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University of Wisconsin

1892–1893

CATALOGUE

OF THE

UNIVERSITY OF WISCONSIN

FOR

1892-1893

MADISON, WIS.
PUBLISHED BY THE UNIVERSITY
1893

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ORGANIZATION OF THE UNIVERSITY.

The University embraces:

I. The College of Letters and Science.
II. The College of Mechanics and Engineering.
III. The College of Agriculture.
IV. The College of Law.
V. The School of Pharmacy.
VI. The School of Economics, Political Science, and History.

The College of Letters and Science embraces:

A. Under the Course System.

I. The Ancient Classical Course.
II. The Modern Classical Course.
III. The General Science Course.
IV. The English Course.
V. The Civic-Historical Course, antecedent to Law and Journalism.
VI. The Special Science Course, antecedent to Medicine.
VII. The Special Courses for Normal School Graduates.

B. Under the Group System.

A large number of courses.

The College of Mechanics and Engineering embraces:

I. The Civil Engineering Course, including Railway, Bridge, Structural, and Highway Engineering.
II. The Mechanical Engineering Course.
III. The Mining and Metallurgical Engineering Courses.
IV. The Electrical Engineering Course.

The College of Agriculture embraces:

I. The Experiment Station.
II. The Graduate Courses.
III. The Long Agricultural Course.
IV. The Short Agricultural Course.
V. The Dairy Course.
VI. The Farmers' Institutes.

The College of Law embraces:

I. The Two Years' Course.
II. The Three Years' Course.

The School of Pharmacy embraces:

I. The Graduate Course.
II. The Pharmacy Course.
III. The Four Years' Pharmacy Course.

The School of Economics, Political Science, and History embraces:

I. Numerous Under-graduate Courses in all of these branches.
II. Graduate Courses, leading to the higher degrees.

In 1838 an act was passed by the territorial legislature establishing the University of the Territory of Wisconsin, and appointing a Board of Visitors for its government. No action toward establishing the University was taken under this law except the selection of two townships of land appropriated by Congress. In 1848 the constitution of the State of Wisconsin made provision for the establishment of a State University.

In 1849 the Board of Regents held its first meeting and began the work of organizing the University. The first building (now North Hall) was constructed in 1851. Four years from that time Agricultural Hall was completed, and in 1861 University Hall was finished. In 1866 the University was reorganized by act of the legislature, which also provided for uniting with the University the College of Agriculture, endowed with the proceeds of the Agricultural College grant given by the United States in 1862. In 1867 the first appropriation, of about $7,000 a year, was made by the State. Since that date the State has made repeated and large appropriations of money for the construction of buildings and for providing apparatus, and also for meeting the ordinary expenses of the institution. The College of Law was established in 1868; the College of Engineering began its work in 1870; the School of Pharmacy in 1883, and the School of Economics, Political Science, and History in 1892.

The University of Wisconsin is situated at Madison, the capital of the State of Wisconsin. The University grounds comprise 240 acres, and extend for more than a mile along the south shore of Lake Mendota, a sheet of water about four miles in width and six miles in length. University hill occupies the eastern part of the grounds. It rises abruptly from the lake and has two summits, of which the eastern and higher reaches a height of about one hundred feet above the lake. Most of the college buildings are placed on the summit and eastern slope of this hill. The western part of the grounds is lower and more nearly level, and is occupied by the Experimental Farm, belonging to the College of Agriculture. East of University hill lies a small tract known as the Lower Campus, used for athletic sports

and as the drill ground. At the session of 1893 the legislature provided for the purchase of Camp Randall, a tract of ground including 45 acres, and joining the University grounds to the southwest. The buildings of the University which are used for instructional purposes are thirteen in number. The three oldest, University Hall, North Hall, and Agricultural Hall, stand on or near the eastern summit of University hill. Agricultural Hall is occupied by the offices and laboratories of the College of Agriculture; North Hall is used by the departments of German and Scandinavian languages, and the School of Pharmacy; while University Hall contains the recitation rooms for most of the remaining departments of language and literature. These buildings were erected out of the money derived from sales of land granted by the national government. Across the east front of the campus, at the foot of University hill, is a row of more recent buildings, all of them erected at the expense of the State of Wisconsin. To the south is Ladies' Hall, built in 1870, and used as a dormitory for young women; next stands the Library and Library Hall, completed in 1879. Still further to the north is Science Hall, the largest and most costly of the University buildings, completed in 1887, containing the recitation rooms, laboratories and museums of most of the scientific departments of the University, and of those of the College of Engineering. Next to Lake Mendota is the Chemical Laboratory, built in 1885, and behind this is the Machine Shop, erected in the same year. Half-way up the slope of University hill, on the south side, is the new building for the Law School, which will also afford rooms for the School of Economics, Political Science, and History. On the western summit of University hill is the Washburn Observatory, built in 1878 by the late Hon. C. C. Washburn, and presented to the University. Near it are the Students' Observatory and the astronomer's house. On the western slope of the hill is the building for the Dairy School, constructed in 1891, and near it is to be placed the Horticultural Building, whose erection was authorized by the legislature of 1893; while further to the west lie the numerous buildings of the Experimental Farm. Between the Lower Campus and the lake is placed the Armory and Gymnasium, authorized by the legislature of 1891, and now under construction.

GENERAL POLICY.

It is the general policy of the institution to foster the higher educational interests of the State, broadly and generously interpreted. It is its aim to make ample provision for the demands of advanced scholarship in as many lines as its means will permit. By prescribing a large

portion of the studies of the regular courses in the earlier years, and by leaving a large number in the later portion to the selection of the student, it endeavors to give a wise measure of direction and at the same time leave sufficient room for choice to encourage individual adaptation and special development.

The University strenuously avoids all that is sectarian or partisan; but it endeavors to extend its sympathy and influence to whatever contributes to good citizenship and high character.

The University recognizes no distinction of race, color, or sex. All who conform to its intellectual and moral requirements are equally entitled to its privileges.

GOVERNMENT.

The government of the institution rests upon the inherent obligation of students. The University is maintained at the public expense for the public good. Those who participate in its benefits are expected, as a matter of honor, not only to fulfill the obligations of loyal members of the institution, of the community, and of the commonwealth, but actively to aid in promoting their intellectual and moral interests. Every student owes to the public a full equivalent for its expenditure in his behalf, in the form of superior usefulness to it, both while in the institution and afterwards. Students therefore cannot claim any peculiar exemption from the duties of good citizens and of loyal members of the community and of the University; on the contrary they are under peculiar obligations loyally to fulfill every duty. As members of the institution, they are held responsible for regular attendance and the proper performance of their duties. The interests of faithful students and the well-being of the University demand that those who do not conform to these manifest obligations should withdraw from the institution or be excluded. As members of the community, students are amenable to the law; and, if guilty of its infraction, are liable to a termination of their relations with the University. The University recognizes its civic relations and rests its administration upon civic obligations.

The care of the students in their studies is placed in charge of class officers, chosen from the Faculty. Each division of the classes is under such an officer, who directs the work of the students, assigns to each his studies and reports his progress at the end of each term to his parent or guardian. The class officers receive all reports from instructors, both those on work completed at the end of the term and special reports of deficiency or failure on the part of individuals.

METHODS OF WORK.

The methods of work embrace those that have proved efficient in the experience of similar institutions. Recitations, emancipated from servile text-book work, hold a large place. Lectures, especially in the departments admitting of experimental and objective illustration, also occupy a large place. Freedom of discussion and questioning by the student accompany both methods. The laboratory system is fully employed in all the departments in which it is practicable.

The Seminary system has been introduced into the several departments to which it is adapted.

LIBRARIES.

The General University Library, including the department libraries catalogued therewith, contains about 29,000 books and 8,000 pamphlets. It is open to students every day from 8:45 A. M. to 6 P. M., excepting on legal holidays and Sundays. About 200 of the best American and foreign periodicals are taken. In addition there is on deposit the Owen library of works on French literature, numbering about 900 volumes. The College of Law has a special library of 2,300 volumes; and the Washburn Observatory is provided with the Woodman Astronomical Library, now containing 2,200 books and 1,600 pamphlets. Students also have free access to the State Law Library, comprising about 25,000 volumes, and by special arrangements are enabled to take out books from the free library of the City of Madison. This is a well-selected collection of over 12,000 volumes.

The library of the State Historical Society contains about 76,000 volumes and 77,000 pamphlets. It is exceptionally rich in manuscript and other material for the study of the history of the Mississippi valley. The collections of the late Dr. Lyman C. Draper are included in the library. Its files of newspapers and periodicals are among the most complete in the United States. There are over 5,000 volumes of bound newspapers published outside of Wisconsin, and the files cover, with but few breaks, the period from the middle of the seventeenth century to the present. There is an excellent collection of United States government documents, and the material for the study of American local history, Western travel, the Revolution, Slavery, and the Civil War, is unusually abundant. In English history the library possesses the Calendars of the State Papers, the Rolls Series, and other important collections, including works on local history. The Tank collection (Dutch) offers facilities for the study of the Netherlands. The library of the Historical Society is accessible to all students of the University, and thus affords exceptional facilities for the prosecution

of advanced historical work. The Historical Seminary of the University has been generously granted special facilities in the rooms of the library. The Historical, State, University, and City libraries afford duplicate copies of historical material most in use, and to a large extent supplement one another.

During the year 1892–93 the Regents of the University appropriated five thousand dollars for the supply of special works for the use of seminary students in the school of Economics, Political Science, and History. The works supplied by this fund afford good facilities for investigations of an advanced nature.

These library privileges are unsurpassed in the interior, and equaled by very few institutions in the country.

LABORATORIES.

CHEMICAL LABORATORIES.— The Chemical Laboratories, six in number, are in a building devoted exclusively to Chemistry. Three of these are general laboratories, viz:

First. The Qualitative Laboratory, with accommodations for ninety-six students; *Second.* The Organic Laboratory, accommodating thirty-two students; and, *Third.* The Quantitative Laboratory, accommodating forty-eight students.

These laboratories are large, well-lighted, conveniently arranged, and well supplied with the necessary apparatus and equipments.

Of the three special laboratories, one is for Gas-analysis, one for Urinalysis, and one for Toxicology.

Extensive additions will be made to the Chemical Laboratories during the present year, the legislature of 1893 having appropriated money for that purpose.

PHYSICAL LABORATORIES.— The Physical Laboratories contain an excellent outfit of apparatus of the latest designs and of the most approved manufacture. They embrace a very complete set of sound apparatus by Koenig of Paris, including a Scheibler's tonometer, a complete set of discs, pipes and forks to illustrate the production of combination tones, and a *sirene à onde,* in addition to the usual outfit of pipes, manometric flame apparatus, etc. In the department of optics may be especially mentioned large nicol prisms, two and one-half inches in diameter, a polariscope, spectfoscopes by Brashear and Steinheil, a very perfect optical comparator for small scales with screw by Rogers, a photometer, a projection apparatus, and plane and curved diffraction gratings by Rowland.

Among the thermal apparatus may be especially mentioned an air thermometer, calorimeters and other standard apparatus.

Among the electrical and magnetic apparatus are a complete set of Sir Wm. Thomson's instruments for electrical measurements, including a new form of magnetometer by Dr. Gray, electro-dynamometers, voltmeters, amperemeters, resistance boxes, galvanometers, condensers, and other test instruments for electrical engineering. There are also electrometers by Thomson and Edelmann, electric motors, storage batteries, a large Ruhmkorff coil, a Brackett cradle for measuring electrical power, a very full set of Crooke's tubes, switches, standards of electro-motive force, etc. There is a constant potential dynamo in the laboratory and a fifteen arc light dynamo in the Machine Shop with suitable connection with the laboratory.

THE MINERALOGICAL LABORATORY.—The Mineralogical Laboratory has reagents and other necessary apparatus for complete courses in blow-pipe analysis and determinative mineralogy. There is a collection of hand specimens of minerals for laboratory use, and for comparative purposes. The students also have access to the large collections in the cabinet. A small room has been fitted with curtains, to act as a goniometer room, and is supplied with a large reflection goniometer and the complete *Universalapparat* of Fuess and a goniometer lamp.

The mineralogical lecture room is supplied with a complete set of about 150 glass crystal models by F. Thomas, of Siegen, a selected series of wooden crystal models from Kranz, of Bonn; Bohm and Wiedermann's wave-surface and dispersion models; Brill's plaster models of surfaces of elasticity, etc.; Werlein's models to show the characters of dispersion in monoclinic crystals; and a series of axis-systems.

THE PETROGRAPHICAL LABORATORY.— The Petrographical Laboratory is large and well lighted. It contains at present fourteen microscopes, three by Voigt & Hochgesang, seven by Nachet, and four by Fuess, including one first-class stand by each of the last two. The large Fuess is supplied with an unusually complete set of excellent eye-pieces, objectives, and accessories. The laboratory has heavy liquids for separating rock constituents, and a Westphalen balance to determine their specific gravity. The collections of the laboratory are as follows: About 200 sections of minerals, cut in definite directions, 100 of which are Professor Klein's set as prepared by Voigt & Hochgesang; the Stürz set of European rock specimens and thin sections, known as the Rosenbusch collection; a set of American rocks, accompanied by thin sections, by Julien; and the thin sections of the State Geological Survey. There is also available the very extensive collection of rocks and thin sections from the Pre-Cambrian rocks of North America, belonging to the Lake Superior Division of the United States Geological Survey. This collection is one of the largest of its kind in

the world, containing over 10,000 thin sections, and is particularly valuable to advanced students.

The lecture room for geology is provided with a full set of reference manuals; a set of Zittel's Palæontologische Wandtafeln; a large relief map of the United States by E. E. Howells; a set of Shaler's models and photographs; a set of Davis's models showing the development of topographic features; numerous geological maps; a large collection of lantern slides; Newton's large electric projecting lantern, and other apparatus. The Newton lantern is adapted for projecting ordinary lantern slides, and has a front for microscopic slides which projects directly on the screen thin sections of rocks both in the ordinary and polarized light.

THE BIOLOGICAL LABORATORIES.— The elementary laboratory for the departments of botany and zoology is arranged to accommodate seventy-two students, and is provided with compound microscopes, dissecting microscopes, and other apparatus necessary to an elementary course in botany and zoology. The departments have about ninety compound microscopes, chiefly by Leitz and Bausch & Lomb, fitted for elementary and advanced work, including seven microscopes furnished with oil immersion objectives.

The laboratories for advanced work in botany are fitted up with the apparatus and reagents necessary to an advanced course in vegetable histology, and to a course in vegetable physiology. Among the more important pieces of apparatus are Ryder and Minot microtomes, a Vogel's direct vision spectroscope, a metallic registering thermometer, a clinostat and an auxanometer.

The laboratories for advanced work in zoology are two in number, one being devoted to bacteriology and histology, and the other to vertebrate anatomy and embryology. The histological laboratory is provided with a full equipment of the reagents, microtomes of various patterns, and microscopes necessary to a course in histology. In the laboratory for bacteriology, there is a fine set of apparatus for the study of bacteria, by Dr. Rohrbeck of Berlin, including the best patterns of thermostats and sterilizers. The anatomical laboratory is furnished with a collection of vertebrate skeletons and of wax models illustrating the development of some of the more important vertebrates and invertebrates. For illustrating the lectures in botany and in zoology, there are Auzoux models, both of plants and animals, an electric projecting lantern and microscope by Newton & Co., London, over 500 photograms for lantern use, a large number of wall charts, microscope slides, etc.

THE PSYCHOLOGICAL LABORATORY.— The laboratory is intended for practically illustrating the courses in psychology, for giving an

opportunity to the students of experimental psychology to study the methods of this promising and rapidly progressing science, and for the encouragement of original research under the guidance of the professor. Considerable apparatus has been purchased abroad and many pieces have been made at the machine shops of the University. The equipment includes æsthesiometers, test weights, pressure apparatus and other instruments for the study of the sense of touch, color-testing machines, eye-muscle model, revolving apparatus for discs, perimeter and stereoscopes, and a variety of accessory apparatus for the study of vision, a Hipp chronoscope, with a special control machine, a revolving drum, an Ewald interruption counter, tuning forks, induction coil, and accessory apparatus for the study of the duration of mental acts. Apparatus belonging to other departments is also available for demonstration and for other uses. Original research has been carried on for several years and the results published in the American Journal of Psychology; several series of studies from this laboratory have already appeared. Efforts will be made to supply the best opportunities for having students test for themselves the points studied and of illustrating the methods by which the results now accepted have been obtained. It is intended to make the laboratory an essential and important feature of the work in psychology.

The engineering, assaying, pharmacy and agricultural laboratories are described under their respective departments.

MUSEUMS.

THE GEOLOGICAL AND MINERALOGICAL MUSEUM.— The museum of the geological and mineralogical departments occupies the entire south wing of the second floor of Science Hall. Systematic collections of typical and impressive specimens have been arranged in glass cases, while the more extensive series for comparative purposes and the working collections are stored in drawers beneath.

Relief Models.— For illustration in general and structural geology the collection embraces large topographico-geological models of the Colorado Canon, the Henry Mountains, the Auvergne, the Yosemite Valley, the Uintah Mountains, Mt. Vesuvius, the Leadville Region, etc.

Palæontological Collection.— This embraces a considerable number of Ward and Howell's casts of gigantic fossil forms, including *Megatherium Cuvieri, Glyptodon,* the skull and tusks of *Elephas ganesa, Dinotherium* and *Mastodon,* and an unusually good set of Mesozoic reptilian forms. The fossils include a systematic collection, embracing all geological horizons, obtained by purchase, and the *Powers Collection,* the generous gift of Mr. H. C. Powers, of Chicago. This

latter collection is especially rich in fossils of the Trenton and other Silurian deposits of Wisconsin.

The collection of the Wisconsin Academy of Science, which contains the type specimens described in the official reports of the last State Geological Survey, is deposited in the museum and is accessible to students.

The Mineral Collection.— The systematic collection of minerals contains 2,500 to 3,000 specimens, representing the different groups and containing many rare specimens. With a view to the impressive illustration of mineralogical types, the larger and many of the smaller but choice specimens have been displayed in glass cases.

The Henry Collection of Minerals.— The University Museum contains the W. T. Henry collection, consisting of from 30,000 to 40,000 specimens. It is especially representative of the lead and zinc ore-deposits of southwestern Wisconsin and adjoining states, and is exceptionally complete in its exhibition of the various forms of ore, of the order of deposition, and of the pseudomorphic changes that have taken place in the original deposits. Crystallographically the collection is valuable from the specimens of calcite, cerusite, azurite, galena and sphalerite. The large number of duplicate specimens will be utilized in enlarging the collection by exchanges.

Rock Collection.— This collection is now stored in the petrographical laboratory, where it is daily accessible to students. It embraces Stürz's Rosenbusch collection of typical European rocks, and the Julien collection of typical American rocks, as well as a miscellaneous collection obtained from various sources.

Metallurgical Collection.— This collection, illustrating the metallurgy of the different metals, contains specimens representing the ores of each, and the products of the different reducing processes. It has been systematically arranged and placed in the mineralogical lecture room.

THE ZOOLOGICAL AND BOTANICAL MUSEUM occupies the entire third story of the south wing of Science Hall, directly above the geological museum. Among the specimens at present placed in the cases may be named a good collection of vertebrate selections; a large number of Blaschka glass models of invertebrates; an alcoholic collection of invertebrates from the Naples Zoological Station; representative collections of echinoderms, corals and mollusks. The botanical cases contain a collection of Auzoux models of flowers and a collection of specimens of wood. The Owen collection of Lepidoptera, comprising five thousand species, and over twenty thousand specimens, is deposited in Science Hall.

THE HERBARIUM of the University (Room 41, Science Hall) includes the Lapham collection, chiefly of flowering plants, purchased by the State from the estate of I. A. Lapham, of Milwaukee. This contained about 8,000 species. These have been recently mounted and arranged, and are now accessible for consultation. The Wisconsin plants have been separated from the rest, and it is the intention to make them a basis of a complete representation of the Wisconsin flora. The first large addition in this direction has been through the presentation by Mr. L. S. Cheney of his private collection. Mr. Lapham's collection also included a considerable number of algae, lichens, and mosses. The collection of mosses has now been very greatly extended, so that it includes almost all of the species known in North America, and a large number of those of other countries, Many valuable sets of exsiccati are included.

When the museums are not open to the public, access may be gained by visitors at all reasonable hours by calling upon the janitor of the building, whose room is on the ground floor of Science Hall.

THE WASHBURN OBSERVATORY.

The Washburn Observatory is excellently equipped for astronomical work. Its principal instruments are: An equatorially mounted telescope of 15½ inches aperture, constructed by Alvan Clark and Sons, and provided with graduated circles, driving clock, a filar micrometer, and a very complete set of eye-pieces; a meridian circle, by A. Repsold and Sons, of Hamburg, with collimators, and the usual accessories of such an instrument. This instrument is figured in the last edition of the Encyclopædia Britannica as the type of its class. The objective of the instrument was made by the Clarks, and has an aperture of 4.8 inches and a focal length of 58 inches. The circle is graduated to 2′. A floating mirror has been added to this instrument as an auxiliary for the determination of its horizontal points and flexures. There are also a sidereal clock by Höhwü, of Amsterdam, two mean-time clocks by Howard, of Boston, all excellent time-pieces, and a chronograph, by Fauth & Co., of Washington.

In the Students' Observatory are mounted a six-inch equatorial telescope, by Alvan Clark and Sons, a combined transit and zenith telescope, by Fauth and Co., and a transit instrument of the broken telescope type, by Bamberg. These instruments, while primarily intended for instruction, are well adapted to and are employed for certain classes of original work. In particular, the equatorial telescope has been provided with reflecting prisms (Loewy), and employed as one of the principal instruments of the Observatory in an investigation of the re-

fraction and the constant of aberration, and the Bamberg instrument is used for latitude determinations by the Talcott method. The Observatory also possesses a considerable number of subsidiary instruments, such as chronometers, sextants, an altazimuth, a universal instrument of the German type, a spherometer caliper, seismoscopes, and a complete set of meteorological instruments.

The Woodman Astronomical Library, established in connection with the Observatory, possesses a large and valuable collection of works upon astronomy and kindred subjects.

The working force of the Observatory has for some years been largely devoted to the determination with the meridian circle of accurate positions of the fundamental stars, including a study of the errors of the instruments and a precise determination of the latitude of the Observatory.

The large equatorial has been employed in the measurement of double stars, variable stars and the occasional observation of planets, comets, and phenomena of current interest.

Meteorological observations are regularly taken and communicated to the Weather Bureau at Washington.

Students of sufficient technical attainments are admitted to the Observatory, and take part in the investigations in progress. Meritorious original work of such students will be included in the publications of the Observatory.

PUBLICATIONS.

By provision of law the results of important investigations conducted at the Washburn Observatory are published by the State, and under this provision seven volumes, representing the more important work done at the Observatory, have been issued. Volume VIII is now in press.

PHYSICAL TRAINING.

Military drill is required of the young men of the Freshmen and Sophomore classes, and of special students of the first two years' attendance. The lower campus, a level area, furnishes space for base ball, foot ball, and other physical sports. Tennis courts are also provided. The University is situated on the shores of Lake Mendota, a beautiful sheet of water, which invites exercise and recreation in boating. The University Boat House Association has just erected a boat house at a cost of over $4,000.

NEW ARMORY AND GYMNASIUM.

Through the liberal appropriation made by the legislature of 1891 means are provided for the construction of a new Armory and Gym-

nasium of the most approved order. The building, now in process of construction, is two hundred feet in length, ninety-eight feet in width, and three stories in height. On the ground floor there are to be commodious accommodations for bathing, including a swimming tank eighty feet in length by twenty-eight in width, a room for squad and company drill, lockers for six hundred students, four bowling alleys, and room for the practice of the minor gymnastics. On the main floor, besides the necessary offices, there is an unobstructed hall one hundred and sixty-two by ninety-three feet in dimensions, for the purposes of military drill and gymnastic practice. On the third floor are two rifle ranges, a running track, and a base ball cage one hundred and forty feet in length. The construction of the building is so far advanced as to justify the expectation that it will be ready for use in the course of the collegiate year 1893–94.

GYMNASTICS FOR WOMEN.

Systematic courses in Gymnastics for women are maintained in Ladies' Hall under the immediate direction of a trained instructor, a graduate of Allen's Gymnasium of Boston, and under the general supervision of a thoroughly educated physician.

DEGREES.

FIRST DEGREES.

The baccalaureate degrees are conferred at graduation upon those who have successfully completed the regular courses leading to degrees, and who have conformed with the requirements of the University. The degrees for the several courses are as follows:

ACADEMIC.

BACHELOR OF ARTS, for the Ancient Classical Course.
BACHELOR OF SCIENCE, for the General Science Course.
BACHELOR OF LETTERS, for the Modern Classical, English and Civic-Historical Courses.

PROFESSIONAL.

BACHELOR OF LAWS, for the Law Course.
GRADUATE IN PHARMACY, for the Pharmaceutical Course.
BACHELOR OF SCIENCE IN PHARMACY, for the Four Years' Pharmacy Course.

TECHNICAL.

BACHELOR OF SCIENCE IN AGRICULTURE, for the Agricultural Course.
BACHELOR OF SCIENCE IN ENGINEERING, for the courses in Civil Engineering, Mechanical Engineering, Mining and Metallurgical Engineering, Electrical Engineering.

A graduate of any one of the courses may receive the baccalaureate degree of any other course by completing the additional studies required in that course, but two baccalaureate degrees cannot be taken in one year.

SECOND DEGREES.

The degrees of Master of Arts, Master of Letters and Master of Science are conferred upon graduates at the University who have previously taken the degrees of Bachelor of Arts, Bachelor of Letters and Bachelor of Science respectively, and who, after graduation, have pursued an approved course of study equivalent to the work of one year of graduate studies in the University, and who present a satisfactory thesis upon the leading subject pursued. This work may be done at the University or elsewhere, but if it is not done at the University, or in connection with some institution of high rank, it will be

assumed that a longer time and a larger nominal amount of study will be requisite to give the equivalent attainment, and the degree will not be conferred until three years after graduation. The work must be in the general line of advanced study implied by the degree sought, and must be approved by the Committee of the Faculty having the subject in charge. Two-thirds of this study must be devoted to one department or to closely allied departments. Study for a profession will not be accepted, but original investigation in connection with a profession, or special and scholarly study collateral to it, may be accepted, in the discretion of the Faculty. An examination upon the work done is required, and a thesis showing creditable original research must be presented at least one month before the close of the academic year.

Graduates of this or of similar institutions who pursue the course in law at the University, and who, by reason of their superior training, are able to take additional studies advantageously, may receive a second degree on graduation from the Law School on condition of having satisfactorily pursued graduate studies equivalent to five hours a week during the two years of their course, and by conforming to the other required conditions.

The degrees of Civil Engineer, Mechanical Engineer, Mining Engineer, Metallurgical Engineer and Electrical Engineer are conferred as second degrees upon Bachelors of Science in the Civil, Mechanical, Mining and Metallurgical and Electrical Engineering Courses respectively, (1) who pursue advanced professional study at the University for one year, and present a satisfactory project or thesis; or (2) who present suitable evidence of three years of professional work, of which one must be in a position of responsibility, accompanied by professional study.

The degree of Master of Pharmacy will be conferred upon graduates in pharmacy who satisfactorily complete a course of one full year (three terms) at the University in advanced pharmacy, or in some science or sciences specially allied to pharmacy, and who shall present a satisfactory thesis embodying the results of original investigation.

The University offers its higher degrees to graduates of other colleges of high standing who shall reside at the University and pursue the requisite studies under the immediate direction of the Faculty.

The Committees on second degrees are as follows:

For the degree of M. A., Professors Kerr and Hendrickson.

For the degree of M. L., Professors Parkinson, Freeman and Stearns.

For the degree of M. S., Professors Daniells and Birge.

For all the second degrees in Engineering, the Engineering Board.

For higher degrees in Pharmacy, Professors Kremers and Daniells.

THIRD DEGREES.

The degree of Doctor of Philosophy will be conferred upon successful candidates after three years of graduate study, of which the last year or the first two years must be pursued at this University. This degree will not, however, be conferred simply on the ground of the completion of the prescribed study. Special attainments are requisite; particularly the power of original thought and independent investigation. Two-thirds of the study must be devoted to some one subject or closely allied group of subjects, and a thesis must be presented which shall give evidence of original research and independent treatment. The applicant must announce himself as a candidate at least as early as the beginning of his last year of study, and his thesis must be placed in the hands of the appropriate committee of the Faculty at least two months before the close of the academic year. The subject of the thesis must have the approval of the head of the department in which the major subject is carried on as early as November 1st of the collegiate year in which the candidate expects to take his degree. In case the candidate is successful, he is required to put his thesis into print and deposit twenty-five copies of the same in the Library of the University.

HONORS IN SPECIAL STUDIES.

Honors are given at graduation for special work of high order of excellence done in any department. Such honors will be voted by the Faculty to those students whose graduation theses show exceptional excellence and who have completed with unusual success a long course of study in the department in which the thesis is presented. Students desiring to become candidates for special honors in any department must make application to the Faculty at the opening of the winter term through the professor in whose department the honors are sought.

FELLOWSHIPS.

THE JOHN JOHNSTON FELLOWSHIP.

The Hon. John Johnston, of Milwaukee, has generously established a fellowship of $400 per annum for two years. In the nomination of candidates for this fellowship preference will be given, other things being equal, to excellence and promise in the department of Mechanic Arts, and to residents of Milwaukee county; but the appointments will not necessarily be limited to those complying with these restrictions.

UNIVERSITY FELLOWSHIPS.

For the purpose of promoting higher scholarship and more extended original study than the academic courses afford, the Board of Regents has established eight University Fellowships of $400 each, conditioned upon proper qualifications and upon a prescribed amount of instruction rendered in the University.

The following are the regulations respecting these fellowships:

1. Any fellowship to which the present regulations apply may be held by any graduate of a college of recognized standing or any one whose education is equivalent to that represented by a college degree. Those about to take such a degree are eligible as candidates, the regulations applying to the time of entrance upon the duties of the fellowship. The sexes are equally eligible.

2. Fellowships will be granted upon application only; such application, with accompanying evidence of merit, attainment, and ability, to be in the hands of the President before May 1st of the collegiate year preceding that during which the fellowship is held. The recommendations of fellows shall be made by the Faculty in the month of May.

3. All fellowships will be filled each year. Fellows may be re-elected for one additional year only.

4. Applications must be accompanied by evidence of scholarship, ability, and general worthiness; such as theses (whether prepared for this or other purposes), published writings, testimonials from instructors, outline of educational course pursued, special distinctions gained, and the like. Applications for re-appointment should contain a full account of the work of the preceding year. Applications to receive attention must contain a definite statement of the special studies which the applicant intends to pursue.

5. The fellowships will be assigned to the several departments according to the studies which the fellows intend to pursue; and all applications with accompanying testimonials will be examined by the head of the department upon which the candidates' studies have special bearing. The manner of election will be as follows:

At a meeting of the Faculty in the month of May (which meeting shall be duly announced as the meeting for the election of fellows), the President shall call upon the several heads of the departments in which applications have been received to make a statement of the merits of the candidates in their departments; after all such statements have been made, the members of the Faculty will then cast their ballots for as many candidates as there are fellows to be elected, and those receiving the highest number of votes (provided that each receive a majority of the votes cast) shall be recommended to the Board of Regents for appointment to fellowships.

6. Each fellow shall pursue his studies under the direction of the professor or professors in charge of his special studies, and such professor or professors shall report semi-annually to the Faculty regarding the progress of such studies. The assignment of University services to the fellows shall be made by the President in consultation with the head of the department to which the fellow has been assigned. The work assigned will be equivalent to (at least) one hour of teaching, daily, or the supervision of laboratory work for two hours daily.

7. Vacancies in fellowships due to resignation or other causes may be filled as they occur at the option of the Faculty.

SCHOLARSHIPS.

THE JOHN A. JOHNSON SCHOLARSHIPS.

The University is indebted to the liberality of the Hon. John A. Johnson, of Madison, for ten scholarships of the annual value of about $35 each, established under the following conditions:

The sum received by one student in one year shall not exceed $50, nor the sum received during his college course exceed $200. Until the year 1900 the sum will be limited to students speaking one of the Scandinavian languages (Norse, Swedish, Danish or Icelandic). No student can receive aid from this fund unless he has attended a common school one year, or has attended the University one year. The recipient of aid will be expected to return the money received by him to the fund, if he shall at any time be able to do so. The income of the fund will be dispensed by a committee of the Faculty. This committee consists of the President of the University and Professors Olson and Bull.

THE JOHN JOHNSTON SCHOLARSHIP.

The Hon. John Johnston, of Milwaukee, has generously offered a scholarship of $250 per annum for a period of four years, to be awarded to a student of limited pecuniary resources, resident of Milwaukee county; said scholarship to be awarded to the student applying for admission to the University who has passed the best accredited examination, and upon other conditions to be determined by the two regents residing in or nearest to Milwaukee county and the principal of the Milwaukee High School, with the approval of Mr. Johnston.

THE MITCHELL SCHOLARSHIPS.

The Hon. John L. Mitchell has given to the College of Agriculture forty scholarships of $100 each, for the benefit of the students in the short course in agriculture. Special mention of these scholarships is made under the College of Agriculture.

SCHOLARSHIPS IN HEBREW AND HELLENISTIC GREEK.

Friends of the study of Hebrew and Hellenistic Greek have given for the current year three scholarships of $150 each, four scholarships of $50 each, and two scholarships of $25 each.

These scholarships and probably others will be given for the year 1893–4. More complete announcement will be made later by circular. The scholarships are for superior attainment only.

The University Christian Association has given a fellowship of $400 for the current year.

UNIVERSITY EXTENSION.

The extra-collegiate work of the University assumes two phases: First, the industrial or professional; second, the cultural. The first embraces the Farmers' Institutes and the Teachers' Institute Lectures. The work of the former of these will be found set forth under the College of Agriculture; the latter consists of about forty lectures given annually at as many different teachers' institutes held in various portions of the State. These lectures aim to promote advanced work in the teacher's profession, and at the same time foster higher and broader educational views among the people.

The other phase of the work takes the form of University Extension. At the opening of the year 1892–93, thirty-two courses of six lectures each were offered, as follows:

English School of Philosophy; History of Ethics, by Prof. J. W. Stearns.

English Literature; Shakespeare, by Prof. J. C. Freeman.

Development of the English Drama, by Mr. F. M. Tisdel.

Early Scandinavian Literature, by Prof. J. E. Olson.

Greek Literature, by Prof. A. Kerr.

Greek Life, by Prof. F. L. Van Cleef.

Growth of Language, by Prof. H. C. Tolman.

Socialism, by Prof. R. T. Ely.

American Politics, by Mr. L. P. Powell.

Six Great American Statesmen, by Mr. P. S. Reinsch.

English Constitution; Practical Economics, by Prof. J. B. Parkinson.

The Labor Problem, by Mr. F. W. Speirs.

Economic Problems of the Day, by Prof. W. A. Scott.

Money; Social Topics; the Labor Question, by Mr. D. Kinley.

The Making of Wisconsin, by Mr. R. G. Thwaites.

Colonization of North America, by Prof. F. J. Turner.

Classes in History of Middle Ages, France and England, by Mrs. Anna R. Sheldon.

Bacteriology, by Prof. E. A. Birge.

Physiology of Plants, by Prof. C. R. Barnes.

Geology; Two courses, by Mr. G. E. Culver.

Physiology, by Dr. John M. Dodson.

Electricity; Light, by Dr. H. B. Loomis.

Chemistry, by Prof. H. W. Hillyer.

Chemistry of the Alkaloids and Ptomaines; Chemistry of Camphors and Terpenes, by Prof. E. Kremers.

Astronomy, by Prof. G. C. Comstock.

Mathematics, by Prof. C. A. Van Velzer.

Courses were given in the following places:

Milwaukee, 6; Chicago, Ill., 4; Galesburg, Ill., 3; Oshkosh, Platteville, Racine, La Crosse, Lake Mills, two each; Baraboo, Belleville, Chippewa Falls, Eau Claire, Fond du Lac, Grand Rapids, Marshfield, Minneapolis, Minn., Neenah, Sheboygan, Sparta, Stevens Point, Washburn, Wausau, West Superior, Weyauwega, Winona, one each.

Besides these regular courses of University Extension lectures, Mrs. Anna R. Sheldon conducted study classes for women in the History of the Middle Ages, France, and England; giving four courses in Madison, three in Milwaukee, and one in Kenosha.

Various methods were employed by the local organizations to meet the expenses of the course. In most cases a moderate fee was charged, and this, with few exceptions, was found sufficient to meet the entire expenses, and in most instances some residue remained. The charges for the courses during the past year were $90 for the six lectures, together with the necessary traveling expenses of the lecturer. A synopsis of the lectures is furnished gratuitously to each member of the class.

Announcements of the courses offered for next fall and winter may be expected about the opening of the University year.

COLLEGE OF LETTERS AND SCIENCE.

CORPS OF INSTRUCTION.

The President of the University.
E. A. Birge, Dean and Professor of Zoology.
C. R. Barnes, Professor of Botany.
G. C. Comstock, Professor of Astronomy.
W. W. Daniells, Professor of Chemistry.
J. E. Davies, Professor of Electricity and Magnetism and Mathematical Physics.
R. T. Ely, Professor of Political Economy.
D. B. Frankenburger, Professor of Rhetoric and Oratory.
J. C. Freeman, Professor of English Literature.
Almah J. Frisby, Preceptress and Professor of Hygiene.
C. H. Haskins, Professor of Institutional History.
G. L. Hendrickson, Professor of Latin.
H. W. Hillyer, Assistant Professor of Organic Chemistry.
W. H. Hobbs, Assistant Professor of Mineralogy and Metallurgy.
F. G. Hubbard, Assistant Professor of English Literature.
Joseph Jastrow, Professor of Experimental and Comparative Psychology.
Alexander Kerr, Professor of Greek.
H. J. McGrath, Professor of Military Science and Tactics.
J. E. Olson, Professor of Scandinavian Languages and Literature.
E. T. Owen, Professor of the French Language and Literature.
F. A. Parker, Professor of Music.
J. B. Parkinson, Professor of Constitutional and International Law.
J. M. Parkinson, Assistant Professor of Civil Polity.
W. H. Rosenstengel, Professor of the German Language and Literature.
W. A. Scott, Assistant Professor of Political Economy.
C. S. Slichter, Professor of Applied Mathematics.
J. W. Stearns, Professor of Philosophy and Pedagogy.
H. C. Tolman, Assistant Professor of Sanskrit and Instructor in Latin.
F. J. Turner, Professor of American History.
F. L. Van Cleef, Professor of Greek.

C. R. Van Hise, Professor of Geology.
C. A. Van Velzer, Professor of Mathematics.
W. H. Williams, Professor of Hebrew and Hellenistic Greek.
Clara E. S. Ballard, Instructor in Gymnastics.
W. B. Cairns, Instructor in Rhetoric.
Lucy M. Gay, Instructor in French.
A. A. Knowlton, Instructor in Rhetoric.
H. B. Loomis, Instructor in Physics.
W. S. Miller, Instructor in Biology.
H. L. W. Otto, Instructor in French.
Harriet T. Remington, Instructor in German.
W. G. Sired, Instructor in Music.
E. B. Skinner, Instructor in Mathematics.
Susan A. Sterling, Instructor in German.
F. M. Tisdel, Instructor in Elecution.
Elsbeth Veerhusen, Instructor in German.

ADMISSION TO THE FRESHMAN CLASS OF THE UNIVERSITY.

There are three methods of admission to the University:

I. By examination at the University.
II. By special local examinations under the supervision of an authorized agent of the University; and
III. By certificates from accredited schools.

I. Examinations at the University.

The regular examinations of the University are two in number; one in June and one in September. The earlier one is intended for those who wish to be examined while fresh from their preparatory studies and thus to set at rest all doubt as to their admission; and for those who wish to test their qualifications at an early date that they may have time to make up deficiencies if necessary. The September examination immediately precedes the opening of the fall term.

For the current year the earlier examination will be held on Thursday and Friday, June 14th and 15th, beginning at 9 o'clock A. M. The later examinations will be held on Tuesday and Wednesday, September 12th and 13th, beginning at 9 o'clock A. M. Students who are in any doubt as to their qualifications are urged to present themselves at the earlier examination.

Examinations will also be held on the opening day of the winter and the spring terms.

The examinations will cover the following topics:

GROUP I. Subjects required of all candidates.

Geography, political and physical.

History of the United States; Montgomery's or Johnston's History of the United States.

Arithmetic.

Algebra, through theory of indices in Van Velzer and Slichter's School Algebra or an equivalent amount in other texts.

Geometry, Wentworth's, plane, solid, and spherical.

English. 1. An analysis of short extracts from prose and poetry, as to forms and meanings of words, structure of sentences, paragraphing and figures of speech.

2. Each candidate will be required to write a short essay on a subject to be announced at the time of the examination. The essay will be taken as a test of a candidate's knowledge of spelling, punctuation, use of capital letters, grammar, structure of sentences and paragraphs. The subjects will be selected from the following works. It is expected that the student by careful reading will make himself familiar with the characters, incidents and plots:

1894 — Shakespeare's Julius Cæsar and Merchant of Venice, Scott's Lady of the Lake, Addison's Roger de Coverley papers, Macaulay's Second Essay on the Earl of Chatham, Emerson's American Scholar, Irving's Sketch Book, Dickens' David Copperfield.

1895 — Shakespeare's Merchant of Venice and Twelfth Night, Milton's L' Allegro, Il Penseroso, Comus and Lycidas, Longfellow's Evangeline, Addison's Roger de Coverley papers, Macaulay's Essay on Milton and Essay on Addison, Webster's first Bunker Hill Oration, Irving's Sketch Book, Scott's Ivanhoe.

It is recommended (1) that the pupil use annotated editions of the above, which are now furnished by several publishers at very reasonable prices; (2) that the pupil make daily use of the unabridged dictionaries; (3) that a review of the principles of English grammar be taken in the latter part of the preparatory course; (4) that in the reading of the above works the pupil have regard to the principles of rhetoric; (5) that the pupil present weekly exercises in original composition during the latter half of the preparatory course. The themes of the compositions should be taken from the above works or from other subjects which he is studying.

GROUP II. Requirements for admission to the Ancient Classical Course:

a. The studies enumerated in Group I.

b. Latin: Grammar; Reader; Cæsar, four books; Cicero, seven orations; Virgil, six books; Composition, forty lessons of Jones' composition, or an equivalent.

c. Greek: Grammar; Lessons; Xenophon's Anabasis, four books; Homer's Iliad, three books, or an equivalent amount of Xenophon's prose; Greek composition.

d. Ancient History: Myers' and Allen's Ancient History; Myers' Ancient History or Fyffe's Greece and Creighton's Rome.

English History: Gardiner's English History for Schools, or Montgomery's Leading Facts of English History.

GROUP III. Requirements for admission to the Modern Classical Course:

a. The studies enumerated in Group I.

b. Latin as stated in Group II, b.

c. History as stated in Group II, d.

d. German: Correct pronunciation, the essentials of grammar (Collar-Eysenbach's, Joynes-Meissner's, Whitney's, etc.), and the ability to apply them (two terms' work); acquisition of a vocabulary sufficient to enable students to read and translate sixty reading lessons in any standard reader correctly and understandingly; practice in the oral use of German in connection with the reading lessons, and the memorizing of from 9 to 12 German poems (two terms' work), and the careful study of at least two plays (Minna von Barnhelm, Der Neffe als Onkel, Die Journalisten, etc.; two terms' work).

GROUP IV. Requirements for admission to the General Science Course:

a. The studies named in Group I.

b. German as stated in Group III, d, or an equivalent amount of French.

c. Physics: Gage or Avery, with laboratory work.

d. Physiology: Martin's The Human Body (briefer course).

e. Botany: Gray's Lessons, with plant analysis and description.

f. Adaptive Work: amounting to one daily recitation for two years. This may consist of various subjects. The University advises

1. Two years' daily work in French or Latin; or,

2. One year's work in history, equivalent to that stated in Group II, d; and

One year's work in English literature, as stated in Group V, c.

If these studies cannot be taken, a selection from the following studies may be offered:

3. Rhetoric, Civil Government, Mental Science, Theory and Art of Teaching, Zoology, Astronomy, or other science. No subject can be offered which has been pursued in high school for a shorter time than twelve weeks, or which is less in amount than a standard high school text-book on

the subject. The total amount offered must be the equivalent of a daily recitation for two years. The two years' work may be made up of these studies in any combinations, under the conditions stated above.

GROUP V. Requirements for the Civic-Historical and English Courses.

a. The studies named in Group I.

b. History as prescribed in Group II, d.

c. English Literature: Reed and Kellogg's Manual; Careful study of representative writers. The whole to be equal to a daily recitation for one year.

d. Science as prescribed in Group IV, c, d, e.

e. Adaptive work as stated in Group IV, f.

Students entering these courses are advised to present either Latin, French, or German as their adaptive work. Candidates not presenting any foreign language are urged to make a thorough review of English grammar. Experience has shown that a not inconsiderable number of students fail in French and German at the University from deficient preparation in English grammar.

CHANGE OF TERMS OF ADMISSION TO THE CIVIC-HISTORICAL COURSE.

In 1895 the terms of admission to the Civic-Historical Course will be changed, so as to agree with those now demanded of candidates for the Modern Classical Course; except that an equivalent amount of history, English literature or science as now required for the Civic-Historical Course may be substituted for German.

Real equivalents will be accepted for the requirements given above. Students desiring admission into any course must present those requirements which are essential to the work of the course.

Conditions in entrance examinations will be limited to those cases in which the Board of Examiners think that the maturity and strength of the student will allow him to carry the regular work of his course and make up the conditions.

ADMISSION TO THE ELEMENTARY GREEK CLASS.

As Greek is given in but few high schools, a special concession is made to those who wish to take the Ancient Classical Course in the University. An Elementary Greek Class is provided, for admission to which Greek will not be required. In Latin, four books of Cæsar and four orations of Cicero will be required. Otherwise the requirements will be the same as for the Ancient Classical Course. This preparation may be secured by taking the Modern Classical Course recommended by the State Superintendent through the first three

years, substituting geometry in the place of German in the third year. Students who thus take their elementary Greek in the University must expect to take five years for completing the Ancient Classical Course.

ADMISSION OF SPECIAL STUDENTS.

Candidates under twenty-one years of age desiring to take special courses will be required to present the same qualifications as candidates for one of the regular courses.

Persons twenty-one years of age, who are not candidates for a degree, and who wish to take special studies, will be permitted to do so upon giving satisfactory evidence that they are prepared to take the desired studies advantageously. If they subsequently desire to become candidates for a degree, or to take a regular course, they must pass the required entrance examinations.

II. ADMISSION BY SPECIAL LOCAL EXAMINATIONS.

To save expense and embarrassment to those who live at a considerable distance from the University, special local examinations will be given when satisfactory arrangements can be made. Upon request, questions will be sent to any principal or county superintendent who will consent to supervise the examination for the accommodation of the candidate. The questions are to be submitted under the usual restrictions of a written examination, and the answers returned to the University accompanied by the indorsement of the principal or superintendent that the examination has been properly made. The student desiring to take advantage of this provision must secure the consent of the proper person to take charge of the examination, and make request to the President of the University to have the questions sent. The proper time for such an examination is that of the earlier examination of the University, June 15, 16. Exceptions may be made for special reasons. It is very desirable, however, that all papers should be returned to the University before Commencement, as the professors in charge of examinations usually separate immediately after that event. No papers will be sent out after June 14.

