....
	Thursday	Political Science 1	Drawing 5c	Drawing 5c	English 7	.....	.....
	Friday	German 9 Political Science 1	Geology 2	Geology 2	French 6	.....	.....
	Saturday	Political Science 1	Drawing 5c	Drawing 5c	Military Science 2	.....	.....

GENERAL COURSE.—

Term	Day	8–9	9–10	10–11
First..	Monday			French 7
	Tuesday		Political Science 3 Political Science 2	English 8
	Wednesday		Political Science 3 Political Science 2	French 7
	Thursday		Political Science 3	English 8
	Friday			French 7
	Saturday		Political Science 2 Political Science 3	English 8
Second	Monday			French 8
	Tuesday		Philosophy 4 Mathematics 6	Philosophy 3
	Wednesday		Philosophy 4 Mathematics 6	French 8
	Thursday		Philosophy 4 Mathematics 6	Philosophy 3
	Friday		Philosophy 4 Mathematics 6	French 8
	Saturday		Philosophy 4	Philosophy 3
Third.	Monday			Engineering 11 French 9
	Tuesday		English 9	Meteorology 1
	Wednesday		English 9	Engineering 11 French 9
	Thursday		English 9	Meteorology 1
	Friday		English 9	Engineering 11 French 9
	Saturday		Philosophy 5	Meteorology 1

SENIOR CLASS.

Day	11–11.50	1.30–2.30	2.30–4
Monday		Drawing 6a	Drawing 6a
		Botany 3	Botany 3
		Zoölogy 6	Zoölogy 6
		Chemistry 7	Chemistry 7
Tuesday	Philosophy 2	Drawing 6a	Drawing 6a
		Botany 3	Botany 3
		Zoölogy 6	Zoölogy 6
		Chemistry 7	Chemistry 7
Wednesday		Drawing 6a	Drawing 6a
		Botany 3	Botany 3
		Zoölogy 6	Zoölogy 6
		Chemistry 7	Chemistry 7
Thursday	Philosophy 2	Zoölogy 6	Zoölogy 6
Friday	Political Science 2		
	Political Science 3		
Saturday	Philosophy 2		
Monday	Political Science 6	Chemistry 7	Chemistry 7
		Zoölogy 6	Zoölogy 6
		Botany 3	Botany 3
		Drawing 6b	Drawing 6b
Tuesday	Political Science 4	Chemistry 7	Chemistry 7
		Zoölogy 6	Zoölogy 6
		Botany 3	Botany 3
		Drawing 6b	Drawing 6b
Wednesday	Political Science 6	Chemistry 7	Chemistry 7
		Zoölogy 6	Zoölogy 6
		Botany 3	Botany 3
		Drawing 6b	Drawing 6b
Thursday	Political Science 4		
Friday			Political Science 6
Saturday	Political Science 4		
Monday	Philosophy 5	Chemistry 7	Chemistry 7
		Zoölogy 6	Zoölogy 6
		Botany 3	Botany 3
		Drawing 6c	Drawing 6c
Tuesday	Political Science 5	English 9	English 9
Wednesday	Philosophy 5	Chemistry 7	Chemistry 7
		Zoölogy 6	Zoölogy 6
		Botany 3	Botany 3
		Drawing 6c	Drawing 6c
Thursday	Political Science 5		
Friday	Philosophy 5	Chemistry 7	Chemistry 7
		Zoölogy 6	Zoölogy 6
		Botany 3	Botany 3
		Drawing 6c	Drawing 6c
Saturday	Political Science 5		

TWO YEARS' COURSE IN AGRICULTURE.

This course was established by the legislature of 1895. It is devoted to the study of practical and theoretical agriculture, and the natural sciences which are closely related to successful farming. At least ten hours each week are spent in practical exercises, which, so far as possible, are educational in their nature. This work is done on the farm, or in the garden, barn, greenhouse, or shops.

The course is open to "students who can pass a fair and reasonable examination in reading, spelling, writing, arithmetic, English grammar, and the geography and history of the United States." A certificate will be awarded for its completion.

OUTLINE OF STUDIES.

First Year.

FIRST TERM.

	Exercises per week.
Elements of Agriculture—Agronomy 1	4
Principles of Plant Growth—Horticulture *a*	4
Algebra	3
Grammar—English Grammar and Composition	2
Drawing	2
Animal Husbandry	2
Military Tactics—Military Science 2	1

SECOND TERM.

Dairying	4
Animal Husbandry	5
Algebra	2
Grammar	3
Chemistry	2
Drawing	2
Military Tactics—Military Science 2	1

THIRD TERM.

Botany	5
Commercial Fertilizers	2
Physics	6
Algebra	2
Animal Husbandry	2
Military Tactics—Military Science 2.	1

SECOND YEAR.

FIRST TERM.

Farm Equipment—Agronomy 3	3
Vegetable Growing—Horticulture *b*	3
Introductory Zoölogy—Zoölogy 1	3
English	3
Geometry	4
Fruit Growing—Horticulture *d*	3
Military Tactics—Military Science 2	1

SECOND TERM.

Soil Physics—Agronomy 4	4
Winter Gardening—Horticulture *c*	2
Arboriculture and Forestry—Forestry *a*	2
Comparative Anatomy—Zoölogy 5	1
Animal Biology—Zoölogy 2	2
English	3
Geometry	4
Farm Bookkeeping	3
Military Tactics—Military Science 2	1

THIRD TERM.

Stock Feeding—Animal Husbandry 2	3
Fruit Growing	4
Entomology—Zoölogy 3	3
English	2
Plant Diseases—Botany 2	2
Farm Crops—Agronomy 5	3
Military Tactics—Military Science 2	1

NOTE. The schedule of hours will be posted on the bulletin board.

TEN WEEKS' WINTER COURSE IN AGRICULTURE.

The college offers a Winter Course in Agriculture, beginning Tuesday, January 6, and continuing until Friday, March 20, 1903.

No entrance examination is required, but students taking the course should possess a common school education.

The studies offered are dairying, stock-feeding, winter-gardening, wood-working, forestry, and entomology, with practice in the creamery, barn, greenhouse, or wood-shop.

A fee of five dollars will be charged for tuition.

The expense of the course may be estimated as follows:

Room and board, ten weeks, at $4 . .	$40.00
Tuition fee	5.00
Books	3.00
Total	$48.00

Applicants should report at the president's office, Thompson Hall, Durham, on Tuesday, January 6, 1903.

NESMITH HALL — THE EXPERIMENT STATION BUILDING.

TEN WEEKS' COURSE IN DAIRYING.

This course is offered in connection with the Winter Course in Agriculture, to young men who wish to make a specialty of dairying. It is designed for those who are specially desirous of mastering the art of butter-making, or who wish to become fitted for the position of manager or superintendent of a creamery. In New Hampshire, where dairying is carried on to a great extent in the sale of milk for the city markets, this course is especially valuable as a training for those operating farm-dairies.

The Course in Dairying begins January 6, 1903, and closes March 20. The subjects taught are butter-making, milk-testing, pasteurzing milk and cream, dairy bacteriology, dairy farming, dairy chemistry, and care of steam engines and boilers.

The creamery is equipped with separator, milk-tester, pasteurizer, and all tools required in making butter and preparing milk and cream for market.

Requirements for admission are the same as for the Winter Course in Agriculture.

ESTIMATE OF EXPENSES.

Room rent, ten weeks at $1.00	$10.00
Board, ten weeks, at $3.00	30.00
Fee	5.00
Books	3.00
Total	$48.00

For circulars or further information concerning these courses address New Hampshire College, Durham, N. H.

AGRICULTURAL EXPERIMENT STATION.

This department of the college is provided for by the National Government, at an annual expense of fifteen thousand dollars.

The Act of Congress provides,—

"That it shall be the object and duty of said Experiment Stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping, as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states and territories."

COMMENCEMENT, 1902.

On Commencement Day, June 4, 1902, the following degrees were conferred:

Bachelors of Science.

in agriculture.

John Chester Kendall, Peterborough.
Abiel Abbott Livermore, Wilton.
George Enoch Merrill, Newburyport, Mass.
Eugene Pierce Runlett, Durham.

in technical chemistry.

Arthur Lyon Sullivan, Suncook.

in mechanical engineering.

Edwin W. Gilmartin, Nashua.
Charles Abbott Payne, Portsmouth.

in general course.

Mary Doe, Rollinsford.

Master of Science.

Albert F. Conradi, Durham.

Honorary Degrees.

The degree of M. Sc. was conferred upon—

Hon. David H. Goodell, Antrim.
Hon. Frank Jones,* Portsmouth.
Hon. John D. Lyman,* Exeter.
Hon. John W. Sanborn, Wakefield.
Hon. Charles H. Sawyer, Dover.
Hon. Joseph B. Walker, Concord.

*Deceased.

Certificates.

Certificates of graduation from the two years' course in agriculture were awarded to—

George R. Brew, Durham.
Carroll Winfred Farr, North Weare.
George Fletcher Hills, Hollis.
Walter Eugene Quinby, Deerfield.
Walter Phelps Tenney, Chester.
Robert Eben Whittier, Deerfield.
Edward Carlyle Wilson, Wilton.

PRIZE RECORD FOR 1902.

SMYTH PRIZES.

GIVEN BY HON. FREDERICK SMYTH.

Speaking:

1st. ALFRED CONNER.
2d. MELVIN J. WHITE.
3d. CARROLL W. FARR.

Reading:

1st. CASTINE C. SWANSON.
2d. CHARLES E. ROBERTSON.

BAILEY PRIZE.

