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Annual · Catalogue

of the

Agricultural · College

... of Utah ...

1894-5

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Logan, Utah

THE SALT LAKE LITHOGRAPHING CO. PRINTERS

AGRICULTURAL COLLEGE, LOGAN, UTAH.

ANNUAL CATALOGUE

OF THE

AGRICULTURAL COLLEGE

OF UTAH

1894-5

LOGAN, UTAH

CALENDAR FOR 1894-5.

First Term Opens	Tuesday, September 4, 1894.
First Term Closes	Friday, December 21, 1894.
Second Term Opens	Tuesday, January 3, 1895.
Second Term Closes	Friday, March 15, 1895.
Third Term Opens	Tuesday, March 19, 1895.
Third Term Closes	Wednesday, June 5, 1895.

BOARD OF TRUSTEES.

William S. McCornick	Salt Lake City.
A. George Barber	Logan.
J. W. McNutt	Ogden.
William P. Nebeker	Salt Lake City.
Achilles Perrin	Ogden.
Aaron F. Farr, Jr	Logan.
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William S. McCornick	President.
Joseph E. Hyde	Secretary.
Allan M. Fleming	Treasurer.

EXPERIMENT STATION ORGANIZATION.

BOARD OF CONTROL.

The Board of Trustees of the College.

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STATION STAFF.

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E. S. RICHMAN, M. S. A. ..... Horticulturist and Entomologist.
R. W. ERWIN ..... Assistant Chemist.
S. S. TWOMBLY, M. S., D. V. S. ..... Consulting Veterinarian.
A. A. MILLS, B. Sc. ..... Superintendent of Farm Experiment Work.
F. W. BREWER, M. A., M. D. ..... Biologist.
S. FORTIER, C. E ..... Consulting Irrigation Engineer.
F. B. LINFIELD, B. S. A. ..... Dairy Investigator.
JAMES DRYDEN ..... Clerk and Stenographer
ALLAN M. FLEMING ..... Treasurer.

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ARRANGED IN ORDER OF SENIORITY OF APPOINTMENT.

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JEREMIAH W. SANBORN, B. S., President of Faculty.

Professor of Agriculture, Political Economy and Civil Government.

Mental and Moral Philosophy

EVERT S. RICHMAN, M. S. A.,

Professor of Horticulture, Entomology and Botany.

Professor of Physics, Geology and Mineralogy.

MISS ABBIE L. MARLATT, M. Sc.,

Professor of Domestic Economy.

JACOB M. SHOLL, B. M. E.,

Professor of Mechanical Engineering.

JOHN T. CAINE, JR.,

Principal of the Preparatory Department.

ALONZO A. MILLS, B. Sc.,

Assistant Agriculturist.

SIDNEY S. TWOMBLY, M. S., D. V. S.,

Professor of Chemistry and Veterinary Science.

JOSEPH E. SHEPARD,

Principal of the Commercial Department.

MRS. SARAH W. EDDY,

Instructor in Preparatory Department.

JAMES DRYDEN,

Assistant in Commercial Department.

ELIAS J. MacEWAN, M. A.,

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F. W. BREWER, M. A., M. D.,

Professor of Biology.

MISS E. ADA LITTLE, B. S. C.,

Instructor in Sewing.

MISS CLARE KENYON,

Instructor in Elocution and Librarian.

HENRY D. STYER, First Lieut. 13th Inf. U. S. A.,

Professor of Military Science and Mathematics.

SAMUEL FORTIER, B. A. Sc.,

Professor of Civil Engineering.

F. B. LINFIELD, B. S. A.,

Professor of Dairying and Animal Husbandry.

J. WALTER MAYO.

Instructor in Drawing and Shop Work.

WILLARD S. LANGTON,

Instructor in Preparatory Department.

HISTORICAL STATEMENT.

The Agricultural College of Utah was organized by an act of the Territorial Legislature, approved March 8, 1888, accepting the provisions of an act of Congress introduced by Hon. Justin S. Morrill, of Vermont, and made a law July 2, 1862. This act was supplemented by an act passed March 2, 1888, founding and endowing Agricultural Experiment Stations as departments of these colleges, and by a subsequent act passed August, 1890, further endowing them.

The National act of 1862 gave 30,000 acres of land to each State, for each member of its Congressional delegation. This land will become available to the Agricultural College when Utah is admitted to Statehood. The act of 1888, endowing Agricultural Experiment Stations, gave $15,000 annually for research in agriculture. The National act of 1890 gave $15,000 for the purpose of instruction at Agricultural Colleges for the year following the date of the passage of the act, this sum to be increased one thousand dollars per year until the total annual appropriation reaches $25,000. The sum received from the National Treasury for the present year will be $20,000.