III. ADMISSION UPON CERTIFICATE.

ACCREDITED SCHOOLS.— Any high school or academy whose course of instruction covers the branches requisite for admission to one or more of the courses of the University may be admitted to its accredited list of preparatory schools after a satisfactory examination by a representative of the University. Application for such an examination may be made by an officer of the school to the President of the University, on the basis of which a representative of the University

will examine the course of study and the methods of instruction of the school, and on his favorable recommendation, and the concurrence of the Faculty, it will be entered upon the accredited list of the University. No school will be placed upon the list whose course of study is not fully equal to the four-year course for high schools recommended by the State Superintendent. The *graduates* of such an approved school will be received by the University, on presentation of a proper certificate, into any of its courses for which they have been fitted. Students of an accredited school who are not graduates must expect examination as other candidates.

A school once entered upon the accredited list will remain there until its administration is changed, or until notice is given by the University of unsatisfactory results. Upon a change of administration, application for continuation upon the list, if desired, must be made. If the work of the principal coming into charge has been recently examined in connection with some other school, a new examination may not be required, but such examination should in all cases be invited. The necessary expenses attending the visit of the representative of the University are to be met by the school under examination.

Principals of accredited schools are requested to note the statements regarding English, German, and adaptive work under terms of admission, pp. 39, 40; and their attention is directed especially to the change in terms of admission to the Civic-Historical Course after 1895.

ACCREDITED HIGH SCHOOLS.

FOR ALL COURSES.

Beloit High School	A. J. ROTE, Principal.
Chicago (Ill.) High School . .	A. G. LANE, Superintendent.
Fond du Lac High School .	E. MCLOUGHLIN, Principal.
Janesville High School . . .	F. W. COOLEY, Principal.
La Crosse High School . . .	ALBERT HARDY, Principal.
Madison High School	J. H. HUTCHINSON, Principal.
Marinette High School . . .	C. M. MCMAHON, Principal.
Milwaukee High School . . .	A. J. ROGERS, Principal.
Monroe High School	J. A. MITCHELL, Principal.
Rockford (Ill.) High School . .	WALTER A. EDWARDS, Principal.

FOR ANCIENT CLASSICAL, GENERAL SCIENCE, ENGLISH, ENGINEERING, PHARMACY AND AGRICULTURAL COURSES.

Oshkosh High School	R. H. HALSEY, Principal.

FOR MODERN CLASSICAL, GENERAL SCIENCE, ENGLISH, ENGINEERING, PHARMACY AND AGRICULTURAL COURSES.

Austin (Ill.) High School	Newell D. Gilbert, Superintend't.
Baraboo High School	E. C. Wiswall, Principal.
Black River Falls High School	J. H. Derse, Principal.
Brodhead High School	F. E. McGovern, Principal.
Burlington High School	C. W. Rittenberg, Principal.
Darlington High School	J. T. Hooper, Principal.
Decorah (Iowa) High School	S. S. Townsley, Principal.
De Pere High School	C. H. Burgess, Principal.
Dodgeville High School	L. L. Clarke, Principal.
Eau Claire High School	M. S. Frawley, Principal.
Elkhorn High School	J. T. Edwards, Principal.
Freeport (Ill.) High School	Miss Francis A. Rosebrugh, Prin.
Green Bay High School	M. C. Andrews, Principal.
Lancaster High School	C. L. Harper, Principal.
Mayville High School	L. S. Kelley, Principal.
Neillsville High School	E. B. Oakley, Principal.
Prairie du Chien High School	F. G. Kraege, Principal.
Sheboygan High School	J. E. Riordan, Principal.
Waupaca High School	F. A. Lowell, Principal.
Whitewater High School	E. W. Walker, Principal.

FOR MODERN CLASSICAL, GENERAL SCIENCE, ENGINEERING, PHARMACY AND AGRICULTURAL COURSES.

Appleton High School	O. H. Ecke, Principal.
Beaver Dam High School	H. B. Hubbell, Principal.
Delavan High School	H. A. Adrian, Principal.
Evansville High School	L. E. Gettle, Principal.
Fort Atkinson High School	D. D. Mayne, Principal.
Neenah High School	G. S. Parker, Principal.
Prescott High School	J. Goldsworthy, Principal.
Racine High School	A. J. Volland, Principal.
Sparta High School	J. W. Livingston, Principal.
Stevens Point High School	H. A. Simonds, Principal.
Tomah High School	G. W. Reigle, Principal.
Viroqua High School	Taylor Frye, Principal.
Watertown High School	C. F. Viebahn, Principal.
West De Pere High School	A. B. Dunlap, Principal.

FOR GENERAL SCIENCE, ENGLISH, ENGINEERING, PHARMACY AND AGRICULTURAL COURSES.

Ashland High School	C. M. Gleason, Principal.
Boscobel High School	L. L. Lightcap, Principal.

Columbus High School	M. H. JACKSON, Principal.
Edgerton High School	F. M. JACK, Principal.
Fox Lake High School	W. N. PARKER, Principal.
Galena (Ill.) High School	A. J. WILLIAMS, Principal.
Grand Rapids High School	W. H. LUEHR, Principal.
Horicon High School	E. T. JOHNSON, Principal.
Hudson High School	E. P. FROST, Principal.
Kenosha High School	FRANK CLEARY, Principal.
Lodi High School	J. E. NECOLLINS, Principal.
Mazomanie High School	R. F. SKIFF, Principal.
Menasha High School	F. W. BUCHHOLZ, Principal.
Menomonie High School	J. E. HOYT, Principal.
New Lisbon High School	G. H. LANDGRAF, Principal.
New Richmond High School	T. H. LAGE, Principal.
Oregon High School	ARTHUR SHOLTZ, Principal.
Ripon High School	M. A. HESTER, Principal.
Sauk City High School	J. S. ROESELER, Principal.
Shullsburg High School	M. M. WARNER, Principal.
Wausau High School	CHAS. MATHIE, Principal.
West Bend High School	L. E. AMIDON, Principal.

FOR GENERAL SCIENCE, ENGINEERING, PHARMACY, AND AGRICULTURAL COURSES.

Mineral Point High School	A. R. JOLLEY, Principal.
Portage High School	W. G. CLOUGH, Principal.
Poynette High School	A. M. LOCKER, Principal.

FOR ENGLISH, AGRICULTURAL, AND PHARMACY COURSES.

Arcadia High School	J. I. JEGI, Principal.
Chippewa Falls High School	C. M. BOUTELLE, Principal.
Durand High School	J. W. NESBIT, Principal.
Elroy High School	H. B. LATHE, Principal.
Hartford High School	P. T. NELSON, Principal.
Jefferson High School	I. PETERSON, Principal.
Kewaunee High School	M. MCMAHON, Principal.
Lake Mills High School	H. L. TERRY, Principal.
Marshall High School	WM. FOWLIE, Principal.
Mauston High School	W. L. MORRISON, Principal.
Necedah High School	WILLIAM F. SELL, Principal.
Oconomowoc High School	O. J. SCHUSTER, Principal.
Reedsburg High School	A. B. WEST, Principal.
Richland Center High School	T. H. HANEY, Principal.

Sharon High School	J. G. SKEELS, Principal.
Shawano High School	W. H. HICKOK, Principal.
Spring Green High School . .	J. D. ROUSE, Principal.
Stoughton High School . . .	A. T. CORSTVET, Principal.
Sun Prairie High School . . .	JAMES MELVILLE, Principal.
Washburn High School . . .	H. W. ROOD, Principal.
Waterloo High School . . .	J. G. ADAMS, Principal.
Wauwatosa High School . . .	A. W. SMITH, Principal.

ACCREDITED ACADEMIES AND OTHER INSTITUTIONS.

Carroll College (Waukesha) .	W. L. RANKIN, Principal.
Evansville Seminary . . .	J. E. COLEMAN, Principal.
Harvard School (2101 Indiana Ave., Chicago, Ill.) . .	J. J. SCHOBINGER and J. C. GRANT, Principals.
Hillside Home School . .	MISS ELLEN C. LLOYD-JONES and MISS JANE LLOYD-JONES, Principals.
Kenwood Institute (5001 Lake Ave., Chicago, Ill. . .	MRS. HELEN EKIN STARRETT and MISS ANNIE E. BUTTS, Principals.
Racine Academy	W. W. ROWLANDS, Principal.
Shattuck School (Faribault, Minn.)	E. W. WHIPPLE, Headmaster.
St. Monica School (Fond du Lac)	MRS. J. S. BENNETT, Principal.
Stoughton Academy . . .	K. A. KASBERG, Principal.
Wayland Academy (Beaver Dam)	H. J. VOSBURGH, Principal.
Wisconsin Academy (Madison)	R. H. TRUE, Principal.

GRADUATES OF THE STATE NORMAL SCHOOLS.

Graduates of the advanced course of the State normal schools will be admitted to the University with the rank of juniors in the English and General Science courses. A special adaptation of these courses has been framed for the purpose of enabling such graduates to utilize as advantageously as practicable their previous training. This has been done in view of the ill-adjustment of the courses of normal schools to the regular college courses, and in recognition of the excellent training given in the Wisconsin normal schools.

These courses are presented on a subsequent page, and the attention of normal school graduates is invited to them.

The certified standing of any student in the regular courses of the normal schools of this State will be accepted in the studies which it covers, in place of an examination.

STUDENTS FROM OTHER COLLEGES AND UNIVERSITIES.

Students from other institutions, who have pursued standard college courses equivalent to those of the University, will be admitted to a like standing upon the presentation of proper certificates of creditable standing and honorable dismission. Students of other colleges of good standing who have not taken such standard courses, but who have studied one year in the college proper, may be admitted to the University as special students without examination, or, upon such an examination as may be necessary to determine their attainments, they may be admitted to any course or to any class for which they are found fitted. Students coming from other institutions are advised to bring authenticated records of their standing. In all cases of reasonable ground for doubt, the University reserves the right to test the value of such records by actual examination.

No person will be admitted to advanced standing later than October 1st of the year in which he expects to graduate.

GRADUATE STUDENTS.

Graduates of this University and other colleges and universities of good standing are admitted to graduate courses without examination.

SCHOOLS ACCREDITED SINCE PRINTING THE PRECEDING LIST.

Detroit School for Boys . . .	FREDERICK WHITTON, Principal.
St. Clara's Academy (Sinsinawa)	THE DOMINICAN SISTERS.
Argyle High School (English) .	E. W. PRYOR, Principal.
Centralia H. S. (Eng. & G. S.) .	F. W. PAULUS, Principal.
Waupun High School (English) .	T. C. HOWARD, Principal.
Lake Geneva H. S. (M. C., G. S. & Eng.)	A. F. BARTLETT, Principal.

GRADUATE DEPARTMENT.

The University of Wisconsin now affords unusually excellent facilities for the pursuit of advanced study and original work in several important lines and fair facilities in others. For several years past the University has been adding rapidly to its appliances for advanced work, and larger additions will be made in the future.

Attention is invited to the School of Economics, Political Science, and History, under the direction of Dr. Richard T. Ely. This school presents unusual advantages for advanced study and original research in economic, civic, social and historical subjects. Further information may be obtained from Prof. Richard T. Ely relative to the school in general and economics in particular; from Prof. J. B. Parkinson, relative to civil polity; and from Prof. F. J. Turner and Prof. C. H. Haskins, relative to history.

For special information regarding courses and facilities in other departments of graduate study, inquiry is invited as follows:

In Philosophy, of Prof. J. W. Stearns.
In Comparative and Experimental Psychology, of Prof. Jos. Jastrow.
In Greek Literature, of Prof. Alex. Kerr.
In Greek Philology, of Prof. F. L. Van Cleef.
In Latin, of Prof. G. L. Hendrickson.
In Sanskrit, and Old Persian, of Dr. H. C. Tolman.
In Hebrew, of Prof. W. H. Williams.
In Romance Languages, of Prof. E. T. Owen.
In Germanic Languages, of Prof. W. H. Rosenstengel.
In Scandinavian Languages, of Prof. Julius E. Olson.
In English, of Prof. J. C. Freeman.
In Rhetoric, of Prof. D. B. Frankenburger.
In Pure Mathematics, of Prof. C. A. Van Velzer.
In Applied Mathematics, of Prof. C. S. Slichter.
In Astronomy, of Prof. G. C. Comstock.
In Math. Physics, Electricity and Magnetism, of Prof. J. E. Davies.
In Physics, of Dr. H. B. Loomis.
In Chemistry, of Prof. W. W. Daniells.
In Geology, of Prof. C. R. Van Hise.
In Mineralogy and Petrography, of Prof. W. H. Hobbs.
In Zoology, of Prof. E. A. Birge.
In Botany, of Prof. C. R. Barnes.

For graduate courses in the colleges of Engineering and Agriculture and the school of Pharmacy, see statements under those headings.

UNDERGRADUATE DEPARTMENT.

There are two general schemes or systems of study by which the bachelor's degree may be reached: the Course System and the Group System (p. 53), the fundamental idea in the one being variety and breadth of culture; in the other, concentration and thoroughness.

Under both systems there are required for graduation thirty-six terms' work in the regular studies. In addition, there is required of all students:

1. Hygiene, twice weekly, one term, preferably in Freshman year.
2. Military drill is required of all able-bodied male students during Freshman and Sophomore years, and gymnastic exercise is required of young women during Freshman year.
3. Synoptical lectures (p. 55) are required in such subjects as may be assigned to the student by his class-officer under the rules of the Faculty.
4. A thesis on a topic approved by the Faculty.

A. THE COURSE SYSTEM.

The University offers, in the College of Letters and Science, six courses of study leading to the bachelor's degree: The Ancient Classical Course, leading to the degree of Bachelor of Arts; the Modern Classical, the English and the Civic-Historical Courses, leading to the degree of Bachelor of Letters; the General Science and Pre-medical courses, leading to the degree of Bachelor of Science. In the Ancient and the Modern Classical Courses, languages, ancient and modern, are the central studies. In the General Science and Pre-medical courses, science; in the English Course, the English language and literature; in the Civic-Historical Course, history, economics and political science are the main lines.

The Pre-medical Course is intended to give a broad and solid foundation for the professional medical course, together with collegiate culture.

The Chicago College of Physicians and Surgeons, Rush Medical College and the Chicago Medical College have approved the course and will accept it as the equivalent of one year's study, thus enabling

those who have taken the four years' course here to complete their medical course in these excellent colleges in three years.

Students desiring a similar course of scientific study introductory to the practice of pharmacy are referred to the account of the Four Years' Course in Pharmacy on a subsequent page.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS.

ANCIENT CLASSICAL COURSE.

Freshman Year: Greek 4;* Latin 4; mathematics 4; English 2; Greek and Roman history 2; military drill, gymnastics, hygiene 3.

Sophomore Year: Greek 4; Latin 2; German or French 4; physics 3; English 2; military drill, gymnastics 3; electives, 0–5.

Junior and Senior Years: Philosophy 5, one year; thesis 2, two terms; electives, enough to make thirty-six terms' work besides military drill, gymnastics, hygiene and such synoptical lectures as may be required.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF LETTERS.

1. MODERN CLASSICAL COURSE.

Freshman Year: German 4; Latin 4; mathematics 4; Greek and Roman history 2; English 2; military drill, gymnastics and hygiene 3.

Sophomore Year: German 2; Latin 2; French 4; physics 3; English 2; military drill, gymnastics 3; electives 2–7.

Junior and Senior Years: Philosophy 5, one year; thesis 2, two terms; electives, enough to make thirty-six terms' work besides military drill, gymnastics, hygiene and such synoptical lectures as may be required.

2. CIVIC-HISTORICAL COURSE.

Freshman Year: Latin or German 4; mathematics 4; Greek and Roman history 2; English history 3; English 2; military drill, gymnastics, and hygiene 3.

Sophomore Year: German 4; French 4; science (physics, biology or chemistry) 5; English 2; military drill, gymnastics 3; electives 0–5.

Junior and Senior Years: Philosophy 5, one year; Latin, German or French, one year (the German must be taken if begun in Sophomore year); thesis 2, two terms. The remaining studies, sufficient to make thirty-six terms' work, are elective, except that the equivalent of twelve hours per week for one year must be elected in history, economics, and political science.

* The figures refer to the number of hours required weekly throughout the year.

3. English Course.

Freshman Year: German 4; English history 3; Greek and Roman history 2; mathematics 4; English 2; military drill, gymnastics and hygiene 3.

Sophomore Year: German 4; English literature 3; physics 4, or biology 5, or chemistry 5; Anglo-Saxon 3, or Norse 4, or French 4; English 2; military drill, gymnastics 3; electives 0–3.

Junior and Senior Years: Philosophy 5, one year; English 5, two years (less the Anglo-Saxon of Sophomore year, if taken at that time). A reading knowledge of two languages besides English; thesis 2, two terms; electives, enough to make thirty-six terms' work besides military drill, hygiene and such synoptical lectures as may be required.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE.

1. General Science Course.

Freshman Year: Biology 5; German 4; mathematics 4; English 2; military drill, gymnastics, hygiene 3.

Sophomore Year: French 4; chemistry or mathematics 5 (if mathematics is chosen, chemistry must be taken in Junior year); physics 4 or 5; English 2; military drill, gymnastics 3; electives 0–5.

Junior and Senior Years: History, philosophy, political science or economics 5, one year; advanced French or German 4 or 5 hours, one year; advanced science 5, two years; thesis 2, two terms; elective studies enough to make thirty-six terms' work, besides military drill, hygiene and such synoptical lectures as may be required.

2. Pre-medical Course.

The required studies of the four-years Pre-medical Course, leading to the degree of B. S., are the same as those of the General Science Course. The students in the Pre-medical Course are required to turn their scientific work and their elections in the direction of those sciences which are preliminary to the study of medicine.

3. Engineering and Agricultural Courses and Four-Years' Pharmacy Course.

For details of these courses look under College of Engineering, College of Agriculture and School of Pharmacy on later pages.

SPECIAL COURSES FOR NORMAL GRADUATES.

To these courses the regular graduates from the advanced courses of the State normal schools of Wisconsin will be admitted with the rank of juniors. Two years of successful study will enable the graduates to complete one of the courses, and, by proper selection of studies, to graduate with the degree of Bachelor of Letters or of Bachelor of Science. Two years of residence at the University are required of candidates for a degree.

Normal graduates who may have a sufficient knowledge of Latin, French or German, in addition to the full acquirements of normal school graduates, may take such courses as will be the nearest available equivalents of those of the Modern Classical Course.

ENGLISH COURSE FOR NORMAL GRADUATES.

JUNIOR YEAR.

I. LANGUAGE (Latin, French or German) pursued continuously throughout the year.

II. CIVICS (political science or economics) pursued continuously throughout the year.

III. SCIENCE (chemistry, physics, mathematics, astronomy, botany, mineralogy or geology) pursued continuously throughout the year.

IV. ELECTIVES. One or more of the above long courses may be deferred until the Senior year, and elective studies substituted therefor.

SENIOR YEAR.

I. LANGUAGE (Latin, French or German) pursued continuously throughout the year.

II. HISTORY. Pursued continuously throughout the year.

III. ENGLISH, elective. A course in English literature is recommended to those who chose Latin instead of English literature in the normal school course.

IV. CIVICS. The required course in civics may be taken during this year. Additional elective studies in civics may also be taken.

V. SCIENCE. The required course in science may be taken during this year. Additional elective studies in science may also be taken.

SCIENCE COURSE FOR NORMAL GRADUATES.

JUNIOR YEAR.

I. SCIENCE. (1) A continuous course in chemistry, physics, mathematics or astronomy throughout the year; and (2) A continuous course in botany, zoology or mineralogy throughout the year. Mineralogy may be taken, preparatory to geology in the Senior year. One of

these courses in science may be taken in the Senior year, but if geology is elected, courses in chemistry, mineralogy or physics, or in zoology or botany, should be taken during the Junior year.

II. LANGUAGE (Latin, German or French) pursued throughout the year. Students who chose English literature in the normal course will be required to take two courses in language throughout the year.

III. ELECTIVES. If either course in science is deferred until the Senior year, elective studies are to be substituted. Extra elective may also be taken by those prepared for them.

SENIOR YEAR.

I. SCIENCE, a continuous study running through the year. If geology is chosen as one of the three required courses, it should be taken during this year, and be preceded by the two other courses in science.

II. LANGUAGE (Latin, German or French) throughout the year. Students who chose English literature in the normal course will be required to take two courses in language throughout the year.

III. ELECTIVES. Sufficient to make at least three full studies.

ELEMENTARY GREEK COURSE.

GREEK, Goodwin's Grammar, Composition and Homer's Iliad.
GREEK, Xenophon's Anabasis, Elements of Language.
LATIN, Cicero's Select Orations, Latin Composition, Virgil.

B. THE GROUP SYSTEM.

The object of the group system is to give continuity, concentration and thoroughness to the leading lines of study and at the same time to afford a wide (though of necessity only general) familiarity with the broad field of knowledge. The work of the four years is divided into two parts, the first consisting of a group of basal studies intended to furnish a solid foundation for the second part, which consists of (1) a leading line of study running through two years, constituting the major study of the student; (2) a series of assigned studies supplementary to it, selected by the professor in charge of the leading line; and (3) a series of elective studies sufficient to make up a full course. The basal group of studies will occupy the Freshman and Sophomore years and may in some instances extend into the Junior year. The work of the second part, the university group, will occupy the Junior and Senior years. These courses will be supplemented by synoptical lectures in the leading lines of study not otherwise taken, so that the student will possess some knowledge of their salient features.

THE BASAL GROUP.

FRESHMAN AND SOPHOMORE YEARS.

This group must embrace at least three full studies during the first two years of the course, which must include the following:

1. A year's course (four hours weekly) in mathematics.
2. A year's course in physical or natural science with laboratory work.
3. A course in English, twice a week for two years.
4. Language study, sufficient, in addition to previous work, to give a reading knowledge of two languages besides English. If this is not accomplished by the close of the Sophomore year, language study must be continued.

Among the basal studies there should be at least one course running through a year especially preparatory to the major study contemplated in the last two years of the course.

UNIVERSITY GROUPS.

JUNIOR AND SENIOR YEARS.

This embraces the work of the last two years of the course, and must include at least the following:

1. *A Major Study* running consecutively through two years, constituting the leading study of the student. Extra work beyond the usual requirements of a full study will be expected, the precise amount and form of which will be determined by the professor in charge.
2. *An Assigned Minor Study,* to be named by the professor in charge of the major study, which it is intended to supplement. This will be equivalent to one full course for two years, and may be a single continuous study or a succession of courses selected from different groups.
3. *An Elective Minor Study.* This may be made up of a series of courses or of a single continuous study, and must be at least equivalent to a full study throughout the last two years of the course.
4. *Synoptical lectures* will be required as ordered by the Faculty.

The major studies are to be selected from the following groups:

1. Psychology, Ethics, Æsthetics, Logic and Pedagogy (Philosophical group).
2. Economics and Political Science (Civic group).
3. History (Historical group).
4. English Language and Literature, Anglo-Saxon and Rhetoric (English group).
5. French, Italian, Spanish (Romance group).

6. German, Norse, Anglo-Saxon (Germanic group).
7. Greek, Latin, Sanskrit, Hebrew (Classic group).
8. Mathematics and Astronomy or Physics (Mathematical group).
9. Botany and Zoology (Biology group).
10. Chemistry and Physics (Chemico-physical group).
11. Mineralogy, Petrography and Geology (Geology group).

SYNOPTICAL LECTURES.

The purpose of the synoptical lectures is to present the outlines of the leading branches taught in the University in such a way as to convey the maximum of important information in the minimum of time, so that the students may become familiar with the salient features of subjects which they are unable to take up as regular studies. The aim is to broaden the students' information and interest and correct the effects of too great specialization.

These courses of lectures will be serviceable to students in selecting their leading lines of study, by enabling them to become familiar with the chief features of the several subjects they may have under consideration before making their choice.

These lectures will be accompanied by class work, and will be closed by an examination.

The lectures and accompanying class exercises will be given between 4 and 6 P. M., five days in the week.

The following courses are assigned for 1893–4: In Modern Languages, on German, French and Norse; in the Mathematical group, lectures on pure and applied mathematics and astronomy; in the Chemico-physical group, on chemistry and physics; in the Philosophical course, lectures on psychology, philosophy, ethics and æsthetics; in the Geological group, courses on mineralogy, petrography and geology.

GENERAL INFORMATION.

LITERARY AND SCIENTIFIC SOCIETIES.

The literary societies, the Athenæan, Hesperian and Philomathian, composed of gentlemen, and the Castalian and Laurean, composed of ladies, are sustained with unusual interest and constitute an important means of intellectual training. A German society, the Bildungsverein, and a Scandinavian society, the Nora Samlag, cultivate an interest in the German and Norse languages and literature.

LADIES' HALL.

Lady students are allowed the same choice of boarding accommodations that is accorded to gentlemen, but to provide for those who prefer a home under the immediate auspices of the University, a Ladies' Hall is maintained. It contains suites of rooms for sixty-two students, and ample accommodations for boarding. The apartments are in suites of two and three rooms, each suite accommodating four students. There is a bath-room on each floor. The building is heated by steam, lighted by gas, has three fire-escapes, and other precautions have been taken to render it as secure as practicable against fire. Students' rooms are carpeted and furnished, but occupants are expected to provide washstand furniture, towels, napkins, napkin rings, sheets, pillow-cases, counterpanes and blankets. Young women occupying this building are under the immediate charge of the preceptress, and are required to board in the Hall. They are expected cheerfully to conform with the requirements necessary for a family of students. Students are admitted only on the expectation of remaining throughout the term, and the charges for board are by the term and not for any fraction of it. No deduction is made for voluntary absence, and any commutation in cases where students leave before the close of the term, except in cases of necessity, is entirely voluntary with the matron in charge. To secure rooms in advance, payment of room-rent for the ensuing term ($6.00) must be made to the Secretary of the Board. The music department has accommodations in this building, with music rooms for piano practice, and a hall for the use of general music classes, gymnastics and the ladies' literary societies.

No responsibility is assumed for lady students rooming in the city beyond that involved in good scholarship and general deportment.

The foregoing statements and the prices of board given below under the head of "Charges and Fees" relate to the current year and are subject to modification for the ensuing year. The price of board will be no greater than that stated.

ROOMS AND BOARD.

Rooms furnished and unfurnished can be obtained in the city at reasonable rates. The cost of board in clubs is from $2.00 to $2.50 per week; in private families from $3.00 to $4.00 per week. Washing costs from sixty to seventy-five cents per dozen. Many of the students support themselves in whole or in part. The places offering available work are eagerly sought for and cannot always be obtained at once. Those dependent on themselves should secure some means before coming here, and be ready to wait and learn how to help themselves.

CHARGES AND FEES.

Tuition for residents of the State of Wisconsin, ...	FREE.
Tuition for non-resident students, per term, ...	$6 00
General Expenses — First term, ...	5 00
General Expenses — Second term, ...	5 00
General Expenses — Third term, ...	2 00
Room-rent in Ladies' Hall, per term, ...	6 00
Fuel and light in Ladies' Hall at actual cost (about $20 a year).	
Board in Ladies' Hall — Fall term, ...	50 75
Board in Ladies' Hall — Winter term, ...	42 00
Board in Ladies' Hall — Spring term, ...	36 75
Washing, Ladies' Hall, per dozen, ...	60
Instrumental Music, 20 lessons, ...	10 00
Use of instrument for practice, 10 weeks, ...	2 00–5 00
Vocal Music, 20 lessons, ...	10 00

Students will be charged for not less than one term, and no deduction will be made for voluntary absence. Payment of all University charges for tuition, room-rent, heating, etc., is required strictly in advance, and made to the Secretary of the Board of Regents.

Students working in the laboratories are required to pay a fee to cover the cost of the materials and instruments used by them. When this cannot be fixed beforehand, a deposit sufficient to cover the probable cost is required and an account of the same is kept, and the amount of the deposit not used is returned to the student at the close of his term of study in the laboratory.

The items of expense are subject to revision at the commencement of each collegiate year.

DEPARTMENTS OF INSTRUCTION.

PHILOSOPHY.

PROFESSOR STEARNS, PROFESSOR JASTROW, AND MR. MOOREHOUSE.

1. **General Psychology.** Five times a week during the fall term. (Prof. Stearns and Jastrow.)

2. **History of Philosophy.** (a) History of Greek Philosophy. Three times a week during the winter term. (Prof. Stearns.) (b) History of Modern English Philosophy. Three times a week during the spring term. (Prof. Stearns.) (c) The Idealistic Philosophy. Twice a week, winter and spring terms. (Prof. Stearns.)

3. (a) **Experimental Psychology.** Twice a week, winter and spring terms. (Prof. Jastrow.) (b) **Laboratory Work in Psychology.** Three times a week, winter and spring terms. (Prof. Jastrow.)

4. **Æsthetics and History of Art.** Five times a week during the fall term. (Prof. Stearns.)

5. **Ethics.** Five times a week, winter term. (Prof. Stearns.)

6. **Seminary in Ethics.** Five times a week during spring term. (Prof. Stearns.)

7. **Advanced Experimental Psychology, Laboratory Work.** Three times a week throughout the year. (Prof. Jastrow.)

8. **Comparative Psychology.** Twice a week, fall term. (Prof. Jastrow.)

9. **Abnormal Psychology.** Twice a week study during winter term. (Prof. Jastrow.)

10. **Anthropological Psychology.** Twice a week, spring term. (Prof. Jastrow.)

11. **Elementary Logic.** Five times a week, winter term. (Prof. Jastrow.)

12. **Advanced Logic.** Twice a week, winter and spring terms. (Prof. Jastrow.)

13. **Philosophical Seminary.** Once a week, winter and spring terms. (Prof. Stearns and Jastrow.)

14. **Synoptical Lectures.** A course of synoptical lectures in Philosophy will be given weekly during the year 1893–4.

Group students in Philosophy will take courses 1 and 2 or 1 and 3 during Junior year.

PEDAGOGY.

PROFESSOR STEARNS.

1. **History of Educational Theories and Practices.** Five times a week, fall term.

2. **The Philosophy of Education.** Three times a week, winter term.

3. **School Law and School Hygiene.** Twice a week, winter term.

4. **Methods and Management.** Three times a week, spring term.

5. **Pedagogical Seminary.** Twice a week, spring term.

ECONOMICS.

PROFESSOR ELY, PROFESSOR SCOTT, MR. KINLEY, AND MR. CROOK.

1. **Economic Seminary.** This will be conducted by the professors and assistants in economics. It will afford opportunity for research and critical study under individual direction, and will embrace discussions of periodical literature, recent works and original papers. The special subject for study during the year 1893–4 will be American Taxation. For advanced students only.

2. **Distribution of Wealth.** Rent, interest, profits and wages. Plans which have been advocated for bringing about what their authors regard as a better distribution of wealth will be discussed. Open to undergraduates who have done the elementary work. Two hours a week throughout the year. (Prof. Ely.)

3. **History of Economic Thought.** The history of economic theories in classical antiquity will be sketched; their development under the influence of the Christian era and the middle ages to the time of the Mercantilists, who will be discussed at greater length. The rise and growth of economics as a distinct branch of social science. Existing schools of economic thought. Three hours a week during the winter term. For advanced students only. (Prof. Ely.)

4. **Socialism.** Historical account of its origin, followed by a critical examination of its nature, strength and weakness. Three times a week during the fall term. For advanced students only. (Prof. Ely.)

5. **American Taxation.** Brief examination of federal taxation and a more detailed study of taxation in American states and cities. Three times a week during the spring term. (Prof. Ely.)

6. **Theories of Value and Interest.** History of value and interest theories down to the present day. The seminary method of instruction will be employed, and each student will be required to

study critically the writings of the theorists examined. For advanced students only. Twice a week throughout the year. (Prof. Scott).

7. **Theories of Rent, Wages and Profits.** A critical and historical study of theories of rent, wages and profits. Students who take this and the above-described course will find it greatly to their advantage to own Adam Smith's Wealth of Nations; Ricardo's works; Cairnes' Leading Principles of Political Economy; Mill's Principles of Political Economy; Jevons' Theory of Political Economy; Böhm-Bawerk's Capital and Interest, and Positive Theory of Capital; Patten's Premises of Political Economy and The Theory of Dynamic Economics; and J. B. Clark's Philosophy of Wealth. For advanced students only. Twice a week throughout the year. (Prof. Scott.)

8. **Public Finance.** Government expenditures, taxation, public debts, the budget, financial administration, etc. Bastable's Public Finance will be used as a text-book. For undergraduates. Three times a week throughout the year. (Prof. Scott.)

9. **Economics of Agriculture.** Designed especially for agricultural students. Lectures. One hour per week during the winter term. (Prof. Scott.)

10. **Outlines of Economics.** Economics will be treated as a branch of general sociology. The text-book will be Ely's Outlines of Economics or Introduction to Political Economy. This work is preparatory to all other courses in economics. Four times a week during the year.

Courses in (1) Insurance, (2) Banking, and (3) Money will be offered if suitable arrangements can be made. It is hoped also that provision will be made for courses in Pauperism and Crime.

POLITICAL SCIENCE.

PROFESSOR PARKINSON.

1. **Elementary Law.** A general view of the whole field of law, with its terminology and leading principles. Twice a week through the year.

2. **Constitutional Law (English).** A brief study of the English constitution from the time of Magna Charta to the present — especially of its conventional development since the Revolution of 1688. Growth of constitutional law in the United States prior to the adoption of the present constitution. Twice a week, fall term.

3. **Constitutional Law (American).** The constitution of the United States. This is designed to follow course 2, inasmuch as some knowledge of the English constitution is of great help to intelligent examination of our own. Twice a week, winter and spring terms.

GREEK.

PROFESSOR KERR AND PROFESSOR VAN CLEEF.

1. **Grammar, Prose Composition, Homer.** Goodwin's Greek Grammar (Revised Edition of 1893), translation of the English sentences in White's Beginner's Greek Book into Greek and three books of Homer's Iliad. Three times a week throughout the year. (Prof. Kerr.)

2. **Elements of the Language, Xenophon's Anabasis, Translation at Sight.** During the fall term White's Beginner's Greek Book will be used. During the winter and spring terms Jones' Prose Composition and four books of Xenophon's Anabasis or its equivalent. Three times a week throughout the year. (Prof. Van Cleef.)

Courses 1 and 2 taken together comply with the entrance requirements in Greek to the Ancient Classical course. They may, however, be taken independently, in which case 2 is adapted especially for beginners, while 1 may be pursued by those who have already become familiar with the elementary principles of the language and have read the required amount of the Anabasis.

3. **Lysias, Plato.** Five orations of Lysias, Plato's Apology and Crito. Twice a week during the year. (Prof. Kerr.)

4. **Grammar, Composition and Homer's Odyssey.** In the fall term a thorough review of the grammar, accompanied by written translations from English into Greek. In the winter and spring terms Homer's Odyssey will be read. Twice a week throughout the year. (Prof. Van Cleef.)

5. **Herodotus, Lyric Poets.** Book VII of Herodotus, both in prepared lessons and at sight, selections from the lyric poets, lectures on the geography, mythology and monuments of Greece. Twice a week throughout the year. (Prof. Kerr.)

6. **Demosthenes' Olynthiacs and Philippics, Sophocles' Oedipus Tyrannus.** The translation will be accompanied by lectures on the history of oratory and the drama. Twice a week throughout the year. (Prof. Van Cleef.)

7. **Greek Dramatic Poets, or Plato's Dialogues.** Alcestis of Euripides, Prometheus of Aeschylus, Iphigenia among the Taurians of Euripides and Antigone of Sophocles (1893–94). Plato's Protagoras, Gorgias and Phaedo (1894–95). Lectures on the Greek poets and Plato. Three times a week throughout the year. (Prof. Kerr.)

8. **The Legal Antiquities of the Greeks.** Lectures on the public life of the Greek citizen and the public economy of the state. Twice a week throughout the year. (Prof. Van Cleef.)

9. **Seminary in the Modern Greek Language and Literature.** A study of the changes in form and structure which the language has undergone since the classical period. Readings from contemporary Greek authors and a comparison of their writings with the prose and poetry of the Attic Greek. Papers and discussions upon topics connected with the course of reading. One meeting of an hour and a half each week throughout the year. Two-fifths study. (Prof. Kerr.)

10. **Greek Seminary.** Reading and interpretation of six plays of Euripides, preparatory to the text criticism of the Bacchae of Euripides. This course is intended primarily for graduates, but is open to all who have completed the required Greek of the Ancient Classical course. The work will be accompanied by papers on special topics. One meeting weekly of an hour and a half, counting as a two-fifths study. (Prof. Van Cleef.)

Courses 1 and 2 are open to all students. Courses 3 and 4 are required of Ancient Classical Freshman; courses 5 and 6 of Ancient Classical Sophomores. Students electing Greek under the Group system as major work will take courses 3 and 4 as preparatory, courses 5, 6, 7 and 8 as major study. Students electing Greek as minor work will take courses 3, 4, 5 and 6. All courses are open to those properly qualified to undertake the work.

LATIN.

PROFESSOR HENDRICKSON, PROFESSOR TOLMAN, AND MISS ALLEN.

1. **Cicero, Virgil.** Cicero's Orations (three), Virgil's Aeneid (six books), Latin Grammar and Composition. Five times a week during the year. Required of Greek class.

2. **Cicero, Livy, Horace.** Cicero de Senectute, Livy (two books), Selected Odes of Horace, Latin Composition and Roman Literature. Four times a week during the year. Private readings. Required of Freshmen of Ancient Classical and Modern Classical courses.

3. **Cicero, Horace, Tacitus.** Selected Letters of Cicero, Selected Satires and Epistles of Horace, the Agricola of Tacitus. Twice a week during the year. Required of Sophomores of Ancient Classical and Modern Classical courses.

4. **Nepos, Cicero, Terence, Ovid.** The aim of this course is to give facility in reading, and large amounts of various authors will be read rapidly. Three times a week during the year. Elective for Sophomores.

5. (a) **Lucretius** (with selections from the philosophical works of Cicero); (b) **Tacitus** (portions of the Annals); (c) **Catullus.** Three times a week during the year. (Prof. Hendrickson.)

6. **History of Roman Literature.** Lectures accompanied by readings in Latin and in English. Twice a week during the year. (Prof. Hendrickson.)

7. **Historical Latin Grammar.** Lectures on the sounds, forms and syntax of the Latin language. Twice a week during the year. This course alternates with course 6 and will not be given in 1893–94.

8. **Latin Seminary.** Criticism and interpretation of selected Odes of Horace. Exercises in palaeography with MS. fac-similes. The work will be accompanied by the presentation of papers and discussions on special subjects. One meeting of an hour and a half counting as a two-fifths course. The Seminary is intended chiefly for graduate students, but will be open to others of suitable preparation with the consent of the director. (Prof. Hendrickson.)

9. **Teachers' Course.** Hints on the teaching of Latin in preparatory schools. One exercise a week during the spring term. (Prof. Hendrickson.)

SANSKRIT AND OLD IRANIAN.

PROFESSOR TOLMAN.

1. **Sanskrit.** Whitney's Grammar — Lanman's Sanskrit Reader. Twice a week.

2. **Rig Veda.** The second book entire; selections from the other books. Twice a week.

3. **Sanskrit Drama.** The Çakuntalā of Kālidāsa. Once a week.

4. **Old Iranian.** Reading of the Avesta. Jackson's Avestan Series. Twice a week.

5. **Ancient Persian.** Reading of the Cuneiform text. Tolman's Persian Inscriptions. Once a week.

6. **Advanced Sanskrit.** Careful interpretation of the Vedic hymns. The Laws of Manu (six books) will be read rapidly.

7. **Sanskrit Literature.** Lectures on Indo-Iranian literature, one hour a week during winter and spring terms.

8. **Linguistics.** Lectures and recitations on the structure of language. Whitney's Life and Growth of Language. Once a week.

HEBREW AND HELLENISTIC LANGUAGE AND LITERATURE.

PROFESSOR WILLIAMS.

1. **Hebrew Language.** Reading of select passages from the Pentateuch and the books of Samuel with a view to (1) a mastery of the general grammatical principles of the Hebrew language, (2) the acquisition of a vocabulary and a study of (3) the Mosaic institutions, (4) the question of Pentateuchal authorship and of (5) the principles of textual criticism. Full study.

2. **Hebrew Literature.** A critical reading of Psalms, Job and Isaiah, poetic accents, forms of poetry, Hebrew syntax. Full study.

3. **Hellenistic Language and Literature.** An introduction to the language of the New Testament based on a study of Matthew — Acts. Full study.

Under the Course system Hebrew may constitute one of the years of required study in the Junior or Senior years and form one of the elections in either of the other courses.

Under the Group system the course in Hellenistic Language and Literature may constitute the basal study. The Hebrew may be taken as a minor study, elective or assigned. The full course in Hebrew as outlined, with added work as assigned by the professor, may constitute the major study.

FRENCH.

PROFESSOR OWEN, MISS GAY, AND MR. OTTO.

1. **Elementary Course for Modern Classical Students.** Otto's French Conversation Grammar, Roman d'un Jeune Homme Pauvre, La Petite Fadette (the former read mainly and the latter altogether independently of the class-room), Le Cid, Le Misanthrope, Athalie. Four times a week throughout the year. (Miss Gay.)

2. **Elementary Course for Ancient Classical Students.** The same as 1 with the addition of lectures on the history of the French Language, consideration of Latin etymologies and treatment of the subject generally from the standpoint of the classics. Additional material for translation will be assigned as the progress of the class allows. Four times a week throughout the year. (Miss Gay.)

3. **Elementary Course for Science Students.** The same as 2, but with the omission of such portion (usually Athalie and Petite Fadette) as the needs of the class suggests. Four times a week throughout the year. (Miss Gay.)

As many students desire a reading knowledge only, the effort of the above elementary courses is concentrated upon reading. Students are expected at the end of any elementary course to read with sufficient ease and accuracy to make a practical use of French text-books in the prosecution of their other studies.

4. **Composition, etc.** Written translation into French of the English exercises in Otto's Grammar, oral translation into French of Howard's Aids to French Composition, lectures in French on the history of the language and recitations in French on the same, lectures in French on the early literature of the language, recitations in French from Demogeot's History of French Literature, reading independently

for examination an abridgment of Les Trois Mousquetaires of Dumas and other easy French to be assigned. Five times a week throughout the year. (Prof. Owen.)

An additional exercise weekly is given to reading and speaking French, for which no preparation is required.

5. **Advanced Reading and Syntax.** Reading in class parts of Cinq-Mars, Ursule Mirouet, Travailleurs de la Mer, La Fontaine's Fables, etc., reading independently for examination the Histoire de Charles XII and other easy French to be assigned. Five times a week throughout the year. (Prof. Owen.)

In connection with course 5 there will be given a series of lectures on the comparative syntax of the French and English languages.

Courses 4 and 5 will be given in alternate years, beginning with subcourse 4 in the collegiate year 1892–3.

6. **Synoptical Lectures.** A course of synoptical lectures will be given weekly during part of the year 1893–4.

Students under the Romance group system will so far as possible take course 1 in Freshman year. Such students will be able to arrange studies for the remaining years, as follows:

SOPHOMORE YEAR.

A. Independent reading of course 5; Spanish or Italian. ....or.... B. *Independent reading of course 4; Italian or Spanish.*

JUNIOR YEAR.

C. Course 4 without the independent reading; Spanish or Italian. ....or.... D. *Course 5 without the independent reading; Italian or Spanish.*

SENIOR YEAR.

E. Course 4.....or.....F. *Course 5.*

Studies printed in *Italics* alternate with those printed in Roman. Elections accordingly follow the order A—D—E or the order B—C—F.

SPANISH.

PROFESSOR OWEN.

1. **Elementary.** Translation into English of the Spanish exercises in Sauer's Conversation Grammar and of Castelar's Historia del año 1883, half study for the year. The distribution of the hours throughout the year will be influenced by considerations of convenience.

This course will be given only every other year, beginning in 1887.

ITALIAN.

PROFESSOR OWEN.

1. **Elementary.** Translation into English of the Italian Exercises in Sauer's Conversation Grammar, and of Mazoni's I Promessi Sposi, half study for the year. This course is in general like that in Spanish, with which it alternates, beginning in 1888.

GERMAN.

PROFESSOR ROSENSTENGEL, MISS STERLING, MISS REMINGTON, AND MISS VEERHUSEN.

The aim in the Modern Classical course is to enable students to understand with ease a modern German author, to grasp spoken German rapidly and comprehensively, and to use with facility oral as well as written German in the simple forms of discourse. Practice in conversation is afforded at every recitation in connection with the reading.

In the other courses, the aim is to give a reading knowledge of German scientific literature (General Science and Engineering courses), of German historical and philosophical literature (Civic-Historical and English courses), of German philological literature (Ancient Classical course), and to enable students to make use of German scientific text-books as soon as possible.

1. **Grammar.** Four times a week during the fall and winter terms. Required of Freshman of Civic-Historical and English courses.

2. **Reader.** Four times a week during the spring term of the Freshman, and the fall term of the Sophomore year. Required of Civic-Historical and English Freshmen and Sophomores.

3. **Reader of Literature.** Four times a week during the year. Required of Modern Classical Freshmen. Requirements for admission to this class: Courses 1 and 2.

4. **Wm. Tell, Hermann and Dorothea, and Maria Stuart.** Twice a week throughout the year. Required of Modern Classical Sophomores.

5. **Nathan der Weise, Wallenstein, and Tasso.** Three times a week throughout the year. Elective for Modern Classical Juniors.

6. **Iphigenie, Faust and History of German Literature.** Three times a week throughout the year. Elective for Modern Classical Seniors.

7. **Middle High and Old High German, and Gothic.** Three times a week throughout the year. Elective for Modern Classical Seniors that have finished subcourses 1, 2, 3, 4 and 5.

8. **Grammar, Reader, Iphigenie, and Laokoon.** Four times a week throughout the year. Required of Ancient Classical Sophomores.

9. **German Science Reader.** Four times a week during the fall. term, and scientific monographs during the winter and spring terms. Required of General Science and Engineering Freshmen.

10. **German Scientific Monographs.** Three times a week throughout the year. Elective for General Science and Engineering Sophomores.

11. **Rapid translation of selections from German historical writers.** Four times a week during the winter and spring terms. Required of Civic-Historic Sophomores.

12. **Rapid translation of selections from German philosophical writers.** Four times a week during the winter and spring terms. Required of English Sophomores.

13. **Synoptical Lectures.** A course of weekly synoptical lectures will be given during part of the year 1893–4.

Any advance courses for which the student is prepared may be taken as an elective study. Under the Group system, the student taking German as a major study will take courses 1 to 7 inclusive. Students under the Group system taking German as a minor study will take such courses as are assigned by their advisors.

SCANDINAVIAN LANGUAGES.

PROFESSOR OLSON.

1. **Modern Norse, Elementary.** First term, Grammar and Reader, and selections from Norse folk-lore stories. Second term, Björnson's En glad Gut, and selections from his shorter stories. Third term, Ibsen's Et Dukkehjem and Terje Vigen, and selections from Jonas Lie's stories. Four times a week throughout the year.

2. **Modern Norse.** First term, Alexander Kielland's Skipper Worse, and selections from Norwegian and Danish poetry. Second term, Ibsen's Brand, and selections from Swedish poetry. Third term, Jonas Lie's Den Fremsynte, and Tegner's Frithiof's Saga (in Swedish). Five times a week throughout the year.