GIVEN BY DR. C. H. BAILEY, OF GARDNER, MASS., AND E. A. BAILEY, B. S., OF KEENE.

ARTHUR LYON SULLIVAN.

ERSKINE MASON MEMORIAL PRIZE.

MARY DOE.

SENIOR STANDING HIGHEST IN THE MILITARY DEPARTMENT.

EDWIN W. GILMARTIN.

WINNER OF INDIVIDUAL PRIZE DRILL.

WILFRED GORDON BRIERLY.

HONORABLE MENTION.

ELMER SETH SAVAGE.

The Valentine Smith scholarships are held by

MORRIS A. STEWART, '03.
ARTHUR L. FULLER, '04.
WILLIAM O. ROBINSON, '05.
JOHN D. CLARK, '06.

ROSTER OF THE BATTALION OF CADETS.

FOR 1902-1903.

Commandant, Captain V. A. CALDWELL,
Seventh Infantry U. S. A.

Major E. W. BURBECK.

First Lieutenant and Adjutant M. J. WHITE.

COMPANY A.

Capt. H. D. Batchelor.
1st Lieut. D. A. Watson.
2d Lieut W. A. Barker.

SERGEANTS.

First Sergt. A. L. Fuller.
Sergt. S. A. Richardson.
Sergt. B. De B. Bradford.

CORPORALS.

E. D. Savage.
C. W. Farr.
H. J. Pettee.
C. O. Dodge.

MUSICIAN.

E. E. Hall.

COMPANY B.

Capt. E. F. Bickford.
1st Lieut. T. J. Laton.
2d Lieut. P. A. Campbell.

SERGEANTS.

First Sergt. L. Ashton.
Sergt. J. E. Goodrich.
Sergt. W. G. Brierly.

CORPORALS.

F. R. Pickering.
G. H. Hill.
J. L. Randall.
D. A. A. Durward.
S. B. Hayden.

MUSICIAN.

R. M. Osborne.

STUDENTS.

a—Agricultural Course; *c*—Course in Technical Chemistry; *g*—General Course; *m e*—Mechanical Engineering; *e e*—Electrical Engineering. Sophomores in the Engineering Courses are designated by *e* only. Freshmen are not classified in courses.

PAST GRADUATE.

Name.	Residence.	Subject.
Runlett, Eugene Pierce	*Durham.*	Botany

SENIORS.

Name.	Residence.	Room.
Batchelor, Harry David *c*	*West Upton, Mass.*	Kappa Sigma House
Bickford, Edgar Forest *e e*	*Rochester.*	Thompson Hall
Brown, Frank Ray *m e*	*Durham.*	Mr. Brown's
Burbeck, Everett William *m e*	*Haverhill.*	Kappa Sigma House
Davis, Everett Garfield *a*	*Newmarket.*	Newmarket
Rollins, Ralph Harvey *m e*	*E. Concord.*	Kappa Sigma House
Stewart, Morris Archer *c*	*Dover.*	DeMeritt Hall
Watson, David Albert *a*	*Durham*	Mr. Watson's
White, Melvin Johnson *g*	*Farmington.*	Kappa Sigma House

Total, 9.

JUNIORS.

Name.	Residence.	Room.
Ashton, Leander *a*	*Pittsfield.*	Kappa Sigma House
Barker, Walter Allen *e e*	*Pittsfield.*	Mr. Hancock's
Campbell, Percy Anderson *a*	*Litchfield.*	Kappa Sigma House
Fuller, Arthur Levi *m e*	*Marlborough Depot.*	Kappa Sigma House
Goodrich, Joseph Ezra *a*	*New Durham.*	The Mystic
Hill, George Herbert *m e*	*Pittsfield.*	The Mystic
Laton, Thomas Jefferson *m e*	*Nashua.*	Kappa Sigma House
Littlefield, Erwin Melvin *e e*	*Dover.*	Nesmith Hall
Merrill, Arthur Ronello *a*	*No. Bridgton, Me.*	DeMeritt Hall
Pickering, Fred Roberts *e e*	*Barnstead.*	Mr. Hancock's

Total, 10.

SOPHOMORES.

Name.	Residence.	Room.
Bickford, Edgar Charles *e*	*Durham.*	Mr. Bickford's
Bradford, Baury de Bellerive *e*	*Portsmouth.*	Meserve Hall
Brierley, Wilfrid Gordon *a*	*Dover.*	DeMeritt Hall
Chesley, John Henry *g*	*Rockingham.*	Rockingham
Conner, Alfred *g*	*Newfields.*	Newfields
Dearborn, Jenness Stevens *a*	*Suncook.*	DeMeritt Hall
Dodge, Cleon Orestes *c*	*Sunapee.*	Mrs. Sanders's
Haley, Waldron Butler *e*	*East Barrington.*	Kappa Sigma House
Haley, Sumner Abbott *g*	*East Barrington.*	Kappa Sigma House
Hayden, Silas Bryden *e*	*So. Natick, Mass.*	Kappa Sigma House
Hayes, Chauncey Warren *c*	*Durham.*	Mr. Hayes's
Hayes, Harry Linwood *e*	*Exeter.*	Exeter
Heath, Fred Harvey *c*	*Warner.*	Prof. Scott's
Hill, Frank Lester *a*	*Amherst.*	Kappa Sigma House
Knight, Harold Nims	*Marlborough.*	Mr. Schoonmaker's
Lunt, Raymond Louis	*Dover.*	Nesmith Hall
Moreton, Joseph Wesley *e*	*Medford, Mass.*	The Mystic
Otis, Albert Noah *e*	*Durham.*	DeMeritt Hall
Pettee, Horace James *e*	*Durham.*	Prof. Pettee's
Putney, Fred Silver *g*	*Hopkinton.*	Prof. Scott's
Randall, John Leslie *a*	*Lee.*	Lee
Richardson, Samuel Ambrose *e*	*Charlestown.*	The Mystic
Robinson, William Orrin *a*	*Marlborough.*	Mr. Schoonmaker's
Russell, Harry Union *c*	*West Derry.*	Pinkerton Hall
Savage, Elmer Seth *a*	*Lancaster.*	Kappa Sigma House
Swanson, Castine Caroline *g*	*Cambridge, Mass.*	Mr. Hayes's
Tinkham, Frank Alvin *a*	*Grafton.*	Prof. Parsons's
True, Henry Olin *a*	*East Haverhill.*	Prof. Parsons's
Wiggin, Josiah Benjamin *e*	*Andover.*	Prof. Scott's

Total, 29.

FRESHMEN.

Name.	Residence.	Room.
Adams, Samuel Taylor	*Pittsfield.*	Mr. Hancock's
Armstrong, Percy Edwin	*Milford.*	Mr. Schoonmaker's
Balch, Ivon Augustus	*Antrim.*	Pettee's Block
Batchelder, Charles	*So. Hampton.*	Mr. Schoonmaker's
Barnes, Stuart Kenrick	*Walpole.*	DeMeritt Hall
Belleville, William Edward	*Hinsdale.*	Pettee's Block
Black, Dennis Leo	*Nashua.*	DeMeritt Hall
Berry, Elverton Cloutman	*Farmington.*	Farmington

Burnham, Rayworth	*Antrim.*	Pettee's Block
Campbell, Samuel Francis	*Windham.*	Pinkerton Hall
Campbell, Willis Cassius	*Windham.*	Pinkerton Hall
Clement, Clarence Elbert	*Derry.*	Pinkerton Hall
Clark, John Dustin	*Nashua.*	DeMeritt Hall
Converse, Ernest Luther	*Amherst.*	Mr. Sawyer's
Crawford, Elizabeth Blaine	*Southbridge, Mass.*	Prof. Nesbit's
Davison, Earl B.	*Lisbon.*	DeMeritt Hall
Dearborn, Joseph Jewell	*Suncook.*	DeMeritt Hall
Densmore, Frank Benjamin	*No. Charlestown.*	Mrs. Sanders's
Durward, David A. A.	*Claremont.*	Mrs. Sanders's
Edwards, Frank Andrew	*New Boston.*	Mrs. John Thompson's
Farr, Carroll Winfred	*No. Weare.*	Mrs. Sanders's
Fish, Ralph Brown	*Kensington.*	Mr. Schoonmaker's
Foss, Grace Tamson	*Durham.*	Mr. Foss's
Franklin, Neil Starr	*Bernardston, Mass.*	Mrs. Morse's
Fuller, Carl Tilson	*Nashua.*	Pettee's Block
Garland, Albert Raymond	*Farmington.*	Kappa Sigma House
George, Henry Clinton	*Newmarket.*	Newmarket
Gooch, William Safford	*Exeter.*	Exeter
Gooch, George Webster	*Exeter.*	Exeter
Gowen, Ralph Edward	*Stratham.*	The Mystic
Hardy, Edwin Davis	*Nashua.*	Pettee's Block
Hall, Erie Earle	*East Barrington.*	Mr. George Stevens's
Johnson, Montague	*Nashua.*	DeMeritt Hall
Jenness, Cyrus Fremont	*Gonic.*	Kappa Sigma House
Lamson, Charles James Frank	*Exeter.*	Exeter
Marden, Walter Leroy	*Portsmouth.*	Meserve Hall
Merrifield, Charles Henry	*Charlestown.*	Mr. Meserve's
Mudgett, Orlo Dudley	*Gilmanton.*	Thompson Hall
Norwood, Edgar A.	*Rockport.*	
Osborne, Raymond Marden	*Peterborough.*	Pettee's Block
Pierce, Butler Libby	*Enfield Center.*	Prof. Scott's
Pike, Mahlon Arthur	*Dover.*	Meserve Hall
Purrington, Wallace Fuller	*So. Yarmouth, Mass.*	Mr. Morse's
Reed, Ralph Samuel	*Worcester, Mass.*	DeMeritt Hall
Roberts, Edwin Jay	*Laconia.*	Dr. Grant's
Roberts, Ernest Raymond	*Rollinsford.*	DeMeritt Hall
Small, William Clifford	*Nashua.*	DeMeritt Hall
Swain, Roy Vance	*Barrington.*	Dover
Whittle, William Thurston	*Antrim.*	Pettee's Block
Woodward, Julius Seth	*Woodsville.*	DeMeritt Hall

Total, 50.