3. **History of Scandinavian Literature.** Seip and Broch's Litteraturhistorie, with lectures and exercises in composition. Hofgaard's Grammatik, and Aars's Retskrivningsregler. Three times a week throughout the year.

4. **Old Norse or Icelandic.** Vigfusson & Powell's Reader, with lectures on early history, literature and mythology. Twice a week throughout the year.

5. **Synoptical Lectures.** A course of weekly synoptical lectures will be given during part of the year 1893–4.

All courses are elective. Any of the courses for which the student is prepared may constitute minor studies under the Group system. Those who make the Scandinavian languages their major line should take all the courses.

The Scandinavian department of the University library affords excellent advantages to students pursuing these studies.

ENGLISH LANGUAGE AND LITERATURE.

PROFESSOR FREEMAN, PROFESSOR HUBBARD, AND MR. PYRE.

I. Language.

1. **Anglo-Saxon and Middle English.** An introduction to the historical study of English. Three times a week throughout the year. (Prof. Hubbard.)

2. **Anglo-Saxon Poetry.** Study of selections; survey of Anglo-Saxon literature. Three times a week during the fall term. (Prof. Hubbard.) Open to students who have completed course 1.

3. **Advanced Anglo-Saxon.** Beowulf; Introduction to the study of Old Germanic Life. Three times a week during winter and spring terms. (Prof. Hubbard.)

II. Literature.

4. **General Survey of English Literature.** Recitations and study of representative masterpieces. This course is prerequisite to all other courses in English. Three times a week throughout the year. (Mr. Pyre.)

5. **Chaucer and Langland.** History of the literature of XIV and XV centuries. Three times a week during the spring term. (Prof. Hubbard.)

6. **The Literature of the Elizabethan Period.** Four times a week during the fall term. (Prof. Freeman.)

7. **The Eighteenth Century.** Study of the literature of the period with special reference to the social and intellectual life of the time. Four times a week during the winter term. (Prof. Hubbard.)

8. **History of the English Drama.** Lectures and collateral reading. Twice a week during the fall term. (Prof. Freeman.) [Given in 1892–93 and 1894–95.]

9. **Shakespeare.** Selected plays. Interpretative readings; theses and discussions. Four times a week during the winter term. (Prof. Freeman.) [Given in 1892–93 and 1894–95.]

10. **The Epic.** (a) **Homer, Virgil and Dante** in translation, as types of the Epic, and as an introduction to the study of Spenser and Milton. Three times a week during the winter term. (Prof. Freeman.) (b) **Spenser and Milton.** Three times a week during the spring term. (Prof. Freeman.)

11. **English Lyric Poetry.** Three times a week during the winter and spring terms. (Prof. Freeman.)

12. **The Development of the Novel.** Three times a week during the fall term. (Prof. Freeman.)

13. **The Development of English Prose.** Four times a week during the fall term. (Prof. Hubbard.)

14. **English Prose Masterpieces.** Four times a week during the spring term. (Prof. Freeman.)

15. **American Prose Masterpieces.** Five times a week during the spring term. (Prof. Freeman.) [Given in 1892–93 and 1894–95.]

16. **Literary Criticism.** Seminary for graduate students and properly qualified Seniors. Two hours a week in one session throughout the year. (Profs. Freeman and Hubbard.)

17. **Synoptical Lectures.** A course has been given in 1892–93. One lecture a week throughout the year on the history and development of English literature in its several periods. (Prof. Freeman.)

RHETORIC AND ORATORY.

PROFESSOR FRANKENBURGER, MR. KNOWLTON, MR. TISDEL, AND MR. CAIRNS.

1. **Rhetoric.** Analysis of themes; fundamental qualities of style and study of literary types, with debates, orations, essays and literary criticism. Text-books: A. S. Hill's Principles of Rhetoric; Abbott's How to Write Clearly; Nichols' Manual of English Composition; Genung's Rhetorical Analysis, with supplementary reading. Three times a week during the year. (Prof. Frankenburger, Mr. Knowlton and Mr. Cairns.)

2. **Rhetoric.** Analysis of themes; fundamental qualities of style and study of literary types with daily exercises in composition. Text-books: A. S. Hill's Rhetoric, and Abbott's How to Write Clearly. Twice a week during the year. (Prof. Frankenburger, Mr. Knowlton and Mr. Cairns.)

3. **Rhetoric.** To follow course 2. Text-books: Genung's Rhetorical Analysis; Nichols' Manual of English Composition, with supplementary reading and lectures. Exercises in debates, essays, orations, with personal criticism. Twice a week during the year. (Prof. Frankenburger, Mr. Knowlton and Mr. Cairns.)

4. **Philosophy of Rhetoric.** Open to those who have completed courses 2 and 3 above. Analysis of orations, essays, debates, with higher literary criticism. Text-book: D. J. Hill's Science of Rhetoric and lectures with supplementary reading. Three times a week during the year. (Prof. Frankenburger.)

5. **Elocution.** Voice culture, common reading, and the speaking of orations by class, and private instruction. Open to Sophomores, Juniors and Seniors. Three times a week throughout the year. (Mr. Tisdel.)

6. **Elocution and Dramatic Reading.** Bell's Principles of Elocution, with lectures and gesture; declamation, with personal criticism; dramatic reading, Macbeth and Othello or Julius Cæsar and Hamlet. Open to those who have taken course 5 or its equivalent. Twice a week throughout the year. (Prof. Frankenburger.)

MATHEMATICS.

PROFESSOR VAN VELZER, PROFESSOR SLICHTER, AND MR. SKINNER.

1. **Algebra.** Progressions, arrangements and groups (permutations and combinations), binomial theorem, the theory of limits, undetermined coefficients, derivatives, series and logarithms. The text-book used is Van Velzer and Slichter's University Algebra. Four exercises a week during the fall term. (Prof. Slichter and Mr. Skinner.)

2. **Algebra.** Imaginaries (treated by modern methods giving geometric constructions), discussion of rational integral functions of one variable (topics usually treated under the head of theory of equations), solution of numerical equations of higher degrees, graphic representation of equations and determinants. The text-book used is Van Velzer and Slichter's University Algebra. Four exercises a week during the winter term. (Prof. Slichter and Mr. Skinner.)

3. **Trigonometry.** In this course the ratio system is exclusively used. The greater part of the term is devoted to plane trigonometry, special stress being laid on goniometry. Spherical trigonometry occupies the last three or four weeks of the term. Text-book: Van Velzer and Slichter's Trigonometry and Mathematical Tables. Four exercises a week during the spring term. (Prof. Slichter and Mr. Skinner.)

4. **Analytic Geometry.** Straight line, conic sections, general equation of the second degree, curves of higher degrees, transcendental curves, and an introduction to geometry of three dimensions. Five exercises a week during the fall term.

5. **Calculus.** Two-term course. Functions of one variable. The leading subjects treated are: Differentiation and integration of func-

tions of one variable, expansion in series, indeterminate forms, maxima and minima, with the usual applications to the lengths of curves, areas of plane curves and surfaces of revolution, volumes of solids of revolution, etc. Five exercises a week during the winter and spring terms.

This course may be followed by the fall term of course 6 to make a three-term course in calculus.

6. **Analysis.** A continuation of course 5. The fall term will be devoted to partial derivatives and multiple integrals with their usual geometrical applications. The winter and spring terms will be devoted to differential equations. Five exercises a week during the Junior or Senior year.

7. **Geometry.** Continuation of course 4. In this course the time will be divided between geometry of two dimensions and geometry of three dimensions. The fall term will be devoted entirely to geometry of two dimensions. In the winter term the more advanced portions of geometry of two dimensions will alternate with the more elementary portions of geometry of three dimensions, while the spring term will be devoted entirely to geometry of three dimensions. In geometry of two dimensions the work will include trilinear and tangential coordinates, properties of pole and polar, principle of duality from the analytic and synthetic standpoints, and the method of projection. In three dimensions the work will embrace the equations of plane, straight line, quadric surfaces and curves in space, quadriplaner coordinates and principle of duality.

Salmon's Conic Sections and Salmon's Geometry of Three Dimensions are the books mainly used, but references will be made to Whitworth's Trilinear Coordinates, Ferrers' Trilinear Coordinates, Baltzer's Analytische Geometrie and Chasles' Geometrie Superieure. This course must be preceded by course 4, and preferably by course 5 also.

8. **Modern Algebra.** In this course an elementary knowledge of determinants is assumed, and starting from this elementary knowledge the work will include multiplication of determinants, symmetric and skew symmetric determinants, compound determinants, cubic determinants, symmetric functions, elimination, resultants, discriminants, invariants, covariants and canonical forms. Salmon's Modern Higher Algebra will be used principally, but references will be made to Faa de Bruno's Forms Binaries and to Clebesch's Binären Formen. Three exercises a week during the year.

9. **Theory of Numbers.** Division of numbers, congruences, their analogy to equations, theorems of Fermat and Wilson, primitive roots, quadratic residues and quadratic forms. In this course Dirich-

let's Zahlentheorie will be followed. Two exercises a week during the year.

10. **Quaternions.** Addition and subtraction of vectors, products and quotients of vectors, interpretation and transformation of quaternion expressions with applications to the geometry of the straight line and plane to quadric surfaces and to mechanics. The book used is Kelland and Tait's Introduction to Quaternions, but occasionally work will be assigned in Tait's larger book.

11. **Synthetic Geometry.** This course will develop the subject of geometry from the synthetic instead of the analytic standpoint and the results usually obtained by analysis will be shown to flow from pure geometry.

12. **Theoretical Mechanics.** An elementary course in analytical mechanics three times a week through the year. Elective for students who have taken calculus. (Prof. Slichter.)

13. **Newtonian Potential Function.** Lectures and required readings on the theory of potential, twice a week through the year. (Prof. Slichter.)

Advanced Courses. To graduates and others prepared to take them, courses will be given consisting of advanced work in the studies already outlined and in the general theory of functions, elliptic functions, higher plane curves, and spherical harmonics.

14. **Synoptical Lectures.** This course will sketch in outline the growth of mathematics from the earliest times to the present with allusions to some of the causes which have favored this growth and some of the mathematicians who have contributed to it.

Under the Course system, courses 1, 2 and 3 will be required, and the student may elect such advance courses in addition as he is prepared to take. Under the Group system, subcourses 1, 2, 3, 4 and 5 are required as the basal studies of the Freshman and Sophomore years. The major study in mathematics may be made from the courses 6–13. Minor studies in mathematics may be assigned according to the capacity of the student.

ASTRONOMY.

PROFESSOR COMSTOCK.

1. **General Astronomy.** Fundamental concepts of astronomy and the more important problems associated with them, so far as the latter admit of treatment by elementary methods. Five times a week during the fall term. Text-book: Young's General Astronomy, with collateral reading.

2. **General Astronomy.** A continuation of the work of 1, with special reference to modern developments in astronomical physics. Five times a week during the winter term.

3. **Observatory Work and Methods.** This course is designed to give to the student some familiarity with the principal astronomical instruments and the methods of employing them in research. It will require attendance at the observatory for two consecutive hours five times a week during the spring term, and the nature of the work requires that a part of the exercises shall fall in the evening hours.

The above work can be undertaken only by students who have completed a course in general physics and the mathematics of the Freshman year. The mathematics of the Sophomore year must either precede or be taken concurrently with the above subcourses.

4. **Theoretical Astronomy.** This course presupposes in the student a working knowledge of the infinitesimal calculus and the elements of dynamics. Integration of the equations of motion and the application of the resulting elements to the computation of ephemerides (first term). Determination of the elements of an orbit from observation (second term). Theory of special perturbations (third term).

5. **Synoptical Lectures.** A course of weekly lectures on the growth and present state of astronomy will be given during part of the year 1893–4.

Graduate students and others desiring to pursue advanced astronomical studies will be received in the Washburn Observatory as assistants and will take part in the regular series of observations with the equatorial telescopes or with the meridian circle, at the same time continuing their theoretical studies. Facilities for independent original work will be afforded to such students, and their work, if of sufficient value, will be printed in the publications of the Washburn Observatory. Seven volumes of these publications, representing the work of the observatory prior to 1890, have already been issued.

For other courses of instruction consult the title Astronomy, in the announcement of the College of Mechanics and Engineering. See, also, the title Washburn Observatory.

PHYSICS.

PROFESSOR DAVIES AND DR. LOOMIS.

1. **Elementary Physics.** For students in the Ancient and Modern Classical courses. Laboratory work is a prominent part of the instruction. The work of the class room is intended to so supplement this as to give a grasp of the fundamental principles. Three times a week during the year. (Dr. Loomis.)

2. **General Physics.** Required of students in the General Science course. Elective sciences for Sophomores in the Civic-Historic and English courses. Similar in general to course 1, but requires preparation in elementary physics and trigonometry. Four-fifths study during the year, two-fifths in the laboratory and two-fifths in the class room. The course may be elected as a full study, the extra work being in the laboratory. (Dr. Loomis.)

3. **Mathematical Physics.** This course will open in the last half of the Junior year for students taking a higher course in mathematical physics. The work will commence with the larger treatise of A. Gray on Absolute Measurements in Electricity and Magnetism, and will be continued throughout the Senior year in electro-dynamics, physical optics, and capillarity, mathematically treated. A prior knowledge of differential equations will be required at the beginning, but special partial differential equations will be treated as they arise. (Prof. Davies.)

4. **Advanced Physics.** A continuation of 2, and should be preceded by 1 or 2. Students who have taken 1 may be admitted if in the judgment of the instructor they can carry the work. A knowledge of the calculus is required. The instruction will be given partly in the class room, partly in the laboratory. Five times a week during the year. (Dr. Loomis.)

5. **Synoptical Lectures.** A course of eighteen lectures will be given by Dr. Loomis, giving an outline of electricity and magnetism, heat, sound and light.

Course 2 will constitute the basal study under the Group system.

Courses 2 and 4 may constitute minor studies, elective or assigned. The major will consist of 3 and 4 with special laboratory work and investigation.

CHEMISTRY.

PROFESSOR DANIELLS AND PROFESSOR HILLYER.

1. **Descriptive Inorganic Chemistry.** Lectures and laboratory work, the laboratory work being supplementary to the previous hour's lecture. Text-book: Remsen's An Introduction to the Study of Chemistry. Full study, fall term.

2. **Qualitative Analysis.** Weekly recitations and discussions. Full study, winter term.

3. **Principles of Organic Chemistry.** Lectures and Laboratory work. Text-books: Remsen's Organic Chemistry, Levy's Anleitung zur Darstellung Organische Präparate. Full study, spring term.

4. **Inorganic Chemistry.** Quantitative work in determining the equivalence of elements and the molecular weights of gases. The

quantitative analysis of substances of known compositions. Full study, fall term.

5. **Volumetric Analysis and Its Applications.** Gravimetric analysis of ores. Full study, winter term.

6. **The Analysis of Ores, Crude Metal, Slags and Technical Products.** The preparation of chemically pure substances. One exercise each week during the year in chemical theory, the solving of chemical problems, and on the history of chemistry. Full study, spring term.

7. **Inorganic Chemistry.** Gas analysis. The comparison of various methods of analysis. Fall term.

8. **Organic Chemistry.** Continuation of synthetical work with comparison of methods, ultimate analysis, determination of molecular weights in fall term. In winter and spring terms, special work, original investigations, preparation of thesis.

The division of time between organic and inorganic chemistry for the Junior and Senior years will be made after consultation with the instructors.

Students wishing to become practical chemists, physicians, teachers, etc., will so far as is possible be given work that will be of greatest service in accomplishing the end they have in view.

9. **Synoptical Lectures.** A course of synoptical lectures will be given weekly during part of the year 1893–4.

Twelve hours' laboratory work a week is regarded as the equivalent of a full study.

The chemical library is well supplied with works of reference and with chemical periodicals, enabling students to familiarize themselves with the most recent investigations bearing upon the work in hand.

Instructors and advanced students will meet once or twice a week during the year to report on articles in the current chemical journals and on assigned topics suggested by recent work in chemistry. Nearly all the more important chemical journals are accessible for use in this work, and the department library is steadily growing by accessions of the best books of reference.

MINERALOGY, PETROLOGY AND GEOLOGY.

PROFESSOR VAN HISE AND PROFESSOR HOBBS.

Preparatory to a two-years' course in the above subjects a reading knowledge of both German and French is desirable, German being especially important. Biology and chemistry should be taken in the Freshman and Sophomore years. It is also advised that physics be taken in the Sophomore year if practicable.

Under the Group system two lines of work are offered. One of these emphasizes geology proper; the other emphasizes mineralogy and petrology. The outline of these courses is as follows:

Mineralogy and Petrology.	Geology.
JUNIOR YEAR.	
Mineralogy, 1. (Assigned study geology, 1, 2 and 4.)	Geology, 1, 2 and 4. (Assigned study mineralogy, 1.)
SENIOR YEAR.	
Petrology, 4 and 5. (Geology, 5, will constitute a part of the assigned work.)	Geology, 3, 5 and 6. (Assigned study petrology, 4.)

MINERALOGY AND PETROLOGY.

PROFESSOR HOBBS.

1. **General Course in Mineralogy.** Full study throughout the year divided into three parts, viz.: General Mineralogy, Optical Mineralogy and Blowpipe Analysis:

Part 1. **General Mineralogy.** Recitations and practicums in crystallography, lectures and quizzes on physical and chemical mineralogy, and lectures and practical work in systematic and descriptive mineralogy.

Part 2. **Optical Mineralogy.** Lectures followed by laboratory work with the petrographical microscope, each student being supplied with one for his special use.

Part 3. **Blowpipe Analysis.** The blowpipe characteristics of the elements, analysis of simple compounds and determination of minerals by use of Brush's tables.

Extra work embracing goniometrical measurements, crystal drawing, special reading in English and German works and extra hours in laboratory, will be assigned to Group students in mineralogy. Required of students who take petrology or geology under the Group system. M., T., W., Th., F., at 11–12, during fall term, and 8–10 during the winter and spring terms.

2. **Short Course in Mineralogy.** General mineralogy is treated during the fall term and blowpipe analysis during the winter term.

Required of all civil engineers (Sophomore year). M., T., W., Th., F., 10–11, during the fall term; W., F., 9–11, during the winter term.

3. **Blowpipe Analysis and Determinative Mineralogy.** This course consists almost entirely of laboratory work. It can be adapted to the needs of pharmacy students and may be made either a three-fifths or a full study.

4. **Petrology 1.** Must be preceded by course 1. A few lectures followed by laboratory work with the microscope on the petrology of the crystalline rocks. Required of Group students in geology or petrology. M., T., W., Th., F., 2–4, fall term.

5. **Petrology 2.** The petrology of the crystalline rocks, including lectures and laboratory work. A month at the end of the spring term will be generally spent in camp in Northern Wisconsin or Michigan studying crystalline rocks in the field. A full study of some original problem and a thesis upon the same will be expected of students in this course. Required of Group students in petrology. M., T., W., Th., F., 2–4, throughout the year.

GEOLOGY.

PROFESSOR VAN HISE.

1. **General Geology.** The geological forces and the work they accomplish; the geography of the continents; the effects of land relief, water areas and rivers upon the distribution of peoples; rocks and their original and secondary structures. A series of synoptic lectures on historical geology. Required of Group students in petrology and geology and Seniors in civil engineering. M., T., W., Th., F., 12–1, during fall term. Text-book, Geikie's Class Book of Geology.

2. **Historical Geology.** Special emphasis is given to the history of the North American continent, including both its physical and life development. Lecture room and laboratory work. Must be preceded by course 1.

Required of group students in petrology and geology. M., T., W., Th., F., 12–1, and 4–5, during winter term.

3. **Systematic Paleontology.** This course was not given the present year, but it is expected to offer it for the school year 1893–94. Required of Group students in geology. Full study, winter term.

4. **Field Geology.** The work of this course the present year is the systematic platting on a large scale of the rock outcrops adjacent to Madison. The study includes a consideration of the physical and paleontological data for correlating the outcrops of the different formations and for placing them at definite positions in the geological time scale. Must be preceded by course 1 and 2. Required of Group students in geology and petrology. F., 2–6; S., 9–1 2–6, during spring term.

5. **Applied Geology.** Treats of the geology of potable water, structural materials, soils, mineral fuels and ore deposits. A report upon an assigned topic is required of each student. Must be preceded

by course 1. Required of Group students in petrology and geology and of Seniors in civil engineering. M., T., W., Th., F., 12-1, spring term.

6. Advanced and graduate courses in geology are offered. The character of the work is adapted to the individual students. Special facilities are offered in physical geology and pre-Cambrian geology by Prof. Van Hise, and in petrology by Prof. Hobbs. Must be preceded by courses 1, 2 and 4 in geology, and courses 1 and 4 in mineralogy and petrology. Required of Group students in geology as a minimum, one term's work and a thesis. Time to be arranged with instructor.

7. **Synoptical Lectures.** Courses of lectures in mineralogy and geology will be given weekly in 1893–4.

BIOLOGY.

PROFESSOR BIRGE, PROFESSOR BARNES, DR. MILLER, AND MR. CHENEY.

1. **General Biology.** Introductory to both botany and zoology, and required as preliminary to all advanced work in either department. Two recitations a week from Parker's Biology and ten hours weekly of laboratory work, using as a hand-book Huxley and Martin's Elementary Biology.

Required of Freshmen in General Science course.

2. **Vertebrate Anatomy.** Dissection of typical vertebrates and recitations from Wiedersheim's Anatomy of Vertebrates. Full study one year. (Prof. Birge and Dr. Miller.)

3. **Invertebrate Zoology.** A general course in the morphology and classification of Invertebrates. The work will be on Arthropoda in the fall term, Mollusca in the winter term, and Vermes in the spring term. Text-book: Claus-Sedgwick's Zoology, Vogt and Jung's Lehrbuch der Praktischen Vergleichenden Anatomie. (Prof. Birge.)

4. **Human Physiology and Histology.** In physiology three recitations weekly are given to the study of Martin's The Human Body during the fall and winter terms. Two demonstrations and lectures are given weekly on histology during the same terms. (Prof. Birge and Dr. Miller.)

5. **Animal Embryology.** Three lectures and ten hours' laboratory work weekly spring term. The development of the chick during the first three days is studied. Text-books: Foster and Balfour's Embryology, Schaefer's Embryology. (Dr. Miller.)

6. **Animal Histology.** Laboratory work in the preparation of the more important tissues and organs, accompanied with lectures and recitations. Full study fall term. (Dr. Miller.)

7. **Bacteriology.** Two recitations and ten hours' laboratory work weekly during the winter term. Recitations from Frænkel's Bacteriology. Full study winter term. (Prof. Birge and Dr. Miller.)

8. **Advanced work in Histology, Embryology or Bacteriology.** Students who have completed the foregoing courses may give the spring term to some special investigation in one of the three lines of study named above.

9. **General Morphology of Plants.** This course is recommended only as a sequel to 1. Its aim is, by a study of the structure of various types of plants, to fill out and complete the student's idea of the forms of vegetable life. To this end such plants will be used as supplement those used in course 1. In the spring term attention will be given to collecting and naming such groups of plants as each student may select for his special study. Ten hours a week throughout the year. Reference book: Goebel's Outlines of Classification. Offered (beginning) only in even years, alternating with courses 10 and 11. (Prof. Barnes.)

10. **Vegetable Histology.** Systematic study of the tissues of phanerogams and ferns. Use of reagents and stains, modes of imbedding, section cutting and mounting. Ten hours a week, two terms. Laboratory guide: Strasburger's Practical Botany. Offered (beginning) only in odd years, courses 10 and 11 alternating with course 9. (Prof. Barnes and Mr. Cheney.)

11. **Organogeny and Embryology.** A study of the development of organs and the embryo. Offered *only* in connection with course 10, alternating with course 9.

12. **Vegetable Physiology.** A course in experimental physiology, supplemented by reference readings. Biology 9 or 10, Chemistry 1 and Physics 1 or 2 must precede this, and it is very desirable that those taking it should be able to read German readily. The necessary observations sometimes require extra time and work at unusual hours, which those taking the course should be willing to give. Ten hours a week throughout the year. Reference books: Detmer's Pflanzenphysiologisches Praktikum, Vines' Lectures on the Physiology of Plants. (Prof. Barnes.)

13. **Bryology.** The large collections of mosses and of the literature relating to their classification offer unusual facilities for special and original work in the study of the moss flora. The course is offered only to advanced students who can devote considerable time to its prosecution, and no credit will be given for less than a year's work. Work will usually be assigned in the determination of general collections during the first term. In the last two terms the student will be given small groups to examine critically. Ten to fifteen hours a week

throughout the year. Manuals: Lesquereux and James, Mosses of North America; Barnes, Keys to the Genera and Species of Mosses. (Prof. Barnes.)

14. **Anatomy of Drugs.** Vegetable histology applied to the examination of commercial drugs. Course 10 must precede this. The drugs from collection required in course 15 will be used. Spring term, ten hours a week. (Mr. Cheney.)

15. **Morphology of Seed-plants.** A study in the laboratory and field of the forms of root, stem and leaf of the highest plants. Embryos and their growth; buds and their unfolding; leaves and their shapes; stems, underground and aerial; flowers and their parts — will be studied in turn. Students will be taught how to determine the names of plants, and will be expected to prepare during the summer a collection in duplicate of twenty-five species of seed-plants of their homes, named, mounted and fully described; and in addition twenty-five species named and mounted. The duplicates, named but unmounted, will be retained by the University. This collection must be presented at the opening of the next fall term. Students will also be required to arrange a collection of drugs, authentic specimens being furnished by the University. Spring term, ten hours a week. (Mr. Cheney.)

Those who wish to pursue a continuous course in botany can do so by taking the courses in the following order: 1, 9, 10, 11, 12, or 1, 9, or 10 and 11, 12, 13, or 1, 10 and 11, 9, 12.

For those who expect to teach botany in high schools, courses 1 and 9 are the *minimum* preparation desirable; and General Science students expecting to teach this subject are recommended to take in addition course 15 in part as a review.

The course in general biology is to be taken by students in the Course system and as one of the basal studies by those making biology the major study under the Group system. A major in biology can be made by adding to the course in general biology two years' work in either zoology or botany.

HYGIENE.

DR. ALMAH J. FRISBY.

Lectures on hygiene are given twice a week during the fall and winter terms. The course each term covers the subjects of sanitary sites and modes of construction of houses, house drainage and sewerage, water supply, ventilation and heating, food and drink, exercise,

clothing, care of the person, preservation of eyesight and hearing, communicable diseases, treatment of emergencies.

Attendance upon these lectures during one term is required of all Freshmen and of special students in their first year.

PHYSICAL TRAINING.

CLARA E. S. BALLARD.

The University now offers opportunity for physical training to the young women. The aim of this training is to secure a symmetrical development of the muscular system, to improve the circulation and produce healthy action in all the organs of the body. Each student is examined and measured on beginning the work in order to discover physical defects. Individual work is assigned for the correction of these. There is a four years' course, consisting of free or Swedish movements, deep breathing exercises, dumb bell drill, chest weight work and other exercises with apparatus.

In advance classes the Delsarte system is used in combination with gymnastics. All exercises in the gymnasium are taken under the personal direction of the instructor, and every precaution is taken to prevent over-exertion.

Work in gymnastics is required of young women of the Freshman class.

MILITARY SCIENCE AND TACTICS.

LIEUTENANT McGRATH.

This department of the University is maintained in accordance with United States and State statutes. By the regulations of the department, all the able-bodied male students of the Freshman and Sophomore classes, and of the special courses, for the first two years of such courses, are required to take military drill.

The work of the department embraces a course in tactics, a course of lectures on military subjects and practical instruction in the school of the soldier, company and battalion, target practice, sabre practice and artillery drill. The class in tactics is formed November 1st of each year, and may be elected by both classes. All non-commissioned officers are required to take the course, which continues through the winter term. The course of lectures may be elected during the winter term of the Sophomore year. Commissioned officers are expected to take this course. The study value of tactics and the lecture course is that of a two-fifths and one-fifth study respectively.

Freshman who, prior to their entering the University, have received the equivalent of one year's instruction in the University battalion, will be required to drill during their Freshman year only; *provided,*

that they furnish certificates from superintendents of military schools or commanding officers of military companies, setting forth in detail the military duty performed; that they are able at the opening of the drill season to give instruction in the school of the soldier; that they take the full course in drill regulations, maintaining a class standing of 90 per cent.; that they waive all right of promotion, and that their conduct and deportment are thoroughly satisfactory during the year. All students ranking below Juniors, no matter how extended may have been their previous military training, will be required to take one year's drill in the University battalion.

Drill for Freshmen begins at the opening of the fall term and is held four times a week until November 1st. Well-instructed Freshmen are assigned to duty as drill masters. A thorough knowledge of the school of the soldier is a prerequisite for such assignment. The drill is continued through the winter term and closes in May. The Sophomore privates commence drill November 1st, at which time the battalion is divided into two divisions, one division drilling Mondays and Wednesdays and one on Tuesdays and Thursdays.

The uniform of the battalion is prescribed by regulation, and can be obtained in Madison.

The University battalion is at present composed of four companies. The following is the

ROSTER

of officers and non-commissioned officers of the University Battalion for the year 1892-93:

First Lieut. H. J. McGrath, 4th U. S. Cavalry, Commanding Battalion.

BATTALION STAFF.

Captain and Adjutant, A. W. Gray.
Captain and Quartermaster, H. E. Allen.
Captain and Inspector, H. R. Messer.
Sergeant Major, J. B. Sanborn.

COMPANY A.

Captain, A. T. Fairchild; First Lieutenant, F. W. Thomas; Second Lieutenant, J. H. Bucey; First Sergeant, B. J. Ochsner; Sergeants, C. K. Leith, G. P. Robinson, H. M. Trippe; Corporals, Niederman, Amazeen.

COMPANY B.

Captain, S. H. Cady; First Lieutenant, C. L. Warren; Second Lieutenant, C. F. Burgess; First Sergeant, W. B. Rubin; Sergeants, H. G. Davies, J. V. Green, E. C. Bebb, O. E. Crooker; Corporals, R. P. Daniells, Geo. Thompson.

COMPANY C.

Captain, G. W. Dewey; First Lieutenant, V. Mason; Second Lieutenant, T. R. Brown; First Sergeant, E. B. True; Sergeants, L. M. Ward, W. L. Bolton, A. O. Wright; Corporals, C. M. Brown, C. B. Hayden.

COMPANY D.

Captain, F. E. Pierce; First Lieutenant, C. W. Jones; Second Lieutenant, G. E. Nichols; First Sergeant, J. S. Lyon; Sergeants, H. J. Noyes, C. H. Anderson, G. Katzenstein, J. D. Maynard; Corporals, L. L. Alsted, A. F. Maynard.

MUSIC.

PROFESSOR PARKER AND MR. SIRED.

Harmony may be taken as an elective, counting as a two-fifths study, during the first two terms of the year. The class will be organized at the begining of the fall term and will meet twice a week. (Prof. Parker.)

There are two general classes in music, each of which meets once a week during the collegiate year. One of these begins at the opening of each year, with a course in the elements of the theory of music, combined with practical exercises in the art of reading vocal music. All students who desire to join this class are admitted without restriction. (Mr. Sired.)

The second class is devoted to the practice of glees, choruses, part-songs, etc. The selections of music are varied in kind and style for the purpose of acquainting the students with the works of both classical and modern authors. All who enter this class are expected to read plain music readily. (Prof. Parker.)

Smaller organizations for special occasions or general practice are encouraged, and receive such attention as can be given without detriment to other work.

Private lessons in vocal culture, piano playing and harmony are given to students pursuing any of the regular courses of study on application and presentation of a card from the Secretary of the Board of Regents, to indicate that the fees mentioned under the head of expenses have been paid. Special students taking two studies may receive private lessons on the same conditions by consent of the Faculty.

The instruction, both in singing and piano playing, is designed to be thorough and progressive, combining a careful technical training with proper guidance to intelligent interpretation.

COLLEGE OF MECHANICS AND ENGINEERING.

CORPS OF INSTRUCTION.

The President of the University.
Storm Bull, Professor of Steam Engineering.
John E. Davies, Professor of Electricity and Magnetism, and Mathematical Physics.
Dugald C. Jackson, Professor of Electrical Engineering.
Forrest R. Jones, Professor of Machine Design.
Charles I. King, Professor of Mechanical Practice.
Frederick E. Turneaure, Professor of Bridge and Hydraulic Engineering.
Nelson O. Whitney, Professor of Railway Engineering.
Edward R. Maurer, Instructor in Engineering.
Arthur W. Richter, Instructor in Engineering.
Ellis E. Dillon, Student Assistant in Wood Shop.
James Higgins, Foreman of Foundry.
James Ross, Foreman of Blacksmith Shop.
James Young, Foreman of Machine Shop.

George C. Comstock, Professor of Astronomy.
William W. Daniells, Professor of Chemistry.
David B. Frankenburger, Professor of Rhetoric.
Homer W. Hillyer, Assistant Professor of Organic Chemistry.
William H. Hobbs, Assistant Professor of Mineralogy and Metallurgy.
Hugh J. McGrath, Professor of Military Science and Tactics.
Edward T. Owen, Professor of French.
William H. Rosenstengel, Professor of German.
Charles S. Slichter, Professor of Applied Mathematics.
Charles R. Van Hise, Professor of Geology.
Charles A. Van Velzer, Professor of Mathematics.
Lucy M. Gay, Instructor in French.
A. A. Knowlton, Instructor in Rhetoric.
Hiram B. Loomis, Instructor in Physics.
Ernest B. Skinner, Instructor in Mathematics.
Susan A. Sterling, Instructor in German.
Fred M. Tisdel, Instructor in Elocution.

ORGANIZATION OF THE COLLEGE.

The College of Engineering is organized in the belief that thoroughgoing fundamental training is the first essential to a successful engineer, but that this fundamental training may be best secured in connection with a certain amount of study of the practical applications of the principles involved, and not solely by theoretical study. It is further a leading thought that after the fundamental principles have been mastered, a certain measure of specialization in the leading lines of engineering is advisable, because of the great development of engineering in recent years and the varied phases which it is rapidly assuming. It is the endeavor of this institution to combine a prudent amount of specialization in the closing years with a thorough grounding in the fundamentals in the earlier portion of its courses; and in carrying this out, it endeavors to make its mathematical and theoretical courses strong in the earlier years, and its applied courses strong in the later years, while its draughting and shop courses continue progressively from the beginning to the end. It also introduces sufficient foreign language to enable its graduates to read the professional German and French literature, and also to give so much of the mastery of the English language as to enable its graduates to present professional subjects with ease, clearness and effectiveness.

Especial encouragement is given to those who can afford the time to graduate in a collegiate course before entering the course in Engineering. By electing the mathematics required of Engineers during the collegiate course, the degree in Engineering can be obtained in two additional years. Greater satisfaction and profit is gained from the study of engineering when the student has already acquired a broad and thorough general training. Engineers are often called upon to fill the highest positions in the community, demanding breadth of view and wide general training. The opportunities for acquiring this breadth of education, as it is given by a complete collegiate course, are few after the student has begun the active practice of his profession.

The College of Mechanics and Engineering offers four systematic courses, as follows:

Two in CIVIL ENGINEERING { 1. RAILWAY ENGINEERING. 2. STRUCTURAL ENGINEERING.

One in MECHANICAL ENGINEERING.

One in ELECTRICAL ENGINEERING.

To those students who desire a course in METALLURGICAL ENGINEERING, elections are offered for advanced work in geology, mineralogy, commercial assaying and chemistry, and the general engineering courses in metallurgy, treatment of ores, and electro-metallurgy.

REQUIREMENTS FOR ADMISSION.

The requirements for admission are alike for all courses and may be found under Group IV, on page 40.

On account of the importance of the mathematical studies in the first two years of the engineering courses, students intending to enter the College of Engineering are urged to review algebra carefully before coming to the University. As topics for this review may be mentioned factoring, simple equations, quadratic equations, higher simultaneous equations and theory of indices.

DEGREES.

For degrees in the College of Engineering see pages 30, 31.

QUARTERS AND EQUIPMENT.

Much of the laboratory, draughting, experimental and class work of the College of Mechanics and Engineering is provided for upon the two lower floors of Science Hall, one of the best educational structures in this country. Shop work and additional laboratory work is carried on in a well equipped building exclusively devoted to the purpose, which, through the generosity of the legislature of 1893, is being largely extended; the chemistry, assaying and metallurgical work are carried on in the Chemical Building, a fine structure built especially for the purpose and which is also to be enlarged. The work in allied sciences, mineralogy, geology, etc., is conducted upon the upper floors of Science Hall; the practical astronomy at the Observatory; the language and mathematical studies in the literary halls of the University. The advantages of association with students seeking general and literary culture are thus secured. All laboratories and courses of study in the University are open to the students in engineering for elective work.

LABORATORIES.

The engineering laboratories are well equipped for purposes of instruction and investigation. In the Testing Laboratory are Olson, Thurston and Riehle machines for making tests in tension, compression, bending and torsion, also for making tests of cements. These machines are supplied with extensometers, clamps, devices for autographic records, and other special devices. Two lathes (in addition to those in the machine shop) are placed in the laboratory for convenience in preparing specimens for the testing machines. The hydraulic laboratory contains high and low level tanks fitted for experimenting upon the flow of water through orifices, nozzles, pipes, and over weirs. In the laboratory are several water motors, water meters, current meters, etc., all available for experimental work. There is also a convenient

supply of gauges and other apparatus required in accurate hydraulic experiment.

The Steam Engineering Laboratory contains a hot-air engine, a gas engine, and several steam-engines of various types. The most important experimental engine is a fifty horse power quarter-crank compound engine, so arranged that either cylinder can be supplied with live steam from the boilers and run as a single cylinder engine. The condenser and pumps can also be disconnected so that the engine may be run as a non-condensing one. Both cylinders and the receiver are provided with steam jackets, which may be used at will. By means of a Proell governor, the number of revolutions may be varied from 50 to 125. The cylinders each have four poppet valves, and the cut-off of the steam is automatically controlled by the governor and may vary between zero and nine-tenths of the stroke. A new fifty horse power Root boiler furnishes the steam for this engine exclusively. The laboratory is supplied with friction brakes, transmitting dynamometers, mercury column and other means for testing steam, water, vacuum, and other gauges, and various devices for special tests. There are also the necessary tanks, weighing apparatus, pyrometers, calorimeters, etc., for making complete tests of the economy and capacity of boilers; with a variety of minor and accessory apparatus. The laboratory contains a large model of Stephenson's link motion, in connection with the piston, cross-head, connecting-rod, and crank of engine.

For elementary instruction in the Electrical Laboratory, the electrical apparatus of the Physics Department is available. The electrical laboratory is also well supplied with exact scientific and commercial instruments, and is arranged for instruction and investigation. With the additional space and apparatus which is allowed through the generosity of the last legislature, the equipment will be made unusually complete in the lines of continuous current, and single and multiphase alternating current generation and distribution, and commercial electro-chemistry. The dynamos in the laboratory are to be arranged in a large special room, with a special engine of exceedingly close speed regulation. For use in testing dynamos, a Brackett cradle dynamometer and other necessary apparatus is at hand. A photometer room is well arranged for the commercial comparisons of arc and incandescent lamps, or for scientific investigations.

The Assay Laboratory, situated in the south part of the basement of the chemical building, is one of the largest and best equipped laboratories of its kind in the country. It has separate rooms for furnaces, tables, wet assaying and balances. The furnace room is supplied with eleven crucible and three muffle furnaces, as well as a small gas plant. It has steam power, a Sturtevant blower, bullion rolls, a Blake ore

crusher and other pulverizers. The table room has space for twenty-four students, and is well supplied with ordinary balances. In the balance room are first-class quantitative balances by Becker and an Oertling gold balance.

The Machine Shop affords excellent facilities for mechanical practice. It embraces a main machine room properly equipped; a room containing smaller machines; a carpenter shop supplied with wood-working machines; a forge room provided with forges and their equipment, with blast and exhaust fans; a foundry room whose equipment consists of a cupola, brass furnace and core oven, with the necessary small tools; a wood-work room supplied with benches, carpenter tools and wood-turning lathes; and a pattern room furnished with the requisite tools. The shop is supplied with convenient lockers, closets and wash-room with hot and cold water. The space and equipment of the shop will be considerably increased by the beginning of the next college year, to provide for the rapid increase in the number of students entering the classes of the Engineering School.

The Engineering Museum contains a complete set of Schroeder's models for descriptive geometry, including shades, shadows and perspective; also a small collection of Schroeder's kinematic models, besides a number of smaller models, made by students, illustrating problems in kinematics.

The draughting rooms contain a large and varied collection of general working and detailed drawings illustrating a great variety of engineering structures and machines.

The surveying instruments include six transits and theodolites, with several solar attachments; five engineer's wye and dumpy levels; and sextants, compasses, aneroids, chains, steel tapes, leveling rods of various patterns, and all needful accessories.

The standards of weights and measures belonging to the State are kept in the laboratories, and all official comparisons are made here.

CIVIL ENGINEERING COURSE.*

FRESHMAN YEAR.

FALL TERM.— French, † 3, ‡ (5), or; German, 4, (5); English and Rhetoric, 1, (3); Mathematics, 1, (5); Topographical Engineering, 1, (Civil Eng.), (5); Machine Design, 1, (Mech. and Elect. Eng.), (5); Shop Work, 1, (2½).

* Engineering students are advised to attend the Synoptical lecture courses of the College of Letters and Science whenever such attendance will not interfere with their prescribed work.

† The language of the Freshman year must be the same as that offered for the entrance examination.

‡ The figures in parentheses denote the number of hours per week. The preceding figures the number of the course.

WINTER TERM.—French, 3, (5); German, 5, (5); English and Rhetoric, 1, (3); Mathematics, 2 and 3, (5); Mathematics, 8, (5); Shop Work, 2, (Mech. and Elect. Eng.), 8, (Civil Eng.), (2½).

SPRING TERM.—French, 3, (5), or German, 5, (5), English and Rhetoric, 1, (3); Mathematics, 4, (5); Mathematics, 8, (5); Shop Work, 3, (2½); Military Drill from September 20 to May 15.

SOPHOMORE YEAR.

FALL TERM.—Mathematics, 4 and 5, (5); Physics, 3a, (4); Chemistry, 1, (5); Mineralogy, 2, (5); Topographical Engineering, 2, (2).

WINTER TERM.—Mathematics, 5, (5); Physics, 3b, (4); Chemistry, 1, (5); Pure and Applied Mechanics, 1a, (5).

SPRING TERM.—Mathematics, 5, 6, (5); Physics, 3c, (4); Pure and Applied Mechanics, 1a, (5); Topographical Engineering, 3, (7); Military Drill from November 1 to May 15.

JUNIOR YEAR.

FALL TERM.—Pure and Applied Mechanics, 1b and 2, (7); Machine Design, 3, (3); Structural Engineering, 1 and 2, (4); Railway Engineering, 1 and 2, (7).

WINTER TERM.—Pure and Applied Mechanics, 3, (4); Railway Engineering, 3, 4, (5); Steam Engineering, 5, (3); Structural Engineering, 3 and 4, (4); Topographical Engineering, 4, (2); Mineralogy, 2, (2).

SPRING TERM.—Pure and Applied Mechanics, 1c, (4); Structural Engineering, 5a, 7a, (8); Steam Engineering, 6, (3); Astronomy, 2, (5).

SENIOR YEAR.

FALL TERM.—Structural Engineering, 5b, 6, 7b, (10); Railway Engineering, 5, (3); Hydraulic and Sanitary Engineering, 1, (3); Geology, 1, (5).

WINTER TERM.—*Required:* Structural Engineering, 7c, (5); Hydraulic and Sanitary Engineering, 2, (3); Highway and Canals, 2, (2); Astronomy, 4, (2); Laws of Corporations and Contracts, (2). Thesis, (2). *Elective, four-fifths study:* *Structural Engineering, 8 and 9, (4); Railway Engineering, 6, (2); Hydraulic and Sanitary Engineering, 3, (3).

SPRING TERM.—*Required:* Highways and Canals, 1, (2); Geology, 5, (5); Thesis, (5). *Elective, eight-fifths study:* *Structural Engineering, 7d, (3); Railway Engineering, 6, (3); Hydraulic and Sanitary Engineering, 4 and 5, (8); Machine Design, 8, (5).

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*Opportunity is afforded for specialization in Railway, Structural or Hydraulic Engineering. Elective studies must be approved by class-officer.

MECHANICAL ENGINEERING COURSE.

FRESHMAN YEAR.

The same as in the Civil Engineering Course.

SOPHOMORE YEAR.

FALL TERM.—Mathematics, 4, 5, (5); Physics, 3a, (4); Chemistry, 1, (5); Machine Design, 2, (2); Shop Work, 4, 5, (5).

WINTER TERM.—Mathematics, 5, (5); Mechanics, 1a, (5); Physics, 3b, (4); Chemistry, 1, (5); Machine Design, 2, (2).

SPRING TERM.—Mathematics, 5, 7, (5); Mechanics, 1a, (5); Physics, 3c, (4); Chemistry, 1, (2); Machine Design, 2, (5).

Military drill from Nov. 1 to May 15.

JUNIOR YEAR.

FALL TERM.—Mechanics, 1b, 2, (7); Electrical Engineering, 1, (5); Machine Design, 2, 4, (5); Shop Work, 6, (4).

WINTER TERM.—Steam Engineering, 1, (5); Electrical Engineering, 1, (4); Machine Design, 5, (7); Shop Work, 8, (5).

SPRING TERM.—Steam Engineering, 2 and 4, (9); Machine Design, 5, 6, (7); Shop Work, 9, (5).

SENIOR YEAR.

FALL TERM.—Steam Engineering, 3, 4, (10); Machine Design, 6a, (8); Shop Work, 10, (3).

WINTER TERM.—Hydraulic Engineering, 3, (3); Steam Engineering, 3, 4, (6); Machine Design, 6a, (5); Laws of Corporations and Contracts, (2); Shop Work, 11, (5).

SPRING TERM.—Hydraulic Engineering, 3 and 4, (3); Thesis.

ELECTRICAL ENGINEERING COURSE.

FRESHMAN YEAR.

The same as in the Civil Engineering Course.

SOPHOMORE YEAR.

The same as in the Mechanical Engineering Course.

JUNIOR YEAR.

FALL TERM.—Mechanics, 1b, (5); Physics, 7, (2); Electrical Engineering, 1, (5); Machine Design, 3, 4, (5); Shop Work, 6, (4).

WINTER TERM.—Mechanics, 2, (2); Steam Engineering, 5, (3); Electrical Engineering, 1, 2a, (8); Machine Design, 5, (7); Shop Work, 8, (2).

SPRING TERM.—Steam Engineering, 4, (5); Electrical Engineering, 2b, (6); Machine Design, 5, 6, (7); Shop Work, 7, (3).

SENIOR YEAR.

FALL TERM.— Steam Engineering, 3, 4, (5); Electrical Engineering, 3a, 4a, 6a, (11); or 4a, 7a, (10); Machine Design, 7b, (5).

WINTER TERM.— Hydraulic Engineering, 3, (3); Electrical Engineering, 3b, 4b, 6b, (11); or 4b, 7b, (10); Machine Design, 7b, (5); Laws of Corporations and Contracts, (2).

SPRING TERM.— Hydraulic Engineering, 3 and 4, (3); Electrical Engineering, 5, 6c, or 5, 7b, (10); Thesis.

ELECTIONS FOR STUDENTS IN GENERAL UNIVERSITY COURSES.

Students who plan to graduate in engineering, after taking a degree in any other college of the University, should aim to make the following elections during their under-graduate course, in order that the Engineering course may be completed in two additional years:

FRESHMAN YEAR STUDIES.

Mathematics, all courses; Topographical Engineering, 1, or Machine Design, 1.

SOPHOMORE YEAR STUDIES.

Mathematics, all courses; Physics, 3; Topographical Engineering, 2 and 3, or Machine Design, 2, 3 and 4; Pure and Applied Mechanics, 1a and 2.

DEPARTMENTS OF INSTRUCTION.

For other courses see pages 58 to 83. The number of hours given is the actual number of hours of instruction. Class-room work and lectures require outside preparation, draughting-room and laboratory work do not.

MATHEMATICS.

PROFESSOR VAN VELZER, PROFESSOR SLICHTER, AND MR. RICHTER.

1. **Algebra.** The course includes progression, arrangements and groups (permutations and combinations), binomial theorem, the theory of limits, undetermined coefficients, series, and logarithms. Text-book: Van Velzer and Slichter's University Algebra. Fall term, five times a week (70 hours in class-room). (Prof. Slichter.)

Required of Freshmen in Engineering.

2. **Algebra.** Imaginaries, rational integral functions of one variable, and solution of numerical equations of higher degrees. Text-book: Van Velzer and Slichter's University Algebra. Twice a week, winter term (24 hours in class-room). (Prof. Slichter.)

Required of Freshmen in Engineering.

3. **Plane Trigonometry.** In this course the ratio system is exclusively used. Text-book: Van Velzer and Slichter's Trigonometry and Tables. Three times a week, winter term (36 hours). (Prof. Slichter.)

Required of Freshmen in Engineering.

4. **Analytic Geometry.** Straight line and conic sections, general equations of the second degree, and introduction to geometry of three dimensions. Five times a week, spring term; three times a week, fall term (92 hours in class-room). (Prof. Slichter.)

Required of Freshmen and Sophomores in Engineering.

5. **Calculus.** Twice a week, fall term; five times a week, winter term, and twice a week, spring term (108 hours in class-room). (Prof. Slichter.)

Required of Sophomores in Engineering.

6. **Spherical Trigonometry.** The fundamental formulas are derived by the transformation of coordinates. Twice a week, winter term; once a week, spring term (34 hours in class-room). (Prof. Slichter.)

Required of Sophomores in Civil Engineering.

7. **Differential Equations.** Three times a week, spring term (30 hours in class-room). (Prof. Slichter.)

Required of Sophomores in Mechanical and Electrical Engineering.

8. **Descriptive Geometry.** Projection of lines, planes, surfaces and solids; intersections; tangents to curves and surfaces; problems in warped surfaces; shades and shadows; linear perspective and isometric projection. The class-room exercises are accompanied by work in the draughting-room. Text-book: Watson's Descriptive Geometry. Five times a week, winter and spring terms (56 hours in class-room and 108 in draughting-room). (Mr. Richter.)

Required of Freshmen in Engineering.

PHYSICS.

PROFESSOR DAVIES AND DR. LOOMIS.

3. **Engineers' Course.** Four times a week during the year. The time is divided between the laboratory and the lecture-room (216 hours).

(a) **Elementary Mechanics, Sound and Light.** Four times a week, fall term. (Dr. Loomis.)

(b) **Heat, Electricity and Magnetism.** Four times a week, winter term. (Dr. Loomis.)

(c) **Elementary Electricity and Magnetism.** Four times a week, spring term. (Dr. Loomis.)

Required of Sophomores in Engineering.

7. **Precision of Measurements.** A laboratory course in physical measurements, directed by occasional class-room lectures. Twice a week, fall term (56 hours in laboratory). Text and reference books: Kohlrausch, Physical Measurements; Stewart & Gee, Elementary Physics; Comstock, Method of Least Squares.

Required of Juniors in Electrical Engineering.

ASTRONOMY.

PROFESSOR COMSTOCK.

5. **Astronomical Practice.** This course gives training in the theory and use of instruments of precision, and teaches the more important practical applications of astronomy, such as the determination of time, latitude, longitude, and the direction of the meridian. Attention is paid to methods of computation and the numerical treatment of observed data. Five times a week, spring term (100 hours in observatory). (Prof. Comstock.)

Required of Seniors in Civil Engineering.

6. **Method of Least Squares.** The subject is treated from the empirical side, and stress is laid upon the application of principles rather than upon the purely mathematical problems which accompany them. Twice a week, winter term (24 hours in class-room). (Prof. Comstock.)

Required of Seniors in Civil Engineering.

CHEMISTRY.

PROFESSOR DANIELLS AND PROFESSOR HILLYER.

1. Five times a week during the fall and winter terms and twice a week during the spring term, divided as follows:

a. **Descriptive Inorganic Chemistry,** lectures and laboratory practice for fourteen weeks. (Prof. Daniells.)

b. **Qualitative Analysis,** for eight weeks. (Dr. Hillyer.)

c. **Quantitative Work** in the determination of the equivalence of elements, for four weeks. (Prof. Daniells.)

d. **Descriptive Organic Chemistry, Gas Analysis,** or **Sanitary Water Analysis,** lectures and laboratory practice for ten weeks. (Prof. Daniells and Prof. Hillyer.) (270 hours in lectures and laboratory.)

Required of Sophomores in Engineering.

PURE AND APPLIED MECHANICS.

PROFESSOR TURNEAURE AND MR. MAURER.

1. **Analytic Mechanics.** This course is shaped with special reference to the practical requirements of engineers.

(a) **Mechanics of Solids.** Two terms are devoted to this part of the course. During the winter term the work covers the main principles of the subject of statics, centre of gravity, friction, and simple machines. During the spring term the work deals mainly with kinematics and kinetics, the principles of work and energy, and moments of inertia. Five times a week (110 hours in class-room). (Mr. Maurer.)

Required of Sophomores in Engineering.

(b) **Mechanics of Materials** (elastic solids). The strength and elastic properties of the most important materials of construction are studied from a theoretical standpoint. Five times a week, fall term (70 hours in class-room). (Mr. Maurer.)

Required of Juniors in Engineering.

(c) **Mechanics of Fluids.** Only enough time is devoted to theoretical hydromechanics to enable the student to pass on to the practical considerations of the flow of water through orifices, in conduits, canals, and rivers; water-power, etc. Four times a week, spring term

(30 hours in class-room and 20 in laboratory). (Prof. Turneaure and Mr. Maurer.)

Required of Juniors in Civil Engineering.

2. **Testing Materials.** Each student is required to make a definite series of tests of wrought iron, cast iron, steel and wood in tension, compression, bending, and torsion. Twice a week, fall term, for Juniors in Civil and Mechanical Engineering. Twice a week, winter term, for Juniors in Electrical Engineering (56 hours in laboratory). (Prof. Turneaure and Mr. Maurer.)

Required of Juniors in Engineering.

3. **Graphic Statics.** This course covers the following general subjects: (1) General theory of graphic statics, being a development from first principles, by graphic methods, of the general principles of the statics of complanar forces, and of the composition and resolution of forces. (2) Applications to the determination of stresses in framed structures under fixed loads. (3) Applications to the determination of centres of gravity and moments of inertia of plane areas.

The work consists of recitations and draughting. As part of the draughting, the student is required to make, graphically, the computations which form the basis of problems in roof design, to be completed the following term. Four times a week (including the draughting) in winter term. (Mr. Maurer.)

Required of Juniors in Civil Engineering.

TOPOGRAPHICAL ENGINEERING.

PROFESSOR WHITNEY AND MR. MAURER.

1. **Elementary Drawing.** Instruction is given in pen topography, colored topography, and brush shading. The conventional signs used in the various kinds of map drawing are carefully studied. The course is preparatory for work in railway and topographical engineering. Five times a week, fall term (140 hours in draughting-room). (Mr. Maurer.)

Required of Freshmen in Civil Engineering.

2. **Elementary Surveying.** The principles of the instrumental adjustments are first studied; after which practical problems in land surveying and profile leveling are worked. Taught partly in lecture room, drawing room, and in the field. Twice a week, fall term. (Prof. Whitney.)

Required of Sophomores in Civil Engineering.

3. **Advanced Surveying.** This study includes the theory and practice of city, mining, hydrographic, and stadia surveying. Text-book: Johnson's Surveying. Spring term, twice a week in class-room

(20 hours) and five times a week in the field (100 hours). (Prof. Whitney.)

Required of Sophomores in Civil Engineering.

4. **Geodesy.** This course includes the theory of geodetic measurements, method of computation, and a study of U. S. Coast Survey charts and reports. Twice a week, winter term (24 hours in class-room). (Prof. Whitney.)

Required of Juniors in Civil Engineering.

RAILWAY ENGINEERING.

PROFESSOR WHITNEY.

1. **Railway Surveying.** A preliminary line about three miles in length is laid out, topography taken adjacent thereto and platted. Each member of the class, given certain limits as to grades and curves, makes an independent projection for final location. Approximate estimates of the cost are made, and the best line is located on the ground. All necessary field and office work required to survey and construct such a line is performed. Five times a week, fall term (140 hours field and office work). (Prof. Whitney.)

Required of Juniors in Civil Engineering.

2. **Location and Construction.** This course is class-room work to be accompanied by course 1. Lectures and recitations on preliminary and location surveys, and on construction, including rock-work, tunneling, explosives, etc. Twice a week, fall term (28 hours in lecture-room). (Prof. Whitney.)

Required of Juniors in Civil Engineering.

3. **Construction and Maintenance of Way.** Lectures on dredging, docking, pile driving, track work in general, including street railway, freight and passenger yard construction, and standard structures. The various signal and interlocking systems are studied. Winter term, twice a week (24 hours in lecture-room). (Prof. Whitney.)

Required of Juniors in Civil Engineering.

4. **Railway Economics.** A study of the sources of income; operating expenses; relative values of distance, gradient, and curvature and their influence upon net receipts; classification of locomotives, and their relative power; rolling stock; and train resistance. Text-book: Wellington's Economic Theory of Railway Location. Three times a week, winter term (36 hours in class-room). Prof. Whitney.

Required of Juniors in Civil Engineering.

5. **Tunneling and Substructures.** Latest methods of tunneling, shaft sinking, and deep foundation work. Designing retaining

walls, piers, abutments, culverts, etc. Three times a week, fall term (42 hours in lecture-room). (Prof. Whitney.)

Required of Seniors in Civil Engineering.

6. **Railway Standards.** This course is intended to give the student a working familiarity with designing various railway standards, such as: box and arch culverts, switches, frogs, freight, and passenger yards, turn-tables, round-houses, freight, and passenger stations, and the various minor buildings. It is carried on in the draughting-room, aided by careful study of numerous blue prints of the standards of the best existing railways. Twice a week, winter term, and three times a week during spring term (108 hours in drafting-room). (Prof. Whitney.)

Elective for Seniors in Civil Engineering.

HIGHWAYS AND CANALS.

PROFESSOR WHITNEY.

1. **Roads and Pavements.** Lectures and assigned readings on the location, construction, and maintenance of country roads, and city streets and pavements. Twice a week, spring term (20 hours in class-room). (Prof. Whitney.)

Required of Seniors in Civil Engineering.

2. **River and Harbor Improvement and Canal Construction.** Lectures and assigned readings on the artificial improvement of rivers and harbors for navigation and protection, and on canal construction in the United States and abroad. Twice a week, winter term (24 hours in lecture-room). (Prof. Whitney.)

Required of Seniors in Civil Engineering.

HYDRAULIC AND SANITARY ENGINEERING.

PROFESSOR TURNEAURE AND PROFESSOR BULL.

1. **Water Supply Engineering.** Collection, purification, and distribution of water. Interpretation of chemical and biological analysis. Given by lectures and assigned reading. Three times a week, fall term (42 hours in lecture-room). (Prof. Turneaure.)

Required of Seniors in Civil Engineering.

2. **Municipal and Sanitary Engineering.** Sewerage systems, sewage and garbage disposal, and street cleaning. Lectures and assigned reading. Three times a week, winter term (36 hours in lecture-room). (Prof. Turneaure.)

Required of Seniors in Civil Engineering.

3. **Hydraulic Motors and Pumping Machinery.** To prepare the student for the study of the motors a short course in practical hydraulics is first given. The various experimental coefficients are discussed, as well as the ordinary methods for measuring the quantity of water used by any motor. Then the various motors are studied, especially turbine wheels, and the course concludes with a short study of pumping machinery. Three times a week, winter term and first half of spring terms (50 hours in class-room). (Prof. Bull.)

Required of Seniors in Mechanical and Electrical Engineering. Elective for Seniors in Civil Engineering.

4. **Hydraulic Laboratory.** The student here learns to measure the water consumed by a motor, to determine the experimental coefficients, and to measure the efficiency of small turbine wheels. Three times a week, last half of the spring term (30 hours in laboratory). (Prof. Bull.)

Required of Seniors in Mechanical and Electrical Engineering. Elective for Seniors in Civil Engineering.

5. **Hydraulic Laboratory.** Special investigations of an original character in continuation of Mechanics, course 1c. Two to five times a week, spring term (40 to 100 hours in the laboratory). (Prof. Turneaure.)

Elective for Seniors in Civil Engineering.

STEAM ENGINEERING.

PROFESSOR BULL AND MR. RICHTER.

1. **Thermodynamics.** This course covers those principles of the mechanical theory of heat which are preliminary to the study of the various kinds of heat-engines. The course is intended to be very thorough, especially with reference to steam. Text-book: Peabody's Thermodynamics of the Steam-Engine. The study is partly taught by lectures. Five times a week, winter term (60 hours in class-room). (Prof. Bull.)

Required of Juniors in Mechanical Engineering.

2. **Theory of Heat-Engines and Boilers.** In this study practical yet scientifically correct formulas for computing the diameter and stroke of the steam-engine are deduced. The influence of clearance, jacketing, cylinder condensation, wet and superheated steam are considered. The theory of compound, triple, and quadruple engines are given, as well as the results from practice in this direction. At the end of the course the subject of injectors, condensers, air and feed pumps are taken up. The general subject of combustion and its application to steam boilers is studied and the theoretical and prac-

tical efficiency of these is developed. The study is mostly given by lectures; for part of the work Peabody's Thermodynamics is used as a text-book. Five times a week, spring term (50 hours in class-room). (Prof. Bull.)

Required of Juniors in Mechanical Engineering.

3. **Design of the Steam-Engine.** In this course the diameter, stroke, and number of revolutions of the engine, as well as the steam pressure and cut-off, are assumed to be known, and from these data the other dimensions are either computed or deduced according to practice. Special attention is given to the various kinds of valve gears, to the fly wheel, governor, and reciprocating parts, and their relations to each other. The study is taught principally by lectures, although Peabody's Valve Gears for Steam-Engines is used as a text-book for a part of the term. The work in the class-room is supplemented by the work in the draughting-room, where each student is required to work out a complete problem. The class work comes three times a week during the fall and winter terms (78 hours), and draughting, eight hours per week, is required in the fall term (112 hours). (Prof. Bull.)

Required of the Seniors in Mechanical Engineering, also three times a week in the fall term of the Seniors in Electrical Engineering.

4. **Laboratory Course.** For this study the compound experimental engine of the laboratory and the fifty horse power Root boiler, besides the various other smaller engines owned by the department, are used with all the necessary appliances for making complete tests of engines and boilers. Stress is laid upon the necessary calibration of all instruments used in such a test. Each student is required to perform all of the various operations necessary for conducting an accurate trial. The methods used are first explained in a course of lectures twice a week during the spring term (20 hours). The laboratory work comes three times a week for the whole year (216 hours), beginning with the spring term. (Prof. Bull and Mr. Richter.)

Required of Juniors and Seniors in Mechanical Engineering. Required of Juniors and Seniors in Electrical Engineering during spring term five times a week, and fall term twice a week. The class-work is required of Juniors in Mechanical and Electrical Engineering.

5. **Short Course in Thermodynamics and the Theory of the Steam-Engine.** Only the fundamental principles of thermodynamics can be touched upon in this course, but to a sufficient degree to enable the student to study the steam-engine intelligently. The theory of the steam-engine is then taken up, to the exclusion of all other heat-engines. Three times a week, winter term (36 hours in class-room). (Prof. Bull.)

Required of Juniors in Civil and Electrical Engineering.

6. **Short Laboratory Course.** This course is intended for Civil Engineering students and is more elementary than the long course in Boiler and Engine Testing. The student will, however, learn enough to conduct an ordinary commercial test of a pumping engine. Laboratory work, twice a week (40 hours); class work, once a week (10 hours); laboratory work twice a week, spring term. (Prof. Bull.)

Required of Juniors in Civil Engineering.

ELECTRICAL ENGINEERING.

PROFESSOR JACKSON AND PROFESSOR DAVIES.

1. **Electromagnets and Dynamos.** This covers a discussion of the simple forms of electromagnets; the development of the laws of magnetization by electric currents; the laws of simple magnetic circuits and the windings for electromagnets; the relations between electro-motive force, velocity, and strength of field, under conditions obtaining in dynamos; the practical design of dynamos. The instruction is illustrated by the design, examination, operation, and testing of commercial dynamos in the drawing room and laboratory. Taught by lectures based on Jackson's Text-book on Electromagnetism and the Construction of Dynamos. Must be preceded by Physics, course 3c. Five times a week, fall and winter terms (94 hours in class-room and 72 in laboratory). (Prof. Jackson.)

Required of Juniors in Electrical and Mechanical Engineering.

2. **Applied Electro-Chemistry.**

(a) **Primary and Secondary Batteries.** This treats of electric batteries as sources of electricity; the construction of primary and secondary batteries; the chemical reactions occurring during their operation; and their commercial use. Tests of various types of cells are made by the students in the laboratory, during their work in course 2b. Text-books: Carhart's Primary Batteries, and Niblett's Secondary Batteries. Three times a week, winter term (36 hours in class-room). (Prof. Davies.)

(b) **Electrolysis and Electro-metallurgy.** This consists of lectures on Faraday's law, electro-chemical equivalents, velocities of ions, relations between chemical affinities and electro-motive forces, electric osmosis, molecular conductivity, resistance of electrolytes, electrolysis of gases, atomic charges, Grotthus' chains, effect of temperature on electrolysis, specific inductive capacity of electrolytes, etc. Electrolytic separation and refining of metals and treatment of ores are considered from the practical side. The instruction is illustrated by the laboratory work of the students. Taught by lectures based on Gore's Electrolytic Separation of Metals. Must be preceded by courses

in chemistry and course 2a. Six times a week, spring term (30 hours in class-room and 60 in laboratory). (Prof. Davies.)

Required of Juniors in Electrical Engineering.

3. (a) *Electrical Instruments and Measurements. This treats of the ultimate precision attainable in the various classes of electrical measurements; selection of instruments for special tests, and the precautions and corrections required to attain the greatest accuracy; construction and verification of the constants of standard instruments, and their forms when modified for special measurements; construction, calibration, use, and abuse of commercial electrical instruments. Three times a week, fall term (14 hours in class-room and 56 hours in laboratory). (Prof. of Physics.)

Required of Seniors in Electrical Engineering.

3. (b) **Electric Circuits and testing lines used in Telephony, Telegraphy, and Railway Electric Signaling.** This includes the construction of telephone and telegraph lines for local and long-distance circuits, and the selection of conductors, insulators and supports; the protection of lines and plant from damage by lightning or by crossing with electric light and power wires, the effect of induction, leakage, and earth returns; the design and wiring of switch boards; the application of electric circuits and electromagnetic mechanism to locking and operating railway signals. Taught by lectures. Must be preceded by 3a. Four times a week, winter term (24 hours in class-room and 48 in laboratory). (Prof. Davies.)

Required of Seniors in Electrical Engineering.

4. **Theory and Application of Alternating Electric Currents.**

(a) **Theory of Alternating Currents.** This covers the theory of the generation and application of alternating currents. The induction coil and alternating current transformer, effects of self and mutual induction, magnetization by alternating currents, hysteresis, and other phenomena are theoretically investigated. Practical examples and laboratory work by the students illustrate the class-room instruction. Text-book: Fleming's Alternate Current Transformer in Theory and Practice, Vol. 1. Must be preceded by all courses in mathematics and course 3c in physics. Five times a week, fall term (42 hours in class-room and 56 in laboratory). (Prof. Davies.)

(b) **Alternating Current Machinery.** In this the theoretical discussion of alternating currents is directly applied to designing alter-

* Courses 3 and 6 are intended exclusively for students who expect to enter the field of practical electrical engineering and construction. The instruction is thoroughly practical. Students desiring to enter the field of teaching, or, for other reasons, desiring a further theoretical training, may substitute therefor the elective course 7.

nating current machinery. The methods of course 1 are used as far as practice with alternating currents will permit. The time devoted to laboratory work is occupied in examining and testing commercial machines. Taught by lectures based on notes by the professor. Must be preceded by courses 1 and 4a. Five times a week, winter term (36 hours in class-room and 48 in laboratory). (Prof. Jackson.)

Required of Seniors in Electrical Engineering.

5. **Electric Light and Transmission of Power.** This includes a study of the manufacture and use of arc and incandescent lamps; selection and arrangement of electrical machinery for generating plants; location, erection, and cost of distributing lines, and application of electric motors to the general purpose of power distribution. Taught by lectures based on Russell's Electric Light Cables and Kapp's Electric Transmission of Energy. Five times a week, spring term (50 hours in class-room). (Prof. Jackson.)

Required of Seniors in Electrical Engineering.

6. ***Electricity in Engineering Operations.**

(a) **Electric Railways.** The instruction in this includes the road-bed, rolling stock, electric circuits, and power plants for city, town, and suburban railways; the location and construction of street railways in cities and towns; track foundation and types of rail; selection of cars and motors to be used under different conditions; methods of conveying the electric current from the generator to the motors, and the best methods for meeting the severe conditions imposed on electric railway power plants. Taught by lectures based on notes by the professors. Three times a week, fall term (42 hours in class-room). (Profs. Jackson and Whitney.)

(b) **Electricity in Mining and Quarrying.** This includes a discussion of the practice in mining and quarrying where electricity can be satisfactorily applied; the use of electric motors on locomotives, hoisters, pumps, coal cutters, drills, and derricks, and the advantages and limiting conditions of long-distance transmission of power by electricity from water-power to mines. Taught by lectures. Should be preceded by 6a. Winter term, twice a week (24 hours in class-room). (Prof. Jackson.)

(c) **Station Management and Estimates.** This includes the effect on operating expenses of the arrangement of power and generating plants and circuits, and the use of meters. The greater part of the time is given to this discussion on account of its importance. Some time is spent in estimating costs of power and generating plants, and the cost of lines and weights of copper. Instruction by

* See foot-note, p. 103.

lectures. Five times a week, spring term (50 hours in class-room). (Prof. Jackson.)

Required of Seniors in Electrical Engineering.

7. **Mathematical Theory of Electricity and Magnetism.**

(a) **Elementary Theory.** This course is offered to students who have completed courses 3 in Physics and 2 in Electrical Engineering. It follows the treatment of the subject as given in Gray's Theory of Absolute Measurements in Electricity and Magnetism. Must be preceded by all courses in mathematics. Five times a week, fall term (70 hours in class-room). (Prof. Davies.)

(b) **Advanced Theory.** This is an amplification of course 7a. The work includes a mathematical course in the theory of elasticity and its application by analogy to the laws of electricity and magnetism. The instruction is by lectures and references to Maxwell's Electricity and Magnetism, Mascart and Joubert's Electricity and Magnetism, Mathieu's Electro-dynamique, etc. Must be preceded by course 7a. Five times a week, winter and spring terms (110 hours in class-room. (Prof. Davies.)

Elective for Seniors in Electrical Engineering.

Laboratory Work. All laboratory instruction is made to conform with and illustrate the class-room instruction. Of the total number of hours given to instruction in the electrical engineering courses, nearly one-half is devoted to work in the laboratories. Students are advised to use their extra time in additional work in the shops and laboratories.

STRUCTURAL ENGINEERING.

PROFESSOR TURNEAURE AND PROFESSOR WHITNEY.

1. **Elementary Drawing.** During the summer vacation, preceding the Junior year, each student is expected to make full detail measurements of a railway or highway bridge of about 100-foot span. In the fall term he makes a complete drawing of the structure from these measurements, carefully studying the various details. Twice a week, fall term (56 hours in drawing-room). (Prof. Turneaure.)

Required of Juniors in Civil Engineering.

2. **Masonry Construction.** Preparing and using the materials; masonry structures, as dams, walls, piers, abutments, culverts, and arches; general theory of distribution of forces. Lectures and recitations. Twice a week, fall term (28 hours in class-room). (Prof. Whitney.)

Required of Juniors in Civil Engineering.

3. **Engineering Architecture.** Treats of those principles of artistic design applicable to engineering structures, especially those of masonry. Winter term; twelve lectures in connection with course 4.

4. **Masonry Arches.** A discussion of the theory of the stability of masonry arches is followed by the complete design and architectural treatment of an arch. Three times a week, winter term (mainly draughting. (Prof. Turneaure.)

Required of Juniors in Civil Engineering.

5. **Theory of Structures.** The instruction in this subject is by text-book, together with the working of numerous problems. Text-book: Johnson, Turneaure, and Bryan's Modern Framed Structures.

(a) **Simple Bridge Trusses.** Determination of stresses by both graphical and analytical methods in the modern types of trusses for uniform and for concentrated moving loads. Three times a week, spring term (30 hours in class-room). (Prof. Turneaure.)

Required of Juniors in Civil Engineering.

(b) **Suspension, Swing, Cantilever and Arch Bridges.** Theory of stresses and problems. Three times a week, fall term (42 hours in class-room). (Prof. Turneaure.)

Required of Seniors in Civil Engineering.

6. **Bridge Design.** Formulæ for working stresses, design of individual truss members, details of joints, secondary stresses, and other questions relating to the designing of details. Twice a week, fall term (28 hours in class-room). (Prof. Turneaure.)

Required of Seniors in Civil Engineering.

7. **Designs and Estimates.** The work consists in the designing of one or more structures of each kind mentioned, the estimating of material and cost, the working up of details, and the preparation of complete working drawings.

(a) **Elementary Designing.** Details in wood and iron, with the complete design of a simple wooden truss and of an iron roof truss. Five times a week, spring term (100 hours in draughting-room). (Prof. Turneaure.)

Required of Juniors in Civil Engineering.

(b) **Plate and Lattice Girders.** Five times a week, fall term (140 hours in draughting-room). (Prof. Turneaure.)

Required of Seniors in Civil Engineering.

(c) **Pin Connected Trusses.** Five times a week, winter term (120 hours in draughting-room). (Prof. Turneaure.)

Required of Seniors in Civil Engineering.

(d) **Suspension and Swing Bridges.** Special details. Three times a week, spring term (60 hours in draughting-room). (Prof. Turneaure.)

Elective for Seniors in Civil Engineering.

8. **Economic and Artistic Design.** This work includes a study of bridge location, span length, economy, and adaptability of the various forms of bridges, and the selection of designs with proper reference to æsthetic as well as economic principles. Twice a week, winter term (24 hours in class-room). (Prof. Turneaure.)

Elective for Seniors in Civil Engineering.

9. **Inspection and Testing.** In this course a study is made of the properties of structural iron and steel, results and methods of testing, and specifications for quality of material. The instruction is given by means of lectures, recitations, and laboratory experiments. Twice a week, winter term (12 hours in class-room and 24 hours in laboratory). (Prof. Turneaure.)

Elective for Seniors in Civil Engineering.

MACHINE DESIGN.

PROFESSOR JONES AND INSTRUCTOR.

1. **Elements of Drawing.** The use of drawing instruments and plain lettering are first taught, followed by freehand sketching of machine parts; from the sketches complete working drawings are made. The sketches are from parts of machines in actual use, having correct proportions and outlines. Five times a week, fall term (140 hours in draughting-room).

Required of Freshmen in Mechanical and Electrical Engineering.

2. **Draughting, Tracing, and Blue Printing.** During this course drawings are made from actual machines, models, and plates, the object being to give the student a general idea of the forms of machine parts and methods of putting them together. Where plates are used they are as far as possible duplicates of drawings in use at the time for construction in the best machine establishments of to-day. Standard plates are used to illustrate combinations not shown by the above methods. Finally an entire machine of moderate complexity is taken as a model from which complete working drawings are made. Line shading, tracing, and blue printing are taught during this course. Twice a week, fall term. Three times a week, winter term. Five times a week, spring term (228 hours in draughting-room).

Required of Sophomores in Mechanical and Electrical Engineering.

3. **Materials.** Elementary Metallurgy of Iron and Steel. Methods of testing materials and interpretation of results. The effect of change of chemical composition, mechanical working, and heat treatment upon the physical properties of materials. In this work the magnetic and electrical properties of materials that are of value to the engineer

are studied. Three times a week, fall term (42 hours in class-room). (Prof. Jones.)

Required of Juniors in Engineering.

4. **Kinematics.** A study of the relative motions in machine parts; belting, toothed gears, cams, linkages, and velocity diagrams are considered. Twice a week, fall term (28 hours in class-room). (Prof. Jones.)

Required of Juniors in Mechanical and Electrical Engineering.

5. **Graphic Statics of Mechanism.** An application of graphic statics to finding the stresses and moments in machine members with a view to determining their proper forms and dimensions. Winter term, twice a week (24 hours) in class; five times a week (120 hours) draughting. Five times a week, spring term (100 hours) draughting. (Prof. Jones.)

Required of Juniors in Mechanical and Electrical Engineering.

6. **Elements of Machines.** A study of screw fastenings, riveted joints, journals, bearings, sliding surfaces, etc. Also the outline and cross-sectional forms of machine parts. Twice a week, spring term (20 hours in class). (Prof. Jones.)

Required of Juniors in Mechanical and Electrical Engineering.

7. (a) **Complete Machines.** The principles of the preceding courses are applied in the design of a complete machine. The parts are considered with regard to strength, form, beauty of outline, and cost of construction, the object being to produce an efficient, durable machine with pleasing outlines and the minimum complexity allowable for its purpose. The methods for obtaining the best machines at the lowest cost are given special attention. The manufacture of a large number of machines of the same pattern is studied with regard to economy, rapidity, and accuracy. Fall term, three times a week (42 hours) in class; five times a week (140 hours) draughting. Winter term, twice a week (24 hours) in class; three times a week (72 hours) draughting. (Prof. Jones.)

Required of Seniors in Mechanical Engineering.

7. (b) **Complete Machines.** This work is in the main the same as that of 7 (a), the only difference being that electrical machinery is designed during the latter portion of the course. Direct and alternating current dynamos and transformers have special attention. The planning of an electric light or power station is studied with regard to arrangement of machinery. Fall term, three times a week (42 hours) in class; twice a week (56 hours) draughting. (Prof. Jones.) Winter term, twice a week (24 hours) in class; three times a week (72 hours) draughting. (Prof. Jones.)

Required of Seniors in Electrical Engineering.

8. **Traveling Cranes. Power Derricks. Hoisting Machinery, etc.** A course for those who have studied the properties of materials and graphic statics. Spring term, twice a week (20 hours) in class; three times a week (30 hours) draughting. (Prof. Jones.)

Elective for Seniors in Civil Engineering.

SHOP WORK.

PROFESSOR KING, MR. DILLON, MR. HIGGINS, MR. ROSS, AND MR. YOUNG.

1. **Bench and Machine Work in Wood.** (a) A systematic course in the use of the plane, saw, gouge, bit, and kindred tools. This covers the principles of joining and joint work involved in building construction. Lectures each day precede new operations. Exercises in free-hand sketching are required three times a week. One-half study first half of fall term (35 hours).

(b) Systematic training at the lathe in the use of the gouge and chisel in plain and ornamental turning in hard and soft wood. Lectures and sketching as before. One-half study during last half of fall term (35 hours). (Prof. King and Mr. Dillon.)

Required of Freshmen in Engineering.

2. **Foundry Work.** Practice in pattern making and moulding. The patterns chosen are those giving the best illustration of the principles involved in their construction and in the methods of moulding. Lectures on these subjects and on the methods of core making and core work are given with this course. Free-hand sketching is required. One-half study, winter term (60 hours). (Prof. King and Mr. Higgins.)

Required of Freshmen in Electrical and Mechanical Engineering.

3. **Bench Work in Iron.** Embraces practice in wrought and cast iron with the hammer, chisel and file at the vise. One-half study, spring term (50 hours). (Prof. King and Mr. Young.)

Required of Freshmen in Engineering.

4. **Production of Flat Surfaces and Straight Edges.** Training in the use of file and scraper on surfaces of large area. Lectures treating of the lathe and drilling machine. Twice a week, fall term (56 hours). (Prof. King and Mr. Young.)

Required of Sophomores in Mechanical and Electrical Engineering.

5. **Machine Work in Iron.** Practice on the engine lathe, in connection with which are taught the elementary features of boring, turning and screw cutting. Lectures on these subjects weekly. Three times a week, fall term (84 hours). (Prof. King and Mr. Young.)

Required of Sophomores in Mechanical and Electrical Engineering.

6. **Tool Making.** The methods of making taps and dies for cutting screw threads are the prominent features. Some instruction in

brass work is also given. Four times a week, fall term (112 hours). (Prof. King and Mr. Young.)

Required of Juniors in Mechanical and Electrical Engineering.

7. **Machine Construction.** Attention is given to the cost of production. Twice a week, winter term (48 hours). (Prof. King and Mr. Young.) Required of Juniors in Mechanical Engineering. Three times a week, spring term (60 hours). Required of Juniors in Electrical Engineering.

8. **Forge Work.** Training in the fundamental features of forge practice, as drawing, upsetting, bending, welding, tool making, and tempering, Three times a week, winter term (84 hours). (Prof. King and Mr. Ross.) Required of Sophomores in Mechanical and Electrical Engineering. One-half study (60 hours). Required of Freshmen in Civil Engineering.

9. **Practice at the Lathe and Milling Machine.** This includes instruction in the methods of determining the diameter of blanks for spur, bevel, spiral, and tangent wheels, on the lathe, and in cutting the teeth with the milling machine. Five times a week (100 hours), spring term. (Prof. King and Mr. Young.)

Required of Juniors in Mechanical Engineering.

10. **Construction and Pattern Work.** Practice in the construction of machines. The responsibility is imposed upon the student of constructing some piece of machinery which will involve a knowledge and use of the principles previously taught. This requires pattern work, forging, moulding, and machine work. Three times a week (84 hours), fall term. (Prof. King.)

Required of Seniors in Mechanical Engineering.

11. **Construction.** The time in this course is devoted to the construction and completion of the machines. Five times a week (120 hours), winter term. (Prof. King.)

Required of Seniors in Mechanical Engineering.

12. **Construction and Testing.** Work in this course is similar to that of course 11. Tests and experiments are made to prove the value of the machines and to develop their defects if any exist. (Prof. King.)

Elective during spring term for Seniors in Mechanical and Electrical Engineering.

GENERAL INFORMATION.

For information regarding the general policy and government of the University, methods of work, libraries, scientific laboratories, museums and observatories, see pages 17 to 28. For courses in language, literature, science, etc., see pages 58 to 83. For information respecting charges, fees and other expenses, see page 57.

COLLEGE OF AGRICULTURE.

CORPS OF INSTRUCTION.

The President of the University.
W. A. Henry, Dean, Professor of Agriculture.
S. M. Babcock, Professor of Agricultural Chemistry.
J. A. Craig, Professor of Animal Husbandry.
E. S. Goff, Professor of Horticulture and Economic Entomology.
F. H. King, Professor of Agricultural Physics.
W. H. Morrison, Superintendent of Farmers' Institutes.
J. W. Decker, Instructor in Dairying.
F. W. Woll, Instructor in Agricultural Chemistry.
C. A. Woodford, Instructor in Veterinary Science.

C. R. Barnes, Professor of Botany.
E. A. Birge, Professor of Zoology.
W. W. Daniells, Professor of Chemistry.
D. B. Frankenburger, Professor of Rhetoric.
H. W. Hillyer, Assistant Professor of Organic Chemistry.
C. I. King, Professor of Practical Mechanics.
H. J. McGrath, Professor of Military Science and Tactics.
W. H. Rosenstengel, Professor of German.
C. R. Van Hise, Professor of Geology.
C. A. Van Velzer, Professor of Mathematics.
H. B. Loomis, Instructor in Physics.
A. W. Richter, Instructor in Engineering.

H. J. Noyes, Instructor in Butter Making.
U. S. Baer, Assistant Instructor in Cheese Making.
E. S. Brubaker, Assistant Instructor in Butter Making.
F. Carpenter, Assistant Instructor in Butter Making.
E. W. Curtis, Assistant Instructor in Butter Making.
DeW. Goodrich, Instructor in Farm Dairying.
A. Schoenman, Instructor in Milk Testing.
D. Simmons, Assistant Instructor in Cheese Making.

OFFICERS OF THE EXPERIMENT STATION.

W. A. Henry, Director.
S. M. Babcock, Chief Chemist.
F. H. King, Agricultural Physicist.
E. S. Goff, Horticulturist and Entomologist.
J. A. Craig, Animal Husbandry.
F. W. Woll, Assistant Chemist.
J. W. Decker, Dairying.
Winona Merrick, Clerk and Librarian.

INSTITUTE SPEAKERS.

W. H. Morrison, Superintendent.

S. M. Babcock, University.
J. A. Craig, University.
E. S. Goff, University.
W. A. Henry, University.
F. H. King, University.
L. H. Adams, University.
J. W. Decker, University.
M. T. Allen, Waupaca Co.
C. S. Arnold, Walworth Co.
A. D. Barnes, Waupaca Co.
W. D. Barnes, Outagamie Co.
H. A. Briggs, Walworth Co.
H. M. Culbertson, Outagamie Co.
W. H. Cole, Dane Co.
R. J. Coe, Jefferson Co.
Thos. Convey, Iowa Co.
F. C. Curtis, Columbia Co.
A. J. Decker, Fond du Lac Co.
F. C. Edwards, Jefferson Co.
C. H. Everett, Rock Co.
E. G. Fuller, Calumet Co.
F. A. George, Trempealeau.
C. P. Goodrich, Jefferson Co.
Geo. C. Hill, Fond du Lac Co.
S. S. Jones, Rock Co.
R. S. Kingman, Monroe Co.
Chas. Linse, La Crosse Co.
Geo. McKerrow, Waukesha Co.
Byron Snyder, Rock Co.
A. Selle, Ozaukee Co.
M. A. Thayer, Monroe Co.
T. J. Van Matre, La Fayette Co.
Geo. Wylie, Columbia Co.
John Wilson, Dane Co.

PLAN OF AGRICULTURAL EDUCATION.

The system of education adopted by the College of Agriculture has three aims:

First, to develop agricultural science through investigation and experiment and to disseminate the same through bulletins and reports;

Second, to give instruction in agriculture at the University;

Third, to disseminate agricultural knowledge among the farmers of the State by means of institutes and popular publications.

I. THE AGRICULTURAL EXPERIMENT STATION.

The purpose of the Experiment Station is the promotion of agricultural science by investigation and experimentation. In the choice of subjects it endeavors to select those which possess the greatest importance to the farmers of Wisconsin, so far as the facilities at hand permit. At all times there is an earnest effort to give the investigations a careful fundamental character in order that the results may be real contributions to agricultural science. The Station is also a means of disseminating general and miscellaneous information on agricultural topics, and its staff cheerfully devotes the necessary time to private and public correspondence and to personal interviews.

The offices and laboratories of the Station are in Agricultural Hall, on the University grounds. The Dairy Building lies midway between the general group of college buildings and the University farm. The Horticultural Building, to be erected during the summer of '93, will be located near the Dairy Building. The farm with its buildings and the experimental grounds adjoins the campus on the west.

By direction of the general government, which supplies a large portion of the funds for maintaining the Experiment Station, there are issued an annual report and quarterly bulletins. Eight reports and thirty-four bulletins have been issued to date. Fifteen thousand copies of the report are printed annually, and the edition of the bulletins generally comprises ten thousand copies. These bulletins and reports are free to all residents of the State upon application. The Station mailing list now embraces about eight thousand names of farmers and others to whom the reports and bulletins are regularly sent.

II. INSTRUCTION AT THE UNIVERSITY.

Systematic courses in agriculture have been arranged to meet the wants of students having different purposes in view.

The *Graduate Course* offers to advanced students opportunities for professional training and original investigation, made possible through a well equipped and active Experiment Station, associated with numerous amply furnished scientific laboratories. The special lines of study will be left largely to the selection of the students, subject to the approval of the Agricultural Faculty. It will be practicable to a large extent for such students to participate in experiments in progress and, after suitable experience, to conduct independent investigations. When contributions to knowledge of permanent value are made they will be published through bulletins of the Experiment Station under the name of the contributor.

The *Long Course* offers a liberal and scientific training along agricultural lines; it opens an avenue to a professional mastery of agricultural chemistry, agricultural physics, animal husbandry, dairying, and other special phases of the subject. Besides the strictly professional branches it embraces chemistry, physics, botany, zoology, geology, and similar branches which have an agricultural bearing. The field is so broad, however, that it is impossible for the students in four years to pursue all the courses offered, in addition to acquiring the necessary fundamental studies, and hence a large liberty of selection is allowed.

The *Short Course* is adapted to those who have but limited preparation and can devote only a short time to study, and who wish to return at once to the active operations of the farm, and therefore desire the greatest amount of available and directly useful knowledge that can be acquired in the brief time allowed.

The *Dairy Course* is designed to meet the wants of those who intend to operate creameries and cheese factories.

DEGREES.

The degree of Bachelor of Science in Agriculture is conferred on students who successfully complete the Long Course in Agriculture. The degree of Master of Science in Agriculture is conferred on Bachelors of Science in Agriculture who complete one year advance study at the University and present an acceptable thesis on a topic approved by the Faculty.

TERMS OF ADMISSION.

Graduate Course in Agriculture. Graduates of this University and of other colleges and universities in good standing are admitted to this course without examination.

Long Course in Agriculture. The following branches are required: English grammar, including sentential analysis and orthography; arithmetic, algebra through quadratics, and plane and solid geometry; political and physical geography; history of the United States; natural philosophy; physiology and botany. Students from accredited schools will be admitted on the same basis as required for the General Science or English course.

Short Course in Agriculture. Students in this course must be at least sixteen years of age, and have a good common school education. No entrance examinations are required, but those who come poorly prepared cannot expect the full benefits of the course.

Course in Dairying. The terms of admission to this course will be the same as for the Short Course.

Special Students in Agriculture. As many of the youth of the farming communities are not within reach of schools giving instruction in all the branches required for admission to the Long Course, limited concessions will be made to young men of exceptional strength and maturity by which they will be permitted to enter the University as special students in agriculture.

LONG COURSE IN AGRICULTURE.

FRESHMAN YEAR.

BIOLOGY, full study for the year.
MATHEMATICS, algebra and trigonometry, four-fifths study for the year.
GERMAN, four-fifths study for the year.
ENGLISH, two-fifths study for the year.
MILITARY DRILL, GYMNASTICS and HYGIENE.

SOPHOMORE YEAR.

CHEMISTRY, full study for the year.
PHYSICS, full study for the year.
GERMAN, four-fifths study for the year.
ENGLISH, two-fifths study for the year.
MILITARY DRILL and GYMNASTICS.

JUNIOR AND SENIOR YEARS.

Two years in AGRICULTURAL CHEMISTRY, AGRICULTURAL PHYSICS, ANIMAL HUSBANDRY or HORTICULTURE, as a major subject.
One year in one of the above-named subjects to be assigned by the professor in charge of the major subject.
One term in VETERINARY SCIENCE.
Elective studies sufficient to make thirty-six terms' work.

SHORT COURSE IN AGRICULTURE.

The Short course in Agriculture is proving a very popular course for young farmers who can devote but a limited amount of time to preparatory study for their chosen vocation. The subjects of this course are elective, and will occupy the whole time of the student during the winter term of two years. The course embraces the following topics:

Thirty lectures, mainly devoted to feeds and feeding, by Professor Henry.

Thirty lectures on breeds and breeding, with practice in scoring and judging improved breeds of live-stock, by Professor Craig.

Thirty-six lectures and recitations on the elements of agricultural chemistry, by Dr. Babcock.

Sixty lectures and recitations on agricultural physics and meteorology, by Professor F. H. King.

Sixty lectures with laboratory practice in horticulture and economic entomology, by Professor Goff.

Sixty lectures with demonstrations on the anatomy, physiology and hygiene of domestic animals, by Dr. Woodford.

One hundred and twenty hours at the work-bench and forge in practical mechanics, by Professor C. I. King.

Twenty-four lectures on dairying, by Dr. Babcock.

Seventy-two hours' practice in the creamery and dairy laboratory, by Mr. Goodrich.

Illustrated circulars descriptive of the Short Course will be sent on application.

To the above will be added in 1894 instruction in farm book-keeping and business accounts.

COURSE IN DAIRYING.

The instruction in dairying is divided into four courses. The dairy class is divided into three sections, one of which is assigned daily to the laboratory, a second to the creamery, and a third to the cheese factory. The sections alternate so that each student receives instruction twice a week in each of the three departments. The courses are arranged as follows:

1. **Lectures and Class-room Work:**

(1) Twenty-four lectures by Dr. Babcock on the constitution of milk, the conditions which affect creaming and churning, methods of milk testing, the preservation of milk, etc.

(2) Eight lectures by Professor F. H. King on heating, ventilation, and other physical problems directly connected with dairy practice.

(3) Ten lectures and demonstrations by Mr. Richter on the care and management of the boiler and engine.

(4) Ten lectures by Dr. Woodford on the common diseases of the dairy cow.

(5) Eight lectures by Professor Henry on the feeding and management of dairy stock.

(6) Eight lectures by Professor Craig on breeding and selection of dairy stock.

2. **Milk Testing.** This embraces instruction in the laboratory by Dr. Babcock and Mr. Schoenman in estimating the fat in milk, butter,

and cheese by methods adapted to the factory and factory operators. Six hours per week.

3. **Butter Making.** Instruction in this course is given by Mr. H. J. Noyes, with assistants. Butter making is carried on daily on the creamery plan. The student learns to operate the several forms of power, centrifugal separators, and the butter extractor. They attend to the ripening of the cream, churning and packing butter, carrying on all the operations as they would be conducted in a creamery. Twelve hours per week.

4. **Cheese Making.** In this course, Mr. Decker, with assistants, gives daily instruction in the manufacture of cheese, the operations being carried on as in the regular factory, the student being required to take careful notes and make reports of the process. Sixteen hours per week.

ADVANCED DAIRY WORK.

Those pupils who have had experience before joining us, after passing examinations in the practical work of the creamery and cheese factory, will be advanced to the class in experimental dairying, where problems connected with the dairy will be studied by the class.

EXAMINATIONS AND CERTIFICATES.

At intervals during the term and at its close, students are subjected to examinations, written and practical. To secure a dairy certificate the candidate must have spent a full term in the dairy school, and passed a satisfactory examination in all the courses. Further, he must have worked in a creamery or cheese factory for two full seasons of not less than seven months each. One of these seasons must follow the period spent in the dairy school. During this time the candidate must have practical charge of the factory in which he is working and will report the operations therein fully, or as directed on proper blanks furnished by the University. The University holds the right to send an authorized person to inspect the factory of the candidate. If all the conditions are satisfactorily complied with, a dairy certificate will be issued to the candidate.

On account of the expense of sending an inspector, the University does not bind itself to issue dairy certificates to students who operate factories in other States.

Illustrated circulars descriptive of the Dairy Course will be sent on application.

DEPARTMENTS OF INSTRUCTION.

AGRICULTURAL CHEMISTRY.

PROFESSOR BABCOCK AND MR. WOLL.