TWO YEARS' COURSE.

SECOND YEAR.

Name.	Residence.	Room.
Brierley, Harry Garfield	*Dover.*	DeMeritt Hall
Manning, George Grover	*Boston, Mass.*	DeMeritt Hall
Nixon, James Henry	*East Brentwood.*	The Mystic
Swain, Roscoe Franklin	*So. Hampton.*	So. Hampton

Total, 4.

FIRST YEAR.

Batchelder, Erland Graves	*Wilton.*	Mr. Bickford
Fiske, Harry Martin	*Temple.*	
Flint, Wesley Pillsbury	*South Hampton.*	The Mystic
Sanborn, Ernest Noyes	*Laconia.*	
Shurbert, Henry Marston	*Northwood Ridge.*	
Smyth, Harry Wilson	*West Concord.*	

Total, 6.

SPECIAL COURSE.

Dunham, L. Helen	*Durham.*	Zoölogy and Mathematics
Dunham, Samuel Ellis	*Durham.*	Mechanical Engineering
Little, Ralph Dearborn	*Salisbury.*	Shopwork
Shenton, Charles Marshall	*Nashua.*	Pettee's Block

Total, 4.

DAIRY COURSE.

Name.	Residence.	Room.
Fish, Ralph Brown	*Kensington.*	
Holt, Harry Walter	*South Lyndeborough.*	
Jones, William Marlin	*Wentworth.*	
Kendall, Louis E.	*Peterborough.*	
Pearson, Frederick C.	*Somersworth.*	
Savage, Arthur Barron	*Milford.*	
Westgate, Frank M.	*Pike's Station.*	
Woodbury, Frank Pliny	*Durham.*	

Total, 8.

SUMMARY.

Graduate Student	1
Seniors	9
Juniors	10
Sophomores	29
Freshmen	50
Students in Two Years' Course	10
Students in Dairy Course	8
Special Students	4
Total	111

ERRATA.

Change to Sophomore Class,
Mudgett, Orlo Dudley.

Change to Senior Class,
Otis, Albert Noah, *e e.*

REGISTER OF GRADUATES.

BACHELORS OF SCIENCE.

NOTE.—The arrangement is: (*a*) Name in full. (*b*) Later degrees taken. (*c*) Residence at time of entering college. (*d*) Occupation, etc. (*e*) Present residence. *Dead. It is earnestly requested that each graduate inform the Secretary of the Faculty of any changes that should be made in this list.

1871.

William Preston Ballard, Concord. Farmer. *P. O. Box 39, Concord.*

Lewis Perkins, Hampton. Contractor.
301 Lake Avenue, Newton Highlands, Mass.

Charles Henry Sanders, Peuacook. Merchant. *Penacook.*

3—

1872.

Edwin Bartlett, Bath. Harness Business.

Frank Alexander White, Bow. Farmer. *Route 4, Concord.*

2—

1873.

Frederick Erasmus Eldredge, Kensington.

James Fred Smith, A. B., A. M. (Dartmouth, 1885), Principal of High School. *Campbell, Cal.*

Charles Henry Tucker, Plaistow. Carriage Woodworker.
24 Highland Street, Amesbury, Mass.

3—

1874.

Millard Fillmore Hardy, Rev., Nelson. Graduated Theo. Inst., Ct., 1878. Pastor of Cong'l Church. *West Townshend, Vt.*

*Henry Abbott Sawyer, North Weare.

2—*1

1875.

Walton Herman Aldrich, M. D. (Univ. N. Y. City, 1880), Troy. Physician and Surgeon. *Marlborough.*

Frank Pierce Curtis. Grocer. *Fitchburg, Mass.*

Frank Veranus Emerson, Lebanon. Manager Emerson Edge Tool Company. *East Lebanon.*

Charles Webster Hardy, M. D. (Mo. Med. Coll., 1881), Marlborough. Physician. *206 So. Main Street, Ottawa, Kansas.*

Harvey Jewell, Winchester. Fruit Grower and Market Gardener. *Cromwell, Conn.*

*Charles Ormille Leavitt, Lebanon.

*John Loney McGregor, D. D. S. (Phila. Dental Coll., 1877), M. D. (Dartmouth, 1883), Whitefield.

Eliel Peck, Lebanon. Merchant. *Kimball, Minn.*

Ira William Ramsey, Walpole. *Walpole.*

Orlando Leslie Seward, Keene. Artist. *287 Church Street, Keene.*

Emery Mason Willard, Harrisville. Druggist, 15 Union Street, Boston, Mass. *109 Hewlett Street Roslindale, Mass.*

11—*2

1876.

Herbert Cyril Aldrich, Troy. Real Estate and Orange Grower. *Cypress Avenue, Ridlands, Cal.*

Edmund Lawson Brigham, Jaffrey. Mechanic.

Joseph Warren Butterfield, Westmoreland. Farmer. *North Montpelier, Vt.*

Arthur French Chamberlain, Westmoreland. Partner of Edson Keith & Co., Chicago, Ill. *6542 Kimbark Avenue, Chicago, Ill.*

Anson Ballard Cross, Holyoke, Mass. Contractor and builder. *Wilmington, Vt.*

Warren Webster Kimball, Troy. Merchant. *Troy.*

Daniel Deeth Parker, Fitzwilliam. With Heywood Bros. & Wakefield Co. *Box 56, Gardner, Mass.*

7—

1877.

Rollin Kirk Adair, Indian Territory. Merchant. *Chelsea, Indian Ter.*

*Homer Brooks, M. D. (N. Y. Hom. Med. Coll., 1881), Franconia.

John Washington Carson, Mont Vernon. School Supt. and Land Surveyor. *Francestown.*

*Charles Otto Chubert, Troy.

*Charles Albert Edwards, LL. B. (State Univ., Iowa, 1880), Keene.

William Francis Flint, Richmond. Land Surveyor, Horticulturist, Forestry Expert. *Winchester.*

Clinton Camillus Hall, Westmoreland. Farmer. *East Westmoreland.*

John Goodrich Henry, M. D. (Dartmouth, 1880), Chesterfield. Physician. *Winchendon, Mass.*

*Charles Pitkin Hollister, North Montpelier, Vt.

George Mirick Holman, M. D., Fitchburg, Mass. Teacher. *608 Washington Street, Boston, Mass.*

Charles Appleton Hubbard, Troy. Treasurer United Fruit Company. *Board of Trade Building, 113 State Street, Boston, Mass.*

Carlos Augustus Wheeler, East Calais, Vt. Bee Keeper and Farmer.
Bracken, Comal Co., Texas.

Everard Whittemore, Fitzwilliam. Insurance and Real Estate.
14 River Street, Hudson, Mass.

13—*4

1878.

Ezra Eastman Adams, Manchester.

*Elmer Kilburn, Marlow.

Charles Edward Record, Fitchburg, Mass. Contractor and Builder (Greenhouses a specialty). *73 Green Street, Leominster, Mass.*

3—*1

1879.

Charles Hardy Bailey, M. D. (Dartmouth, 1881). Physician.
Gardner, Mass., Station A.

Richard Clinton Chapin, Chicopee, Mass. With American Writing Paper Company. *Holyoke, Mass.*

Lucius M. Cragin, Lempster. Farmer. *Springfield, Vt.*

*Nathaniel Cutler Holmes, Jaffrey.

Fred Charles Parker, Lempster. Commercial Traveler, 23 Union St. Concord, N. H. *Acworth.*

George Henry Wilkins, M. D. (N. Y. Hom. Med. Coll., 1883), Amherst. Physician. *306 Walnut Street, Newtonville, Mass.*

6—*1

1880.

Charles Harvey Hood, Derry, Milk Business.
2 Benton Road, Somerville, Mass.

1—

1881.

Edwin Thomas Aldrich, Troy. General Insurance Agent.
Bridgmans Block, Keene.

Henry Lyman Barnard, Troy. Clerk. *Troy.*

*George Jordan Boardman, Lawrence, Mass.

Edwin Franklin, Bristol, Harwinton, Conn. Miller and Farmer.
Ascutneyville, Vt.

Artemas Terald Burleigh. Farmer. *Franklin.*

Frank Dana Ely, Cavendish, Vt. With Vermont Marble Company, Electrician. *Proctor, Vt.*

Sanford Eugene Emery, LL. B. (Albany Law School, 186), Proctorsville, Vt. Attorney at Law. *Proctorsville, Vt.*

Charles Herbert Hazen, Hartford, Vt. Farmer and Market Gardener.
Bethlehem.

Frank P. Marston, Hartford, Vt. With International Paper Company.
Wilder, Vt.