1. **The Origin, Composition and Classification of Soils.** The composition of air and the amount of plant food which it supplies. The elements necessary for plant development. The proximate composition of plants. The exhaustion of soils by different crops; the rotation of crops. The nitrogen problem. Classification of feeding stuffs; relative value of different systems of preserving forage crops. The silo and its losses. Manures, their classification, composition, sources and relative value. Manurial value of fodders. Artificial fertilizers. Preservation and application of manures. The composition of the animal body. Animal nutrition. Digestibility of foods. Lectures and recitations during fall and spring terms; twice a week. (Mr. Woll.)

2. **Analysis of Fodders, Dairy Products and Fertilizers.** Laboratory work during fall and spring terms; three times a week. Mr. Woll.)

3. **The Chemistry of the Dairy;** the composition and physical properties of milk and its manufactured products; the principles involved in modern dairy practice. Detection of adulterations, etc. Lectures during winter term; five times a week. (Prof. Babcock.)

4. **Advanced and Original Work.** Ash analysis. Chemical examination of soils. Estimation of sugars, starch, etc. Original investigations in the chemical laboratory. Laboratory work during the year; five times a week. (Prof. Babcock and Mr. Woll.)

AGRICULTURAL PHYSICS.

PROFESSOR KING.

1. **Meteorology.** The aim of this course is, first, to cover the general principles of the subject and familiarize the student with meteorological methods and instruments, and second, to deal specially with the agricultural and horticultural phases of the subject. Lectures and laboratory work; five times a week, fall term.

2. **Farm Engineering.** Farm drainage, the construction and maintenance of country roads, and the construction of farm buildings. Five times a week, winter term.

3. **Soil Physics.** Physical characteristics, origin and classification of soils; needs and methods of soil aeration; storage capacity of soils for water; movements of soil water as affected by texture, composition, fertilizers, and temperature; principles governing and the methods of determining soil temperatures; principles, methods, and implements of tillage. Five times a week, spring term.

4. **Original investigations** in the physical laboratory and field. Five times a week through the year.

ANIMAL HUSBANDRY.

PROFESSOR HENRY AND PROFESSOR CRAIG.

1. **The Breeds of Live Stock.** Students taking this course are trained in judging live stock by the use of typical animals, skeletons, charts, models, and score cards. As aids to the work use will be made of the stock on the University Farm and farms in the vicinity of Madison; also many photographic slides projected with the electric lantern. The agricultural library now embraces over 400 volumes of stud books, herd books and flock registers. Five times a week, fall and winter terms. (Prof. Craig.)

2. **Breeding.** Principles of breeding (heredity, fecundity, etc.), methods of breeding (line breeding, inter-breeding, cross-breeding, etc.). Practice of breeding (horse, cattle, sheep, and swine breeding), taught by lectures, text-book work, and study of the practices of breeders as shown by the various stock registries. The text-books for this subcourse are Darwin's Animals and Plants under Domestication, and Miles' Stock Breeding. Five times a week, spring term. (Prof. Craig.)

3. **Feeds and Feeding.** Chemical constituents of feeding materials, amount, combination, and form of these necessary to give the best results with the various kinds of live stock. The student will familiarize himself with German feeding tables, the feeding trials conducted at our own Station and the experimental work now in progress. Armsby's Manual of Cattle Feeding will be used as a text-book. Five times a week, winter term. (Prof. Henry.)

4. **Advanced Work in Feeding and Breeding.** Having completed the previous subcourses the student is in position to carry on investigations through a study of the Experiment Stations of this country and the old world. Further he will assist in conducting feeding trials at our own Station. Five times a week, one year. (Profs. Henry and Craig.)

HORTICULTURE.

PROFESSOR GOFF.

1. **General Principles of Horticulture.** Propagation, planting, cultivating, pruning, and breeding of economic plants. Lectures, recitations, and laboratory work. Five times a week, fall term.

2. **Economic Horticulture.** Special instructions in growing, harvesting, marketing, and preserving the principal fruits and vegetables of our climate, with the leading injurious insects and diseases that prey upon these, and the best method of preventing their ravages. Lectures, recitations, and laboratory work. Five times a week, winter term.

3. **Æsthetic Horticulture.** The principles of ornamental planting and of laying out gardens and pleasure grounds, with the formation and management of lawns, and the adaptation of decorative plants. Lectures and recitations. Five times a week, spring term.

4. **Special Investigations** in subjects relating to the propagation and rearing of economic plants, including the suppression of injurious insects and diseases. Field and laboratory work. Five times a week through the year.

VETERINARY SCIENCE.

DR. WOODFORD.

It is intended by this course to impart such general knowledge of veterinary science as will enable the student to meet intelligently such emergencies as frequently arise among live-stock and require prompt action, and to cooperate understandingly with the qualified practitioner. It will also be of service as preliminary instruction for those who contemplate entering any of the regular veterinary colleges, as the course will comprise an outline of all the principal branches of the science. The lectures will be illustrated by a very complete set of skeletons, charts, models, specimens, etc. Among these is one of the Auzoux anatomical models of the Arab horse which is so constructed that it can be dissected to show over 3,000 anatomical parts. Five times a week, winter term.

GENERAL INFORMATION.

The facilities for agricultural instruction are already large and steadily increasing. Agricultural Hall is a stone building one hundred and twenty feet in length by forty-two in width, four stories in height. It contains two large lectures rooms, offices for the several instructors and investigators, library rooms, and several chemical and physical laboratories.

The Hiram Smith Hall, devoted to dairying, was erected during the fall of 1891 and represents an outlay of $40,000. A description of the Hiram Smith Hall occurs on page 00.

A building for the accommodation of the departments of horticulture and agricultural physics is to be erected. That portion to be devoted to horticulture, with green-houses, will be constructed during the summer of 1893, $20,000 having been set aside by the Regents for this purpose.

At the Experiment Station Farm are the fields for investigation, the barns and the live-stock. Here as elsewhere all arrangements have in view investigation and instruction.

By its association with amply equipped laboratories of science and the practical arts, with departments in which are taught all the foreign languages that contain much reliable agricultural literature, with an active Experiment Station, equipped with special laboratories and library, and with an Experiment Farm where practical tests are carried on, guided by experienced talent, the College of Agriculture affords exceptional opportunities to those who desire to become professional experts.

Besides these facilities the College of Agriculture has at its command, for the use of the students, the general laboratory facilities of the University, so far as they relate to general chemistry, physics, practical mechanics, biology, geology, etc. See pages 22–27, 88–90.

LIBRARIES.

The Agricultural Library contains over 3,000 bound volumes and several hundred pamphlets, all of which are available for the use of students. They have access also to the various other libraries of the University and the city. See page 21.

SOCIETIES.

Two societies are maintained, one by the students of the several agricultural courses, and one by those of the course in dairying. These organizations afford valuable opportunities for the discussion of the many professional and practical questions concerning agriculture and dairying.

THE MITCHELL SCHOLARSHIPS.

Through the thoughtful munificence of the Hon. John L. Mitchell, of Milwaukee, there have been provided forty scholarships in the Short Course in Agriculture of $100 each. These scholarships are placed one to a county in the order of application from county school superintendents. Graduates of the country district schools have the first chance. Fifty dollars of the scholarships are paid during the first winter, and fifty dollars during the second winter. By this arrangement twenty new scholarships are placed each year.

THE OGILVIE MEDAL.

As a stimulus to the study of some of our improved breeds of livestock, Mr. R. B. Ogilvie, of Madison, has generously provided a gold medal of exquisite workmanship, valued at $75, to be awarded annually at commencement to the agricultural student who shall show the greatest proficiency in judging draught horses and the mutton breeds of sheep. In 1892 the medal was awarded to Mr. Arthur G. Hough, Winchester, Wis. In 1893 it was won by Mr. J. J. Tschudy, of Monroe, Wis.

ROOMS AND BOARD.

Furnished rooms cost from 75 cents to $1.50 per week for each occupant. Cost of table board in clubs varies from $2.00 to $2.50 per week.

FEES AND EXPENSES.

Tuition for residents of the State of Wisconsin	FREE.
Tuition for non-resident students in all courses, per term . .	$6 00
Incidental fees for students in all courses:	
First term	5 00
Second term	5 00
Third term	2 00

Students will be charged for not less than one term, and no deductions will be made for voluntary absence. The fees required for dairy

students will be announced in a circular which will be issued in the fall of 1893.

The expenses of a Short Course student will vary from $60.00 to $75.00 for fees, room, board, washing and necessary books. The necessary expenses of a dairy student will vary from $75.00 to $85.00 for the term. The expenses of Long Course students per term need not exceed that here mentioned for Short Course students.

THE DAIRY SCHOOL BUILDING — HIRAM SMITH HALL.

In Hiram Smith Hall, the University of Wisconsin has a dairy building which for size, appearance, and equipment is in some fair degree commensurate with the great dairy interests of our commonwealth. This building is named the Hiram Smith Hall in memory of one of Wisconsin's veteran dairymen, who long served as a member of the Board of Regents, aiding greatly in the upbuilding of the College of Agriculture, and to whose untiring efforts in no small degree the establishment of the Dairy School may be credited.

It is constructed of Dunville white sandstone and white brick, the exterior of the upper stories being finished in pebble and beam work after the style of rural buildings in the old world.

The main structure has a frontage of 75 x 54 ft. in depth and three full stories in height. On the north side of the main structure is the boiler room with coal vault and cold storage 20 x 28 ft. two stories in height. In the boiler room is a 60 H. P. steel boiler and a 25 H. P. Allis-Corliss engine. The creamery room, 36 x 48 ft., is on the first floor. Milk is delivered at a covered driveway in the rear, and from the weigh-can passes by gravity into a large receiving vat on a platform which extends across the rear of the creamery room. The receiving vat has a capacity of 5,000 pounds. Along the front of the platform just mentioned, are six special milk vats each with capacity of 500 pounds. In front of the platform on the main floor stand six separators of as many different patterns resting on solid stone bases. The separators are of the latest patterns, the manufacturers being desirous of having our students familiar with the most improved forms of their several machines. During the last year the following separators were run in the creamery: De Laval, Danish Weston, Alpha belt, Alpha turbine, Jumbo, Sharples Russian, and the Butter Extractor. Near the front of the creamery room are two churns of different patterns flanked by cream ripening vats. Further forward still stands the butter worker, and other apparatus common to the creamery.

The cheese room, also on the first floor, occupies a space 27 x 33 ft. In this are eight steam-heated cheese vats of a capacity of 300 pounds,

each equipped with a complete set of cheese-making apparatus. Adjoining the cheese room is one for testing curd, a second for storage of apparatus and material, and a third which contains three gang presses and one vertical press. The hall way and the floors of all the rooms thus far mentioned are laid with figured tiles. The walls are of pressed brick.

In the second story is the office for the use of the instructors, connected with which is a large fire-proof vault for holding records. On this floor are 102 lockers in which the students keep their chemical apparatus and work clothes. Adjoining the locker room are the toilet and bath rooms. On this floor are two cheese-curing rooms so constructed that a uniform temperature can be easily maintained.

On this floor is also provided a large room for instruction in farm dairying. Two lines of shafting in this room provide ample power for driving all machinery. In the same room are five kinds of hand separators, the various forms of hand churns, butter workers, etc.

In the third story is the dairy lecture room, provided with 108 seats, and the dairy laboratory, which has an equipment of tables provided with gas, hot and cold water, scales, Babcock tests run by hand and steam power, the whole sufficient to accommodate 50 students working at one time. This floor also contains a reading room provided with tables and dairy literature and two smaller laboratories for advanced work.

The building is warmed directly by steam radiators. In the second story of the boiler room is a Sturtevant fan run by its own 2 H. P. engine. This fan forces air, hot or cold, to every room in the building, thereby giving a secondary heating system. The large attic practically adds a fourth story. This serves as storage for the hundreds of milk cans and numerous pieces of apparatus incident to dairy instruction. Here are two large water tanks, one furnishing water for general use, including the boiler, and the other furnishing water for washing butter. On this floor are placed a couple of slide valve engines, several separators of old patterns, shafting, etc., further to increase the facilities for instruction in machinery essential to creamery use. Live steam pipes and water pipes are carried to all portions of the building so that steam, hot and cold water are everywhere accessible.

The building is designed to accommodate 100 students. This year that number has been in attendance and a number of applicants were turned away for lack of room. Hiram Smith Hall with its equipment represents to date an outlay of about $40,000.

III. FARMERS' INSTITUTES.

W. H. MORRISON, SUPERINTENDENT.

The third division of work under the direction of the College of Agriculture is the instruction of farmers who are unable to come to the University for study. This is provided for through generous legislative provisions by which a carefully supervised system of farmers' institutes is maintained. The institutes are in immediate charge of a superintendent, who elaborates and controls the organization and execution of the institutes. He is aided by special conductors, who assist in perfecting the details and carrying the whole into effect. Members of the Agricultural Faculty render as much assistance as is consistent with their other duties. Experts in different departments are engaged to present special important themes. Lecturers are often brought from other States to treat on specific topics in which they are recognized authorities. Local talent is freely used, and not the least of the educational benefits is the development of latent ability in writing, speaking and experimenting which has followed as a natural result of the interest awakened by this important stimulus.

During the institute season of 1892–3, 97 institutes lasting two days each were held at the places named below:

LIST OF INSTITUTES HELD DURING THE SEASON 1892–3.

County.	Place.	County.	Place.
Adams	Friendship.	Dane	Mazomanie.
Barron	Rice Lake.	Dodge	Juneau.
Brown	Green Bay.	Dodge	Fox Lake.
Buffalo	Alma.	Dunn	Menomonie.
Buffalo	Mondovi.	Eau Claire	Augusta.
Calumet	New Holstein.	Fond du Lac.	Fond du Lac.
Chippewa	Eagle Point.	Fond du Lac.	Calumetville.
Clark	Colby.	Fond du Lac.	Ripon.
Clark	Loyal.	Grant	Lancaster.
Clark	Thorp.	Grant	Fennimore.
Columbia	Kilbourn City.	Grant	Muscoda.
Columbia	Lodi.	Grant	Platteville.
Columbia	Pardeeville.	Green	Monroe.
Columbia	Rio.	Green Lake	Berlin.
Crawford	Soldier's Grove.	Green Lake	Markesan.
Dane	Blue Mounds.	Iowa	Dodgeville.
Dane	Morrisonville.	Iowa	Mineral Point.
Dane	Sun Prairie.	Jackson	Black River Falls.

County.	Place.
Jackson	Alma Center.
Jackson	Melrose.
Jefferson	Lake Mills.
Jefferson	Palmyra.
Jefferson	Watertown.
Juneau	Mauston.
Juneau	Wonewoc.
Kenosha	Salem.
Kewaunee	Ahnapee.
Kewaunee	Kewaunee.
La Crosse	Bangor.
La Fayette	South Wayne.
La Fayette	Shullsburg.
Manitowoc	Manitowoc.
Marquette	Briggsville.
Marquette	Westfield.
Monroe	Sparta.
Monroe	Tomah.
Outagamie	Hortonville.
Outagamie	Seymour.
Ozaukee	Cedarburg.
Pepin	Durand.
Pierce	Ellsworth.
Pierce	River Falls.
Polk	Amery.
Polk	Osceola Mills.
Portage	Amherst.
Racine	Union Grove.
Racine	Rochester.
Richland	Richland Center.
Richland	Viola.
Rock	Clinton.
Rock	Evansville.
Rock	Edgerton.
St. Croix	Hammond.
St. Croix	New Richmond.
Sauk	Baraboo.
Sauk	Reedsburg.
Sauk	Sauk City.
Sauk	Spring Green.
Sheboygan	Plymouth.
Sheboygan	Galesville.
Trempealeau	Whitehall.
Vernon	Westby.
Walworth	East Troy.
Walworth	Elkhorn.
Washington	Hartford.
Washington	West Bend.
Waukesha	Dousman.
Waukesha	Hartland.
Waukesha	Menomonee Falls.
Waupaca	Clintonville.
Waupaca	Manawa.
Waupaca	Waupaca.
Waushara	Plainfield.
Waushara	Wautoma.
Winnebago	Neenah.
Winnebago	Oshkosh.
Winnebago	Winneconne.
Wood	Centralia.
Wood	Marshfield.

LOCATION OF INSTITUTES.

Institutes are placed for the most part in localities which show the greatest interest in this movement. Applications for institutes will be received by the superintendent and presented to the agricultural committee at its June meeting. The committee goes over the list and carefully considers the needs and interests of each locality, and places the institutes where in its judgment they will prove the most helpful. Generally there have been far more applications for institutes than it was possible to supply. Applications should be received before June 15, each year.

THE FARMERS' INSTITUTE BULLETIN.

To disseminate still more widely a representative portion of the matter presented and discussed at the institutes, and to give it permanency for its own sake and for its historical value, a system of publication in the form of bulletins has been begun by the superintendent. Bulletin No. 6, the last issued, contains a stenographic report of the closing institute held at Portage in March, 1892. Forty thousand copies of this bulletin were published, and yet so great has been the call that already the edition is nearly exhausted. Copies will be sent to applicants living within the State upon receipt of eight cents to pay postage.

THE COLLEGE OF LAW.

CORPS OF INSTRUCTION.

The President of the University.

Edwin E. Bryant, Dean of the Faculty, Lecturer on Practice and Pleading, Criminal Law, Personal Property, and Railway Law.

I. C. Sloan, Counselor-at-Law, Professor of Equity Jurisprudence and Real Property.

John B. Cassoday, Associate Justice of the Supreme Court of Wisconsin, Professor of Constitutional Law and Wills.

J. H. Carpenter, LL. D., Mortimer Jackson Professor of Contracts and Torts.

Burr W. Jones, LL. B., Professor of the Law of Evidence, Corporations and Domestic Relations.

Orsamus Cole, Ex-Chief Justice of the Supreme Court of Wisconsin, Special Lecturer on the Law of Insurance.

Geo. H. Noyes, Counselor-at-Law, Special Lecturer on Common Carriers.

James G. Jenkins, Judge United States District Court, Eastern District of Wisconsin, Special Lecturer on Negligence.

Samuel D. Hastings, Jr., Judge of the 4th Judicial Circuit of Wisconsin, Special Lecturer on Taxation.

Henry B. Favill, M. D., Special Lecturer on Medical Jurisprudence.

GENERAL STATEMENT.

The advantage of professional schools for the systematic elementary training of professional men has long since been demonstrated. Especially has the legal profession acknowledged the superiority of such schools over other methods of preparation for the practice of the law.

The views generally entertained by lawyers on this subject are well expressed in the report of the standing committee of the American Bar Association on legal education and admission to the bar, made in 1881, which was unanimously adopted by the Association. The committee says:

"There is little, if any, dispute now as to the relative merit of education by means of law schools, and that to be got by more practical

training or apprenticeship as an attorney's clerk. Without disparagement of more practical advantages, the verdict of the best informed is in favor of the schools.

"The benefits which they offer are easily suggested and are of the most superior kind. They afford the student an acquaintance with general principles, difficult, if not impossible, to be otherwise attained; they serve to remove difficulties which are inherent in scientific and technical phraseology; and they, as a necessary consequence, furnish the student with the means for clear conception and accurate and precise expression. They familiarize him with leading cases and the application of them in discussion; they give him the valuable habit of attention, teach him familiar maxims, and offer him the priceless opportunities which result from contact and generous emulation. They lead him to readily survey law as a science, and imbue him with the principles of ethics as its true foundation. Disputing, reasoning, reading, and discussing become his constant exercises."

The literature of the law is very voluminous, and, in later times, but few books have been written which are especially adapted to the use of students beginning legal studies. Those most useful to the practitioner are seldom helpful to the student. At the present time the student in the law office is given but little assistance from the lawyer, and that necessarily desultory and unsystematic. His reading in the classic text-books of the last century, and the earlier part of the present, gives him but little insight, either into the law as it is or its progress and growth.

While it cannot be claimed that in a course of two years a student can become a thoroughly equipped lawyer, yet he can derive from the law school such assistance as to give him many years' advantage over one who relies upon study in a law-office and such instruction as he may there receive.

The beginner needs to gain a comprehensive general view and analysis of the whole system of law, a knowledge of the elementary principles and of the methods of legal proceedings and the principles that underlie procedure. He must learn where to search in the books for more detailed information, and must acquire the habit of legal study and ready analysis. This degree of attainment can in present conditions be reached in the professional school more thoroughly, systematically, and rapidly than elsewhere.

The College of Law of the University of Wisconsin, after many years of experience, has prepared a course of unusually practical merit, which is rendered effective by facilities for instruction and advantages of location of an exceptional order. The success of the

graduates of this college, an exceptionally large percentage of whom rapidly advance in the profession, their thorough methods and intelligent conduct of business elicit the commendation of courts very generally, and attest, it is believed, quite conclusively to the utility and correctness of the methods and courses of study here pursued.

THE MORTIMER JACKSON PROFESSORSHIP OF LAW.

By the generous provisions of the will of the late Judge Mortimer M. Jackson, funds to the amount of twenty thousand dollars were bequeathed to the University to found and maintain a Professorship of Law. In accordance with the wish of the donor, Judge J. H. Carpenter, an instructor of long experience, and well-recognized ability, has been elected to this professorship.

THE METHODS OF INSTRUCTION.

The methods of instruction are varied and embrace the advantages of several of the most approved systems.

Lectures by members of the faculty are given on leading topics, and students are required to take notes. In connection with these the students are referred to leading cases, required to read them and make a concise statement of the facts in each case, the question of law involved, the decision and the reasoning of the court. Topics are assigned involving original study, and hours are assigned each week in which students are required to expound important cases, discriminate between them, and discuss the principles involved.

Text-book study is required, and this is followed by recitations in which the classes are thoroughly examined. This, in the more important studies, is followed by a most searching review; and students are practiced daily in the exercise of stating and explaining legal principles and their application as reported.

The Committee on Legal Education of the American Bar Association in their report for 1891 say: "Almost the only defect in law-school education at the present time which has attracted general attention and remark grows out of the fact that they afford no adequate instruction in matters of practice. It is exceedingly desirable that this defect should be remedied in so far as it is possible to do so. To this end practice courts should be established in all schools of law. It is not enough that what are known as moot courts should be organized for the argument of questions of law. . . . There should be practice courts in which the students should have the opportunity of seeing how everything is done from the commencement of the case to the taking out of execution. . . . The student cannot have

practice by simply listening to a teacher expounding principles of practice; but opportunity must be afforded him for doing himself the things which he will have to do in case of actual litigation."

To supply the defect criticised in the above quotation, this college some years ago adopted and still pursues the methods above recommended.

Unusual pains are taken to make students familiar with the preparation of all kinds of legal documents. In common-law pleading they are required to practice in drafting pleadings in the entire series. In equity practice and pleading they are also required to conduct suits from beginning to end, thus becoming familiar with all the steps in the suit. In Code practice and pleading a thorough course of instruction is given and practical exercises conducted in the drafting of pleadings, the preparation of papers of all kinds, especially affidavits, motion papers, orders, findings, exceptions, judgments, bills of exception, etc. To illustrate the practice in the actual work of the lawyer, cases are submitted, and the student is required to prepare, under supervision and instruction, all the papers in various actions, to familiarize him with practice and procedure. While too much time is not devoted to this class of work, sufficient is given to illustrate the theoretical instruction in practice and pleading.

In criminal law, the class is exercised in the drafting of complaints, indictments, informations, warrants, pleas, and in all the steps of a criminal prosecution. All papers are examined, errors pointed out, and students required to perfect them.

Moot court practice forms a large element in the required work. Cases are assigned involving careful study. Students in the later period of the course are required to issue process, prepare pleadings, contest each step in practice, make briefs and oral arguments bringing questions of law and practice before the courts, as they are presented in actual practice. Others, sitting as judges, examine the questions and prepare written opinions. Practical instruction is also given in the practice of the courts of probate, and in the procedure in Federal courts.

TERMS OF ADMISSION.

Legal practice touches upon a great variety of human relations and involves a knowledge of a wide range of subjects. A broad fundamental education is therefore important to the highest success, and a liberal course of general study is urged upon those who contemplate the profession of law. Especially is a mastery of the English language and literature important, as is also a wide familiarity with history and with civil, economic, and social science. It is the policy of the

University to increase the standards of admission as far as consistent with existing educational conditions. Meanwhile candidates ought not to rest satisfied with the minimum requirements imposed but secure the highest practicable general education.

Candidates for admission will be examined in English language (orthograpy, grammar, composition, etc.), English literature (leading works and authors), in American and general history, and in the constitution of the United States, and the general features of the constitutions of States. Candidates must also give evidence of at least a good general English education. A college course is eminently desirable.

Candidates will be admitted without examination upon presenting certificates of graduation from any reputable college or university, State normal school, accredited high school or academy, or upon presenting a first grade teacher's certificate.

Preliminary Course. It is urged upon all those whose general education is not ample, to take a preliminary course of study in those branches which are most nearly related to law and most serviceable in legal practice, before entering upon the strictly professional course. To facilitate this, adult students, who give evidences of being able to take up branches advantageously, and minors above eighteen years of age who pass a satisfactory examination in the above studies, will be permitted to take up a select course framed from the following branches: elementary law, history, economics, political science, English literature, rhetoric, elocution and legal Latin.

The minimum professional course consists of two full years' work as follows, subject to modification:

JUNIOR YEAR.

FALL TERM.—Elementary Law; Contracts; Agency; Domestic Relations; Real Property; Personal Property; Common Law Pleading and Practice.

WINTER TERM.—Real Property; Contracts; Partnership; Equity Pleading and Practice; Criminal Law; Public Corporations.

SPRING TERM.—Contracts; Bailments; Real Property; Criminal Law and Practice; Private Corporations; Practice and Pleading under Code.

SENIOR YEAR.

FALL TERM.—Contracts; Bills of Exchange and Promissory Notes; Evidence; Wills; Real Property; Uses and Trusts; Railway Law; Common Carriers; Taxation; Practice and Pleading under Code.

WINTER TERM.—Constitutional Law; Real Property; Bills of Exchange and Promissory Notes; Evidence; Equity Jurisprudence; Practice after Judgment; Railway Law; Damages.

SPRING TERM.— Constitutional Law; Equity Jurisprudence; Torts and Remedies therefor; Evidence; Administration of Estates; Negligence; Practice in Special Actions and Proceedings; General Instruction in Practice.

ADMISSION TO ADVANCED STANDING.

Candidates presenting duly accredited certificates from other law schools of good standing will be admitted to corresponding standing in this college without passing examinations. Candidates who have studied elsewhere, and can pass examination upon the studies of the Junior year, or their equivalent, can enter the Senior year. But such examination will be most searching and thorough, embracing all the studies of the Junior year except Common Law Pleading and Criminal Law. As the real ground-work of legal proficiency is laid in the first year's course, all should strive to take it rather than trust to such progress as can be made in a law office. If but one year can be spent at a law school, the first year will be the most valuable.

Students entering the Junior class after the beginning of the academic year, will be required to read and pass examination in the work of the class which has been done prior to their admission. It is urged upon all who desire to enter the classes, to begin at the opening of the fall term.

THREE YEARS' COURSE.

A three years' course is offered, consisting of an extension of the professional studies of the two years' course given above conjoined with elective studies in economics, political and social science and advanced literary branches. When studies in these elective branches equivalent to a year's work are taken by graduates of college courses, it will entitle them to the academic Master's degree as well as the degree of Bachelor of Law when other required conditions are fulfilled. This three years' course constitutes to such at once a professional and a graduate course of study. It is strongly recommended.

SPECIAL ADVANTAGES.

The peculiar advantages which the city of Madison, the capital of the State, afford to the law student deserve mention.

COURTS.— All sessions of the Supreme Court are held here, in the State Capitol, near the University. During the most of the year the student has an opportunity of listening to arguments carefully prepared by able lawyers before that court. Two terms of the United States Circuit and District Courts are held here annually. Many in-

teresting causes arise and are tried in these courts. The Circuit Court of Dane county holds three terms annually, affording the student excellent opportunity to learn by observations the methods of procedure in jury trials. The Municipal Court of Dane county sits daily. Nowhere are better facilities at hand for becoming familiar with the practice in courts, and the methods pursued by able and successful practitioners.

THE LEGISLATURE of the State holds one session during each course, affording the student opportunity to observe the processes of legislation.

THE UNIVERSITY.— The University of Wisconsin has one of the finest sites for a seat of learning in the world. Beautifully located in a healthful climate, admirably equipped and endowed, with a large attendance of students from the best youth of the country, the student of this college is surrounded by the best of influences and incentives.

LAW COLLEGE BUILDING.— The liberality of the State has provided the means for the erection of a building for the College of Law. It is now finished and will in the future be occupied, and is one of the finest, most convenient edifices possessed by any law school in the country. It is located on the campus, or University grounds, on a commanding site and convenient of access. It is built of the brown sandstone of Lake Superior, at a cost of more than $75,000. Its lecture rooms, capable of comfortably seating 400 or more students, are admirably heated and lighted and provided with the completest system of ventilation known to modern invention. Its library room and general study rooms will seat several hundred students, affording each abundant table room for writing and books. While this building is elegant in design, the greatest pains have been taken to secure perfect adaptation to the intended use. Other rooms in the same building will be occupied by the School of Economics, Political Science, and History, affording to law students opportunities for many of the lectures of that school.

LIBRARIES.— The Law College has a fine and rapidly increasing library. This will be greatly enlarged now that the Law College building is ready for use. The law library of the State, the largest and most complete in the northwest, is located in the Capitol building and is at all times accessible to students for reference, and conveniences are afforded them for the use of the books in preparing briefs or pursuing topical investigations. The University libraries, and those of the State Historical Society and the Madison City Free Library, are also open to the law students.

THE BAR.— The bar of Dane county is an unusually strong one. Students who desire it can generally obtain situations in law offices, where they have opportunities to assist in practice, in the preparation of briefs and in the conduct of legal business, at the same time attending lectures and the practical exercises of the classes.

TEXT-BOOKS.

Among the text-books used as the ground-work or basis of examination are:

Adams on Equity; Beach on the Law of Railways; Benjamin on Sales; Bishop on Contracts; Bigelow on Torts; Bishop on Non-Contract Law; Bishop on Criminal Law; Bliss on Pleading; Cook on Stock, etc.; Cooley on Torts; Cooley on Constitutional Limitations; Darlington on Personal Property; Dillon on Municipal Corporations; Edwards on Bills of Exchange and Promissory Notes; Gould on Pleading; Greenleaf on Evidence; Langdell on Equity Pleading; Heard on Civil Pleading; Heard on Criminal Pleading; Lewis on Eminent Domain; Maxwell on Pleading; Mechem on Agency; Mills on Eminent Domain; Morawetz on Private Corporations; Parsons on Contracts; Pomeroy's Equity Jurisprudence; Pomeroy's Remedies and Remedial Rights; Redfield on Wills; Rorer on Railroads; Schouler on Domestic Relations; Schouler on Personal Property; Schouler on Wills; Stephen on Pleading; Story on Agency; Story on Equity Pleading; Story on Partnership; Tiedeman on Commercial Paper; Tiedeman on Real Property; Tiedeman on Sales; Wade on Law of Notice; Washburn's Outlines of Criminal Law; Washburn on Real Property; Willard's Equity Jurisprudence; Williams on Real Property.

The books mentioned in the following list may also be used to advantage:

BAILMENTS.— Edwards, Schouler, Story.

BILLS, NOTES, AND COMMERCIAL PAPER.— Byles, Chalmers, Daniel, Parsons, Randolph, Story, Bigelow.

COMMON CARRIERS.— Hutchinson, Redfield on Railways; Thompson on Passenger Carriers.

CONSTITUTIONAL HISTORY.— Hallam's Constitutional History of England (1485–1760); May's Constitutional History of England (1760–1870); Young's Constitutional History of England (1760–1860); Bagehot's English Constitution; Fischel's English Constitution; Cox's English Institutions; Curtis' History of the Constitution of the United States; Bancroft's History of the Constitution of the United States; Von Holst's Constitutional History of the United States.

CONSTITUTIONAL AND STATUTE LAW.— Cooley's Principles of Constitutional Law; Endlich on Interpretation; Story's Commentaries on the Constitution of the United States; Sedgwick on Constitutional and Statutory Law; Jameson's Constitutional Counselor; Bishop's Written Law; Maxwell on the Interpretation of Statutes.

CONTRACTS.— Anson, Benjamin, Bishop, Metcalf, Parsons, Pollock.

CORPORATIONS.— Angell and Ames, Field, Morawetz, Taylor, Dillon on Municipal Corporations; Thompson on Liability of Stockholders; Cook on Stock and Stockholders.

CRIMINAL LAW.— Bishop, Wharton, Harris, May, Stephen's Digest of Criminal Law.

DOMESTIC RELATIONS.— Reeves, Bishop on Marriage and Divorce; Bishop on Married Women; Cord on Married Women; MacDonnell on Master and Servant; Ewell on Infancy; Tyler on Infancy; Schouler's Domestic Relations.

EASEMENTS.— Goddard, Washburn.

EQUITY.— Pomeroy or Story's Equity Jurisprudence; Adams' Equity; Bispham's Principles of Equity.

ESTOPPEL.— Bigelow, Hermann.

EVIDENCE.— Best's Principles of Evidence; Stephen's Digest of the Law of Evidence; Wharton, Starkie, Rogers on Expert Testimony.

INSURANCE.—May on Insurance; Wood on Fire Insurance; Bliss on Life Insurance; Arnould on Marine Insurance; Richards on Insurance.

INTERNATIONAL LAW.— Wheaton's Elements of International Law; Phillimore's International Law; Woolsey's Introduction to International Law; Hall's International Law; Story's Conflict of Laws; Wharton's Conflict of Laws.

JURISPRUDENCE.—Holland's Elements of Jurisprudence; Austin's Lectures on Jurisdrudence; Lorimer's Principles of Jurisprudence; Ames on the Science of Law; Curtis' Jurisdiction of United States Courts.

MINERAL LAWS.— Weeks.

PARTNERSHIP.— Lindley, Parsons, Story, Tyler, Pollock.

PLEADING.— Gould, Chitty, Bliss on Code Pleading; Story's Equity Pleading; Barton's Suit in Equity; Maxwell on Code Pleading.

REAL PROPERTY.— Boone, Williams, Tiedeman.

REPLEVIN.— Corbin.

SALES.— Benjamin, Tiedeman.

SHIPPING AND ADMIRALTY.—Abbott, Conklin, Desty, Parsons.

TAXATION.— Blackwell, Burroughs, Cooley, Desty.

TORTS.— Addison, Ames, Hilliard, Moak, Weeks and Bishop on Non-Contract Law.

WILLS AND ADMINISTRATION.— Redfield on Wills; Jarman on Wills; Williams on Executors; Woerner's American Law of Administration; Schouler on Wills.

Students who are able to do so will find it to their advantage to furnish their own books. They will need them in practice. Arrangements have been made by which they can be ordered through the Secretary of the Board of Regents, and obtained at a considerable discount from quoted prices. It is believed that the books required for the first year can be obtained for about sixty dollars; for the second year, for about seventy-five dollars.

EXAMINATION FOR ADMISSION.

The examination for admission will be made on the day preceding the opening day of the fall term. Students intending to apply for admission should apply to the Dean for directions before the opening of the term, as examinations cannot be had after the term begins. Candidates intending to apply for admission are requested to notify the Dean before the commencement of the term. No student of the Junior year will be admitted to the Senior class who fails to pass an examination in the principal studies of the Junior year, except conditionally; his graduation being dependent upon his attaining proficiency during the year in the studies wherein he was found deficient.

Students applying for admission, upon examination, to the Senior class, must report in person for examination two days before the commencement of the term; as the examination will occupy two days and cannot be held after the appointed time.

For graduation each student will be required to have passed a satisfactory examination upon all studies pursued during both years of the course, such examinations to be made either at the end of each year or on completion of a particular topic; and he must have prosecuted or defended to judgment such moot court cases as shall have been assigned by the Faculty, and must have prepared and presented to the Faculty, at least three weeks before the close of the Senior collegiate year, a satisfactory thesis upon some legal topic.

EXPENSES.

The matriculation fee for the full course is $100, two-thirds of which must be paid at the opening of the first year, and one-third at the opening of the second year. For students entering the advanced class the fee is $75.

All fees are payable in advance at the office of the Secretary of the Board of Regents, No. 24 East Mifflin St. Not less than $100 shall be charged for a two years' course, nor less than $75 for one year's course.

No deduction will be made for absences, nor extension of time of payment of fees granted.

The expenses of living are moderate. Good board can be obtained at from $3 to $4 per week, and by forming or joining clubs the expenses can be reduced.

SOCIETIES.

The E. G. Ryan Literary Society, the Forum, the Arena, and the Columbian are four incorporated literary societies, composed entirely of law students. Each of them is in flourishing condition, and each holds weekly meetings in one of the rooms of the college for debates and other literary exercises. Opportunity is afforded to each student to take part frequently in debate.

MOOT COURTS.

A Faculty Moot Court sits once in each week for each class for the trial of cases and the argument of questions of law. Each student must prosecute or defend at least two actions in this court during the course. There are also several Class Moot Courts, consisting of several divisions, so that students may have more frequent practice in preparing and arguing questions of law arising upon submitted statements of fact.

SCHOOL OF PHARMACY.

CORPS OF INSTRUCTION.

The President of the University.
Edward Kremers, Professor of Pharmaceutical Chemistry.
L. E. Cheney, Instructor in Pharmacognostical Botany.
L. C. Urban, Assistant in Pharmaceutical Chemistry.

C. R. Barnes, Professor of Botany.
E. A. Birge, Professor of Zoology.
W. W. Daniells, Professor of Chemistry.
J. E. Davies, Professor of Electricity and Magnetism and Mathematical Physics.
D. B. Frankenburger, Professor of Rhetoric and Oratory.
A. J. Frisby, Professor of Hygiene.
E. T. Owen, Professor of French.
W. H. Rosenstengel, Professor of German.
C. S. Slichter, Professor of Applied Mathematics.
C. R. Van Hise, Professor of Geology.
C. A. Van Velzer, Professor of Mathematics.
H. W. Hillyer, Assistant Professor of Organic Chemistry.
W. H. Hobbs, Assistant Professor of Mineralogy and Metallurgy.
W. B. Cairns, Instructor in Rhetoric.
L. M. Gay, Instructor in French.
A. A. Knowlton, Instructor in Rhetoric.
H. B. Loomis, Instructor in Physics.
W. S. Miller, Instructor in Biology.
E. B. Skinner, Instructor in Mathematics.
S. A. Sterling, Instructor in German.
F. M. Tisdel, Instructor in Elocution.

GENERAL STATEMENT.

In addition to the shorter course, which a year ago was extended so as to include two full years, the University has during the past year also offered a four years' course. This longer course was created in order to accommodate those students who desire to obtain a general scientific education and to include in their course the pharmaceutical

studies; and with the hope of stimulating a broader pharmaceutical education.

Students who are not prepared for the four years' course but desire to pursue studies not required in the shorter course can do so by extending the work scheduled for two years over three or more years.

For detailed information consult the Eleventh Annual Announcement of the school, which can be had on application.

TERMS OF ADMISSION.

To the Two Years' Course:

All applicants must be at least eighteen years of age.

Applicants who bring a certificate of at least one year's attendance from some standard high school, or its equivalent from a similar educational institution, will be admitted without further examination.

All other applicants who do not present written evidence of a satisfactory preliminary education will be subjected to such an examination in arithmetic, grammar, English composition, geography (political and physical), and history of the United States, as will afford a guaranty that the applicant is capable of pursuing with advantage and profit to himself the studies of this course. The examination of such applicants will be held on the first two days immediately preceding the opening of the fall term.

Applicants who desire to enter under the above-mentioned conditions should previously have had two years' practical experience in a well-conducted pharmacy. Graduates from accredited high schools will be admitted without previous practical experience. For the list of accredited schools, see pages 43–46.

To the Four Years' Course:

The terms of admission to this course are the same as those to the General Science Course, as given on page 40. No practical experience in pharmacy is required.

Students from other colleges or schools of pharmacy will be admitted on presentation of satisfactory certificates. However, no student who enters from another college will be admitted after October 1 of the year in which he intends to graduate.

DEGREES.

Students who desire the degree of *Graduate in Pharmacy* (Ph. G.) must conform to the following requirements:

He must have satisfactorily completed the studies of the two-years' course.

He must have had four years of professional experience. The time spent at the University is considered as part of such time of experience.

He must have passed satisfactorily the examination in practical pharmacy held by the examining committee of the State Pharmaceutical Association. Only such students who have had the required practical experience are admitted to this examination.

He must have attained the age of twenty-one years.

Upon presentation of this diploma, graduates in pharmacy can obtain, without further examination, the graduate certificate from the State Board, which permits the independent practice of pharmacy in the State of Wisconsin.

Any *Graduate in Pharmacy* of this school, in good professional standing, may become a candidate for the higher degree of *Master of Pharmacy.* For the attainment of this degree the candidate shall spend one entire year (three terms) at the University after graduation, and during this period shall pursue advanced work in some science or sciences specially allied to Pharmacy. This shall include the presentation of a dissertation embodying the results of an original investigation, which shall be satisfactory to the committee on higher degrees.

The degree of Bachelor of Science (in Pharmacy) is conferred upon students who have successfully met the requirements of the Four Years' Course.

TWO YEARS' COURSE IN PHARMACY.

JUNIOR YEAR.

FALL TERM.— Chemistry, 1;* Biology, 1; Pharmacy, 4; Hygiene.
WINTER TERM.— Chemistry, 1; Biology, 1; Pharmacy, 4.
SPRING TERM.— Chemistry, 1; Biology, 1; Biology, 15.

SENIOR YEAR.

FALL TERM.— Pharmacy, 1; Pharmacy, 2; Pharmacy, 4; Biology, 10.
WINTER TERM.— Pharmacy, 1; Pharmacy, 2; Pharmacy, 3; Pharmacy, 4; Biology, 10.
SPRING TERM.— Pharmacy, 1; Pharmacy, 3; Pharmacy, 5; Biology, 14.

In addition, the synoptical courses in Physics, Mineralogy and Geology must be taken at the time offered. Blow-Pipe Analysis, Assaying, Journal Reading in Chemistry; Physiology, Bacteriology and other studies can be taken by special arrangement.

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* The figures refer to the numbers of the courses as given in the statements under Departments of Instruction, College of Letters and Science.

FOUR YEARS' COURSE IN PHARMACY.

FRESHMAN YEAR.

Biology, 1; German, 9; Mathematics, 1, 2, 3; English, 2; Hygiene, 1; military drill, gymnastics, 3 hours weekly.

SOPHOMORE YEAR.

French, 3; Chemistry, 1, 2, 3; Physics, 2; English, 3; military drill, gymnastics, 3 hours weekly.

JUNIOR AND SENIOR YEARS.

Pharmaceutical chemistry and botany must be taken for two years. If chemistry is elected as major study, botany must be taken as assigned minor, or vice versa. The elective minor study can be made up of a series of courses or of a single continuous course, and must be at least equivalent to a full study throughout the last two years of the course.

With regard to synoptical lectures and rules of the Group system, compare pages 53–55.

COURSES OF STUDY IN PHARMACY.

PROFESSOR KREMERS AND MR. URBAN.

1. **Pharmaceutical and Pharmacognostical Chemistry.** This course will consist of a review of general chemistry, inorganic and organic, with special adaptation of the subject-matter to the interests of pharmacy. Four hours weekly. (Prof. Kremers.)

2. **Applied Chemical Analysis.** Chemical Analysis, qualitative and quantitative, gravimetric and volumetric, in its application to pharmacy. This will be chiefly a laboratory study, with weekly recitations and lectures. It will not, however, be simply a study of methods, but rather a study of the chemical principles involved. Four hours daily. (Prof. Kremers and Mr. Urban.)

3. **Thesis.** The student may select the subject for his thesis from either botany or chemistry, general or applied, provided he is found proficient by the instructor under whose personal supervision he chooses to carry out such work. About a term and a half, four hours daily, are expected to be given to the necessary laboratory experiments. However, time is not the only criterion. The thesis when written must be satisfactory to both instructor and class-officer. It must be delivered to the class-officer on or before the second Friday preceding graduation, accompanied by a written recommendation from the instructor.

4. **Pharmaceutical and Chemical Operations.** The customary introduction to Pharmacy, inasmuch as it is of an applied mechanical and physical character, will be considered in the form of weekly lectures and recitations. The study will not be limited to the construction and use of apparatus or to the principles involved. Whenever possible the application of physical principles to chemistry will be duly considered. Laboratory work is substituted for class work whenever advantageous. Once a week, fall and winter terms. (Prof. Kremers and Mr. Urban.)

FEES AND EXPENSES.

A matriculation fee of $5 is required to be paid for the first course in this department; the ticket issued therefor should be obtained by September 15th, and none will be issued after October 1st.

The lectures are free to all matriculated students who are residents of the State of Wisconsin; for non-resident students a lecture fee of $25 is required for each course, which must be paid by October 1st. The fee for incidental expenses is $5 for the first term, $5 for the second term, and $2 for the third term. This fee must be paid by all students.

The following laboratory deposits are required:

JUNIOR YEAR.	In the Chemical laboratories	$30 00
	General Inorganic Chemistry. Qualitative Chemical Analysis. Quantitative Chemical Analysis. General Organic Chemistry. — Each a full study for one term.	
	In the Biological laboratories:	
	General Biology (full study three terms).	8 00
	Morphology of Seed Plants (full study one term. Includes specimens for drug collection)	6 00
SENIOR YEAR.	General Anatomy and Anatomy of Drugs (full study three terms)	8 00
	In the Pharmaceutical Laboratory (full study three terms)	25 00

In the chemical and pharmaceutical laboratories accurate accounts of material used and apparatus broken by the student are kept, and such sums as may remain to the credit of the student at the completion of his course will be refunded.

No diploma fee is required upon graduation.

SCHOOL OF ECONOMICS, POLITICAL SCIENCE, AND HISTORY.

CORPS OF INSTRUCTION.

The President of the University.
R. T. Ely, Director and Professor of Political Economy.
C. H. Haskins, Professor of Institutional History.
J. B. Parkinson, Professor of Constitutional and International Law.
J. M. Parkinson, Assistant Professor of Civil Polity.
W. A. Scott, Assistant Professor of Political Economy.
F. J. Turner, Professor of American History.

J. W. Crook, Fellow in Economics.
David Kinley, Fellow and Assistant in Economics.
A. H. Sanford, Fellow in History.

Albert Shaw, Special Lecturer on Cities.
A. G. Warner, Special Lecturer on Pauperism.
F. H. Wines, Special Lecturer on Criminology.
Simon N. Patten, Special Lecturer on Economic Theory.

L. P. Powell, Extension Lecturer on History.
F. W. Speirs, Extension Lecturer on Economics.

The purpose of the School of Economics, Political Science, and History is to afford means for advanced study and research in the economic, political, social, and historical sciences. These subjects are treated largely from the investigative and scientific point of view. It is an especial aim to promote a more liberal study of the branches that are basal to the practice of law, journalism, the ministry, and other professions directly concerned with human relations. It is adapted to those who wish to supplement their legal, theological, or other professional studies with courses in general social science. Such courses, being strictly non-partisan and non-sectarian, will furnish a liberal and comprehensive equipment for those who wish to enter upon public life, the law, the ministry, business pursuits, or to become teachers of history and the political and economic sciences in schools and colleges. It is an

especial endeavor to foster those studies which tend to raise the standard of good citizenship.

The school embraces both undergraduate and graduate courses, but its leading endeavors center in the latter. The degree of Doctor of Philosophy is conferred upon those who successfully meet its requirements. The undergraduate courses are more extended than those usually offered in the college curriculum.

The following are the leading features of the school so far as determined at present. It is expected that additional announcements of importance will be made later.

I. ECONOMIC SEMINARY.

This is conducted by the professors and assistants in economics; and affords opportunity for research and critical study under individual direction. It is designed to embrace discussions of periodical literature, recent works and original papers. The special subject for study during the year 1893–4 will be American Taxation. For advanced students only.

II. HISTORICAL SEMINARY.

This is a graduate course for training in original research. The subject for investigation is selected by the student after consultation with the instructors. A weekly meeting is held for conference, criticism of papers, and consideration of current historical literature. The seminary is conducted by the professors of history.

III. HISTORICAL AND POLITICAL SCIENCE ASSOCIATION.

(*For citizens and advanced students.*)

This is a semi-public institution, and includes in addition to students such other qualified persons as are elected to membership. Prominent officers of the State, clergymen, lawyers, etc., have become members of the association.

IV. ECONOMICS.

Courses for advanced students and graduates will be given by Prof. Ely on the Distribution of Wealth, History of Economic Thought, Socialism, and American Taxation. Prof. Scott will give courses on Theories of Value and Interest, Theories of Rent, Wages and Profits, Public Finance, and Economics of Agriculture. A course on Outlines of Economics will be given for elementary students. For a full account of these courses consult the title Economics on page 59.

V. POLITICAL SCIENCE.

Courses will be given by Prof. Parkinson on Elementary Law, on American, English, and Comparative Constitutional Law, on Roman Law, and International Law. An account of these courses may be found on page 60.

VI. HISTORY.

Courses will be given by Prof. Turner, Prof. Haskins and assistants on Ancient History, English History, American History, Modern History, History of the XIX Century, Economic and Social History of the United States, Constitutional History of England and of the United States, and on History of Institutions. Outlines of these courses will be found on page 61.

VII. SPECIAL LECTURES.

During the current year courses of lectures have been given by Dr. Amos G. Warner, Superintendent of Charities, Washington, D. C., on Pauperism, and Measures for its Prevention and Cure; by Mr. Frederick H. Wines, Secretary of the Illinois Board of Charities, and Special Agent of the Census Office for the collection of statistics relating to the defective, dependent and delinquent classes, on the Sociological Aspect of Crime, and by Prof. Simon H. Patten, of the Wharton School of Finance, on Economic Theory.

VIII. UNIVERSITY EXTENSION WORK.

Courses of extension lectures have been given during the current year by Prof. Ely on Socialism, by Prof. Turner on American Colonization, by Prof. Scott on Economics, by Mr. Speirs on The Labor Problem, and by Mr. Powell on American Politics.

Communications relating to the school may be addressed to the Director.

The School has its rooms in the new building erected for the College of Law, so that the lectures of either may be attended by the students of the other. The courses of the College of Letters and Science will be freely open to the members of the school.

The charges will be the same as for the College of Letters and Science as given on page 57.

WISCONSIN SUMMER SCHOOL.

REGENTS OF THE SCHOOL.

The State Superintendent of Public Instruction.
The President of the University.

CORPS OF INSTRUCTION.

J. W. Stearns, Director and Professor of Psychology and Pedagogy.
C. R. Barnes, Professor of Botany.
E. A. Birge, Professor of Zoology.
L. S. Cheney, Assistant in Biology.
O. B. Clark (University of Indiana), Professor of English Literature.
W. W. Daniells, Professor of Chemistry.
Anna Ellsworth, Assistant in Chemistry.
C. F. Hodge, Instructor in Histology and Physiology.
L. Kahlenberg, Assistant in Chemistry.
A. A. Knowlton, Instructor in Rhetoric.
H. B. Loomis, Instructor in Physics.
C. S. Slichter, Professor of Mathematics.
F. J. Turner, Professor of History.
J. G. Wray, Assistant in Physics.

The Wisconsin Summer School has held six annual session of four weeks each. It was organized in 1887 at the request of the State Teachers' Association. In 1889 the legislature gave it a permanent official organization and made an annual appropriation for its support. No session will be held in 1893. The program for 1894 will be issued during the winter or early spring of that year. The date of opening the session is usually the Tuesday next succeeding July 4th of each year.

One hundred and ninety students attended the School in 1892. A list of their names will be found on a subsequent page.

Inquiries relating to the School should be addressed to Prof. J. W. Stearns, Madison, Wis.

The program for the session of 1892 was as follows:

PSYCHOLOGY — Professor Stearns. Course 1, General Course. Course 2, Seminary.

PEDAGOGY — Professor Stearns. Course 1, two weeks, Historical; Course 2, two weeks, Methods; Course 3, Seminary.

HISTORY — Professor Turner. Course 1, General History; Course 2, American Colonization; Course 3, U. S. History, 1781–1830.

RHETORIC — Mr. Knowlton. Course 1, Rhetorical Methods; Course 2, Rhetorical Criticism.

ENGLISH LITERATURE — Professor Clark. Course 1, General Survey, English Literature; Course 2, Shakespeare; Course 3, Browning, Tennyson, Wordsworth.

MATHEMATICS — Professor Slichter. Course 1, Algebra; Course 2, Geometry.

PHYSIOLOGY — Professor Birge and Dr Hodge. Course 1, Recitations; Course 2, Physiological Laboratory; Course 3, Histology.

ZOOLOGY — Professor Birge. Course 1, Elementary Laboratory; Course 2, Recitations; Course 3, Vertebrate Anatomy.

BOTANY — Professor Barnes. Course 1, Model Course for High Schools, Elementary Botany; Course 2, Microscopic Anatomy of Higher Plants.

MICROSCOPIC POND LIFE — Professor Barnes and Professor Birge.

CHEMISTRY — Professor Daniells. Course 1, Lectures; Course 2, Laboratory Course; Course 3, Qualitative Analysis; Course 4, Quantitative Chemistry.

PHYSICS — Dr. Loomis. Course 1, Lectures; Course 2, Elementary Laboratory.

DEGREES CONFERRED.

COMMENCEMENT, 1892.

BACHELOR OF ARTS.

William Henry Dudley.
Elbert Budd Hand.
Charles Henry Maxson.
John Albert Musser.
Paul Samuel Reinsch.
Edward Owen Rice.
John Jacob Schlicher.
Helen Greig Thorp.

BACHELOR OF LETTERS.

Henry Augustus Adrian.
Julia Annie Armstrong.
George Thomas Atwood.
Walter Dexter Brown.
Lottie Constance Burgess.
Esther Fretwell Butt.
Junius Thomas Hooper.
Edith Hattie Locke.
John Mandt Nelson.
James Francis Augustine Pyre.
Hubert Edward Rogers.
Albert Lee Sawyer.

BACHELOR OF SCIENCE.

Anna Ellsworth.
Charles Jason Fenner.
Herbert Rollin Hammond.
Louis Kahlenberg.
Grace Emma Lee.
Ruth Marshall.
Lester Cooper Mayhew.
James Milton Moore.
Charles Emerson Peet.
Samuel Arthur Piper.
Theron Eugene Powers.
Theodore Running.
Homer Sylvester.
Wesley Munger Thomas.

BACHELOR OF LETTERS — ENGLISH COURSE.

Marilla Andrews.
Frank Hart Bartlett.
Thomas Percy Carter.
Sophie Clawson.
Jeremiah John Cunningham.
Helen A. Daniels.
Mae Evans.
George Walker Lane.
Orin Grant Libby.
J. Elmer NeCollins.
Edna Bertha Richardson.
Elmo Wilson Sawyer.
Edward Paddock Sherry.
Austin Andrew Skolas.

William Lincoln Evans.
Albert Clarence Finn.
Linnie May Flesh.
John Cassidy Healy.
William Henry Hopkins.
Frederick Arthur Jefferson.
George Henry Landgraf.
Margaret Smith.
Anna Ellen Spencer.
Carrie Belle Stevens.
James Huntington Turner.
Marion Belle Wheeler.
William Wesley Young.

BACHELOR OF SCIENCE IN CIVIL ENGINEERING.

Edwin Hugh Ahara.
Harvey Freeman Hamilton.
Olin Andrew Mead.
Frank Elbert Morrow.
George Hiram Stanchfield.

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING.

Charles Wilbur Bennett.
Henry Fox.
Hendrick Bismark Gregg.
Herman John Minch.
George Charles Henry Mors.
Euclid Pascal Worden.

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING.

Edwin Thomas Munger.

BACHELOR OF AGRICULTURE.

Carl Hall Potter.
Albert W. Ten Eyck.

GRADUATE IN PHARMACY.

Clara May Abbott.
Herman Alex. Brennecke.
Max Cohn.
Emily Laura Grote.
Otto Hackendahl.
Louis Henry Kressin.
John Lockwood Mead.
Rudolph Herman Mieding.
Henry August Peters, Jr.
John Rupp.
Ferdinand August Sieker.
Joseph Kuhl Stephany.
Charles Francis Tompkins.
Leopold Charles Urban.

BACHELOR OF LAW.

Theodore John Berri.
Edward Evarts Browne.
Andrew Alexander Bruce.
George Thompson Burrows.
John Otto Carbys.
Ernest Agnew Kehr.
James Bremer Kerr.
Theodore Kronshage, Jr.
Walter Alexander Marling.
Thomas Jefferson Mathews.

Edwin Joseph Cassoday.
Joseph Leslie Caswell.
Henry B. Chappell.
John Chloupek.
Carlisle Royce Clark.
Willard Charles Cole.
Edward Francis Conley.
William Henry Coyne.
Earl Wilson De Moe.
Charles Francis Dillett.
Julius Theodore Dithmar.
John Charles Fehlandt.
Frederick Felker.
Fred Starr Fish.
William Foley.
William Thomas Green.
Maximilian William Heck.
William David Hooker.
George Hoxie.
Charles Adian Ingram.
Morse Ives.
Francis W. Jenkins.
Emory Marion McVicker.
Grant L. Miner.
Lawrence Austin Olwell.
John Lawrence Pingel.
Zebulon Pheatt.
Joseph Myron Reed.
Charles Copeland Russell.
Thomas Henry Ryan.
Russell Perkins Schuyler.
Byron Delos Shear.
George McFadden Shontz.
Farrand Kayley Shuttleworth.
Samuel T. Swansen.
Warren Down Tarrant.
David Henry Walker.
Ernest Noble Warner.
George Rose Whitman.
Edward Frank Wieman.
Edwin Alexander Wigdale.
Richard Sinclaire Witte.
Edward Liberty Wood.

SECOND DEGREES.

(On examination and presentation of thesis.)

MASTER OF ARTS.

Kate Asaphine Everest, A. B., 1882 — In History. Thesis: German Immigration into Wisconsin.

William B. Cairns, A. B., 1890 — In English Literature. Thesis: The Relation of Tragedy to Popular Ideas of Immortality.

Florence Griswold Buckstaff, A. B. and B. L., 1886 — In History. Thesis: Married Women's Property in Anglo-Saxon and Anglo-Norman Law, and the Origin of the Common Law Dower.

Arthur Warren Phelps, A. B., 1890 — In Latin. Thesis: The Dependence of Minucius Felix on the De Natura Deorum and the De Divinatione of Cicero.

Florence Porter Robinson, A. B., 1889 — In History. Thesis: The Colonial Elective Systems as Developed in Massachusetts and Virginia.

MASTER OF LETTERS.

Ada Eugenie Griswold, B. L., 1889 — In History. Thesis: The Territorial Development of Georgia.

Thomas Klingenberg Urdahl, B. L., 1891 — In Latin. Thesis: Gerunds and Gerundives in Plautus.

Zilpha Marie Vernon, B. L., 1890 — In Latin. Thesis: Cicero's Rhetorical Works and their Relation to the Dialogus of Tacitus.

MASTER OF LETTERS (ENGLISH).

Mary M. Howe Shelton, B. S., 1884 — In History. Thesis: The Corn Laws.

MASTER OF SCIENCE.

Edward Thomas Johnson, B. S., 1888 — In Pedagogy. Thesis: The Development of the Teaching of Reading.

John P. Munson, B. S., 1887 — In Zoology. Thesis: Anatomy and Habits of Ophioglypha Sarsii, with Discussion of its Relation to Stelleridea, and to other Ophiurans.

James R. Thompson, B. Met. E., 1887, and B. S., 1888 — In Geology. Thesis: The Structural Relations of the Negaunee-Ishpeming District of the Marquette Iron Range, Lake Superior.

Sidney Dean Townley, B. S., 1890 — In Astronomy. Thesis: Variable Stars of Long Period.

Rodney Howard True, B. S., 1890 — In Botany. Thesis: On Certain American Species of the so-called Orthocarpous Dicrana.

DOCTOR OF PHILOSOPHY..

Charles Richard Van Hise, B. M. E., 1879, B. S., 1880, and M. S., 1882 — In Geology. Thesis: The Penokee Iron-bearing Series of Northern Wisconsin and Michigan.

HONORS IN SPECIAL STUDIES.

ORIN GRANT LIBBY — In Pedagogy. Thesis: Seminary Instruction in History in Wisconsin High Schools.

LOUIS KAHLENBERG — In Chemistry. Thesis: On the Electrolysis of the Hydroxy-acids.

ALBERT MONROE TEN EYCK. Thesis: In Horticulture — A Study of the Regermination of Seeds.

JULIA ANNIE ARMSTRONG. Thesis: In German — Das Heldentum in Goethe's "Iphigenie auf Tauris."

RUTH MARSHALL — In Zoology. Thesis: On a Species of the Genus Podon, Lilj., from Vineyard Sound.

PAUL SAMUEL REINSCH — In History. Thesis: The Land System of New England Towns.

GRADUATES.

Number of University Graduates, 1854–1892, . . .	2,104	1892,	142
Ancient Classical Course, ...	292	. .	8
Modern Classical Course, ...	252	. .	12
English Course, ...	126	. .	27
General Science Course, ...	390	. .	14
Normal Course (1865–68), ...	25	. .	
Engineering Courses, ...	133	. .	12
Law Course, ...	779	. .	53
Pharmacy Course, ...	98	. .	14
Agricultural Course, ...	9	. .	2

STUDENTS.

FELLOWS.

Katherine Allen, B. L., Room 10, University Hall.
Fellow in Latin.

James Walter Crook, A. B., Room 11, University Hall.
Fellow in Economics.

Charles Harvey Hile, B. S., Room 11, Science Hall.
John Johnston Fellow in Mechanical Engineering.

John Sidney Hotton, A. B.,
Christian Association Fellow in Hebrew.

Louis Kahlenberg, B. S., Chemical Laboratory.
Fellow in Chemistry.

David Kinley, A. B., Room 11, University Hall.
Fellow in Economics.

George Wilton Moorehouse, B. L., Room 34, Science Hall.
Fellow in Philosophy.

James Francis Augustine Pyre, B. L., Room 14, Science Hall.
Fellow in English Literature.

Albert Hart Sanford, B. L. (Eng.), Room 11, University Hall.
Fellow in History.

RESIDENT GRADUATES.

Horace Atwood, B. S. in Agr., Cornell Univ., *Glen Cove, N. Y.*
Dairy Husbandry.

Elizabeth Huntington Avery, B. A., Iowa College, *Hampton, Ia.*
History.

Emma Helen Blair, B. S., Ripon College. *Milwaukee.*
Political Economy.

Anna Mary Bolender, B. L., Knox College, *Orangeville, Ill.*
French, Physiology, Shakespeare.

George Lincoln Briggs, A. B., Beloit College, *Delaware.*
Hebrew.

Albert Ellsworth Buckmaster, B. L. (Eng.), Univ. of Wisc., *Madison.*
Economics.

Ira Maynard Buell, A. M., Beloit College, *Beloit.*
Petrography, Histology, Pedagogy.

Jacob Cambier, Ph. G., University of Wisconsin, *Milwaukee.*
Assaying, Mineralogy.

William B. Cairns, M. A., University of Wisconsin, *Madison.*
English Literature.

Norman M. Campbell, A. B., University of Iowa, *Osceola, Ia.*
Economics.

Mary Frances Carpenter, B. L., Smith College, *Madison.*
Hebrew.

Elizabeth Bottenberg Cassidy, B. S., Knox College, *Vermont, Ill.*
History.

Walter Gardner Chandler, A. B., Brown University, *Beloit.*
Economics and History.

Joseph Monroe Clary, A. B., Chaddock College, *Quincy, Ill.*
Economics.

Jeremiah John Cunningham, B. L. (Eng.), Univ. of Wisc., *Dayton.*
Economics.

William Lincoln Evans, B. L. (Eng.), Univ. of Wisc., *Waupaca.*
Economics.

Kate Asaphine Everest, M. A., Univ. of Wisc., *Fond du Lac.*
History and Economics.

Charles Jason Fenner, B. S., Univ. of Wisc., *Centralia, N. Y.*
Mathematics.

Nellie Elizabeth Ford, B. S., Lawrence University, *Fond du Lac.*
Biology, English Literature.

Adelbert Grant Fradenburgh, A. B., Allegheny Col., *Meadville, Pa.*
Economics and History.

Ada Eugenia Griswold, M. L., University of Wisconsin, *Columbus.*
Latin.

Matthew Brown Hammond, Ph. B., Univ. of Mich., *S. Bend, Ind.*
Economics and American History.

Thomas LeGrand Harris, A. B., Indiana University, *Sheridan, Ind.*
History and Economics.

Leonard William Hatch, A. B., Oberlin College, *Oberlin, Ohio.*
Economics and History.

Lillian Frances Hobart, B. L., University of Wisconsin, *Denver, Col.*
Biology, Pedagogy.

William Bashford Huff, A. B., University of Wisconsin, *Boscobel.*
Mathematics and Physics.

Edward David Jones, B. S., Ohio Wesleyan University, *Antigo.*
Economics and History.

Elmer Ellsworth Kaufman, B. Agr., Iowa Agr. College, *Massena, Ia.*
Animal Husbandry.

Frederick Thomas Kelly, B. S., University of Wisconsin, *Madison.*
Hebrew.

Orin Grant Libby, B. L. (Eng.), Univ. of Wisc., *New Richmond.*
History and Economics.

John Lockwood Mead, A. B., B. S., Lawrence University —
Ph. G., Univ. of Wis., *Appleton.*
Pharmaceutical Chemistry.

Edward Christopher Meland, B. L., Univ. of Wisc., *Madison.*
Hebrew, Sanskrit.

Alexander Everett Matthewson, Ph. B., Beloit College, *Beloit.*
Economics.

William Nelson Merriam, B. Met. Eng., Univ. of Wisc., *Madison.*
Mining Engineering.

Helen Sarah Norton, Mt. Holyoke College, *Howell, Mich.*
Economics and History.

Fusato Okada, M. A., Kioto University, *Tokio, Japan.*
Economics and History.

Charles Seymour Osborn, Jr., B. A., Wabash College, *Madison.*
Economics.

Lyman Pierson Powell, A. B., Johns Hopkins University, *Madison.*
History and Economics.

Harry Huntington Powers, A. B., B. L., A. M., Univ. of Wis. *Oberlin, O.*
Economics and History.

Paul Samuel Reinsch, A. B., University of Wisconsin, *Madison.*
History and Economics.

Theodore Running, B. S., University of Wisconsin, *Viroqua.*
Mathematics.

John Henry Shepperd, B. Agrl., Iowa Agr. College, *Chariton, Ia.*
Animal Husbandry.

Samuel Edwin Sparling, A. B., Indiana Univ., *Rensselaer, Ind.*
Economics and History.

Fred William Speirs, S. B., Worcester Polytechnic Inst., *Milwaukee.*
Economics.

Carl Bernhard Wittekind Ströver, Abitur., Gymn. at Minden, *Madison.*
Economics.

Fred Monroe Tisdel, A. B., Northwestern University, *Madison.*
English Literature.

Frank Stanley Traverse, B. S., Univ. of Wisc. *Milwaukee.*
Chemistry.

Thomas Klingenberg Urdahl, B. L., Univ. of Wisconsin, *Madison.*
Latin, History and Economics.

GRADUATES STUDYING IN ABSENTIA.

CANDIDATES FOR HIGHER DEGREES.

Alice Crawford Baily, B. S., *Des Moines, Iowa.*
Master of Science, in English Literature.

William Henry Baily, Ph. B., *Des Moines, Iowa.*
Master of Science, in English Literature.

George Walker Bliss, B. L., *Dallas City, Ill.*
Master of Letters, in English and History.

Myrtie Rundlett Bliss, B. S., *Sharon.*
Master of Science, in Mathematics and Pedagogy.

Jacob Michael Bold, B. L. (Eng.), *Bloomingdale.*
Master of Letters, in Pedagogy.

Elsie L. Bristol, B. L., *Madison.*
Master of Letters, in Literature and History.

Byron Beach Carter, B. M. E., *Chicago, Ill.*
Mechanical Engineer.

Mary Saxe Chandler, B. L., *Chicago, Ill.*
Master of Letters, in English Literature.

Ruth Annie Christie, B. L., *De Pere.*
Master of Letters, in English Literature.

Kirke Lionel Cowdery, A. B., *Oberlin, Ohio.*
Master of Arts, in French.

Mary Hazeltine Ela, B. L., *Rochester.*
Master of Letters, in English Literature.

Augusta Lee Giddings, B. L., *Ann Arbor, Mich.*
Master of Letters, in French.

Emma Goddard, B. L., *Portland, Oreg.*
Master of Letters, in Mathematics.

Jessie Goddard, B. L., *Portland, Oreg.*
Master of Letters, in Mathematics.

Howard Greene, B. L., *Milwaukee.*
Master of Letters, in History.

Cornelius R. Hill, A. B., *Red Wing, Minn.*
Master of Arts, in Greek.

Frank W. Hall, A. B., *Madison.*
Master of Arts, in English Literature.

William Henry Hopkins, B. L., *Chicago, Ill.*
Master of Letters, in Hebrew.

Fred Walter McNair, B. S., *Lansing, Mich.*
Master of Science, in Mathematics.

Hattibell Merrill, B. S., *Milwaukee.*
Master of Science, in Zoology.

Charles S. Miller, A. B., *Madison.*
Master of Arts, in English Literature.

Frank Hayden Miller, A. B., *Omro.*
Master of Arts, in History.

William J. Moroney, B. L., *Dallas, Texas.*
Master of Letters, in History of Spanish-American Institutions.

George Charles Mors, B. S., *Providence, R. I.*
Mechanical Engineer.

Milton Orlup Nelson, B. L., *Minneapolis, Minn.*
Master of Arts, in Economics.

Walter Camp Parmley, B. Met. Eng., *Hebron, Neb.*
Master of Science, in Geology.

Albert E. Schaub, A. B., *Berlin.*
Master of Arts, in History.

Eugene A. Steere, B. S., *Butte, Mont.*
Master of Science, in Geology.

Guido H. Stempel, A. B., *Oskaloosa, Iowa.*
Master of Arts, in German.

Charles Gordon Sterling, A. B., Ph. P., *Omaha, Neb.*
Master of Arts, in Hebrew.

Maude Estelle Remington, B. L., *Baraboo.*
Master of Letters, in English Literature.

Anna Dinsdale Swenson, B. L., *Chicago, Ill.*
Master of Letters, in English Literature.

Magnus Swenson, B. M. E., *Chicago, Ill.*
Mechanical Engineer.

Rose Schuster Taylor, B. S., *Sioux City, Iowa.*
Master of Science, in History.

Edward Kirby Thomas, B. L. (Eng.), *West Superior.*
Master of Letters (Eng.), in English Literature.

ABBREVIATIONS USED IN LIST OF UNDERGRADUATES.

A. C., Ancient Classical; M. C., Modern Classical; Eng., English; C. H., Civic-Historical; G. S., General Science; Sp., Special Student; C. E., Civil Engineering; E. E., Electrical Engineering; M. E., Mechanical Engineering.

UNDERGRADUATES.

COLLEGE OF LETTERS AND SCIENCE.

SENIOR CLASS.

Austin, Mary Belle,	*East Troy,*	G. S.
Ayer, Charles Harris,	*Centreville, S. D.,*	G. S.
Baker, Martha Sumner,	*Madison,*	M. C.
Beeman, Edward Monroe,	*Augusta,*	Eng.
Benfey, Theodore W.,	*Sheboygan,*	C. H.
Blake, John Jeremiah,	*Mazomanie,*	C. H.
Bolton, Frederick Elmer,	*Tomah,*	G. S. (Math. Group).
Bostwick, Samuel Albert,	*Eau Claire,*	C. H.
Bowen, Frances McConnell.	*Madison,*	M. C.
Brown, Mary Catherine,	*Madison,*	M. C.
Buckmaster, Emma Almeda,	*Fayette,*	Eng.
Bulfinch, Arthur Fletcher,	*Juda,*	Eng. Sp.
Bulfinch, Mary Alice,	*Juda,*	G. S. Sp.
Burton, Howard Erastus,	*Lake Geneva,*	G. S.
Burton, Warren Edgar,	*Milwaukee,*	Eng. Sp.
Campbell, Walter Thomas,	*River Falls,*	A. C.
Carter, Joseph Aaron,	*Grey Eagle, Minn.,*	A. C.
Case, Charles Chester,	*Prairie du Chien,*	Eng.
Chadwick, Daisy Jewell,	*Monroe,*	M. C.
Clark, Harvey,	*Madison,*	C. H.
Davis, Ella,	*Madison,*	M. C.
Doherty, John Francis,	*Baraboo,*	C. H.
Douglas, Malcom Campbell,	*Monroe,*	C. H. (Hist. Group).
Doyon, Charles Herrick,	*Madison,*	Eng.
Dunlevy, Robert Baldwin,	*Sparta,*	M. C.
Estes, Frederick Roche,	*Madison,*	Eng.
Fales, Louis Henry,	*Madison,*	C. H. (Hist. Group).
Flom, George Tobias,	*Utica,*	M. C.
Frawley, Edward Joseph,	*Eau Claire,*	C. H.
Garry, Thomas H.,	*Madison,*	C. H.
Griffin, James Francis,	*East Troy,*	C. H. (Hist. Group).
Griffith, Jessie,	*Fond du Lac,*	M. C. (Ger. Group).
Haggerty, Bessie Euphemia	*Mt. Sterling,*	M. C.
Hardy, Edward Sawyer,	*La Crosse,*	C. H. (Hist. Group).
Harper, Blanch,	*Madison,*	G. S. Sp.
Haskell, Herbert Michael,	*Ft. Atkinson,*	C. H. (Hist. Group).
Hatherell, Rosalia Amelia,	*Janesville,*	G. S.

Heald, Lilian Belle,	*Madison,*	M. C.
Herfurth, Sabena,	*Madison,*	Eng.
Holferty, George Mellinger,	*Kansas City, Kan.,*	G. S.
Huenkemeier, Jennie Anna,	*Freeport, Ill.,*	M. C.
Hunner, Guy LeRoy,	*Madison,*	G. S.
Jackson, Fred Morris,	*Monroe,*	A. C.
Jacobs, Herbert Henry,	*Whitewater,*	A. C.
Johnson, Amanda Marie,	*Rockdale,*	A. C.
Johnson, Christian N.,	*Sumner,*	A. C.
Jones, Frank William,	*Elk Grove,*	G. S.
Katz, George Henry,	*Milwaukee,*	Eng.
Katzenstein, Frank,	*Milwaukee,*	Eng.
Kaye, James Ross,	*Madison,*	Eng. Sp.
Kinsman, George Albert,	*Fremont,*	Eng.
Knapp, Luella Belle,	*Madison,*	Eng.
Kroencke, George,	*Wilmot,*	C. H.
Leich, William Frederick,	*Jackson,*	A. C.
Lewis, Margaretta Bradley,	*Sparta,*	M. C.
Lindley, Joseph Thomas,	*Fox Lake,*	Eng.
Lytle, Jay,	*Madison,*	M. C.
Maxon, Jennie Augusta,	*Walworth,*	Eng.
Mayer, Helen Louise,	*Madison,*	M. C.
McCard, William Chester,	*Madison,*	C. H. (Hist. Group).
Meisnest, Frederick William,	*Branch,*	G. S.
Merk, Josephine Marie,	*Sauk City,*	Eng.
Messerschmidt, Joseph Ernst,	*Madison,*	Eng.
Millard, Carlotta May,	*Lake Mills,*	Eng.
Murphy, Julie Ellen,	*Madison,*	C. H.
Murray, Mary Isabel,	*Madison,*	M. C.
Myers, Louis Wescott,	*Lake Mills,*	C. H. (Hist. Group).
Newman, Jesse Ford,	*Appleton,*	A. C.
Nutting, Gertrude Belle,	*Sparta,*	M. C.
Oakey, Anna Irene,	*Madison,*	M. C.
Oakley, Mary Hough,	*Madison,*	Eng. (Math. Group).
Owen, Carrie Anne,	*Milwaukee,*	C. H. (Hist. Group).
Page, Hubert Esterly,	*Whitewater,*	C. H. (Hist. Group).
Parker, Rupert Merrill,	*River Falls,*	G. S.
Parker, Warren Downes,	*Madison,*	G. S.
Parlin, Charles Coolidge,	*Brodhead,*	A. C.
Paul, John Henry,	*Denmark, Ia.,*	M. C.
Pease, George Douglas,	*Eau Claire,*	C. H.
Pendleton, Edmund,	*Sioux City, Ia.,*	A. C.
Piper, Herbert J.,	*Palmyra,*	Eng.

Pollock, James Barkley,	*Orangeville, Ill.,*	G. S.
Post, Katherine D.,	*Milwaukee,*	M. C.
Potter, Sarah Anderson,	*Madison,*	Eng.
Ralph, Agnes Clarissa,	*Columbus,*	M. C.
Reed, Albert John,	*Palmyra,*	G. S.
Richardson, Harriet Jane,	*Sparta,*	M. C.
Richardson, Mary Pauline,	*Milwaukee,*	A. C. (Math. Group).
Rogers, Charles Britton,	*Fort Atkinson,*	C. H.
Rosecranz, Claude Milligan,	*Sparta,*	Eng.
Ruebhausen, Ella Elizabeth,	*Watertown,*	G. S.
Sabin, Kate Lucinda,	*Windsor,*	G. S.
Schumann, Ottilie Marie,	*Portage,*	G. S. Sp.
Schuster, Clara Otelia,	*Middleton,*	Eng.
Showers, Frederick Frank,	*Mazomanie,*	Eng.
Siggleko, Herbert Scott,	*Madison,*	A. C.
Slonaker, James Rollin,	*Farmland, Ind.,*	G. S.
Smith, Harriet,	*Janesville,*	G. S.
Smith, Mary Elizabeth,	*Madison,*	A. C.
Staley, M. Victor,	*Oshkosh,*	A. C.
Stecker, Henry Freeman,	*Rice Lake,*	G. S. (Math. Group).
Stevens, Edmund Ray,	*Janesville,*	C. H. (Hist. Group).
Strahl, Mary Grace,	*River Falls,*	Eng.
Strong, Edgar Freeman,	*Washington, D. C.,*	C. H.
Sumner, Louis Dunning,	*Madison,*	Eng.
Terry, Grace Larkin,	*Madison,*	Eng.
Thatcher, James Leonard,	*Black Earth,*	C. H.
Thomas, Benjamin,	*West Salem,*	G. S.
Turner, Ellen Breese,	*Portage,*	C. H.
Ward, Ernest Farwell,	*Black Earth,*	Eng.
Whitman, Platt J.,	*Dodgeville,*	Eng.
Whittet, Lawrence Clarke,	*Edgerton,*	C. H.
Williams, Charles Henry,	*Columbus,*	M. C.
Williams, Florence Virginia,	*Viroqua,*	M. C.
Williams, George Edgar,	*Columbus,*	M. C.
Woodward, Anna Elizabeth,	*Platteville,*	G. S.
Ziemer, Archer Romeo,	*Madison,*	Eng.—116

JUNIOR CLASS.

Abbott, Belle,	*Beloit,*	C. H.
Allen, William Ware,	*Madison,*	A. C. (Hist. Group).
Anderson, George Krogh,	*Madison,*	Eng.
Austin, Charles Francis,	*Bloomington,*	G. S. (Chem. Group).
Baldwin, Charles Leander,	*Kendalls,*	C. H.

Barnes, Flora Anna,	*Prairie du Chien,*	C. H.
Barney, Charles Richards,	*Mauston,*	A. C. Sp.
Bassett, Agnes Stone,	*Columbus,*	M. C. Sp.
Beebe, Roy Henry,	*Racine,*	M. C. (Pol. Econ. Group).
Beffel, John Marshall,	*Racine,*	G. S. (Zool. Group).
Blake, Herbert Scott,	*Racine,*	C. H.
Bleedorn, Bertha,	*Janesville,*	M. C.
Bold, Francis James,	*Madison,*	G. S.
Bold, Regina Rosetta,	*Bloomingdale,*	Eng.
Bold, Sadie May,	*Madison,*	M. C. Sp.
Bowman, Frank Favill,	*Madison,*	Eng.
Brown, Sarah Edith,	*Madison,*	G. S.
Bucknam, Kate Dana,	*Sioux City, Ia.,*	Eng.
Burgess, Caroline Viola,	*Hitchcock, S. D.,*	M. C.
Carlton, Edward Perkins,	*Madison,*	G. S.
Case, Winnifred May,	*North Greenfield,*	C. H. (Phil. Group).
Clawson, Catherine May,	*Monroe,*	M. C.
Cleveland, Catherine Caroline,	*Oshkosh,*	C. H.
Cleveland, Chester Dwight,	*Oshkosh,*	C. H.
Coe, Arthur Elwood,	*Barron,*	G. S. (Pol. Econ. Group).
Cole, Ralph Gully,*	*St. Louis, Mo.*	A. C.
Comstock, Adam,	*Madison,*	G. S.
Cowdery, Edith Aldrich,	*Elkhorn,*	M. C. Sp.
Crandall, Harriet Emmeline,	*Albion,*	A. C.
Crane, Frank Hurd,	*Beaver Dam,*	G. S. (Chem. Group).
Curtis, Lawrence Albert,	*Madison,*	M. C. Sp.
DeCou, Edgar Ezekiel,	*Madison, S. D.,*	G. S.
Dithmar, Edward Frederick,	*Reedsburg,*	Eng.
Doudna, Pearl Eugene,	*Gillingham,*	A. C. (Math. Group).
Dougan, Wess J.,	*Madison,*	G. S.
Dow, Robert Ninian,	*Madison,*	C. H.
Elliott, George Theodore,	*Milwaukee,*	Eng. Sp.
Elwell, Percy Spencer,	*La Crosse,*	G. S.
Enteman, Minnie Marie,	*Hartland,*	G. S. (Zool. Group).
Foltz, Alice Belle,	*Burlington,*	C. H.
Foster, Mary Stuart,	*Madison,*	Eng.
Francis, John Hugh,	*Spring Green,*	G. S.
Freeman, John Dwight,	*Madison,*	G. S. Sp.
Gier, Henry Charles,	*Black Earth,*	Eng. Sp.
Graves, Adele Maria,	*Milwaukee,*	M. C.
Gray, Mary,	*Schofield,*	Eng. Sp.
Hanks, Stanley Charles,	*Madison,*	Eng.

* Deceased.

Hawley, Charles Francis,	*Milwaukee,*	A. C.
Hayden, Mary Estelle,	*Sun Prairie,*	C. H. (Hist. Group).
Henderson, Bertina,	*Cambridge,*	Eng. Sp.
Henning, Edward Julius,	*Iron Ridge,*	C. H.
Hilbert, Charles Emil,	*Milwaukee,*	Eng. Sp.
Hodges, Gilbert Tennent,	*Monroe,*	C. H.
Hooper, Edward Moses,	*Oshkosh,*	Eng. Sp.
Hopkins, Grace Louise,	*Madison,*	M. C.
Hover, Eugenia Harriet,	*Shullsburg,*	Eng.
Howland, Wheeler,	*Ft. Howard,*	C. H.
Hoyt, Miriam,	*Wauwatosa,*	C. H. (Hist. Group).
Johnston, James Melvin,	*Waupun,*	Eng. Sp.
Johnson, Sarah,	*Milwaukee,*	Eng.
Kanneberg, Adolph,	*Ashland,*	Eng.
Kellett, Bertha,	*Neenah,*	Eng. Sp.
Kellogg, Helen Julia,	*Madison,*	M. C.
Kelly, George Thomas,	*Eau Claire,*	Eng. Sp.
Kinney, Knox,	*Aurora, Ill.,*	C. H.
Kleinpell, Irma Meta,	*Madison,*	M. C.
Kull, Fred,	*Lake Geneva,*	M. C. Sp.
Lamoreaux, Court Wayland,	*Horicon,*	C. H.
Law, Walter Gray,	*Chippewa Falls,*	G. S. Sp.
Lawrence, Carl Gustavus,	*Madison,*	M. C.
Light, Gertrude,	*Milwaukee,*	G. S.
Lindley, Dena,	*Madison,*	Eng.
Livingston, Sue May,	*Livingston,*	Eng.
MacGregor, George Malcolm,	*Eau Claire,*	G. S.
Madison, James Daniel,	*Mazomanie,*	G. S. (Zool. Group).
Marshall, Charles Andrew,	*Superior,*	C. H. Sp.
Mathewson, Kathryn,	*Menasha,*	Eng. Sp.
McGlachlin, Lucy Kate,	*Stevens Point,*	M. C.
Mead, George Wilson,	*Rockford, Ill.,*	A. C.
Mills, Elizabeth Bennett,	*Madison,*	G. S. (Math. Group).
Moore, Fred Milton,	*Fond du Lac,*	G. S. Sp.
Morton, Lila,	*Cambridge,*	Eng. Sp.
Moses, Albert Barnes,	*Madison,*	G. S.
Nelson, Thomas Paine,	*Madison,*	M. C.
Newhouse, William Oscar,	*Clinton,*	A. C. Sp.
Norton, Irene Celia,	*Elkhorn,*	M. C. Sp.
Noyes, Nellie Strong,	*Oshkosh,*	M. C. Sp.
O'Connor, Charles James,	*Sparta,*	A. C. Sp.
O'Keefe, David Francis,	*Stevens Point,*	Eng.
Overson, Willard Bela,	*Cambridge,*	C. H.

Parsons, Ada Martha,	*Milwaukee,*	Eng.
Pomainville, Frank,	*Grand Rapids,*	G. S. Sp.
Pratt, Edgar Alonzo,	*Waupun,*	G. S. Sp.
Pratt, John Alexander,	*Stoughton,*	C. H.
Raish, Edward Lester,	*Madison,*	M. C.
Regan, Susie Pierce,	*Madison,*	M. C.
Reilly, Michael Kiernan,	*Fond du Lac,*	Eng. Sp.
Rienow, Robert,	*Prairie du Chien,*	C. H.
Rindlaub, Martin Phillip,	*Platteville,*	Eng.
Roberts, Eliza,	*Hazel Green,*	G. S.
Roberts, Luella May,	*Dodgeville,*	Eng.
Robinson, Mabel Porter,	*Milwaukee,*	M. C. Sp.
Rountree, Nelly Jewett,	*Platteville,*	Eng.
Rowan, Patrick,	*Madison,*	M. C.
Sarles, Jesse Eugene,	*Boscobel,*	A. C.
Schafer, Joseph,	*Muscoda,*	C. H.
Schlundt, Herman,	*Two Rivers,*	G. S.
Schultz, Edward Frank,	*Reedsburg,*	G. S.
Schuster, Bruno L.,	*Milwaukee,*	G. S. (Chem. Group).
Seymour, Arthur Romeyn,	*Reedsburg,*	M. C. Sp.
Short, Ward Beecher,	*Dodgeville,*	Eng.
Shurly, Burt Russell,	*Chicago, Ill.,*	G. S.
Smith, Etta Milton,	*Mineral Point,*	C. H.
Spensley, Calvert Frederic.	*Mineral Point,*	A. C.
Spooner, Willet Main,	*Madison,*	A. C.
Steele, William Henry,	*Pewaukee,*	Eng.
Stephenson, Alice Elizabeth,	*Madison,*	M. C. Sp.
Stiles, Minnie Margaret,	*Columbus,*	M. C.
Strong, Anna Mary,	*Mineral Point,*	G. S. (Ger. Group).
Tarrant, Burr Randolph,	*Durand,*	Eng. Sp.
Taylor, Ada Elizabeth,	*Milwaukee,*	Eng.
T. orbus, William Curtis,	*Sparta,*	M. C. Sp.
Vilas, Henry,	*Madison,*	A. C.
Wales, M. Virginia,	*River Falls,*	G. S. Sp.
Walker, Mary Ada,	*Stevens Point,*	Eng. Sp.
Webster, John Enoch,	*Almond,*	G. S. Sp.
Weidman, Samuel,	*Ableman,*	G. S. (Geol. Group).
Wheelihan, Frank Antes,	*Necedah,*	Eng. Sp.
White, Harry K.,	*Sparta,*	Eng.
Wyman, Anna Imogene,	*Eau Claire,*	M. C.
Youker, Henry Sherwood,	*Waterloo,*	G. S.
Young, Caroline Morris,	*Madison,*	M. C.—132

SOPHOMORE CLASS.

Allen, Cora,	*Madison,*	Eng.
Allen, Harry Eugene,	*Madison,*	G. S.
Anderson, Otto,	*Chicago, Ill.,*	A. C.
Aylward, Richard Charles,	*Black Earth,*	G. S. Sp.
Baker, Helen Augusta,	*Madison,*	A. C.
Ball, Farlin Herbert,	*Oak Park, Ill.,*	A. C.
Ball, Wilbur Laing,	*Madison,*	A. C.
Black, Buford Downs,	*Richland Center,*	G. S. Sp.
Blakely, Thomas Thurston,	*Janesville,*	C. H. Sp.
Blum, Flora Margaret,	*Madison,*	Eng.
Brown, Helen Lucy,	*Stevens Point*	M. C.
Buckley, Ernest Robertson,	*Tomah,*	G. S.
Bunting, Alice Isabella,	*La Crosse,*	A. C.
Cady, Samuel Howard,	*Madison,*	M. C. Sp.
Cairns, Gertrude Maud,	*Ellsworth,*	M. C.
Callecod, Ole Larson,	*Madison,*	Eng. Sp.
Carhart, Arthur,	*Milwaukee,*	G. S. Sp.
Cary, Margaret,	*Racine,*	Eng.
Case, Laura,	*Prairie du Chien,*	Eng. Sp.
Cassels, Edwin Henry,	*Tomah,*	A. C. Sp.
Chapman, Annie,	*Madison,*	M. C. Sp.
Chase, Lucius Kurtz,	*Sioux City, Ia.,*	M. C. Sp.
Chynoweth, Edna Ruth,	*Madison,*	M. C.
Connell, Marion Theresa,	*Fond du Lac,*	M. C.
Connor, Sarah Esther,	*Token Creek,*	M. C. Sp.
Copeland, Edwin Bingham,	*Monroe,*	G. S.
Cramer, Mary Alison,	*Madison,*	M. C.
Crommett, Herbert Benton,	*Star Prairie,*	G. S.
Cunningham, Wilson,	*Cobb,*	G. S.
Daws, Julius Henry,	*Stoughton,*	Eng. Sp.
Dennett, Florence Amanda,	*Baraboo,*	A. C.
Dewey, George Willard,	*Deansville,*	G. S. Sp.
Dodson, Samuel Henry,	*Terre Haute, Ind.,*	C. H. Sp.
Drew, Alva Frank,	*Lodi,*	Eng. Sp.
Edgren, Dottie Josephine,	*Madison,*	M. C.
Ellsworth, Laura,	*Barron,*	G. S.
Everett, Mary Louise,	*Oshkosh,*	M. C.
Fairchild, Albert Turner,	*Marinette,*	A. C.
Fairchild, William Richard,	*Marinette,*	A. C.
Falk, Nelson Hadley,	*Stoughton,*	Eng. Sp.
Ferris, William Chester,	*Waupun,*	Eng.
Flint, Anna Kathrine,	*Menomonie,*	Eng.

Ford, Guy Stanton,	*Plainfield, Ia.,*	C. H. Sp.
Foster, Fred Albert,	*Port Washington,*	C. H. Sp.
Foster, Guy LeRoy,	*Madison,*	Eng. Sp.
Fulton, Grace,	*Hudson,*	C. H.
Fulton, Olive,	*Hudson,*	C. H.
Garlichs, Alice Corinne,	*St. Joseph, Mo.,*	M. C.
Gale, Zona Belle,	*Portage,*	M. C. Sp.
Giddings, William Trowbridge,	*Sheboygan Falls,*	Eng.
Gittins, Elmer Elsworth,	*Racine,*	Eng. Sp.
Gray, Alfred William,	*Milwaukee,*	A. C.
Green, Grace Nellie,	*Monroe,*	M. C.
Green, Bertha Mae,	*Middleton,*	C. H. Sp.
Greenbank, George Herbert,	*Madison,*	M. C.
Griffiths, Anna Cecilia,	*Madison,*	A. C.
Hamilton, Harry David,	*Sioux City, Ia.,*	Eng. Sp.
Hand, Jessie Louise,	*Racine,*	M. C.
Harder, Herman Peter,	*New Holstein,*	G. S. Sp.
Harrington, Marie,	*Bear Creek,*	G. S. Sp.
Harris, J. Earl,	*Reedsburg,*	G. S.
Harris, Juliet Parker,	*Reedsburg,*	Eng.
Heald, Fred De Forest,	*Madison,*	G. S.
Herrick, Irving James,	*Bayfield,*	G. S. Sp.
Herrmann, Charles,	*Sterling, Ill.,*	G. S.
Hicks, Ernest Levi,	*Oshkosh,*	G. S.
Higgins, James Martin,	*Madison,*	A. C. Sp.
Hill, Louis Tyler,	*Sparta,*	G. S
Hodges, Frank Lewis,	*Monroe,*	G. S.
Holt, Robert Lincoln,	*Caldwell,*	C. H.
Hough, Alexander George,	*Racine,*	G. S.
Houston, Beulah Fitz R.,	*Madison,*	G. S. Sp.
Howell, Charles Hamilton,	*Sioux City, Ia.,*	M. C. Sp.
Hutson, Charles Thomas,	*Edgerton,*	Eng.
Ingalls, Fred M.,	*Fond du Lac,*	Eng. Sp.
Ives, Guy,	*Black Earth,*	Eng. Sp.
Jacobs, Walter Edwin,	*Viroqua,*	Eng. Sp.
Johnson, Fred Gordon,	*Oregon,*	G. S. Sp.
Jones, Charles Wickham,	*Dodgeville,*	Eng. Sp.
Jones, Noble Wiley,	*Red Wing, Minn.,*	G. S.
Judge, Ina,	*Darlington,*	Eng. Sp.
Karel, John Colonel,	*Kewaunee,*	Eng.
Kimball, Bertha Clough,	*Madison,*	G. S.
Kimball, Edna Gertrude,	*Madison,*	M. C. Sp.
Kingsley, George Almond,	*Madison,*	A. C.