William Augustus Megrath, M. D. (Dartmouth, 1886), Cavendish, Vt. Physician. *Loudon.*

Fred Townsend Stanton, Strafford. Farmer. *Strafford Corner.*

Victor Hugo Stickney, M. D. (Dartmouth, 1883), Tyson, Vt. Physician and Surgeon. *Dickinson, N. Dakota.*

Samuel Austin Wallace, Ph. G. (Boston School of Pharmacy, 1886), West Hartford, Vt. Druggist. *Crookston, Minn.*

George Herbert Whitcher, Strafford. Director of the New Hampshire Agricultural Experiment Station, February 22, 1888, to November 1, 1894; Professor of Agriculture of the New Hampshire College, June, 1887, to November 1, 1894. District Superintendent of Schools, August 1, 1900. *Durham.*

14—*1

1882.

Harvey Lincoln Boutwell, LL. B. (Boston University, 1886), Hopkinton. Attorney at Law, 209 Washington Street, Boston, Mass. *37 Pierce Street, Malden, Mass.*

Dana Justin Bugbee, North Pomfret, Vt. Mining in Colorado. *North Pomfret, Vt.*

Robert Fletcher Burleigh, M. D. (Dartmouth, 1887), Franklin. Physician. *South Braintree, Mass.*

La Forrest John Carpenter, Surry. *Cliff Street, Malden, Mass.*

Edwin Preston Dewey, Hanover. Civil Engineer. *City Hall, Long Beach, Cal.*

George Andrew Loveland, LL. B. (University of New York, 1886), Norwich, Vt. Section Director, United States Weather Bureau. *State University, Lincoln, Neb.*

John Wright Mason. Hanover.

Harlan Addison Nichols, Derry. County Physician. *Fort Stockton, Tex.*

*Frank Elmer Thompson. Stark.

9—*1

1883.

Elmore Ferdinand Arnold, M. D. (University City of New York, 1885), Londonderry, Vt. Physician. *New York, N. Y.*

Frank Landor Bigelow, Proctorsville, Vt. Instructor in Mathematics and Sciences, Goddard Seminary, Barre, Vt., 1883–86. Business. *Rutland, Vt.*

Frederick Stocks Birtwhistle, Troy. Electrical Engineer, Foreign Department Ceneral Electric Company, 44 Broad Street, N. Y. *Troy.*

Noice D. Bristol, Harwinton, Conn. Scenic Photographer. *Logan, Ohio.*

Frederick Plummer Comings, Lee. Trustee, 1893—Principal High School, South Yarmouth, Mass. *Lee.*

Frank Harry Follansbee, Canaan. Railway Mail Clerk.
41 Sharon Street, West Medford, Mass.
Adams Clark French, Franklin Falls.
James Edgar Gay, Tunbridge, Vt. Woolen Manufacturer. *Cavendish, Vt.*
Elmer Daniel Kelley, Franklin Falls. Farmer and Business.
445 Central Street, Franklin Falls.
Alvah Benjamin Morgan, Canaan. Registered Druggist. *Woodstock, Vt.*
William Lincoln Whittier, Deerfield. Machinist.
8 Hardy Street, Beverly, Mass.
Charles Minot Woodward, Hanover. Teacher of Science, Corsicana High School.
Corsicana, Texas.

12—

1884.

*Ernest Smith Cummings, Lee.
Fred Carlos Davis, South Reading, Vt. Lawyer, Dealer in Real Estate, and Farmer.
Springfield, Vt.
Sylvester Miller Foster, Riverhead, N. Y. Cashier Riverhead Bank, and Coal Dealer.
Riverhead, N. Y.
Herbert Harvey Kimball, M. S. (Columbian University, 1900), Hopkinton. Assistant Editor Monthly Weather Review. U. S. Weather Bureau.
Washington, D. C.
Moses Bisbee Mann, Benton. Inspector of Customs.
11 Hancock Street, Malden, Mass.
George Milton Moore, Plymouth, Vt. Real Estate, Insurance Agent.
Ludlow, Vt.
Ziba Amherst Norris, Lyme. Dealer in Groceries and Provisions.
587–593 Washington Street, Dorchester, and 529–533 Dudley Street, Roxbury, Mass.
Edwin Chapin Thompson, Lee. Section Director U. S. Weather Bureau.
5 Allen Street, San Juan, P. R.

8—*1

1885.

George Ellsworth Adams, Weston, Vt. Merchant. *Vernal, Utah.*
Ruel Seabury Alden, Lyme. Superintendent of College Farm, 1895–97. Farm Superintendent. *Box 173, North Uxbridge, Mass.*
Walter Eugene Angier, C. E. (Dartmouth, 1887), West Swanzey. Resident Engineer, Thebes, Ill. *Office 50 78th Street, Chicago, Ill.*
Edward Alonzo Bailey, West Swanzey. With George Holbrook & Co.
55 Pine Street, Keene, N. H.
Phillips Greenleaf Bickford, Lyme.
Andrew Walter Brill, Riverhead, L. I. With North British and Mercantile Fire Insurance Company, 76 William Street, New York City.
Hempstead, N. Y.

Paul Cuff Brooks, Boston, Mass.

Frank Jay Emerson, Epping.

Allen Hazen, Wilder, Vt. Consulting Engineer.
St. Paul's Building, 220 Broadway, N. Y.

George Mayo Mullins, Londonderry. Attorney at Law.
Fourth and Jefferson Streets, Papillon, Neb.

Albert Henry Wood, Lebanon. Associate Professor of Agriculture, 1890–94. Grain Merchant. *Framingham, Mass.*

11—

1886.

Frank Albert Davis, M. B., M. D. (Boston University School of Medicine 1897, 1898), South Lee. Physician. *815 Beacon Street, Boston, Mass.*

James Ellsworth Harvey, Surry. Photographer. *Clinton, Mass.*

Belezar Stoianoff Ruevsky, Sistova, Bùlgaria. Employé du governement à la Direction de la Statistique. *Sofia, Bulgaria.*

Madison Templeton Thurber, M. D. (Dartmouth, 1890), Webster. Physician. *95 Savin Hill Avenue, Boston, Mass.*

Edward Hills Wason, New Boston. Attorney at Law.
146 Main Street, Nashua.

George Pillsbury Wood, Lebanon. Draftsman and Clerk, Department of the Navy. *3407 Holmead Avenue, Washington, D. C.*

6—

1887.

William Sprague Currier, Norwich, Vt. Local Forecast Official in charge U. S. Weather Bureau Office. *U. S. Weather Bureau, Toledo, Ohio.*

Arthur Woodbury Hardy, C. E. (Dartmouth, 1889), Hopkinton. Chief Inspector Stock Insurance Companies.
240 La Salle Street, Chicago, Ill.

George Albert Sanborn, Rochester. Salesman for Grand Union Tea Company. *Rochester.*

Hiram Newton Savage, C. E. (Dartmouth), White River Junction, Vt.; Member Am. Soc. C. E.; Chief Engineer San Diego Land and Town Company; Chief Engineer National City and Otay Railway Company; Chief Engineer in charge Sweetwater Water Company; Consulting Engineer Southern California Mountain Water Company; Consulting Engineer General Practice. *National City, Cal.*

Bion Leland Waldron, Strafford. Observer U. S. Weather Bureau.
Columbus, Ohio.

5—

1888.

Melvin Burnside Carr, North Haverhill.

Herbert Grant Davis, South Lee. Manager St. Lawrence Gas, Electric, and Transportation Company. *1 Ford Street, Ogdensburg, N. Y.*

Edwin Chandler Gerrish, Webster. Assistant Paymaster for Proprietors of the Locks and Canals on Merrimack River. *66 Broadway, Lowell, Mass.*

William Nelson Hazen, C. E. (Dartmouth, 1890). Chief Draftsman for the Structural Iron and Steel Co., Bush Street and B. & O. R. R. *Pittsburg, Penn.*

Edward David O'Gara, Hanover. Farmer. *Hanover.*

George Elmer Porter, M. D. (Dartmouth, 1892), Hartford, Vt., Physician. *Marengo, Wayne Co., N. Y.*

George Jonathan Sargent, Canterbury. Civil Engineer with Warnig, Chipman & Farquhar. *874 Broadway, New York, N. Y.*

John Warren Smith, M. S. (1900), Grafton. Section Director U. S. Weather Bureau, in charge Columbus, Ohio, and of Ohio Section. Special Lecturer in Meteorology at Ohio State University. *Columbus, Ohio.*

George Elwin Walker, Littleton. Farmer. *Littleton.*

9—

1889.

Fred Harvey Colby, Hopkinton. Fruit Grower. *Prosser, Wash.*

Linwood Carroll Gillis.

*Louis Jerome Hutchinson, Norwich, Vt.

John Lawrence Norris, Lyme. Norris Brothers, Groceries and Provisions, 1673–1679 Washington Street, Boston, 529–535 Dudley Street, Roxbury, and 587–593 Washington Street, Dorchester, Mass. *6 Worcester Square, Boston, Mass.*

Charles Walter Earl Scott, Winchester. Mechanic. *Darrington, Wash.*

David Elmer Stone, Hartford, Vt. Grain Merchant. *Framingham Center, Mass.*

Fred Washburne, West Springfield. With Sargent & Co., Foreman of Foundry Department. *56 Carmel Street, New Haven, Conn.*

7—*1

1890.

John Young Jewett, C. E. (Dartmouth, 1895), Gilford. Civil Engineer. Metropolitan Water Board, Boston. Dam and Aqueduct Department, Clinton, Mass. *402 Chestnut Street, Clinton, Mass.*

Joseph Franklin Preston, Hanover. Clerk. *Boston, Mass.*

Elihu Quinby Sanborn, Webster. Machinist. *Contoocook.*

Clarence Ira Slack, Norwich, Vt. Bookkeeper with N. E. Hollis, Boston, Mass. *11 Windsor Road, West Somerville, Mass.*

4—

1891.