Lenroot, Nellie Frederica,	*Superior,*	G. S.
Lyle, Edith Catherine,	*Madison,*	M. C. Sp.
Lyon, Edith Adel,	*Sioux City, Ia.,*	M. C.
Lyon, Judd Stuart,	*Sioux City, Ia.,*	M. C. Sp.
MacGregor, Nellie Bly,	*Eau Claire,*	M. C.
Madigan, Patrick Henry,	*Madison,*	M. C.
Madigan, Stephen Alexander,	*Madison,*	M. C.
Main, Annie Elizabeth,	*Madison,*	M. C.
Mandt, Clara Josephine,	*Stoughton,*	Eng. Sp.
Marshall, Victor Fred,	*Appleton,*	G. S. Sp.
Mason, Vroman,	*Madison,*	Eng.
Maynard, Myra Edith,	*Hawarden, Ia.,*	M. C. Sp.
McComb, Walter David,	*Ft. Atkinson,*	Eng. Sp.
McGovran, Thomas Young,	*Oak Creek,*	G. S. Sp.
McGregor, Margaret Elizabeth,	*Stevens Point,*	M. C.
Minch, Lydia Emily,	*Paoli,*	M. C.
Mueller, Olga,	*La Crosse,*	G. S.
Nichols, George Edward,	*Superior,*	M. C. Sp.
O'Connor, Leonora Francis,	*Sparta,*	M. C.
Olson, Oscar Alexander,	*Chicago, Ill.,*	G. S.
O'Neil, George Edwin,	*Milwaukee,*	C. H.
Parfrey, Jennie Mae,	*Richland Center,*	G. S. Sp.
Parman, Ida Lillian,	*Mazomanie.*	M. C. Sp.
Pendleton, Mary Lucy,	*Sioux City, Ia.,*	M. C.
Peterson, Fred William,	*Bonduel,*	A. C.
Pierce, Frank Ellis,	*Pittsburg, Pa,*	G. S. Sp.
Pomeroy, Flavia Marie,	*Edgerton,*	Eng.
Prevey, Comadore,	*Elroy,*	C. H.
Reindahl, Amund Kittleson,	*Madison,*	M. C. Sp.
Richardson, Helen Cornelia,	*Sparta,*	M. C.
Richardson, Julia Baker,	*Davenport, Ia.,*	M. C. Sp.
Robinson, Edith Porter,	*Milwaukee,*	M. C. Sp.
Roden, August Henry, Jr.,	*Sanborn, Ia.,*	G. S.
Rogers, George Henry,	*Wauwatosa,*	C. H.
Ross, Gertrude Clark,	*Sioux City, Ia.,*	M. C.
Ryan, John Elbert,	*North Andover,*	C. H. Sp.
Scheibel, Martha,	*Madison,*	M. C.
Schreiter, Joseph Benjamin,	*Darlington,*	G. S. Sp.
Schuette, Albert B.,	*Manitowoc,*	C. H.
Schumann, Frederick Paul,	*Portage,*	G. S. Sp.
Scott, Robert Bruce,	*Kaneville, Ill.,*	M. C.
Scoular, William Foster,	*Picketts,*	G. S. Sp.
Sheldon, George Matthew,	*Brandon,*	Eng. Sp.

Shepherd, Jessie May,	*Madison,*	M. C.
Silverwood, Thomas P.,	*Sumner,*	G. S.
Simons, Algie Martin,	*North Freedom,*	Eng.
Smith, Eugene Albert,	*Madison,*	G. S. Sp.
Smith, Peleg Young,	*Aurora, Ill.,*	M. C. Sp.
Smith, Ralph Elbert,	*Waupun,*	C. H.
Speigelberg, Elizabeth Sophia,	*Boscobel,*	M. C. Sp.
Stedman, Clara Antoinette,	*Berlin,*	M. C. Sp.
Steenberg, Bessie,	*Chicago, Ill.,*	M. C. Sp.
Steensland, Halbert Severin,	*Madison,*	G. S.
Ten Eyck, Lena Amelia,	*Brodhead,*	G. S.
Thomas, Caroline E.,	*Green Bay,*	M. C.
Thomas, Frederick Willis,	*Eau Claire,*	Eng.
Thorp, Mary Isabella,	*Madison,*	M. C.
Tillotson, Roy Delancey,	*Waupun,*	C. H.
Tone, Knut Hjalmar,	*Madison,*	Eng.
Tratt, Walter Frank,	*Whitewater,*	C. H.
Vernon, Florence Eugenia,	*Madison,*	M. C.
Wagner, Frederick,	*Freeport, Ill.,*	Eng.
Walbridge, Fannie Rose,	*Madison,*	Eng. Sp.
Walters, Lillie Anna,	*Stoughton,*	Eng.
Warren, Clyde Lafayette,	*Green Bay,*	M. C.
Weyer, Edward Moffat,	*St. Louis, Mo.,*	A. C.
Winter, Hermann,	*Madison,*	M. C.
Worden, Lucy Adella,	*Milwaukee,*	Eng. Sp.
Ziemer, Myrtle Drinnie,	*Madison,*	G. S.—154

FRESHMAN CLASS.

Agnew, Eva Marie,	*Stevens Point,*	Eng. Sp.
Alsted, Lewis Losey,	*Milwaukee,*	C. H. Sp.
Amazeen, John Brown,	*Milwaukee,*	A. C.
Anderson, Ivis,	*Augusta,*	Eng. Sp.
Arkills, William Guy,	*Lake Geneva,*	G. S. Sp.
Arndt, Walter Tallmadge,	*De Pere,*	C. H. Sp.
Astle, Cora Alice,	*Prairie du Sac,*	Eng. Sp.
Atwood, David,	*Madison,*	M. C.
Augustin, Robert Alvin,	*Menasha,*	C. H.
Barton, Albert,	*Mount Vernon,*	Eng. Sp.
Beebe, Mame Louise,	*Sparta,*	M. C.
Beebe, Pearl Arthur,	*Marshall,*	G. S. Sp.
Bleyer, Willard Grosvenor,	*Milwaukee,*	M. C.
Blomgren, Charles Edwin,	*Chicago, Ill.,*	G. S.
Boese, Herman Rudolph,	*Beaver Dam,*	Eng.

Bolton, William Lawrence,	*Racine,*	C. H.
Bostwick, Eva Huling,	*Janesville,*	M. C.
Bowden, Josephine Horton,	*West Salem,*	Eng.
Brazeau, Theodore Walter,	*Grand Rapids,*	Eng. Sp.
Breese, Llewelyn, Jr.,	*Portage,*	C. H. Sp.
Brown Charles Marvin,	*Wyoming, Ill.,*	A. C. Sp.
Bucey, Caro Louise,	*Madison,*	M. C.
Bump, Franklin Elisha,	*Wausau,*	C. H. Sp.
Bundy, Margaret Eliza,	*Menomonie,*	Eng.
Bunker, Page Scribner,	*Menomonie,*	A. C. Sp.
Bunting, Charles Henry,	*La Crosse,*	G. S.
Burgess, Ezra Roy,	*Racine,*	C. H.
Bushnell, Ida May,	*Burlington,*	M. C. Sp.
Carlton, Mary Louise,	*Madison,*	C. H.
Catlin, Marie Lois,	*Madison,*	Eng.
Chase, Effie Augusta,	*Sioux City, Ia.,*	M. C. Sp.
Connell, Frank Gregory,	*Wauwatosa,*	Eng. Sp.
Conway, William James,	*Rudolph,*	Eng. Sp.
Copeland, Hubert Bingham,	*Madison,*	C. H.
Copeland, Louis Albert,	*Shullsburg,*	Eng. Sp.
Cornish, Francis Vincent,	*Myrna, Minn.,*	C. H.
Craig, Jessie Catharine,	*Russell, Ontario,*	C. H.
Crooker, Orin Edson,	*Helena, Mont.,*	G. S. Sp.
Crowley, Frank Morton,	*Madison,*	G. S. Sp.
Curtis, Alfred Tennyson,	*Merrill,*	C. H. Sp.
Daniells, Ralph Peabody,	*Madison,*	A. C.
Davison, Thomas Lincoln,	*Waupun,*	Eng. Sp.
Dettloff, Emily Helena,	*Madison,*	Eng.
Dolph, Cyrus,	*Brookfield,*	C. H.
Donohoe, Michael Joseph,	*Antigo,*	G. S. Sp.
Donovan, Mary,	*Madison,*	G. S. Sp.
Doyle, Frances Ellen,	*Madison,*	Eng.
Drake, Susie Main,	*Milwaukee,*	Eng. Sp.
Eager, Gertrude,	*Evansville,*	M. C. Sp.
Eames, Charles Rush,	*Elgin, Ill.,*	C. H.
Echlin, Alice,	*Janesville,*	M. C. Sp.
Fehr, Henry,	*Milwaukee,*	G. S.
Fehr, Jacob, Jr.,	*Milwaukee,*	G. S.
Fife, Nellie May,	*West Superior,*	C. H.
Fischer, Otto Henry,	*Plymouth,*	C. H.
Fowler, Emma Gladys,	*Madison,*	M. C.
Fox, George William,	*Madison,*	G. S. Sp.
Frame, William Somerville,	*Waukesha,*	C. H.

Freeman, Charlotte Brockway,	*Madison,*	M. C.
Gallagher, Sadie Ellen,	*Madison,*	Eng.
Gault, John Henry,	*Poynette,*	G. S.
Gilchrist, Frank Ray,	*McGregor, Ia.,*	C. H.
Gile, Durante Carlyle,	*Madison,*	A. C.
Gillan, Martin James,	*Racine,*	C. H.
Gordon, James Curtiss,	*Madison,*	G. S.
Guile, Ella May,	*Wauwatosa,*	G. S.
Gunther, Laura Marion,	*Madison,*	Eng.
Gurnee, Paul Denison,	*Madison,*	M. C. Sp.
Hambrecht, George Philip,	*Lake Geneva,*	C. H.
Harding, Harry Alexis,	*Brodhead,*	G. S.
Hardy, Charles Albert,	*La Crosse,*	C. H. Sp.
Harvey, Mary Lydia,	*Lake Mills,*	Eng.
Hastreiter, Rolland Frederick,	*Madison,*	G. S.
Hauxhurst, Mary Hicks,	*Eau Claire,*	G. S.
Haviland, Dora Luella,	*Janesville,*	M. C.
Hayden, Charles Beecham,	*Sun Prairie,*	G. S.
Hayden, Georgia H.,	*Eau Claire,*	M. C.
Healy, James Thomas,	*Beaver Dam,*	Eng.
Helm, Ida Ella,	*Madison,*	Eng. Sp.
Henrikson, Charles Isaac,	*So. Kaukauna,*	G. S.
Hewitt, Ella L.,	*Madison,*	M. C. Sp.
Hewitt, Harry Brewer,	*Menasha,*	Eng.
Hocking, William Joseph,	*Darlington,*	M. C. Sp.
Holverson, Mary,	*Otsego,*	Eng. Sp.
Hopkins, Nelson Sanford,	*Milwaukee,*	C. H. Sp.
Hutson, Maud Alice,	*Edgerton,*	Eng. Sp.
Iverson, Edward Alvin,	*Chicago, Ill.,*	G. S. Sp.
Jackson, Russell,	*Madison,*	A. C. Sp.
James, Victoria,	*Eau Claire,*	M. C.
Jenkins, David George,	*Meeme,*	M. C.
Johns, William Henry,	*Dodgeville,*	Eng. Sp.
Johnson, Ellen,	*McFarland,*	Eng.
Jones, Chauncy Lloyd,	*Stevens Point,*	G. S.
Jones, David R.,	*Waterville,*	A. C.
Jones, Lillian A.,	*Racine,*	M. C.
Jones, Thomas Reese Lloyd,	*Hillside,*	G. S.
Kalaher, Michael William,	*Lake Geneva,*	C. H.
Katzenstein, George,	*Milwaukee,*	G. S.
Kennicott, Belle,	*Madison,*	M. C.
Kittell, John Albert,	*De Pere,*	C. H.
Kriz, George Herbert,	*Milwaukee,*	G. S. Sp.

Krueger, Frederick Charles,	*Sun Prairie,*	G. S.
Ladd, Nels A.,	*Stoughton,*	Eng. Sp.
Ladwig, Edwin Robert,	*Milwaukee,*	G. S.
Lamphier, Phoebe Anne,	*Janesville,*	M. C.
LaVigne, Edmund Henry,	*Grand Rapids,*	C. H. Sp.
Leith, Charles Kenneth,	*Madison,*	M. C.
Lewis, Chester Lorenzo,	*Menominee, Mich.,*	C. H. Sp.
Liegler, John Henry,	*Racine,*	C. H.
Loeper, Addie W.,	*Prairie du Chien,*	C. H.
Lucas, Frank Warren,	*Brodhead,*	M. C. Sp.
Luft, Katherine,	*Madison,*	Eng. Sp.
Lynch, John Kenny,	*Oshkosh,*	C. H.
Maine, Ellen Lucy,	*Stevens Point,*	Eng. Sp.
Maloney, David William,	*Elk Creek,*	C. H.
Martin, Frederick Lee,	*Omro,*	G. S. Sp.
Martin, Harry Woodford,	*Chippewa Falls,*	Eng.
McCard, Harry Stanton,	*Madison,*	G. S.
McCoy, Mabel,	*Lancaster,*	C. H.
McGovern, Rachel Catherine,	*Madison,*	G. S.
McKowen, Hattie Estelle,	*Stevens Point,*	Eng.
McNab, Joseph Lowe,	*Evanston, Ill.,*	C. H. Sp.
Medberry, Fannie Knapp,	*Oshkosh,*	Eng.
Mendel, Alfred Marcus,	*Milwaukee,*	G. S.
Miller, Edward Schuyler,	*Waterloo, Ia.,*	A. C.
Miller, Florence Emaretta,	*Madison,*	Eng. Sp.
Miller, George Harry,	*Winneconne,*	A. C.
Mitchell, Andrew William,	*Chicago, Ill.,*	A. C.
Mitchell, Maude,	*Menominee, Mich.,*	Eng. Sp.
Monahan, Barney Andrew,	*East Troy,*	Eng.
Moseley, Helen Wilson,	*Madison,*	M. C. Sp.
Newbury, Lila Dora,	*Sparta,*	M. C. Sp.
Nichols, Augusta Mae,	*Madison,*	M. C.
Noyes, Harry Jennings,	*Milwaukee,*	G. S.
Ochsner, Benjamin James,	*Prairie du Sac,*	G. S.
Olson, Clara R.,	*Sparta,*	M. C. Sp.
Page, J. W.,	*Honey Creek,*	C. H.
Palmer, Helen,	*Madison,*	M. C. Sp.
Parsons, Emilie Marie,	*Whitewater,*	G. S.
Paul, Alexander Gunn,	*La Crosse,*	Eng. Sp.
Peirce, Alice Darlington,	*Sioux City, Ia.,*	M. C.
Peters, Susie Mary,	*Watertown,*	Eng.
Phelps, Charles Austin,	*Madison,*	M. C.
Phipps, Crauston George,	*Milwaukee,*	C. H.

Pitman, Anna Marie,	*Madison,*	A. C.
Pratt, Mary Louise,	*Ft. Atkinson,*	Eng. Sp.
Rehn, Valentine Lawrence	*Marshall,*	Eng.
Richards, John Robertson,	*Lake Geneva,*	C. H.
Rogers, Ethelyn E.,	*Portage,*	Eng. Sp.
Rose, Clark A.,	*Poynette,*	Eng.
Sanborn, John Bell,	*Madison,*	M. C.
Sawyer, Anne E.,	*Boscobel,*	M. C. Sp.
Sawyer, Hiram Arthur,	*Hartford,*	Eng.
Schaeffer, Katherine Louise,	*Somers,*	C. H. Sp.
Schmidt, Albert Henry,	*Manitowoc,*	C. H.
Schram, Abraham William,	*Milwaukee,*	G. S. Sp.
Sheldon, Walter Hodge,	*Madison,*	A. C.
Shockley, Harlow Orville,	*Lamont,*	G. S.
Shuart, Charles Day,	*Kenosha,*	G. S.
Sidell, Alma Rosa,	*Madison,*	Eng.
Sikes, George Rubens,	*Sharon,*	A. C. Sp.
Skinner, Frank Norborne,	*Redfield, Ohio,*	G. S. Sp.
Skinner, Laura Marie,	*Watertown,*	G. S. Sp.
Sliter, William James,	*Spring Green,*	C. H.
Smith, Carrie Fredrica,	*Madison,*	M. C.
Smith, Charles Marquis,	*Racine,*	G. S.
Sparks, Laura Verne,	*Beloit,*	M. C.
Spence, Mary,	*Fond du Lac,*	A. C.
Stair, Robert Purton,	*Ft. Atkinson,*	G. S. Sp.
Stedman, Clara Antoinette,	*Berlin,*	M. C. Sp.
Steffens, Pauline Josephine,	*South Osborne,*	G. S.
Stiles, Lynn Boyd,	*Lake Mills,*	Eng.
Stoddard, Benjamin Myrtle,	*La Crosse,*	G. S.
Sullivan, Eugene,	*Madison,*	A. C. Sp.
Sumner, Charles Johnson,	*Delavan,*	C. H. Sp.
Sutherland, Margaret,	*Eau Claire,*	Eng. Sp.
Suydam, Vernon Andrew,	*Rural,*	G. S. Sp.
Sweetnam, Edward William,	*Cedarburg*	Eng.
Tallman, William Duane,	*Madison,*	G. S. Sp.
Tarrant, Shirley Brooks,	*Durand,*	C. H.
Thompson, George,	*Oconto,*	G. S.
Thompson, Minnie Elizabeth,	*Milwaukee,*	G. S. Sp.
Thompson, Thomas S.,	*Mt. Horeb,*	C. H.
Thompson, Willard Lee,	*Darlington,*	G. S.
Tomkins, Andrew Pearce,	*Ashland,*	M. C.
Torgerson, Martha Florence,	*Madison,*	M. C.
Urdahl, Margerethe,	*Madison,*	M. C.

Virgin, Georgia Irene,	*Platteville,*	M. C.
Ward, Louis Merrick,	*Milwaukee,*	C. H.
Warning, Anna,	*Elkhorn,*	M. C.
Wehmhoff, Emma Clara,	*Burlington,*	M. C.
Welsh, Iva Alice,	*Madison,*	C. H.
West, Harriet Olive,	*Elkhorn,*	G. S. Sp.
Westover, Calla Phoebe,	*Madison,*	G. S.
Whittet, Effie Louise,	*Edgerton,*	Eng. Sp.
Wilson, Bessie,	*Madison,*	M. C.
Witter, Isaac Phelps,	*Grand Rapids,*	C. H. Sp.
Witter, Ruth Emily,	*Grand Rapids,*	Eng. Sp.
Wood, Farlin Francis,	*Madison,*	G. S. Sp.
Wootton, Addiemay,	*Madison,*	M. C.
Wolcott, John Dorsey,	*Penn Yan, N. Y.,*	A. C.
Worden, Lucian Robson,	*Milwaukee,*	Eng. Sp.
Wright, Albert Orville,	*Madison,*	M. C.—203

ADULT SPECIAL STUDENTS.

Andrus, William Terrell,	*Reedsburg.*	
Armstrong, Lizzie,	*DeSmet, S. Dak.*	
Bassett, Mary Griswold,	*Madison.*	
Bohrer, Rosalia,	*Washburn.*	
Carpenter, Nettie Claudina,	*Rockdale.*	
Chamberlain, Martha Louise,	*Windsor.*	
Christianson, Robert,	*Ettrick.*	
Ellingson, Bertha Maria,	*Rockdale.*	
Elward, Rodney Abbott,	*Peoria, Ill.*	
Green, John Vernon,	*Madison.*	
Grove, James Morgan,	*Janesville.*	
Hill, Margaret,	*Wyocena.*	
Lewis, Martin,	*Lake Preston, S. Dak.*	
Martin, Frederick Henry,	*Milwaukee.*	
Murphy, Evelyn Inez,	*Madison.*	
Qualen, Olaus,	*Token Creek.*	
Palmer, Orson William,	*Tomah.*	
Rodolf, Frances Parke,	*La Crosse.*	
Rowan, Frank Joseph,	*Oak Creek.*	
Swanson, William,	*Madison.*	
Thummel, Blanche Elvira,	*Prairieville, Ill.*	
Woodnorth, George William,	*Milwaukee.*	
White, Lillian Taylor,	*Sparta.*	—23

COLLEGE OF MECHANICS AND ENGINEERING.

SENIOR CLASS.

Alverson, Harry Bartlett,	*Portage,*	E. E.
Birge, Charles Elliot,	*Whitewater,*	C. E. Sp.
Boardman, Harry Bingham,	*Milwaukee,*	E. E.
Burton, William Corwin,	*Milwaukee,*	E. E.
Erbach, William L.,	*Milwaukee,*	M. E.
Ford, Frederick Howe,	*Madison,*	E. E.
Fowle, Frederick Filer,	*Milwaukee,*	C. E.
Gerdtzen, Gerdt Adolph,	*Winona, Minn.,*	M. E.
Griffith, John Howell,	*Syracuse, N. Y.,*	C. E.
Hackney, Robert Henry,	*Milwaukee,*	M. E.
Hain, James C.,	*Edgerton,*	C. E.
Harris, Herbert Jean,	*Waupun,*	C. E. Sp.
Joyce, Patrick Festus,	*DePere,*	C. E.
Lardner, Henry Ackley,	*Oconomowo*	E. E.
Minch, Oscar Francis,	*Madison,*	M. E.
Richards, Walter Joseph,	*Dodgeville,*	E. E.
Smith, Alvin Isaac,	*Pewaukee,*	E. E.
Sweet, John Frank,	*Milwaukee,*	M. E.
Tessier, Leonard Lafayette,	*DePere,*	M. E.
Thuringer, Charles,	*Madison,*	C. E.
Viebahn, Gustav Otto,	*Watertown,*	C. E.
Week, John Arthur,	*Stevens Point,*	M. E. Sp.
Wray, James Glen,	*Janesville,*	E. E.
Young, James R.,	*Madison,*	M. E.—24

JUNIOR CLASS.

Arms, Richard Myron,	*Randolph,*	E. E.
Austin, Charles Henry,	*East Troy,*	M. E.
Baehr, William Alfred,	*Oshkosh,*	C. E.
Bell, Alfred Carroll,	*Milwaukee,*	C. E. Sp.
Biefeld, Paul A.,	*Watertown,*	E. E.
Bird, Hobart Stanley,	*Madison,*	C. E.
Boardman, Horace Prentiss,	*Parsons, Kans.,*	C. E.
Brennan, William Michael,	*Cato,*	C. E.
Cosgrove, James Fraulis,	*Madison,*	E. E. Sp.
Evans, Edward Milton,	*Racine,*	C. E.
Evans, George Benjamin,	*Spring Green,*	C. E.
Hansen, Oscar,	*Kenosha,*	E. E.
Humphrey, Edgar P.,	*Janesville,*	C. E.
Hyatt, Emory Alfred,	*Richland Center,*	M. E.

Johnson, Hobart Stanley,	*Madison,*	M. E. Sp.
Kirchoffer, William Gray,	*Elkhorn,*	C. E. Sp.
Kurtz, Edward Martineau,	*Milwaukee,*	M. E.
Lincoln, Azariah Thomas,	*Montfort,*	C. E. Sp.
Loomis, Arthur Cornelius,	*Ft. Atkinson,*	M. E.
Menges, Theodore C.,	*Prairie du Chien,*	M. E.
Newton, George Milligan,	*Sparta,*	M. E. Sp.
Ochsner, Rudolph John,	*Waumandee,*	E. E.
Rosenstengel, Rudolph,	*Madison,*	E. E.
Sheldon, Sidney Roby,	*Madison,*	E. E.
Silber, Fred David,	*Milwaukee,*	E. E.
Stanchfield, Bartley,	*Fond du Lac,*	M. E.
Tibbits, Heber Lockhart,	*Grand Rapids,*	C. E.
Vaughn, Frank Arthur,	*Madison,*	E. E.
Warner, Martyn Finch,	*Milwaukee,*	M. E. Sp.
Woodward, William Leonard,	*Madison,*	M. E.—30

SOPHOMORE CLASS.

Ahara, George Victor,	*Evansville,*	M. E.
Anderson, Chris Herman,	*Forward,*	E. E. Sp.
Bertrand, Philip Adolphus,	*Superior,*	E. E.
Bohan, William James,	*Woodman,*	E. E.
Boorse, Jesse Milton,	*Milwaukee,*	E. E.
Bradbury, Silas Howard,	*New London,*	E. E.
Brown, Thane Ross,	*Topeka, Kans.,*	C. E.
Bucey, John Henry,	*Madison,*	C. E.
Buerstaette, Julius Henry C.,	*Manitowoc,*	E. E.
Burgess, Charles Frederick,	*Oshkosh,*	E. E.
Burgess, George Hickman,	*Oshkosh,*	C. E.
Crenshaw, Thomas Pemberton,	*Richmond, Va.,*	E. E. Sp.
Dillon, Ellis Ellsworth,	*Normal, Ill.,*	E. E.
Dillon, William Henry,	*Normal, Ill.,*	C. E.
Eldredge, Henry Wardell,	*St. Louis, Mo.*	E. E. Sp.
Falconer, Robert Clemens,	*Madison,*	C. E.
Ford, Arthur Hillyer,	*Madison,*	E. E.
Fowle, Harry Herbert,	*Milwaukee,*	E. E.
Gates, Irving Amasa,	*Madison,*	E. E.
Gilmore, John Frank,	*Durand,*	C. E.
Golder, Lloyd William,	*Rock Falls, Ill.,*	M. E.
Gregerson, Lewis Theodore,	*Stoughton,*	C. E.
Grover Alison Sanford,	*S. Milwaukee,*	M. E.
Guilbert, Frank Warburton,	*Racine,*	C. E.
Hanson, Walter Sewel,	*Clinton,*	M. E.

Hartwell, Frank Isham,	*Elkhorn,*	M. E.
Kroncke, Louis William,	*Madison,*	E. E. Sp.
Kümmel, Carl Henry,	*Milwaukee,*	C. E.
Lamoreaux, Don Percy,	*Horicon,*	C. E.
Lee, John Henry,	*Sterling, Ill.,*	M. E.
Maldaner, Arthur,	*Watertown,*	C. E.
Marcher, William Ernest,	*Racine,*	C. E.
Mason, Russell Teel,	*Ward, Col.,*	M. E. Sp.
McCulloch, Alfred Langdon,	*Janesville,*	C. E.
Mead, George Alvin,	*Racine,*	Æ. E.
Messer, Harvey Randall,	*Milwaukee,*	M. E.
Meyer, Edward William,	*Milwaukee,*	M. E.
Niedecken, Edward Frederick,	*Milwaukee,*	M. E. Sp.
Oberndorfer, Max,	*Milwaukee,*	E. E.
Rendtorff, Edwin Joseph,	*Sauk City,*	E. E.
Richards, Jere Turner,	*Viroqua,*	C. E.
Rubin, William Benjamin,	*Milwaukee,*	C. E.
Schuchardt, William Herbert,	*Milwaukee,*	C. E. Sp.
Schumann, Theodore Paul,	*Prairie du Chien,*	E. E.
Scofield, Hubert Cleveland,	*Lake Geneva,*	C. E.
Smith, David D.,	*Whitewater,*	M. E.
Strong, Walter Bolivar,	*Ft. Atkinson,*	M. E.
Teller, George William,	*Milwaukee,*	E. E.
Trautmann, George Henry,	*Whitewater,*	M. E.
True, Ernest Beebe,	*Baraboo,*	E. E.
Walker, Charles Sumner,	*New London,*	C. E.
Warner, Fred Dauchy,	*Canaan, N. Y.,*	M. E.
Wheeler, Stanley Conover,	*Madison,*	C. E.
Wittenburg, Theodore Fred,	*Cedarburg,*	C. E.—54

FRESHMAN CLASS.

Alley, Brentford,	*Madison,*	C. E. Sp.
Ball, John Silas,	*Stevens Point,*	E. E.
Barnes, Joseph Porter,	*Rockford, Ill.,*	M. E.
Bebb, Edward Crosby,	*Rockford, Ill.,*	C. E.
Birkholz, Julius William,	*Milwaukee,*	E. E. Sp.
Burkholder, Charles Irvine,	*Sterling, Ill.,*	E. E.
Carlsen, Charles John,	*Janesville,*	M. E. Sp.
Daggett, Asbury Dyson,	*Madison,*	C. E. Sp.
Dalton, George Leslie,	*Clinton, Ind.,*	E. E.
Davies, Harry Grey,	*Madison,*	E. E.
Davis, David Pryce,	*Racine,*	M. E. Sp.
Dickey, Glenn Deane,	*Racine,*	E. E.

Dillon, Frank Edward,	*Normal, Ill.,*	E. E. Sp.
Ela, George,	*Rochester,*	C. E.
Friederich, George Bernhardt,	*Prairie du Chien,*	M. E. Sp.
Froding, Charles Louis,	*Oconomowoc,*	M. E. Sp.
Goddard, Arthur Laurence,	*Beloit,*	M. E.
Goette, Louis Adolph,	*Milwaukee,*	E. E.
Hager, Albert Ralph,	*Sterling, Ill.,*	E. E.
Hargrave, Russell William,	*Orlando, Fla.,*	M. E. Sp.
Harris, Edward William,	*Prescott,*	C. E.
Harrison, Bruce William,	*Ashland,*	E. E.
Hart, Harvey Choate,	*Green Bay,*	C. E. Sp.
Jones, George Harvey,	*Fond du Lac,*	E. E. Sp.
Johnson, Arthur D.,	*North Greenfield,*	E. E.
Kennedy, William Montgomery,	*Highland,*	C. E.
Lemon, Luther Erwin,	*East Plato, Ill.,*	E. E.
Lloyd, Conrad C.,	*Milwaukee,*	E. E.
Mason, William Charles,	*Ripon,*	C. E. Sp.
Maynard, Joseph Duryea,	*Milwaukee,*	E. E.
McEachern, Walter Allen,	*West Superior,*	C. E.
McLaran, Daniel Taylor,	*St. Louis, Mo.,*	E. E. Sp.
McNichol, Irwin Stuart,	*Shawano,*	E. E. Sp.
McWilliams, Thomas Hazelhurst,	*Boscobel,*	E. E.
Michaels, William,	*Berlin,*	E. E.
Moore, William Roy,	*Burlington,*	C. E.
Niederman, Henry,	*Milwaukee,*	M. E.
O'Neil, Charles,	*Madison,*	C. E. Sp.
Osgood, Frederick Sewell,	*Austin, Ill.,*	E. E. Sp.
Palmer, Allen Harry,	*Escanaba, Mich.,*	E. E.
Parr, Charles Henry,	*Wyoming,*	M. E.
Perkins, Jay Hugh,	*Madison,*	E. E.
Phillips, John Hamilton,	*Westfield,*	C. E.
Powrie, William Robert,	*Templeton,*	M. E. Sp.
Ramien, Carl Henry,	*Milwaukee,*	M. E.
Reedal, Peter Eugene,	*Dekorra,*	E. E.
Riddle, John Elmo,	*Lodi,*	E. E.
Robinson, George Porter,	*Milwaukee,*	E. E.
Ross, Harry Harson,	*Madison,*	E. E.
Ruka, Fred William,	*Boscobel,*	E. E.
Russell, James Hamilton,	*Westfield,*	C. E.
Sale, George Hedges,	*Janesville,*	E. E. Sp.
Scott, Henry Holton,	*Ashland,*	E. E. Sp.
Sharpstein, Charles MacD.,	*Walla Walla, Wash.,*	C. E.

Snashall, Bert Loyall,	*Evansville,*	M. E.
Solon, James,	*Richwood,*	E. E. Sp.
Stephens, Arthur David,	*Madison,*	C. E.
Strothman, Herbert Lawrence,	*West Superior,*	E. E.
Tripp, Harry Montague,	*Whitewater,*	C. E.
Van Ness, Leonard George,	*Lodi,*	E. E. Sp.
Wheeler, John Charles,	*Sioux City, Ia.,*	E. E.
Wilder, George Walker,	*Cooksville,*	E. E.
Wilkes, George Ireson,	*Burlington,*	C. E.
Wilson, John Frank,	*Lake Geneva,*	E. E. Sp.
Zimmerman, Oliver B.,	*Milwaukee,*	M. E.
Zweifel, John Thomas,	*Calumetville,*	C. E. Sp.—66

COLLEGE OF AGRICULTURE.

LONG COURSE.

Ten Eyck, Albert Moore,	*Brodhead,*	Senior Class.
Stiles, Wilber F.,	*Lake Mills,*	Senior Class.
True, Gordon H.,	*Baraboo,*	Junior Class.

SHORT COURSE.

SECOND YEAR.

Allen, Arvin Dee,	*Waupaca.*	
Beck, Alexander,	*Grafton.*	
Bullard, Edward Gernon,	*Waukesha.*	
Carpenter, Leon Adin,	*Fond du Lac.*	
Clarke, Judson Dwight,	*Milton.*	
Haevers, Aima,	*Tonet.*	
Herbst, John Lewis,	*Sparta.*	
Hough, Charles Edward,	*Winchester.*	
Howard, George Lucius,	*Durand.*	
Liddle, Fred R.,	*Eureka.*	
Maddock, David Edward,	*Houlton.*	
Maertner, Wallace Edward,	*Prairie du Chien.*	
McNown, John Henry,	*Mauston.*	
Mitchell, Vertice Arvello,	*Wheatville.*	
Piper, Elmer,	*Palmyra.*	
Robertson, Robert Buckley,	*Tomah.*	
Ruste, Christian Ole,	*Barber.*	
Schmitt, Louis E.,	*Muscoda.*	
Taylor, Orrin Morehouse,	*Madison.*	
Tschudy, John Jacob,	*Monroe.*	—20

FIRST YEAR.

Armstrong, Lester G.,	*Fox Lake.*
Arneson, Henry Albert,	*Barber.*
Babcock, Roy Francis,	*Neenah.*
Babcock, Orville Claire,	*Neenah.*
Baker, Fred Everts,	*Whitehall, Ill.*
Balsley, Frederick Maltby,	*Fayetteville.*
Bates, William Ferdinand,	*Fayetteville, Ark.*
Benedict, Orville,	*Darlington.*
Boss, John Fred,	*Clemansville.*
Burchard. Robert Charles,	*Ft. Atkinson.*
Candee, William Leavitt,	*Milwaukee.*
Clark, John James,	*Berlin.*
Dietrich, Julius Ferdinand,	*Black River Falls.*
Drowatzky, Charles Bernard,	*Tomah.*
Fitzsimons, William,	*Mineral Point.*
Fox, Harry Sherman,	*Plainfield.*
George, LeRoy,	*Spring Green.*
Gilbert, William,	*Madison.*
Greatsinger, Charles Fred,	*Evansville.*
Hadden, George Archibald,	*Johnstown Center.*
Henry, Fred William,	*Stony Ridge, Ohio.*
Herrick, Enoch C.,	*Plainfield.*
Hutchinson, Carl E.,	*Randolph.*
Jordan, Alonzo Wilbur,	*Dayton.*
Kellner, Henry F.,	*Cazenovia.*
Kelly, Herbert James,	*Linden.*
Klodt, John Frederick,	*Portage.*
Kretschmer, Moritz,	*Alma.*
Loofboro, Wade John,	*Welton, Iowa.*
Lowe, Irvin,	*Blair.*
Marks, Herman Charles,	*Alma.*
Means, Charles Roger,	*Stevens Point.*
Osborn, Delaware Walter,	*Oshkosh.*
Pringle, James Reid,	*San Rafael, Cal.*
Puffer, William Erwin,	*Casco.*
Rector, Martin Frederick,	*Fennimore.*
Renk, William Frank,	*Sun Prairie.*
Robertson, William Spence,	*Oxford.*
Robinson, Newton Hubbard,	*Centralia.*
Ruhnke, Richard,	*Ahnapee.*
Safford, Henry,	*Sycamore, Ill.*
Schwartz, George Ellis,	*Troy Centre.*

Smith, Ernest Phillip,	*Mauston.*	
Stowers, Austin Cyrus,	*Kilbourn City.*	
Tobey, Charles Egbert,	*Sparta.*	
Tompkins, Robert Frank,	*Madison.*	
Tressin, Ernest,	*Gypsum, Kans.*	
Wesson, Frank Eugene,	*Greenwood, Ill.*	— 48

DAIRY CLASS.

SECOND YEAR.

Collins, Christopher H.,	*Ixonia.*	
Dabareiner, Lawrence,	*Jefferson.*	
High, John,	*Berlin.*	— 3

FIRST YEAR.

Adams, Ira Ellsworth,	*Linton, Ind.*
Alves, Hugo Charles,	*Plymouth.*
Andrews, Christian F.,	*Camden Place, Minn.*
Back, Horace Irvin,	*Elk Creek.*
Bast, John,	*Johnsburgh.*
Bennett, Edward Joseph.	*Belvidere, Ill.*
Brei, George,	*St. Nazianz.*
Britzman, Frank Otto,	*Clyman.*
Christian, Theodore Edwin,	*Amherst.*
Clark, Anthony Joseph,	*Osman.*
Dagenhart, William,	*Blue Mounds.*
Davis, Horace Grant,	*Fond du Lac.*
Dengel, Lawrence,	*Kewaskum.*
Deusing, Henry John,	*Lowell.*
Dickinson, Ed.,	*Union Mills.*
Dimock, Asa Benjamin,	*Avoca.*
Dowd, Bert Ernest,	*Red Cedar.*
Failey, Owen,	*Fond du Lac.*
Fess, Edward,	*Madison.*
Frick, Louis,	*Plymouth.*
Fryer, Elmer James,	*Hebron.*
Gowin, Frank Willis,	*Glenbeulah.*
Gregory, Ralph,	*Elroy.*
Groh, William,	*Meeme.*
Hamilton, Ernest Adelbert,	*Augusta.*
Hertel, Paul Henry,	*Meeme.*
Hessler, Frank E.,	*Balmoral.*
High, Arnold,	*Berlin.*
Hoffman, Martin Lindmuth,	*Navarre, Kans.*

Hopkins, William Fossett,	*Black Earth.*
Horsfall, Harry Washburn,	*Millville.*
Hulsether, Albert Ludwig,	*Utica.*
Huhn, Henry Herman,	*St. Wendel.*
Irwin, James,	*Waupun.*
Iverson, Iver Lars,	*McFarland.*
Jahn, Henry John,	*Jefferson.*
Jones, William Lloyd,	*Ixonia.*
Kasper, Philip Henry,	*Nicholson.*
Kelty, John,	*Boscobel.*
Klein, John,	*Nenno.*
Knott, John Edgar,	*Oshkosh.*
Koch, Everett Erastus,	*Rockbridge.*
Kolb, Anton,	*Kolb.*
Kolbeck, Frank,	*Cato.*
Kortenkamp, Antony,	*Dyersville, Iowa.*
Krenke, Henry,	*Readfield.*
Last, Bernard Otto,	*Ellisville.*
Lea, Albert Henry,	*Amherst.*
Lea, Ralph,	*Amherst.*
Linzmeyer, Joseph,	*Luxemburg.*
Maxon, Dow,	*Cedar Creek.*
McCaig, John Henry,	*Richwood.*
Merens, Michael,	*Luxemburg.*
Mertez, Bernez T.,	*Fillmore.*
Michels, John,	*Calumet Harbor.*
Northrup, Louis A.,	*Waupun.*
Oertel, Henry Christian,	*Barre Mills.*
O'Keefe, Gilbert Thomas,	*Clyman.*
Olson, Anton,	*Bristow.*
O'Maley, Martin,	*White Mounds.*
Palmer, Edgar Earl,	*Montfort.*
Peters, Ferdinand,	*Johnsburgh.*
Plinke, Conrad,	*Alaska.*
Price, George Howard,	*Carrollton, Ill.*
Price, Thomas John,	*Avoca.*
Radloff, Max Paul Emil,	*Hustisford.*
Reese, Owen,	*Ixonia.*
Reinecke, Christian William,	*Sheboygan Falls.*
Reinke, Frank A.,	*Iron Ridge.*
Roehrig, Cyrus,	*Marytown.*
Ruefenacht, Adolf,	*Madison.*
Scholl, Warren Chapman,	*Richland Center.*

Schulz, William,	*Genoa Junction.*
See, John,	*Stockbridge.*
Seifert, Julius,	*Cleveland.*
Simon, John Henry,	*Johnsburg.*
Simons, Martin H.,	*Mindoro.*
Stammer, Edward Charles,	*South Osborn.*
Steinmann, Fritz,	*Clarno.*
Thill, Matthew,	*Holy Cross.*
Thompson, Arthur Raymond,	*Muscoda.*
Vandenberg, Gilbert,	*Sagole.*
Van Duser, James,	*Hebron.*
Velte, Edwin Albert,	*Tustin.*
Verhulst, Jacob,	*Readfield.*
Virchow, Julius,	*DeForest.*
Waddell, Fred Orestis,	*Richland Center.*
Walker, Frank Edward,	*Richland Center*
Weber, Julius Charles,	*Lamartine.*
Wettstein, Peter,	*Chilton.*
Werner, William,	*Brillion.*
Williams, Henry R.,	*Portage.*
Winter, Louis Napoleon,	*Tustin.*
Wismer, Frank,	*Berlin.*
Wisterman, William H.,	*Wisterman, Ohio.*
Wood, Walter Ray,	*Windsor.*
Worthington, Don Charles,	*Whitewater.*
Zelinka, Emil,	*Greenstreet.*

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COLLEGE OF LAW.

SENIOR CLASS.

Armstrong, George G.,	*Boscobel.*
Babbitt, Arthur,	*Beloit.*
Baker, Ernest Albert,	*Kaukauna.*
Blum, George Lewis,	*Eau Claire.*
Blumenfeld, Charles Rudolph,	*Watertown.*
Blumenfeld, Max Albert,	*Watertown.*
Bruess, Julius,	*Milwaukee.*
Bundy, Charles Thomas,	*Menomonie.*
Campbell, Bert,	*Gratiot.*
Casey, Thomas M.,	*Erin.*
Clendenin, George Henry,	*Oshkosh.*
Conway, James Patrick,	*Lansing, Ia.*

Cummings, Henry,	*Platteville.*
Daubner, George Holmes,	*Brookfield.*
Dickson, Charles Austin,	*Madison.*
Dietrich, George Elbert,	*Avoca.*
Dietrich, Hervey William,	*Avoca.*
Dockery, Francis William,	*Madison.*
Dockery, William Francis,	*Madison.*
Doering, Fred,	*Winneconne.*
Dyer, Francis Marion,	*Madison.*
Felker, Carl,	*Oshkosh.*
Fiedler, Casper Ernest,	*Mineral Point.*
Flett, George Chester,	*Kenosha.*
Fliegler, Jacob,	*Manitowoc.*
Gaffney, Charles Henry,	*Neenah.*
Gilman, Winfield Warren,	*Stoughton.*
Glicksman, Nathan,	*Chippewa Falls.*
Gonski, Casimer,	*Milwaukee.*
Goodrick, Raleigh Allen,	*Clintonville.*
Hackett, Bradley Horatio,	*Augusta.*
Hartley, Hualpi Alto,	*Columbus.*
Hogan, James Timothy,	*Cuba City.*
Hughes, John Price,	*Berlin.*
Hunner, Charles Clements,	*Eau Claire.*
Ingersoll, George Bain,	*Beloit.*
Kaufman, Horace Greeley,	*Mount Morris, Ill.*
Kirk, John Nesbit,	*Durand.*
Kuechle, Gustav Adolph,	*Milwaukee.*
Laflin, Herbert Norman,	*Milwaukee.*
Larson, John S.,	*Blair.*
Leonard, Thomas Bertram,	*Chippewa Falls.*
Levis, George Washington,	*Black River Falls.*
Mather, Alice Tylson,	*Madison.*
McBean, Thomas,	*Iron River.*
McGrath, Hugh Jocelyn,	*Eau Claire.*
McMullen, Colin Eneas,	*Chilton.*
Metcalf, George Henry,	*Marshall.*
Miller, Charles Smith,	*Oconomowoc.*
Mitchell, Ralph Ellis,	*Merritts Landing.*
Morgan, Henry Hotchkiss,	*Madison.*
Morrison, Edwin Thomas,	*Leeds Center.*
Morton, George Edwin,	*Omro.*
Moss, John Hiles,	*Milwaukee.*
Murphy, Lawrence Bartholomew,	*Madison.*

Norcross, John Vanderpoole,	*Janesville.*
Orth, Charles Adam,	*Milwaukee.*
Phillips, Charles Herman,	*Madison.*
Rice, Joseph,	*Madison.*
Ricker, Ralph,	*Milwaukee.*
Rooney, Hugh James,	*Rathburn.*
Sabin, Edward Myron,	*Windsor.*
Sallade, Nat. Goodwin,	*Madison.*
Sanborn, Charles Marston,	*Madison.*
Schoenfeld, Frank,	*Milwaukee.*
Sedgwick, Clyde Hamilton,	*Manitowoc.*
Sheridan, James A.,	*Waterloo.*
Smieding, William,	*Racine.*
Smith, Ferdinand R.,	*Mukwanago.*
Smith, Samuel M.,	*Janesville.*
Stenjhem, Nissen Peter,	*Stoughton.*
Tasker, William Henry,	*Fall River.*
Thauer, Nicholas,	*Watertown.*
Thompson, John Cameron,	*Princeton.*
Tone, David Knutson,	*Madison.*
Townsend, Charles C.,	*Shullsburg.*
Walther, Paul,	*New York, N. Y.*
Wheeler, Leverett Case,	*Milwaukee.*
Williams, Samuel,	*Pewaukee.*
Wolfe, William Frederick,	*Greenville.*

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JUNIOR CLASS.

Agnew, David William,	*Oconomowoc.*
Anderson, Frank William,	*Eau Claire.*
Atwood, George Thomas,	*Madison.*
Austin, Charles Willis,	*Oak Park, Ill.*
Bogue, Alan, Jr.,	*Arlington.*
Buckmaster, Albert Ellsworth,	*Madison.*
Cubela, Joseph Mathias,	*Blue River.*
Clohisy, Arthur,	*East Troy.*
Coleman, Theodore Lincoln,	*Milwaukee.*
Collins, William Francis,	*Stevens Point.*
Cook, George Frank,	*Roberts.*
Cooke, Benjamin Calvin,	*Williamstown, Mass.*
Cowie, Robert Somerville,	*Arcadia.*
Culbertson, Clarence Parker,	*Augusta.*
Cunningham, Jeremiah John,	*Monroe.*
Diercks, Edward Jonathan,	*Bloomer.*

Donovan, John Francis,	*Madison.*
Dreier, Herman George,	*Shawano.*
Dudgeon, Matthew Simpson,	*Madison.*
Ekern, Herman Lewis,	*Whitehall.*
Ela, George Theodore,	*Milwaukee.*
Englebracht, Charles Albert,	*Berlin.*
Engeset, Andrew,	*Norway Grove.*
Evans, William L.,	*Milwaukee.*
Gittings, John Thomas,	*Racine.*
Gray, Edward Everett,	*Oconomowoc.*
Grimmer, George Walter,	*Kewaunee.*
Guard, Paul,	*Cleves, Ohio.*
Haben, Leo,	*Denver, Colo.*
Hart, Royal Bryant,	*Madison.*
Henry, Patrick,	*Mazomanie.*
Hill, Thomas Breckenridge,	*Winona, Minn.*
Johnson, Lars H.,	*Darlington.*
Johnson, Walter E.,	*Waterloo, Ia.*
Jones, Arthur L.,	*Dodgeville.*
Kellogg, Harry La Fayette,	*Madison.*
Kerz, Paul,	*Galena, Ill.*
Kileen, Edward Francis,	*Berlin.*
Krumdick, Gerhardt Fred,	*Winona, Minn.*
La Motte, J. D.,	*Chippewa Falls.*
Larson, Louis Martin,	*Holmen.*
Lefebvre, Louis Grael,	*Milwaukee.*
Lueck, Martin Lawrence,	*Juneau.*
Lyman, Theron Upson,	*Aldin, Ia.*
Lytle, Jay,	*Madison.*
Matheson, Alexander Everett,	*Elkhorn.*
McBride, Robert James,	*Neillsville.*
McCauley, John William,	*Menomonie.*
McElroy, Lou,	*Viola, Ia.*
McLeod, Arthur William,	*Eagle River.*
McMynn, Robert Norman,	*Madison.*
Moss, Marshall Charles,	*Milwaukee.*
Mulberger, Charles,	*Watertown.*
Northup, Frank Everett,	*Westbourne, Ia.*
Pannier, John Ernest,	*Chippewa Falls.*
Parkinson, Ben Carroll,	*Madison.*
Parkinson, Henry Gray,	*Madison.*
Parks, William Ulmer,	*Crystal Falls, Mich.*
Patterson, Edgar John,	*Madison.*

Paul, Clarence Arthur,	*Spring Valley, Minn.*	
Paul, John Henry,	*Denmark, Ia.*	
Pease, George Douglas,	*Eau Claire.*	
Pedrick, Samuel Marcellus,	*Ripon.*	
Quinlan, William Barclay.	*Pewaukee.*	
Reinsch, Paul Samuel,	*Madison.*	
Rosecranz, Claude,	*Sparta.*	
Sames, Albert Morris,	*Rockford, Ill.*	
Seaman, Charles,	*Sheboygan.*	
Sheridan, Philip,	*Green Bay.*	
Silverthorn, Willis Virgil,	*Wausau.*	
Slama, Charles Havla,	*Kewaunee.*	
Smart, Edward Matthew,	*Almond.*	
Spooner, Charles P.,	*Hudson.*	
Stone, Carlton M.,	*Waukon, Ia.*	
Ströver, Carl Bernard,	*Madison.*	
Sturtevant, Claude Rufus,	*Neillsville.*	
Swett, Herbert Eldridge,	*Waupun.*	
Wadleigh, William Samuel,	*Markesan.*	
Waite, Henry Cole,	*Waukesha.*	
Waller, George William,	*Rochester.*	
Whelan, Charles H.,	*Madison.*	
Williams, Charles McGee,	*Madison.*	
Williams, Chauncey Lawrence,	*Madison.*	
Williams, Leo A.,	*Madison.*	
Winne, Douglas Thompson,	*Appleton.*	
Wright, Robert John,	*Milwaukee.*	— 86

SCHOOL OF PHARMACY.

Four Years' Course.

Huber, Edward Jacob,	*Fond du Lac,*	Special Student.
Barth, George Peter,	*Milwaukee.*	Freshman Class.

Two Years' Course.

SENIOR CLASS.

Anderson, Oscar William,	*Appleton.*
Ascott, George Walter,	*Sparta.*
Bruun, Harold Nicholas,	*Chicago, Ill.*
Emde, Arthur Lewis,	*New London.*
Gilman, Walter Flavius,	*Stoughton.*
Habhegger, Charles John,	*Watertown.*
Halsey, Robert Irving,	*Madison.*

Hanf, Ernest David,	*Beaver Dam.*	
Hilfert, Henry Oscar,	*Appleton.*	
Hulburt, Harvie Lyttle,	*Reedsburg.*	
Lardner, William Foster,	*Oconomowoc.*	
Meissner, Fritz William,	*Milwaukee.*	
Pope, Harriet Ratenbury,	*Helena, Mont.*	
Roberts, William Dow,	*Albany.*	
Ruebhausen, Oscar,	*Watertown.*	
Strehlow, Max Henry,	*Ft. Atkinson.*	
Thiele, Richard Charles,	*Milwaukee.*	
Turner, William Alexander,	*Brandon.*	
Wehle, Willibald Johannes,	*Milwaukee.*	
Williams, Edward,	*Hazel Green.*	— 20

JUNIOR CLASS.

Borden, Frank Runcan,	*Plainfield.*
Braaten, Martin Olans,	*Madison.*
Brandon, Andrew,	*Whitehall.*
Briggs, Henry Elmer,	*Muscoda.*
Butcher, John Fred,	*Oconomowoc.*
Christensen, Mazzini Carl,	*Whitewater.*
Correll, Washington Greville,	*Linden.*
Conly, William,	*Elk Point, S. D.*
Davis, John Benjamin,	*Dodgeville.*
Denis, George,	*Green Bay.*
Dietz, Hugo,	*Milwaukee.*
Dimock, Harry Amasa,	*Avoca.*
Emmerich, Herman Ludwig,	*Milwaukee.*
Fleming, Aloysius Stephen,	*Eau Claire.*
Giese, Edward Charles,	*Milwaukee.*
Heiden, Fred Martin,	*Wauwatosa.*
Helbing, Charles William,	*Beaver Dam.*
Hunkel, Carl George,	*Milwaukee.*
Hutchins, Otis,	*Independence.*
Jackson, Clarke Wilbur,	*Plymouth.*
Jones, Laura Miriam,	*Sun Prairie.*
Laabs, Otto Carl,	*Milwaukee.*
Mayer, Edward Anton,	*Kaukauna.*
McCord, Allen Cogswell,	*La Crosse.*
McCoy, Michael James,	*Lomira.*
Neville, Henry Jule,	*Green Bay.*
O'Dwyer, George,	*Dane.*
Richtmann, William Oscar,	*Arcadia.*

Roberts, Frederick Charles,	*Dodgeville.*	
Schaus, Robert Edward,	*Madison.*	
Seresse, Julius Frank,	*Fond du Lac.*	
Sexton, James Malone,	*Marshfield.*	
Sherman, George Flavius,	*Lake Geneva.*	
Silber, Arthur,	*Milwaukee.*	
Timlin, Frank Dixon,	*Kilbourn City.*	
Trayser, Morton Clair,	*New London.*	
Vivian, Alfred,	*Mineral Point.*	
Wehle, Edward Herman,	*Milwaukee.*	
Weigle, George John,	*Milwaukee.*	
Williams, Robert Thomas,	*Racine.*	
Wolff, Adolph Gottlob,	*Milwaukee.*	
Zimmermann, Charles Otto,	*Milwaukee.*	— 42

WISCONSIN SUMMER SCHOOL.

STUDENTS, 1892.

Allen, Jennie C.,	*Merrimac,*	Teacher, Village School.
Allen, Lyman H.,	*Muscoda,*	Principal, High School.
Andersch, Bertha,	*Hillside,*	Teacher, Hillside.
Anderson, Andrea M.,	*Stoughton,*	First Assistant, Stoughton.
Anderson, Anna E.,	*Merrill,*	Principal, High School.
Anderson, Leta M.,	*Ripon,*	Assistant, Milwaukee.
Armstrong, Mary,	*Portage,*	Assistant, High School.
Bach, Marie H.,	*Milwaukee,*	German, Ninth Dist.
Bain, Eleanor B.,	*Kansas City, Mo.,*	Teacher, Lathrop School.
Ball, Wilbur L.,	*Madison,*	Student, University of Wis.
Baxter, Mary L.,	*Kansas City, Mo.,*	Teacher, Woodland School.
Beck, Geo.,	*Platteville,*	Science, Normal School.
Benson, Frances H.,	*Beloit,*	Ass't Prin. Oskaloosa, Ia.
Bird, John P.,	*La Crosse,*	Principal, Third Dist.
Bishop, Dennis D.,	*Grand Rapids,*	Demonstrator of Microscopy, Rush Medical Coll., Chicago.
Brandt, Ada L.,	*Milton Jct.,*	Grammar Grade, Milton Jct.
Brown, Edw. W.,	*Milwaukee,*	Student, College of Phys. and Surg., New York.
Brown, Mary E.,	*Boscobel,*	Grammar Grade, Boscobel.
Brown, S. Edith,	*Madison,*	Student, University of Wis.
Buckley, John S.,	*Black Hawk.*	
Buckley, Martin,	*Black Hawk.*	
Buckmaster, Emma,	*Madison,*	Student, University of Wis.
Bussewitz, M. A.,	*Juneau,*	Teacher, District School.

Buttrick, Mary, *Milwaukee,* Science, St. Monica School, Fond du Lac.
Canty, Margaret, *Oshkcsh,* Ass't Grammar Grade, La Crosse.
Carley, Mertie D., *Boscobel,* Teacher, Whitewater.
Carpenter, D'Agnes, *Milwaukee,* Seventh Grade, Milwaukee.
Caverno, Cora, *Kenosha,* Training Teacher, Cook Co. N. S.
Clark, Harriet E., *Oshkosh,* Normal School, Oshkosh.
Clark, Lillian, *Berlin,* Assistant, High School, Berlin.
Clarke, Perley L., *Milton,* Principal, Monticello Public School.
Crane, Mariette C., *Chicago, Ill.,* Englewood High School.
Creelman, G. C., *Starkeville, Miss.,* Prof. of Biology, Agr. and Mech. College.
Crocker, Levi A., *Neillsville,* Teacher, Wilcox, Wis.
Cundy, William A., *Chicago, Ill.,* Student.
Dafoe, Eber, *Oasis,* Teacher, Village School.
Davis, Sophia E., *Winneconne,* Fifth Gr., 13th Dist. Milwaukee.
Day, Olwen H., *New London,* Teacher, Mosinee.
Dillon, Augustus R., *Chicago, Ill.,* Principal, Manierre School.
Doudna, Pearl E., *Viola,* Student, University of Wis.
Doyon, Charles H., *Madison,* Student, University of Wis.
Drain, Elizabeth, *Sheboygan,* Fifth Grade, Sheboygan.
Dubois, Nellie, *Appleton,* Assistant, Ryan High School.
Durfee, Ulysses G., *Shelby, Ia.* Prin. High School, Shelby, Ia.
Durr, Anne, *Sterling, Ill.,* First Primary, Wallace School.
Eastman, Elizabeth T., *Fond du Lac,* Assistant, High School.
Eaton, Hattie L., *Oshkosh,* Seventh Grade, Ashland.
Edwards, Herbert R., *Albion,* Principal, Milton Jct. High School.
Eike, Paul V,, *Lake Mills,* Principal Graded School, Milford.
Fales, Louis H., *Madison,* Student, University of Wis.
Farrell, William J., *Wausau,* Principal, Ward School.
Field, Forrest E., *Racine,* Principal, Washington School.
Foote, Martha, *Madison,* University School, Chicago.
Fowlie, William, *Waupaca,* Principal, Marshall High School.
Fox, Alice E., *Chicago, Ill.,* Grammar Grade, Douglass Sch.
Fox, Freeling, *Platteville,* Principal, Brandon High School.
Freeman, Henry W., *Chicago, Ill.,* Student, University of Wis.
Gagan, Anna A., *Janesville,* Teacher, District School.
Gilbert, Newell D., *Austin, Ill.,* Supt. Public Schools.
Goodwin, Lucia, *Aurora, Ill.,* Science, Terry Hall, Lake Forest.
Gould, Franklin, *Cambridge,* Principal, High School.
Greenleaf, Mrs. J. W., *Hillside.*
Haessler, Louise, *Milwaukee,* German, 12th District School.
Halliwell, Alice D., *Englewood, Ill.*

Halliwell, Ashleigh C.,	*Chicago, Ill.*	
Hatch, Melvin A.,	*Sheboygan,*	Principal, Ward School.
Hatherell, Rosalia,	*Janesville,*	Student, University of Wis.
Henning, Edw. J.,	*Iron Ridge,*	Student, University of Wis.
Herrell, Ernest G.,	*Augusta,*	Prin., Greenwood Graded School.
Hester, Matthias A.,	*Ripon,*	Principal, High School.
Hillyer, Mrs. Harriet R.,	*Madison.*	
Holferty, George M.,	*Madison,*	Student, University of Wis.
Horton, Schuyler C.,	*Pittsville,*	Principal, Pittsville School.
Hunner, Guy L.,	*Madison,*	Student, University of Wis.
Jegi, John I.,	*Arcadia,*	Principal, High School.
Johnson, Caroline S.,	*Waukesha,*	Teacher, Carroll Academy.
Jones, Elizabeth E.,	*Racine,*	Teacher, Intermediate Grade.
Jones, John,	*Elroy,*	Teacher, Elroy.
Jones, Laura A.,	*Racine,*	Teacher, Fifth Grade.
Jones, Lillian E.,	*Racine,*	Teacher, First Grade.
Judd, S. Alice,	*Chicago, Ill.,*	Jefferson High School, Chicago.
Kellogg, John R.,	*Woodstock, Ill.,*	Principal of Schools.
Ketcham, Edw. A.,	*Colby,*	Teacher, High School.
King, Harriet G.,	*Oak Park, Ill.,*	Assistant, High School.
King, Lilla,	*Whitewater,*	Assistant, High School.
Knapp, Luella R.,	*Madison,*	Student, University of Wis.
Kraus, Sena,	*Lowell,*	Grammar Grade, Reeseville.
Kuepper, Julia,	*Milwaukee,*	German, Public Schools.
Lamb, Caroline S.,	*Oshkosh,*	Third Grade, Second W'd, Oshkosh.
Lane, Abby E.,	*Chicago, Ill.,*	Principal, Carter School.
Le Boutillier, Beulah M.,	*Chicago, Ill.,*	Teacher, Johnson Sch. for Girls.
Lee, Grace E.,	*Madison,*	Student, University of Wis.
Leland, Eva S.,	*Cedar Falls, Ia.,*	Assistant Principal, Cresco.
Leland, Gertrude L.,	*Cedar Falls, Ia.,*	Ass't, H. Sch., Centerville.
Lightcap, Leonard L.,	*Boscobel,*	Principal, High School.
Liebe, Mary F.,	*West Superior,*	Mathematics, High School.
Locker, A. M.,	*Poynette,*	Principal, High School.
Lyons, Mary,	*Kansas City, Mo.,*	Ass't, Humboldt School.
McCord, Olive,	*Austin, Ill.,*	Teacher, Austin.
McDowell, Fannie,	*Milwaukee,*	Teacher, Eighth Primary.
McEachron, Julia P.,	*Chicago, Ill.,*	Principal, Parkside School.
McKenna, Sara B.,	*Brant,*	Teacher, Stockbridge.
McNeil, Anne,	*Janesville,*	Teacher, Third Grade.
Meili, Michael,	*Alma,*	Teacher, Bryant, Ia.
Merk, Helen,	*Sauk City,*	Teacher, Wausau High School.
Merk, Ida,	*Sauk City,*	Teacher, Denver, Col.
Merk, Josephine,	*Sauk City,*	Student, University of Wis.

Meyer, Balthasar A.,	*Port Washington,*	Student.
Meyer, Freda C.,	*Sheboygan,*	Ass't Kindergartner, Sheboygan.
Meyer, Meta D.,	*Sheboygan,*	First Grade, Sheboygan.
Murphy, Eva I.,	*Madison,*	Student, University of Wis.
Murphy, Julia E.,	*Madison,*	Student, University of Wis.
Nelson, Emma A.,	*Madison,*	Teacher, Primary Dep't, Madison.
Nevins, Charles V.,	*Iola,*	Principal, Iola.
Niquette, Lucy J.,	*Two Rivers.*	
Olson, August J.,	*Belleville,*	Principal, High School.
O'Shaughnessy, P. L.,	*Oakwood,*	Principal, High School.
Parsons, Ada M.,	*Milwaukee,*	Teacher, Milwaukee.
Pellow, Annie,	*Linden,*	Assistant, Milwaukee.
Peterson, George W.,	*Rhinelander,*	Principal, High School.
Phelps, Isabella H.,	*Ripon,*	Teacher, New Richmond.
Plapp, Fred'k W.,	*Irving Park, Ill.,*	Science, Jefferson H. S.
Pollock, James B.,	*Orangeville, Ill.,*	Student, University of Wis.
Post, Harriet L.,	*Milwaukee,*	Ass't, Milwaukee High School.
Post, Katherine D.,	*Milwaukee,*	Student, University of Wis.
Pratt, Ed. A.,	*Waupun,*	Student, University of Wis.
Quinn, Katherine C.,	*Oshkosh,*	First Grade, Oshkosh.
Reed, Albert J.,	*Palmyra,*	Student, University of Wis.
Reese, David E.,	*Oakland, Neb.,*	Principal, Oakland.
Reilly, Thomas W.,	*Oshkosh,*	Principal, Oshkosh.
Reynolds, Kittie H.,	*Aurora, Ill.,*	Teacher, High School.
Richardson, Mary P.,	*Milwaukee,*	Student, University of Wis.
Rishel, Austin C.,	*Chicago, Ill.,*	Teacher, Lake View High Sch'l.
Rodman, Macy D.,	*Ashland,*	Assistant, High School.
Rogers, Hattie B.,	*Rowley's Bay,*	Ass't, High School, Oconto.
Ruebhausen, Ella,	*Watertown,*	Student, University of Wis.
Sawyer, Albert L.,	*Columbus,*	Student, University of Wis.
Sawyer, Annie E.,	*Boscobel.*	
Schall, Elias F.,	*Muscatine, Ia.,*	Prin., Muscatine High School.
Schall, Mrs. E. F.,	*Muscatine, Ia.*	
Schlegel, Katherine,	*Stevens Point,*	Student, Univ. of Wis.
Schureman, Frances A.,	*Geneseo, Ill.,*	Ass. Prin., High School.
Shaw, Edwin,	*Milton,*	Latin, Milton College.
Sheldon, Edward E.,	*Aztalan,*	Prin., Weyauwega High School.
Shirk, John H.,	*Thomson, Ill.,*	Principal.
Shurly, Burt R.,	*Chicago, Ill.,*	Student, University of Wis.
Simmons, James, Jr.,	*Grinnell, Ia.,*	Professor, Iowa College.
Simpkins, Florence,	*Durand,*	Grammar Grade, La Crosse.
Smith, Grace G.,	*Madison.*	
Smith, John F.,	*Postville, Ia.,*	Prin., Lansing Public School.

Smithyman, W. Lincoln,	*Platteville,*	Principal, First Ward, Oshkosh.
Spencer, Marion E.,	*Janesville,*	Second Grade, Janesville.
Stack, Marie M.,	*West Superior,*	Teacher, West Superior.
Starbuck, Ada C.,	*Chicago, Ill.,*	Math., N. W. Div. H. S., Chi.
Stone, Minnie A.,	*Appleton,*	First Assistant, Hudson.
Strong, Bertha A.,	*Appleton,*	Grammar Grade.
Sullivan, Mertie E.,	*Eau Claire,*	Principal, Ward School.
Sumner, Ada G.,	*Madison,*	Student, Wisconsin Academy.
Tarnutzer, Anna E.,	*Madison,*	Second Primary, Madison.
Tear, John H.,	*Chicago, Ill.,*	Principal, Washington School.
Thorson, Carrie L.,	*Martell,*	Grammar Grade, New London.
Thurston, Henry W.,	*La Grange, Ill.,*	Principal, High School.
Tollefson, Mrs. Emma F.,	*Footville,*	6th and 7th Grades, Menomonie.
Tompkins, Elizabeth M.,	*Milton.*	Assistant, Arcadia.
Travis, Ira D.,	*Seymour,*	Teacher, Barron.
Trowbridge, Louisa K.,	*Viroqua,*	Third Assistant, Sparta High School.
Turner, Mary,	*Oshkosh,*	Sixth Grade.
Vining, Bessie M.,	*Waupun,*	Ass't H. S., Ahnapee.
Walker, Elmer W.,	*Black Earth,*	Principal, High School.
Warne, Lucy A.,	*Ft. Atkinson,*	First Grade, Milwaukee.
Warne, Mary C.,	*Mitchell, S. D.,*	1st Ass't, Wauwatosa H. Sch.
Watson, Fred J.,	*Chicago, Ill.,*	Chemistry, N. W. Div. H. S.
Wehle, Willibald J.,	*Milwaukee,*	Student, University of Wis.
Weihe, Herman J.,	*Milwaukee,*	German, Fourth Dist. School.
Wells, Bessie E.,	*Kenosha,*	Assistant, High School.
West, Allen B.,	*Reedsburg,*	Principal, High School.
West, Hattie E.,	*Reedsburg,*	Teacher, Edgerton.
Weyer, Edward M.,	*St. Louis, Mo.,*	Student, University of Wis.
Whipple, Herbert A.,	*Whitewater,*	Prin., E. Side Sch., Whitewater.
Whitelaw, Julia A.,	*Portage,*	Assistant, Mayville High School.
Wicker, Ernest L.,	*Colby,*	Teacher, Granton.
Willard, Daniel E.,	*Pewaukee,*	Principal, High School.
Williams, Wm. H.,	*Antigo,*	Superintendent Schools, Antigo.
Witte, Emma,	*Kansas City, Mo.,*	Ass't in Chem., Kan. H. S.
Wood, Farlin F.,	*Barron,*	Principal, Black Earth High School.
Wooster, Elizabeth,	*Palmyra,*	First Assistant, Milwaukee.
Wright, Henry C.,	*Hessey,*	Teacher, Village School.
Youmans, C. F.,	*Oshkosh,*	Teacher, Fifield Graded School.
Zimmerman, G. J.,	*Mt. Hope,*	Principal, Avoca.

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SUMMARY OF STUDENTS.

GRADUATES — 92

Fellows	9
Resident Graduates	48
Graduates studying *in absentia*	35

COLLEGE OF LETTERS AND SCIENCE — 711

Fellows and Graduates	83
Senior Class — 116	
Ancient Classical Course	14
Modern Classical Course	24
English Course	27
Civic-Historical Course	25
General Science Course	20
Special Students	6
Junior Class — 132	
Ancient Classical Course	10
Modern Classical Course	17
English Course	21
Civic-Historical Course	20
General Science Course	26
Special Students	38
Sophomore Class — 154	
Ancient Classical Course	13
Modern Classical Course	30
English Course	16
Civic-Historical Course	10
General Science Course	23
Special Students	62
Freshman Class — 203	
Ancient Classical Course	11
Modern Classical Course	30
English Course	23
Civic-Historical Course	31
General Science Course	31
Special Students	77
Adult Special Students — 23	

COLLEGE OF MECHANICS AND ENGINEERING — 179

Fellows and Graduates	5
Senior Class — 24	
Civil Engineering Course	6
Mechanical Engineering Course	7
Electrical Engineering Course	8
Special Students	3
Junior Class — 30	
Civil Engineering Course	8
Mechanical Engineering Course	7
Electrical Engineering Course	8
Special Students	7
Sophomore Class — 54	
Civil Engineering Course	19
Mechanical Engineering Course	12
Electrical Engineering Course	16
Special Students	7
Freshman Class — 66	
Civil Engineering Course	12
Mechanical Engineering Course	7
Electrical Engineering Course	24
Special Students	23

COLLEGE OF AGRICULTURE — 175

Graduates		3
Long Course		3
Short Course	Second Year	20
	First Year	48
Dairy Course	Second Year	3
	First Year	98

COLLEGE OF LAW — 166

Senior Class	80
Junior Class	86

SCHOOL OF PHARMACY — 65

Graduate		1
Four Years' Course		2
Two Years' Course	Senior Class	20
	Junior Class	42

TOTAL NUMBER OF STUDENTS	1296
Twice enumerated 9, leaving as actual number	1287

COLLEGE OF LETTERS AND SCIENCE — 711

Fellows and Graduates	83
Ancient Classical Course	58
Modern Classical Course	145
English Course	149
Civic-Historical Course	106
General Science Course	147
Adult Special Students	23

COLLEGE OF ENGINEERING — 179

Fellows and Graduates	5
Civil Engineering Course	57
Mechanical Engineering Course	45
Electrical Engineering Course	72

WISCONSIN SUMMER SCHOOL — 189

CALENDAR.

ACADEMIC YEAR, 1892–3.

FALL TERM, September 14 — December 23, 14½ weeks.

WINTER TERM, January 9 — March 31, 12 weeks.

SPRING TERM opened April 10, closes June 21, 10½ weeks.
Legal Holiday, Tuesday, May 30.
Examination of Candidates for Admission, Thursday and Friday, June 15, 16.
Baccalaureate Address, Sunday, June 18.
Class Day and Address to Law Class, Monday, June 19.
Alumni Day, Tuesday, June 20.

COMMENCEMENT, Wednesday, June 21, 9 A. M.

SUMMER VACATION, June 21 — September 13.

ACADEMIC YEAR, 1893–4.

EXAMINATION of Candidates for Admission, September 12, 13.

FALL TERM opens Wednesday, September 13.
First Recitations, Thursday morning, September 14.
Thanksgiving Recess, November 30, December 1.
Fall Term closes Friday, December 22.
Christmas Vacation, December 23 — January 8.

WINTER TERM opens Monday, January 8, 1894.
First Recitations, Tuesday morning, January 9.
Legal Holiday, Thursday, February 22.
Winter Term closes Friday, March 30.
Spring Vacation, March 31 — April 9.

SPRING TERM opens Monday, April 9.
First Recitations, Tuesday, April 10.
Spring Term closes Wednesday, June 20.
Summer Vacation, June 20 — September 12.

COLLEGE OF LETTERS AND SCIENCE.

Time-table of Elective Studies that Begin in the Fall Term.

Note.—The hours of many electives are fixed only after consultation with classes.

	M	T	W	T	F	S
Prof. Birge:						
Physiology 4	8	..	8	..	8	..
Vertebrate Anatomy 2	..	8	..	8	..	..
Biology 1	2	2	2	2	2	..
Invertebrate Zoology 3	..	..	..	..	..	..
Prof. Comstock:						
Astronomy 1	12	12	12	12	12	..
Prof. Daniells:						
Chemistry 1	2	2	2	2	2	..
Prof. Davies:						
Math. Physics 3	12	12	12	12	12	..
Prof. Frankenburger:						
Philos. of Rhetoric 4	12	..	12	..	12	..
Dramatic Reading 6	..	12	..	12	..	..
Prof. Freeman:						
English Novel 12	9	..	9	..	9	..
Elizabethan Period 6	10	10	10	10	..	..
General Survey 4	9	..	9	..	9	..
Prof. Haskins:						
English History 2	9	..	9	..	9	..
Ancient History 1	..	9	..	9	..	..
English History 2	10	..	10	..	10	..
Ancient History 1	..	10	..	10	..	..
Hist. of Institutions 9	11	..	11	..	11	..
19th Century History 6	..	11	..	11	..	..
Eng. Const. History 8	..	12	..	12	..	..
Prof. Hendrickson:						
Latin 4	9	..	9	..	9	..
Latin 5	10	..	10	..	10	..
Latin 6	..	10	..	10	..	..
Prof. Hobbs:						
Mineralogy 2	10	10	10	10	10	..
Mineralogy 1	11	11	11	11	11	..
Petrology 1	2	2	2	2	2	..
Prof. Hubbard:						
Anglo Saxon Poetry 2	..	8	8	8	..	..
Ele. Anglo Saxon 1	9	..	9	..	9	..
English Prose 13	10	10	..	10	10	..
Prof. Jastrow:						
Psychology 1	9	9	9	9	9	..
Advanced Psychology 7	10	..	10	..	10	..
Compar. Psychology 8	..	10	..	10	..	..
Prof. Kerr:						
Elementary Greek 1	9	..	9	..	9	..
Greek 7	11	..	11	..	11	..

	M	T	W	T	F	S
Dr. Miller:						
Histology 4	..	8	..	8	..	..
Animal Histology 6	9	9	9	9	9	..
Prof. Olson:						
Beginning Norse 1	11	11	11	11	11	..
Norse 2	10	10	10	10	10	..
Prof. Owen:						
Advanced French 5	8	8	8	8	8	..
Prof. Parkinson:						
Am. Const. Law 4	9	..	9	..	9	..
Eng. Const. Law 2	..	9	..	9	..	..
Roman Law 6	10	..	10	..	10	..
Elementary Law 1	..	10	..	10	..	..
Prof. Rosenstengel:						
German 5	9	..	9	..	9	..
German 6	11	..	11	..	11	..
German 7	..	11	..	11	..	11
Prof. Scott:						
Prin. of Pol. Economy	8	8	8	8	8	..
Prin. of Pol. Economy	9	9	9	9	9	..
Prof. Slichter:						
Mechanics 12	11	..	11	..	11	..
Mathematics 13	..	11	..	11	..	..
Prof. Stearns:						
Psychology 1	9	9	9	9	9	..
Pedagogy 1	10	10	10	10	10	..
Æsthetics 4	11	11	11	11	11	..
Mr. Tisdel:						
Elocution 5	8	..	8	..	8	..
Elocution 5	12	..	12	..	12	..
Prof. Turner:						
Con. & Pol. U. S. Hist. 10	9	..	9	..	9	..
Modern History 5	11	..	11	..	11	..
U. S. History 4	..	11	..	11	..	..
Econ. & Soc. U. S. Hist. 7	12	..	12	..	12	..
Prof. Van Cleef:						
Greek 2	..	9	..	9	..	9
Greek 8	..	11	..	11	..	..
Prof. Van Hise:						
Geology 1	12	12	12	12	12	..
Prof. Van Velzer:						
Geometry 7	9	9	9	9	9	..
Differential Eq's 6	10	10	10	10	10	..
Anal. Geometry 4	11	11	11	11	11	..

Time-table of Elective Studies that Begin in the Winter Term.

Prof. Freeman:						
Epic Poets 10	9	..	9	..	9	..
Eng. Lyric Poetry 11	10	10	10	10	..	..
Prof. Hubbard:						
Adv. Anglo-Saxon 3	..	8	8	8	..	..
18th Century Lit. 7	10	10	..	10	10	..
Prof. Jastrow:						
Abnormal Psychology 9	..	10	..	10	..	..
Logic 11	..	11	..	11	..	..

Prof. Parkinson:						
Am. Const. Law 3	..	9	..	9	..	..
International Law 7	10	..	10	..	10	..
Prof. Scott:						
Pract. Econ. Questions	8	8	8	8	8	..
Develop. of Econ. Tho't	9	9	9	9	9	..
Prof. Stearns: Ethics 5	11	11	11	11	11	..
Hist. of Philosophy 2	9	9	9	9	9	..
Philos. of Education 2	10	..	10	..	10	..
Pedagogy 3	..	10	..	10	..	..

Time-table of Elective Studies that Begin in the Spring Term.

Prof. Barnes: Botany 14	11	11	11	11	11	..
Prof. Freeman:						
Eng. Prose Mast'p'c's 14	11	11	11	11	..	..
Prof. Hubbard;						
Chaucer 5	10	10	..	10	10	..
Prof. Jastrow:						
Anthro. Psych. 10	..	10	..	10	..	..
Dr. Miller:						
Animal Embryology 5	8	..	8	..	8	..

Prof. Parkinson:						
Comp. Const. Law 5	9	..	9	..	9	..
Prof. Scott:						
Financial U. S. History	8	8	8	8	8	..
Money and Banking	9	9	9	9	9	..
Prof. Stearns:						
Ethics 6	11	11	11	11	11	..
Methods and Manag't 4	10	..	10	..	10	..
Pedagogical Semin. 5	..	10	..	10	..	..

COLLEGE OF LETTERS AND SCIENCE.

TIME-TABLE OF REQUIRED STUDIES OF FRESHMAN YEAR FOR 1893–94.

Hour.	Course	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8 A. M...	M. C...		*Hygiene.		*Hygiene.		
9 A. M...	A. C... C. H... Eng.... G. S....	Mathematics, 1, 2. Mathematics, 1, 2. English History, 2. Mathematics, 1, 2.	Anc. History, 1. Rhetoric, 2. Anc. History, 1. Mathematics, 1, 2.	Mathematics, 1, 2. Mathematics, 1, 2. English History, 2. *Hygiene.	Anc. History, 1. Rhetoric, 2. Anc. History, 1. Mathematics, 1, 2.	Mathematics, 1, 2. Mathematics, 1, 2. English History, 2. Mathematics, 1, 2.	Mathematics, 1, 2. Mathematics, 1, 2. *Hygiene.
10 A. M..	A. C... M. C... C. H... Eng.... G. S....	Greek, 3, 4. Mathematics, 1, 2. English History, 2. German, 1, 2. German, 9.	Greek, 3, 4. Mathematics, 1, 2. Anc. History, 1. Rhetoric, 2. Rhetoric, 2.	Rhetoric, 2. Anc. History, 1. English History, 2. German, 1, 2. German, 9.	Greek, 3, 4. Mathematics, 1, 2. Anc. History, 1. Rhetoric, 2. German, 9.	Greek, 3, 4. Anc. History, 1, 2. English History, 2. German, 1, 2. Rhetoric, 2.	Rhetoric, 2. Mathematics, 1, 2. German, 1, 2. German, 9.
11 A. M..	A. C.... M. C... C. H... Eng....	Latin, 2. Latin, 2. †Hygiene. Mathematics, 1, 2.	Latin, 2. Latin, 2. German, 1, 2. †Hygiene.	*Hygiene. Rhetoric, 2. German, 1, 2. Mathematics, 1, 2.	Latin, 2. Latin, 2. †Hygiene. Mathematics, 1, 2.	Latin, 2. Latin, 2. German, 1, 2. †Hygiene.	*Hygiene. Rhetoric, 2. German, 1, 2. Mathematics, 1, 2.
12 M.....	M. C...	German, 3.	German, 3.	German, 3.	German, 3.		
2–4 P. M.	G. S....	Biology, 1.	Biology, 1.	Biology, 1.	Biology, 1.	Biology, 1.	

TIME-TABLE OF REQUIRED STUDIES OF SOPHOMORE YEAR FOR 1893–94.

Hour.	Course	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8 A. M...	Eng ...		German, 2.	German, 2.	German, 2.	German, 2.	
9 A. M...	A. C....	Ger., 8, or French, 2.	Latin, 3.	Ger., 8, or French, 2.	Latin, 3.	Ger., 8, or French, 2.	Ger., 8, or French, 2.
	M. C...		Latin, 3.		Latin, 3.		
	C. H...		German, 2, 11.	German, 2, 11.		German, 2, 11.	German, 2, 11.
	Eng ...	Eng. Literature, 4.	Rhetoric, 1.	Eng. Literature, 4.	Rhetoric, 1.	Eng. Literature, 4.	Rhetoric, 1.
	G. S ...	Rhetoric, 1.		Rhetoric, 1.		Rhetoric, 1.	
10 A. M..	A. C....	Greek, 5, 6.	Greek, 5, 6.		Greek, 5, 6.	Greek, 5, 6.	
	M. C...	Rhetoric, 1.		Rhetoric, 1.	German, 4.	Rhetoric, 1.	German, 4.
	C. H...	English History, 2.	Anc. History, 1.	English History, 2.	Anc. History, 1.	English History, 2.	
	Eng ...		French, 1.	French, 1.		French, 1.	French, 1.
	G. S ...	French, 3.	French, 3.		French, 3.	French, 3.	
11 A. M..	A. C....		Rhetoric.		Rhetoric.	Rhetoric.	
	M. C...		French, 1.	French, 1.		French, 1.	French, 1.
	C. H...	French, 1.	French, 1.		French, 1.	French, 1.	
	G. S ...	‡Mathematics, 4, 5.	‡Mathematics, 4, 5.	‡Mathematics, 4, 5.	‡Mathematics, 4, 5.	‡Mathematics, 4, 5.	
12 M.....	C. H....		Rhetoric, 1.		Rhetoric, 1.		Rhetoric, 1.
	Eng ...	§Physics, 2.		§Physics, 2.		§Physics, 2.	
	G. S....	Physics, 2.	‖ German, 10.	Physics, 2.	‖ German, 10.	Physics, 2.	‖ German, 10.
2 P. M...	A. C....	Physics, 1.		Physics, 1.		Physics, 1.	
	M. C...	Physics, 1.		Physics, 1.		Physics, 1.	
	Eng ...	§Science.	§Science.	§Science.	§Science.	§Science.	
	G. S....	‡Chemistry, 1.	‡Chemistry, 1.	‡Chemistry, 1.	‡Chemistry, 1.	‡Chemistry, 1.	

*For Fall Term only. †For Winter Term only. ‡ §But one of these two subjects need be taken. ‖Elective.

COLLEGE OF MECHANICS AND ENGINEERING — FALL TERM.

ABBREVIATIONS.— T. E., Topographical Engineering; M. D., Machine Design; R. E., Railway Engineering; E. E., Electrical Engineering; Str. E., Structural Engineering; S. E., Steam Engineering; H. & S. E., Hydraulic and Sanitary Engineering; H. & C., Highways and Canals; d., daily. Electives in *italics*.

Yr	Course.	8.	9.	10.	11.	12.	P. M. and Sat.
FRESHMAN.	C. E.	T. E. 1, d.	T. E. 1, d.	Math. 1, d.	Fr. 3, or Ger. 4, d.	Eng. & R. 1, M. W. F.	Shop 1, W. 2-4; F. 2-5.
	M. E.	Shop 1, M. W. F.	Shop 1, M. W. F.	Math. 1, d.	Fr. 3, or Ger. 4, d.	Eng. & R. 1, M. W. F.	M. D. 1, d. 2-4.
	E. E.	M. D. 1, d.	M. D. 1, d.	Math. 1, d.	Fr. 3, or Ger. 4, d.	Eng. & R. 1, M. W. F.	Shop 1, Th. 2-4; S. 8-11.
SOPHOMORE.	C. E.	Math. 4, 5, d.	Phy. 3a, M. W. T. E. 2, T. Th.	Phy. 3a, M. W. T. E. 2, T. Th.	Mineralogy 2, d.		Chem. 1, M. W. 2-4; T. Th. 2; F. 2-6. Phy. 3a, T. Th. 3.
	M. E.	Math. 4, 5, d.	Shop 4, 5, T. Th. F. Phy. 3a M. W.	Shop 4, 5, T. Th. F. Phy. 3a, M. W.	M. D. 2, T. Th.	M. D. 2, T. Th.	Chem. 1, M.W. 2-4; T. Th., 2; F. 2-6. Phy. 3a, T. Th. 3. Shop 4, 5; S. 8-12.
	E. E.		Math. 4, 5, d.	Shop 4, 5, M. W. F.	M. D. 2, T. Th. Shop 4, 5, M. W. F.	M. D. 2, T. Th. Shop 4, 5, M. W. F.	Chem. 1, M. W. 2-4; T. Th. 2; F. 2-6. Phy. 3a, T. Th. 3; S. 8-12.
JUNIOR.	C. E.			R. E. 2, M. W. M. D. 3, T. Th. F.	Mech. 1a, d.	Geology 1, d.	R. E. 1, Th. 2-4; F. 2-6; S. 8-12.
	M. E.	E. E. 1, d.	Mech. 1a, d.	M. D. 3, T. Th. F. M. D. 4, M. W.	M. D. 4, M. W. F.	M. D. 4, M. W. F.	Shop 6, M. W. F. 2-4.
	E. E.	E. E. 1, d.	Mech. 1a, d.	M. D. 3, T. Th. F.	M. D. 4, M. W. Phy. 7, T. Th.	M. D. 4, M. W. Phy. 7, T. Th.	Shop 6, M. W. F. 2-4.
SENIOR.	C. E.	Str. E. 5b, M. W. F. Str. E. 6, T. Th.	R. E. 5, M. W. F. Str. E. 7b, T. Th.	Mech. 1c, M. W. F. Str. E. 7b, T. Th.	Str. 7b, M. T. W. Th.	H. & S. E. 1, T. Th. F. Str. E. 7b, M. W.	Mech. 1c, T. 2-4.
	M. E.	M. D. 7a, M. W. F.	M. D. 7a, d.	S. E. 3, d.	S. E. 3, d.	S. E. 3, d.	Shop 10, T. 2-4; Th. 2-6. S. E. 4, M. W. F. 2-4.
	E. E.		E. E. 3a, T. Th. *E. E. 6a, M. W. F.*	S. E. 3, d.	E. E. 4a, d.	*E. E. 7a, d.*	E. E. 3a, T. 2-4; Th. 2-6. S. E. 4, M. W. F. 2-4.

COLLEGE OF MECHANICS AND ENGINEERING — WINTER TERM.

ABBREVIATIONS.— T. E., Topographical Engineering; M. D., Machine Design; R. E., Railway Engineering; E. E., Electrical Engineering; Str. E., Structural Engineering; S. E., Steam Engineering; H. & S. E., Hydraulic and Sanitary Engineering; H. & C., Highways and Canals; d., daily. Electives in *italics*.

Yr.	Course.	8.	9.	10.	11.	12.	P. M. and Sat.
FRESHMAN.	C. E.	Math. 8, d.	Math. 8, d.	Math. 2, 3, d.	Fr. 3, or Ger. 5, d.	Eng. & R. 1, M. W. F.	Shop 8, W. 2-4; F. 2-5.
	M. E.	Shop 2, M. W. F.	Shop 2, M. W. F.	Math. 2, 3, d.	Fr. 3, or Ger. 5, d.	Eng. & R. 1, M. W. F.	Math. 8, d. 2-4.
	E. E.	Math. 8, d.	Math. 8, d.	Math. 2, 3, d.	Fr. 3, or Ger. 5, d.	Eng. & R. 1, M. W. F.	Shop 2, Th. 2-4; S. 8-11.
SOPHOMORE.	C. E.	Math. 5, d.	Mech. 1a, d.	Phy. 3b, T. Th.	Math. 6, M. W. Phy. 3b, T. F.	Phy. 3b, T. F.	Chem. 1, d. 2-4.
	M. E.	Math. 5, d.	Mech. 1a, d.	Phy. 3b, T. Th. M. D. 2, M. W. F.	Phy. 3b, T. M. D. 2, M. W. F.	Phy. 3b, T.	Chem. 1, d. 2-4.
	E. E.	Mech. 1a, d.	Math. 5, d.	Phy. 3b, T. Th. M. D. 2, M. W. F.	Phy. 3b, Th. M. D. 2, M. W. F.	Phy. 3b, Th.	Chem. 1, d. 2-4.
JUNIOR.	C. E.	R. E. 3, T. Th. R. E. 4, M. W. F.	Mech. 1, 1a, d.	Mech. 3, T. Th. S. E. 5, M. W. F.	Mech. 3, T. Th. Str. E. 3, 4, M. W. F.	Mech. 3, T. Th. Str. E. 3, 4, M. W. F.	Mech. 3, W. 2-4. Str. E. 3, 4, M. 2-4.
	M. E.	Mech. 1a, d.	S. E. 1, d.	M. D. 5, T. Th.	M. D. 5, d.	M. D. 5, d.	Shop 7, M. W. F. 2-4.
	E. E.	Mech. 1a, d.	E. E. 1, T. E. E. 2a, M. W. F.	S. E. 5, M. W. F. M. D. 5, T. Th.	M. D. 5, T. Th. F.	M. D. 5, T. Th. F.	Shop 6, M. W. E. E. 1, T. Th. F. 2-4.
SENIOR.	C. E.	Str. E. 7c, d.	Str. E. 7c, d.	H. & S. E. 2, M. W. F. H. & C. 2, T. Th.	Astronomy 6, M. W. *Str. E. 8, T. Th.* *R. E. 6, T. Th.*	Str. E. 3, W. *Str. E. 9, T.* *R. E. 6, T. Th.*	*Str. E. 9, Th. 2-4.*
	M. E.	M. D. 7a, d.	M. D. 7a, T. W. Th. S. E. 4, M.	S. E. 3, T. Th. S. E. 4, M.	S. E. 3, M. W.	H. & S. E. 3, T. Th. F. S. E. 3, M. W.	Shop 11, 10 hours. S. E. 4, F. 2-6.
	E. E.	M. D. 7b, T. W. Th.	S. E. 4, M. M. D. 7b, T. W. Th. *E. E. 7b, F.*	S. E. 4, M. M. D. 7b, W. F. S. E. 3, T. Th.	*E. E. 3b, T. Th.* E. E. 4b, M. W. F. *E. E. 7b, T. Th.*	H. & S. E. 3, T. Th. F. *E. E. 7b, M. W.* *E. E. 6b, M. W.*	S. E. 4, F. 2-6. E. E. *3b*, 4b, M. W. 2-6.

COLLEGE OF MECHANICS AND ENGINEERING — SPRING TERM.

ABBREVIATIONS.— T. E., Topographical Engineering; M. D., Machine Design; R. E., Railway Engineering; E. E., Electrical Engineering; Str. E., Structural Engineering; S. E., Steam Engineering; H. & S. E., Hydraulic and Sanitary Engineering;. H. & C., Highways and Canals; d., daily. Electives in *italics.*

Yr	Course.	8.	9.	10.	11.	12.	P. M. and Sat.
FRESHMAN.	C. E.	Math. 8, d.	Math. 8, d.	Math. 4, d.	Fr. 3, or Ger. 5, d.	Eng. & R. 1, M. W. F.	Shop 3, W. 2-4; F. 2-5.
	M. E.	Shop 3, M. W. F.	Shop 3, M. W. F.	Math. 4, d.	Fr. 3, or Ger. 5, d.	Eng. & R. 1, M. W. F.	Math. 8, d. 2-4.
	E. E.	Math. 8, d.	Math. 8, d.	Math. 4, d.	Fr. 3, or Ger. 5, d.	Eng. & R. 1, M. W. F.	Shop 3, Th. 2-4; S. 8-11.
SOPHOMORE.	C. E.	Math. 5, T. Th.	Mech. 1a, d.	Phy. 3c, T. Th. T. E. 3, M. W.	Math. 6, W.		T. E. 3, W. 2-4; F. 2-6; S. 8-12. Phy. 3c, T. Th. 2-4.
	M. E.	Math. 5, 7, d.	Mech. 1a, d.	Phy. 3c, T. Th.	M. D. 2, d.	M. D. 2, d.	Phy. 3c, T. Th. 2-4. Chem. 1, M. W. 2-4.
	E. E.	Mech. 1a, d.	Math. 5, 7, d.	Phy. 3c, T. Th.	M. D. 2, d.	M. D. 2, d.	Phy. 3c, F. 2-6. Chem. 1, M. W. 2-4.
JUNIOR.	C. E.	S. E. 6, W. Mech. 2, T. Th.	Str. E. 5a, M. W. F. Mech. 2, T. Th.	Mech. 1b, d.	S. E. 6, T. Th. Str. E. 7a, M. W. F.	S. E. 6, T. Th. Str. E. 7a, M. W. F.	Astronomy 2, d. 2-4.
	M. E.	S. E. 2, W.	Mech. 1b, d.	S. E. 2, M. F. M. D. 6, T. Th.	M. D. 5, d.	M. D. 5, d.	S. E. 4, T. Th. 2-4. Mech. 2, M. 2-6. Shop 9, W. F. 2-4.
	E. E.	S. E. 6, W.	Mech. 1b, d.	E. E. 2a, M. W. F. M. D. 6, T. Th.	S. E. 6, T. Th. M. D. 5, M. W. F.	S. E. 6, T. Th. M. D. 5, M. W. F.	Mech. 2, Th. 2-6. E. E. 2b, M. W. 2-4.
SENIOR.	C. E.	*M. D. 8, M. W.*	*M. D. 8, d.*	*Str. E. 7d, T. Th. F.* *M. D. 8, M. W.* *R. E. 6, T. Th. F.*	*Str. E. 7d, T. Th. F.* H. & C. 1, M. W. *R. E. 6, T. Th. F.*	Geology 5, d.	*H. & S. E. 5, 4 to 10 hours.*
	M. E.			H. & S. E. 3, 4, T. Th. F.	H. & S. E. 3, 4, T. Th. F.		
	E. E.		E. E. 5, d.	H. & S. E. 3, 4, T. Th. F.	H. & S. E. 3, 4, T. Th. F.	*E. E. 6c, d.* *E. E. 7b, d.*	

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