Ernest Gowell Cole, Hampton. Postmaster and Merchant under firm name E. G. Cole & Co. *Hampton.*

Russell Marden Everett, Chester. Lawyer. *172 Market Street, Newark, N. J.*

Edward Payson Stone, Canaan Center. Chemist With Baton Rouge Sugar Company. *Baton Rouge, La.*

3—

1892.

Percey Lovejoy Barker, C. E. (Dartmouth, 1894), Milford. Assistant Division Engineer, Pennsylvania Division, N. Y. C. & H. R. R. R. *Jersey Shore, Penn.*

Fred Driggs Fuller, Hanover. Assistant Chemist, New York Agricultural Experiment Station. *84 Lyceum Street, Geneva, N. Y.*

Arthur Benezette Hough, Lebanon. Dairy Farmer. *Lebanon.*

Edward Monroe Stone, C. E. (Dartmouth, 1894), Marlborough. Civil Engineer with Henry A. Wolcott. *49 Pearl Street, Hartford, Conn.*

4—

1893.

Wilton Everett Britton, Keene. State Entomologist and Entomologist of the Connecticut Agricultural Experiment Station. *1317 Boulevard, New Haven, Conn.*

Frank John Bryant, Enfield. Teacher. *Lebanon.*

Charles Elbert Hewitt, M. M. E. (Cornell, 1895), Hanover. Electrical Engineer and Contractor. *13–21 Park Row Building, New York City.*

Charles Lincoln Hubbard, M. E. (1895), Fitzwilliam. Heating and Ventilating Engineer, 93 Federal Street, Instructor in heating and Ventilation in American Correspondence School, 156 Tremont Street, Boston, Mass. *283 Central Street, Auburndale, Mass.*

Orrin Moses James, Northwood. Civil Engineer and Surveyor. *Northwood Narrows.*

Arthur Whitmore Smith, M. S. (Wesleyan University, 1895), Norwich, Vt. Instructor in Physics and Electrical Engineering, Tulane University of Louisiana. *New Orleans, La.*

6—

1894.

Bert Sargent Brown, Hanover. Livery Stable Proprietor. *Hanover.*

Fred Willis Gunn, Keene. Farmer and Fruit Grower. *Keene.*

Frederic William Howe, Hollis. Professor of Chemistry. *State Normal School, Framingham, Mass.*

3—

1895.

Frank Stanley Adams, Gilsum. With Vermont Farm Machine Company. *56 Pine Street, Bellows Falls, Vt.*

Frank Clifton Britton, Keene. Superintendent Belchertown Coöperative Creamery. *Belchertown, Mass.*

Henry Elmer Hill, Plainfield, Vt. With the Arizona Lumber Company. *Flagstaff, Arizona.*

Charles Arthur Trow, Mont Vernon. *Athens, Henderson Co., Texas.*

4—

1896.

Lewis Harris Kittredge, Keene. Manager of Peerless Manufacturing Company. *1193 Euclid Avenue, Cleveland, Ohio.*

1—

1897.

Harlan Winifred Barney, Grafton. Business. *333 Walnut Street, Manchester.*

Carrie Augustus Bartlett, Lee. Teacher. *South Lee.*

Mary Blaisdell Bartlett, Epping. Instructor Pinkerton Academy. *Derry.*

Walter French Buck, Manchester. Science Teacher, High School. *Pawtucket, R. I.*

Arthur Willard Colburn, Dracut, Mass. Farmer. *Dracut, Mass.*

Carrie Lydia Comings, Durham. Teacher Woonsocket High School. *94 Blackstone Street, Woonsocket, R. I.*

Irving Lyford Dennett. Chief Engineer, New York Glucose Company. *Edgewater, N. J.*

*Mary Elizabeth Comings (Mrs. I. L. Dennett), Durham.

Elwin Henry Forristall, M. Sc., 1900, Columbia. Manager of Walker Gordon Laboratory Company's Farms. *Charles River Village, Mass.*

Leslie David Hayes, Durham. Teacher in Manual Training and Sciences, Ryan High School. *784 Fisk Street, Appleton, Wis.*

John Norton Hunt, Peterborough. *Peterborough.*

Ellery Dunbar Jenkins, Lee. Chemist, Lowell Fertilizer Company. *P. O. Box 105, Lowell, Mass.*

Woodruff Mason, Stamford, Conn. Medical Student, Columbia University. *New York City.*

Roscoe Hart Shaw, Milton. Instructor in Chemistry, University of Wisconsin. *So. Hall, Madison, Wis.*

Charles William Vickery, Dover. With Claflin Bros., Mining Engineers. *Nome City, Aalska.*

Delbert Amos Wheeler, South Ashburnham, Mass. Teacher. *Rye.*

Everett Sidney Whittemore, Colebrook. Superintendent Stonehurst Farm. *Stonehurst Farm, Intervale, N. H.*

17—*1

1898.

*Richard Cole Butterfield, Westmoreland.

Helen Buzzell Lee. Teacher. *Route 5, Dover.*

Bernice Elisabeth Caverno (Mrs. E. H. Hancock), Durham. *Durham.*

Burton Albert Corbett, Colebrook. Farmer. *Colebrook.*

Alfred Caverly Durgin, Lee. Farmer and Fruit Grower. *Lee.*

James Alfred Foord, Walpole. Assistant in Dairy Husbandry, College of Agriculture, Cornell University. *37 East Avenue, Ithica, N. Y.*

John William Fullerton, Somersworth. Paymaster with Great Falls Woolen Company. *Somersworth.*

Arthur Given, Durham. Assistant Chemist, U. S. Department of Agriculture, Bureau of Chemistry. *1937 13th Street N. W., Washington, D. C.*

Edward Henry Hancock, Belmont. Instructor in Mechanism and Woodwork, New Hampshire College. *Durham.*

Mabel Lucy Hayes, Durham. Teacher of Business Course in High School. *18 Washington Avenue, Winthrop, Mass.*

Tomokichi Hirokawa, B. S. (Massachusetts Institute of Technology), Iamabari, Japan. Instructor in Physics and Electrical Engineering. *Kyoto, Japan.*

Harry Clinton Mathes, Newmarket. Mail Clerk. *25 Belknap Street, Dover.*

Herbert Fisher Moore, M. E. (Cornell, 1899), Penacook. Instructor in Machine Design, Sibley College, Cornell University. *112 Stewart Avenue, Ithaca, N. Y.*

Gerry Austin Morgan, Goffstown. Draftsman with Taft-Pierce Manufacturing Company. *93 Blackstone Street, Woonsocket, R. I.*

Harry Putnam Richardson, Milford. With the John Hancock Insurance Company. *346 East Thirty-Second Street, Paterson, N. J.*

Fred Dexter Sanborn, Ashland. Paper Box Manufacturer. *Ashland.*

Fred Webster Smith, Franklin Falls. Foreman Sulloway Mills. *Franklin Falls.*

Benjamin D. Tolles, Somersworth. With Great Falls Manufacturing Company. *Somersworth.*

18—*1

1899.

Henry Clark Baker, South Yarmouth, Mass. With the General Electric Company, 502 Tradesmens' Building. *Pittsburg, Pa.*

Harry Everett Barnard, Nashua. Chemist for the State Board of Health, State Laboratory of Hygiene. *Concord, N. H.*

Harrison Edward Clement, Nashua. Mining Engineer, Mechanical and Constructing Engineer, Bingham Consolidated Mining and Smelting Company, Bingham Copper and Gold Mining Company, King Mining Company. *700 McCornick Building, Salt Lake City, Utah.*

Irving Atwell Colby, Exeter. Instructor in Machine Design, Sibley College, Cornell University. *703 East State Street, Ithaca, N. Y.*

Willis Daniel Farley Hayden, Hollis. Superintendent Middlebrook Farm. *Dover.*

Frederic Libbey Horton, Dover. With General Electric Company. *107 Park Street, Lynn, Mass.*

William Elmer Hunt, Nashua. First Lieutenant Eighth United States Infantry. *Camp Skagway, Alaska.*

Louis Hobart Kenney, Pownal, Me. Draftsman, Engineering Division Fore River Ship and Engine Company. *Quincy, Mass.*

Grace Agnes Mark, Gilsum. (Mrs. Herbert F. More.)
112 Stewart Avenue, Ithaca, N. Y.
Arthur Zebulon Norcross, Rindge. Dairyman. *Pomfret Centre, Conn.*
Harry Nelson Putney, Franklin. Machinist B. & M. R. R. Shops.
Concord, N. H.
Etta Lillian Simpson, Durham. Principal Grammar School. *Acushnet, Mass.*

12—

1900.

Herbert Prescott Andrews, Hollis. Power Department St. Louis Transit Company. *4049 Morgan Street, St. Louis, Mo.*
David Burns Bartlett, Manchester. Teacher.
250 Harrison Street, Manchester, N. H.
Francis Burnham, Durham. Teacher. *Athol, Mass.*
Blanche Mary Foye, Durham. Teacher in Milford High School. *Milford.*
Charles Elliot Page Mathes. With Wetherbee Allis Company, Clothiers.
456 Central Avenue, Dover, N. H.
Edward Emil Nelson, Nashua. Mining Engineer. With Bingham Consolidated Mining and Smelting Company, and Bingham Copper and Gold Mining Company, Dalton and Lark Mine. *Bingham, Utah.*
Alvena Pettee, Durham. Student, Columbia University.
1250 Amsterdam Avenue, New York City.
Marie Livingstone Robertson, Buffalo, N. Y. (Mrs. Benjamin N. Duggar.)
202 Hitt Street, Columbia, Mo.
Walter Noah Shipley, Nashua. Testing Department, General Electric Company. *608 Western Avenue, Lynn, Mass.*
Charles Edwin Stillings, Somersworth. Testing Department General Electric Company. *78 Mall Street, Lynn, Mass.*
John Ernest Wilson, Hollis. With H. A. Holden, Electrical Contractor, Boston. *45 Warren Street, Boston, Mass.*
Robert Morrill Wright, Hill. Principal Grammar School. *Belmont, N. H.*

12—

1901.

Henry Harold Calderwood, Nashua. With H. G. Cameron & Co., Hacienda de Tula Estado de Vera Cruz, Mexico. *Nashua.*
Charles Henry Courser, Warner.
Alice Emerson Dorr, Dover.
Harry Willis Evans, Portsmouth. Engineering Department, General Electric Company. *671 Western Avenue, Lynn, Mass.*
Harry Gilbert Farwell, Keene. With the General Electric Company.
77 Grove Street, Lynn, Mass.
Ella Gertrude Gowen, Dover. Giving Lessons in Cookery.
15 Lexington Street, Dover.
Charles Lund Hunt, Nashua. Second Lieutenant Twelfth United States Infantry. *Fort Duchesne, Utah.*

Edwin Price Jewett, Lakeport. Assistant Superintendent Walker Gordon Laboratory Farms. *Plainsboro, N. J.*

Robert McArdle Keown, Pomona, Fla. Draftsman with Kidder Press Company. *Dover.*

Elmer Eugene Lyon, Wentworth. Teacher. Connecticut School for Boys. *Meriden, Conn.*

George J. Penneo, Hampstead. Farmer. *Hampstead.*

Harold Morrison Runlett, Durham. Wholesale Shoe Business. With Clark Hutchinson Co., 121 Duane Street, New York City. *Durham.*

Albert Edson Straw, Foreman of Box Factory. *Ashland.*

13—

1902.

Mary Doe, Salmon Falls. *Rural Route No. 2, Dover.*

Edwin W. Gilmartin, Nashua. Testing Department, General Electric Company. *7 Vine Street, Lynn, Mass.*

John C. Kendall, Peterborough. Assistant in Dairy Husbandry, North Carolina College of Agriculture and Mechanic Arts. *West Raleigh, N. C.*

Harry M. Lee, Moultonborough.

Abiel A. Livermore, Wilton.

George E. Merrill, Newburyport, Mass.

Charles A. Payne, Portsmouth. Testing Department, General Electric Company. *77 Grove Street, Lynn, Mass.*

Eugene P. Runlett, Durham. Graduate Student, New Hampshire College.

Arthur L. Sullivan, Suncook.

9—

TWO YEARS' COURSE IN AGRICULTURE.

Lyman Charles Stratton, Hollis. (1897.) Superintendent Dairy Farm. *Brightwood, D. C.*

Charles Wesley Martin, Durham. (1898.) Bellman, Hotel Raymond, Pasadena, Cal.

George Henry Wheeler, Temple. (1898.) Farmer. *Temple.*

Fred Joseph Durell, Newmarket. (1900.) Farmer. *Newmarket.*

Harry Alvin Elliot, Lyme. (1900.) Clerk Grain and Feed Store. *Lyme.*

Edward Augustus Hills, Hollis. (1900.) Farmer. *Hollis.*

Albert Cate Knowles, Epsom. (1900.) Farmer. *Epsom.*

Robert Hale Pearson, Webster. (1900.)

Charles Nicklin Blodgett, Hebron. (1901.)

Harry Douglass Verder, Hollis. (1901.)

Rufus Leonard Cushman, North Adams, Mass. (1901.)

George R. Brew, Lowell, Mass. (1902.)

Carroll W. Farr, North Weare. (1902.) Student in four years' course, New Hampshire College.

George F. Hills, Hollis. (1902.)
Walter E. Quimby, Deerfield. (1902.)
Walter P. Tenney, Chester. (1902.)
Thornton N. Weeks, Greenfield. (1902.)
Robert E. Whittier, Deerfield. (1902.) Manager of Dairy Middlebrook Farm. *Dover.*
Edward C. Wilson, Wilton. (1902.)

SUMMARY.

Graduates, Bachelors of Science, 1871–1902	238
Graduates, Two Years' Course	19
Agriculturists	42
Architects	1
Business Pursuits	53
Chemists	4
Clergyman	1
Civil, Mechanical, Electrical, and Mining Engineers	23
Draftsmen	5
Lawyers	5
Manufacturers and Mechanics	16
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Physicians	13
Post-Graduate Students	3
Teachers	29
Unknown	23
United States Army	2
United States Weather Bureau	6
Dead	15

ALPHABETICAL LIST OF GRADUATES.

Adams, E. E., 1878.
Adams, G. E., 1885.
Adams, F. S., 1895.
Adair, R. K., 1877.
Alden, R. S., 1885.
Aldrich, H. C., 1876.
Aldrich, W. H., 1875.
Aldrich, T. E., 1881.
Andrews, H. P., 1900.
Angier, W. E., 1885.
Arnold, E. F., 1883.
Bailey, C. H., 1879.
Bailey, E. A., 1885.
Baker, H. C., 1899.
Ballard, W. P., 1871.
Barker, P. L., 1892.
Barnard, H. E., 1899.
Barnard, H. L., 1881.
Barney, H. W., 1897.
Bartlett, Miss C. A., 1897.
Bartlett, Miss M. B., 1897.
Bartlett, D. B., 1900.
Bartlett, E., 1872.
Bickford, P. G., 1885.
Bigelow, F. L., 1883.
Birtwhistle, F. S., 1883.
Blodgett, C. N. (2 year), 1901.
*Boardman, G. J., 1881.
Boutwell, H. L., 1882.
Brew, G. R. (2 year), 1902.
Brigham, E. L., 1876.
Brill, A. W., 1885.
Bristol, E. F., 1881.
Bristol, N. D., 1883.
Britton, F. C., 1895.
Britton, W. E., 1893.
*Brooks, H., 1877.
Brooks, P. C., 1885.
Brown, B. S., 1894.
Bryant, F. J., 1893.
Buck, W. F., 1897.
Bugbee, D. J., 1882.
Burleigh, A. T., 1881.
Burleigh, R. F., 1882.
Burnham, Miss F., 1900.
Butterfield, J. W., 1876.
*Butterfield, R. C., 1898.
Buzzell, Miss H., 1898.
Calderwood, H. H., 1901.
Carpenter, L. J., 1882.
Carr, M. B., 1888.
Carson, J. W., 1877.
Caverno, Miss B. E., 1898.
Chamberlin, A. F., 1876.
Chapin, R. C., 1879.
*Chubert, C. O., 1877.
Clement, H. E., 1899.
Colby, F. H., 1889.
Colby, I. A., 1899.
Cole, E. G., 1891.
Colburn, A. W., 1897.
Comings, Miss C. L., 1897.
Comings, F. P., 1883.
*Comings, Miss M. E., 1897.
Corbett, B. A., 1898.
Courser, C. H., 1900.
Cragin, L. M., 1879.
Cross, A. B., 1876.
*Cummings, E. S., 1884.
Currier, W. S., 1887.
Curtis, F. P., 1875.
Davis, F. A., 1886.
Davis, F. C., 1884.
Davis, H. G., 1888.

*Dead.

Dennett, I. L., 1897.
Dewey, E. P., 1882.
Doe, Mary, 1902.
Dorr, Miss A. E., 1901.
Durell, F. J. (2 year), 1900.
Durgin, A. C., 1898.
*Edwards, C. A., 1877.
Eldredge, F. E., 1873.
Elliot, H. A. (2 year), 1900.
Ely, F. D., 1881.
Emerson, F. J., 1885.
Emerson, F. V., 1875.
Emery, S. E., 1881.
Evans, H. W., 1901.
Everett, R. M., 1891.
Farr, C. W. (2 year), 1902.
Farwell, H. G., 1901.
Flint, W. F., 1877.
Follansbee, F. H., 1883.
Foord, J. A., 1898.
Forristall, E. H., 1897.
Foster, S. M., 1884.
Foye, Miss B. M., 1900.
French, A. C., 1883.
Fuller, F. D., 1892.
Fullerton, J. W., 1898.
Gay, J. E., 1883.
Gerrish, E. C., 1888.
Gilmartin, E. W., 1902.
Gillis, L. C., 1889.
Given, A., 1898.
Gowen, Miss E. G., 1901.
Gunn, F. W., 1894.
Hall, C. C., 1877.
Hancock, E. H., 1898.
Hardy, A. W., 1887.
Hardy, C. W., 1875.
Hardy, M. F., 1874.
Harvey, J. E., 1886.
Hayden, W. D. F., 1899.
Hayes, L. D., 1897.
Hayes, Miss M. L., 1898.
Hazen, A., 1885.
Hazen, C. H., 1881.
Hazen, W. N., 1888.
Henry, J. G., 1877.
Hewitt, C. E., 1893.
Hill, H. E., 1894.
Hills, E. A. (2 year), 1900.
Hills, G. F. (2 year), 1902.
Hirakawa, T., 1898.
*Hollister, C. P., 1877.
Holman, G. M., 1877.
*Holmes, N. C., 1879.
Hood, C. H., 1880.
Horton, F. L., 1899.
Hough, A. B., 1892.
Howe, F. W., 1894.
Hubbard, C. A., 1877.
Hubbard, C. L., 1893.
Hunt, C. A., 1901.
Hunt, J. N., 1897.
Hunt, W. E., 1899.
*Hutchinson, L. J., 1889.
James, O. M., 1893.
Jenkins, E. D., 1897.
Jewell, H., 1875.
Jewett, J. Y., 1890.
Jewett, E. P., 1901.
Kelley, E. D., 1883.
Kendall, J. C., 1902.
Kenney, L. H., 1899.
Keown, R. McA., 1901.
Kimball, H. H., 1884.
Kimball, W. W., 1876.
*Kilburn, E., 1878.
Kittredge, L. H., 1896.
Knowles, A. C. (2 year), 1800.
*Leavitt, C. O., 1875.
Lee, H. M., 1902.
Livermore, A. A., 1902.
Loveland, G. A., 1882.
Lyon, E. E., 1901.
Mann, M. B., 1884.
Mark, Miss G. A., 1899.
*McGregor, J. L., 1875.
Marston, F. P., 1881.
Mason, J. W., 1882.
Mason, W., 1897.
Martin, C. W. (2 year), 1898.

*Dead.

Mathes, C. E. P., 1900.
Mathes, H. C., 1898.
Megrath, W. A., 1881.
Merrill, G. E., 1902.
Moore, G. M., 1884.
Moore, H. F., 1898.
Morgan, A. B., 1883.
Morgan, G. A., 1898.
Mullins, G. M., 1885.
Nelson, E. E., 1900.
Nichols, H. A., 1882.
Norcross, A. Z., 1899.
Norris, J. L., 1889.
Norris, Z. A., 1884.
O'Gara, E. D., 1888.
Parker, D. D., 1876.
Parker, F. C., 1879.
Payne, C. A., 1902.
Pearson, R. H. (2 year), 1900.
Peck, E., 1875.
Penneo, G. J., 1901.
Perkins, L., 1871.
Pettee, Miss A., 1900.
Porter, G. E., 1888.
Preston, J. F., 1890.
Putney, H. N., 1899.
Quinby, W. E. (2 year), 1902.
Ramsey, I. W., 1875.
Record, C. E., 1878.
Richardson, H. P., 1898.
Robertson, Miss M. L., 1900.
Ruevsky, B. S., 1886.
Runlett, E. P., 1902.
Runlett, H. M., 1901.
Sanborn, E. Q., 1890.
Sanborn, F. D., 1898.
Sanborn, G. A., 1887.
Sanders, C. H., 1871.
Sargent, G. J., 1888.
*Sawyer, H. A., 1874.
Savage, H. N., 1887.
Scott, C. W. E., 1889.
Seward, O. L., 1875.
Shaw, R. H., 1897.
Shipley, W. N., 1900.
Simpson, Miss E. L., 1899.
Slack, C. I., 1890.
Smith, A. W., 1893.
Smith, F. W., 1898.
Smith, J. F., 1873.
Smith, J. W., 1888.
Stanton, F. T., 1881.
Stickney, V. H., 1881.
Stillings, C. E., 1900.
Stone, D. E., 1889.
Stone, E. M., 1892.
Stone, E. P., 1891.
Stratton, L. C. (2 year), 1897.
Straw, A. E., 1901.
Sullivan, A. L., 1902.
Tenney, W. P. (2 year), 1902.
Thompson, E. C., 1884.
*Thompson, F. E., 1882.
Thurber, M. F., 1886.
Tolles, B. D., 1898.
Trow, C. A., 1895.
Tucker, C. H., 1873.
Verder, H. D. (2 year), 1901.
Vickery, C. W., 1897.
Waldron, B. L., 1887.
Walker, G. E., 1888.
Wallace, S. A., 1881.
Washburn, F., 1889.
Wason, E. H., 1886.
Weeks, T. N. (2 year), 1902.
Wheeler, C. A., 1877.
Wheeler, D. A., 1897.
Wheeler, G. H. (2 year), 1898.
White, F. A., 1872.
Whitcher, G. H., 1881.
Whittemore, E., 1877.
Whittemore, E. S., 1897.
Whittier, R. E. (2 year), 1902.
Whittier, W. L., 1883.
Wilkins, G. H., 1879.
Willard, E. M., 1875.
Wilson, E. C. (2 year), 1902.
Wilson, J. E., 1900.
Wood, A. H., 1885.
Wood, G. P., 1886.
Woodward, C. M., 1883.
Wright, R. M., 1900.

*Dead.

SPECIMEN ENTRANCE EXAMINATION PAPERS, FOR FOUR YEAR COURSES.

ALGEBRA.

1. Define algebra, quantity, coefficient, exponent. Explain positive and negative quantities. Give the signification of fractional and negative exponents. Illustrate.

2. Add $\frac{3}{5}ax^{\frac{1}{2}} - \frac{1}{2}a\sqrt{x}$ and $3bx^2 - \frac{2}{3}ax^{\frac{1}{2}} + 4b$.

3. Multiply $(-4ab)$, $(3\sqrt{ab})$, $(-2\sqrt{-ab})$, $(3\sqrt{-ab})$, $(-a\sqrt{b})$, $(\sqrt{ab})$.

4. Find the prime factors of $x^6 + y^6$, $x^{-1} - y^{-6}$, $x^{2m} + x^m - 2$.

5. Reduce $\frac{1}{a^{\frac{1}{3}}b^{\frac{1}{4}}c^{\frac{2}{3}}}$, $\frac{1}{\sqrt{a}+\sqrt{b}}$, $\frac{1}{a^{\frac{1}{2}}+b^{\frac{1}{2}}}$, to equivalent fractions having rational denominators.

6. Solve for x and y $\frac{2}{ax} + \frac{3}{by} = 5$ and $\frac{5}{ax} - \frac{3}{by} = 2$.

7. $(x-y)^5$, $(\frac{2}{5}x^{\frac{1}{3}}y^{\frac{1}{2}})^{\frac{1}{3}}$, $(x-2a+3a^2)^2$. Perform operations indicated.

8. $3ax^2 - 2x + 3b = 0$. Solve for x.

9. Insert two arithmetical means between c and d.

10. A crew can row a miles in b hours down stream, and c miles in d hours against the stream. Find the rate in miles per hour of the current, and of the crew in still water.

ARITHMETIC.

1. Define arithmetic, fraction, per cent., interest, proportion, decimal.

2. From $3\frac{5}{7}$ take $1\frac{1}{3} + 1\frac{3}{7}$.

3. $3.014 \times 27.900 \div .047$.

4. $\frac{\frac{6}{7}}{\frac{5}{8}} \times \frac{4}{3} \div \frac{6}{11}$.

5. Two men engage in business. One puts in $1,000 for 12 months; the other $2,000 for 15 months. They gain $500. How shall it be divided between them?

6. Find the simple, annual, and compound interest on $1,200 for 3 years, 2 months, and 7 days, at 6 per cent.

7. If 2 men in 3 days can cut 10 acres of grass, in how many days can 3 men cut 8 acres under same conditions?

8. Find square root of 31407.296.

9. Define meter, gram, liter, stere.

10. A box is 2 meters long, 1.5 meters wide, and 5 decimeters high. What is its capacity in liters?

BOTANY.

1. What are the three principal parts of a plant, and what does each do for the plant?

2. What is the embryo? Of what parts does it consist? Where does the root originate? What part of the root takes food material from the soil?

3. What are the principal steps or periods in the life history of a plant?

4. Define node, internode, petiole, peduncle, stipule, bract, axil of leaf, compound leaf.

5. Draw diagrams of the following leaves: (*a*) entire ovate; (*b*) lanceolate serrate; (*c*) lobed; (*d*) palmately cleft; (*e*) pinnately parted.

6. Draw diagrams of the following forms of inflorescence: raceme, spike, head, umbel, cyme.

7. Name five of the earliest blooming plants of New Hampshire and five which have their flowers in catkins.

8. To what families do the following plants belong: cucumber, peach, lettuce, cabbage, potato, corn, onions, celery, clover, strawberry?

9. How would you distinguish between an elm and an oak, a pine and a hemlock, an ash and a hickory?

10. What is the difference between a fruit and a seed?

ENGLISH.

The composition must be correct in spelling, grammar and punctuation.

I.

Select any *four* of the following topics and write a short composition on each:

1. The speech of Nestor.
2. Priam in the Tent of Achilles.
3. The Story of the Caskets.
4. Sir Roger at Church.
5. Characteristics of Dr. Primrose.
6. The Return of the Knight.
7. The Robbery of Silas Marner.

II.

Omit *one*.

1. Macbeth and Lady Macbeth compared.
2. The supernatural in "Comus."
3. From the standpoint of Macaulay, compare Milton and Addison.

This part of the examination presupposes the thorough study of each of the works named in this division. In addition the candidate may be required to answer questions involving the essentials of English grammar and composition. Inability to answer such questions will be considered a sufficient ground for refusing admission.

FRENCH.

1. (*a*) Synopsis: First person singular, *vouloir;* third singular, *aller;* third plural, *finir*. (*b*) Principal parts, *faire*, *venir*, *mettre*, *voir*, *prendre*.

2. Translate: (1) Have you given him any money? (2) This book is better than mine. (3) They lost their mother a week ago. (4) I have no sugar. (5) Give me this pen, if

you please. (6) I shall see him to-morrow, and he will give it to me. (7) I fear that you will lose the money which I have given to you. (8) She has gone to Boston to-day, but she will be in Durham to-morrow. (9) The woman whom we have seen in the garden is very young. (10) He arrived in America June 4, 1899. (Write out the date.)

3. Translation at sight.

4. Translate: (a) Il parlait encore quand il vit la flamme du fusil d' Orlanduccio, et presque en même temps un second coup partit à sa gauche, de l' autre côté du sentier, tiré par un homme qu'il n'avait point aperçu et qui 'l ajustait posté derrière un autre mur. Les deux balles l' atteignirent: l'une, celle d' Orlanduccio, lui traversa le bras gauche, qu'il lui présentait en le couchant en joue; l'autre le frappa à la poitrine, déchira son habit, mais, rencontrant heureusement la lame de son stylet, s'aplatit dessus et ne lui fit qu'une contusion légère. Le bras gauche d'Orsa tomba immobile le long de sa cuisse, et le canon de son fusil s'abaissa un instant; mais il le releva aussitot, et, dirigeant son arme de sa seule main droite, il fit feu sur Orlanduccio. La tête de son ennemi, qu'il ne découvrait que jusqu'aux yeux, disparut derrière le mur. La fumée sortie de son arme montait lentement vers le ciel; aucun mouvement derrière le mur, pas le plus léger bruit. Sans la douleur qu'il ressentait au bras, il aurait pu croire que ces hommes sur qui il venait de tirer étaient des fantomes de son imagination. [Mérimée, Colomba.]

(b) Cela vient des nouveaux maîtres de Longueval, deux Américaines . . . Madame Scott et Miss Percival. Retenez bien leurs noms et priez pour elles ce soir.

Puis il se sauvait, sans attendre les remerciements; à travers les champs, à travers les bois, de hameau en hameau, de chaumière en chaumière, il allait, il allait, il allait . . . Une sorte de griserie lui montait au cerveau. Partout sur son passage, c'étaient des cris de joie et d'étonnement. Tous ces louis d'or tombaient, comme par miracle, dans ces pauvres mains habituées à recevoir de petites pièces de monnaie

blanche. Le curé fit même des folies, des vraies folies; il était lancé, il ne se connaissait plus. Il donnait à ceux-la mêmes qui ne demandaient pas. [Halévy, L'Abbé Constantin.]

GERMAN.

1. (a) Principal parts of brechen, gehen, halten, lesen, schlagen. (b) Synopsis third person singular, singen.

2. Translate: (1) The boy's father is a count, and his mother is a princess. (2) Good, industrious children are the joy of their parents. (3) Does his sister give him the book? (4) The letter which you gave me is on the table. (5) Yesterday was the fourth of September, 1901. (6) The sun has set and the moon is rising. (7) Have you already forgotten what you promised? (8) If you had come, you would have heard good music. (9) I am obliged to go to Berlin, but I should like to go to Paris. (10) She told us that her husband was dead, and that she had no money.

3. Translate: (a) Wie er hinunter in das Hotel kam, hörte er die heftige Stimme eines der Kellner oder des Wirts und eine bittende Frauenstimme dazwischen; und als er neugierig geworden, hinzutrat, um wenigstens zu sehen, was es dort gebe, bemerkte er eine junge, sehr einfach, aber sauber gekleidete Dame, deren Gesicht ihm merkwürdiger Weise bekannt vorkam, die sich schüchtern und mit groszen Thränen in den Augen gegen den ihr unverschämt gegenüberstehenden Oberkellner verteidigte.—[*Gerstaecker Irrfahrten.*]

(b) Zwei lange Jahre waren vergangen, die ersten Reformationskämpfe, viel schwere Tage waren an Breisach vorübergezogen, Hans batte sich durch nichts beirren lassen, unverdrossen hatte er weiter gearbeitet, ohne nach rechts oder nach links zu schauen, und endlich im Sommer des Jahres 1526 erschien er auf dem Rathaus und erklärte das Werk als vollendet.—[*Hillern, Hoeher, als die Kirche.*]

(c) Elisabeth setzte sich unter eine überhängende Buche und lauschte aufmerksam nach allen Seiten; Reinhardt sasz einige Schritte davon auf einem Baumstumpf und sah schweigend nach ihr hinüber. Die Sonne stand gerade über ihnen; es war glühende Mittagshitze; kleine goldglänzende, stahlblaue Fliegen standen flügelschwingend in der Luft; rings um sie her ein feines Schwirren und Summen, und manchmal hörte man tief im Walde das Hämmern der Spechte und das Kreischen der andern Waldvögel.—[*Storm, Immensee.*]

GRECIAN HISTORY.

1. Give an account of the voyage of the Argonauts.
2. Draw a map showing Asia Minor, Macedonia, and the principal Grecian cities.
3. Locate, and with a sentence for each describe the following: Bosphorus, Arcadia, Cyprus, Olympia, Syracuse, Thebes, Lesbos, Propontis, Salamis, Babylon.
4. Sketch the lives of the following: Pythagoras, Pisistratus, Tyrtaeus, Lycurgus.
5. Give a brief account of the Peloponnesian war.
6. Give a brief account of the Expedition of the Ten Thousand.
7. Give an account of the life and work of Herodotus.
8. Explain the principles of the Stoics and of the Epicureans.

PHYSICAL GEOGRAPHY.

1. Is it now seed-time, or harvest-time, in the Transvaal?
2. Is it now day, or night, in Manilla?
3. Describe the climate of Havana, Pekin, and Cape Nome.
4. State the causes of the variations in season, climate, day and night.
5. Describe the trade winds.
6. What ocean currents produce the fogs on the Grand Banks? Why?

7. What causes the high tides in the Bay of Fundy?

8. Describe the principal physical divisions of the United States.

9. Describe the largest river-system in the world.

10. Show the relationship between New Hampshire's physical features and the occupations of its people.

PHYSICS.

1. What is motion? Show how motion is purely relative. A pendulum at the highest point of its path is at rest; what has become of the energy it possessed when moving? Show by illustration that energy when transformed is not all available. In what two ways may we recognize a force? The mass of a given train is one million pounds; how much work must the engine do simply to get the train up to a speed of thirty miles an hour, regardless of resistance? A uniform straight lever, ten feet long, balances at a point three feet from one end; when twelve pounds are hung from this end, and an unknown weight from the other, find the unknown weight, if the lever itself weighs eight pounds.

2. Outline the accepted theory of heat. What is meant by the temperature of a body? Explain what occurs when a pond freezes over, and show how fish-life is preserved by this provision of nature. Explain conduction, convection, and radiation of heat.

3. What relation is there between heat and light? What obvious distinction? How is the path of light revealed in a dark room? How much deeper is water immediately under a bather than it appears to be? Describe the appearance of water to one looking outward from the shore. Explain the decomposition of white light by a prism.

4. In what does sound have its origin? Explain the nature of the transmission of sound. Why can sounds often be heard farther at night than by day? Explain what is meant by the harmonics of a vibrating string.

5. Describe the mariner's compass. Why does not a freely floating magnetic needle move bodily toward the north magnetic pole? Explain how water may be decomposed by an electric current. Why are not birds on a telegraph wire killed by the passage of a current?

PLANE GEOMETRY.

1. Define equal, equivalent, parallel, perpindicular, parallelogram, trapezoid, mean proportion, third proportional, limit of a variable quantity. Give theorem of limits.

2. Theorem: If two parallels are cut by a transversal the alternate interior angles are equal.

3. The sum of the angles of any polygon is equal to two right angles taken as many times, less two, as the polygon has sides.

4. If the non-parallel sides of a trapezoid are equal, its diagonals are also equal.

5. If the number of sides of an inscribed polygon is even, the sum of the alternate angles is equal to as many right angles as the polygon has sides, less two.

6. If any two chords be drawn through a fixed point within a circle, the product of the segments of one chord is equal to the product of the segments of the other.

7. If two of the medians of a triangle are equal, the triangle is isosceles.

8. The number of diagonals of a polygon of b sides is how many?

ROMAN HISTORY.

1. What do we actually know about the early history of Rome?

2. What were the early Roman laws of debtor and creditor?

3. Give the history of the first Punic War.

4. Give a brief but comprehensive account of each of the following: Cæsar, Cicero, Catiline, Jugurtha, Sulla, Pyrrhus, Cleopatra, Mithridates, Vespasian.

5. Give an account of the founding of Constantinople.

6. State fully the causes of the decline of the Roman Empire.

7. Give the facts which bear upon Roman agriculture.

8. Locate, and with a sentence for each describe the following: Pontus, Caucasus, Cyprus, Rhine, Rhone, Sicily, Adriatic, Armenia, Constantinople, Syracuse.

UNITED STATES HISTORY AND CONSTITUTION.

A.

Give full statement of collateral reading.

B.

1. Give an account of Coronado's expedition, stating the approximate time of it.

2. Give a brief account of Virginia during the Puritan supremacy in England; of Maryland; of Massachusetts.

3. What was done at the Albany congress of 1754? Who was the most important member? What plan was proposed? What objections were made? What results followed?

4. Give a brief account of each of the following, stating what great service he rendered to the United States: Thomas Paine, Samuel Adams, John Jay.

5. Explain the principal points about the Treaty of Ghent. What was done about the principal things that led to the war? Give the leading facts about the Hartford Convention.

6. Explain the principle involved and the importance of each of the following: Ordinance of 1787, Wilmot Proviso, Dred Scott case.

7. Starting with 1789 explain when and how each addition has been made to the territory of the United States.

C.

1. State fully the provisions for amending the constitution of the United States.

2. State fully the provisions for electing the president of the United States.

3. State the qualifications, the term and the election provisions for senators; for the members of the House of Representatives.