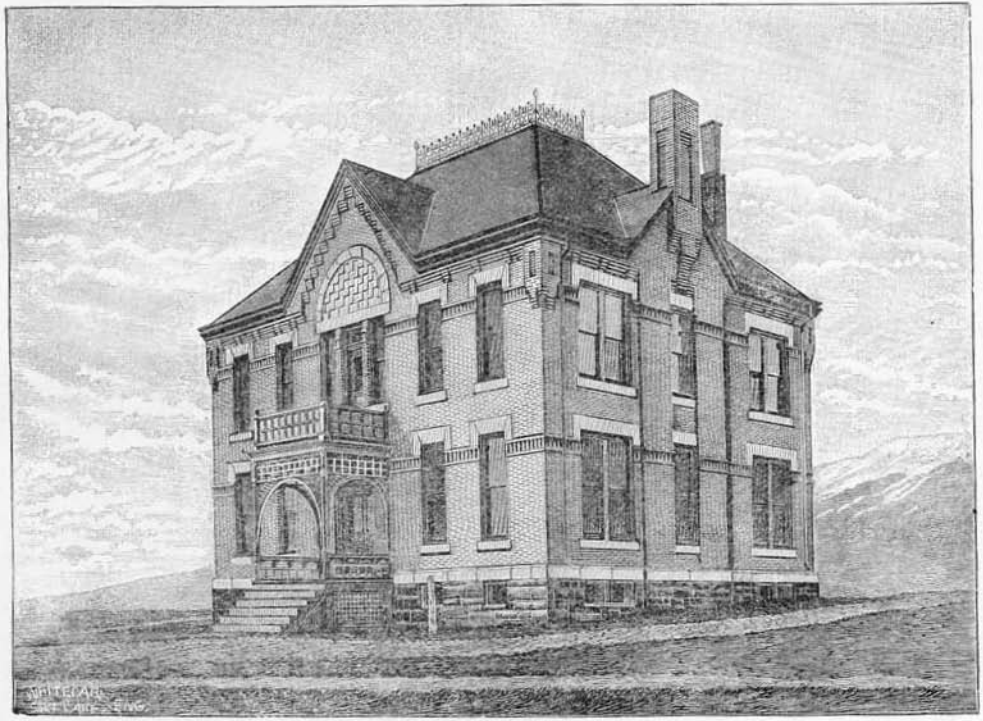
The Legislature that founded the institution gave $25,000 for buildings. The county of Cache and the town of Logan gave one hundred acres of land on which to locate the College. The Legislature of 1890 appropriated $48,000 for apparatus, for the employment of teachers and for the construction of a house, barn, two laborers' cottages and an experiment station. The Legislature of 1892 gave $108,000 for an addition to the College building, for two houses, for apparatus and for salaries of teachers. The Legislature of 1894 appropriated the further sum of $15,000 for purchase of apparatus, for a greenhouse, for a veterinary laboratory and for the employment of teachers.

THE PURPOSES OF THE COLLEGE.

The purposes of these Colleges are seen in the following quotations from the National and Territorial laws. The original Act of Congress founding the Agricultural Colleges says: "And the interest of which shall be inviolably appropriated by each State, which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one College, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, * * * in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The National act establishing the Experiment Station department of the College defines at length the duties of the department:

SEC. 2. That it shall be the object and duty of said Experiment Station to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping, as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analyses of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effect on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories



EXPERIMENT STATION.

The National act of 1890, further endowing agricultural colleges, defines the limits of the application of the money therein appropriated in the following language: "To be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the iudustries of life, and to the facilities for such instruction."

The Territorial law founding the institution reaffirms the purpose of the National act, and in addition contains the following language:

SEC. 12. The course of instruction shall embrace the English language and literature, mathematics, civil engineering, agricultural chemistry, animal and vegetable anatomy and physiology, the veterinary art, entomology, geology, and such other natural sciences as may be prescribed, technology, political, rural and household economy; horticulture, moral philosophy, history, bookkeeping, and especially the application of science and the mechanical arts to practical agriculture in the field.

The Legislature very wisely made strict provisions against a sectarian or partisan management of the institution in Section 10 of the law, which reads as follows:

SEC. 10. In the appointment of professors, instructors and other officers and assistants of said college, and in prescribing the studies and exercises thereof, and in every part of the management and government thereof, no partiality or preference shall be shown by the trustees to one sect or religious denomination over another; nor shall anything sectarian be taught therein; and persons engaged in the conducting, governing, managing or controlling said college and its studies and exercises in all its parts, shall faithfully and impartially carry out the provisions of this act for the common good, irrespective of sects or parties, political or religious.

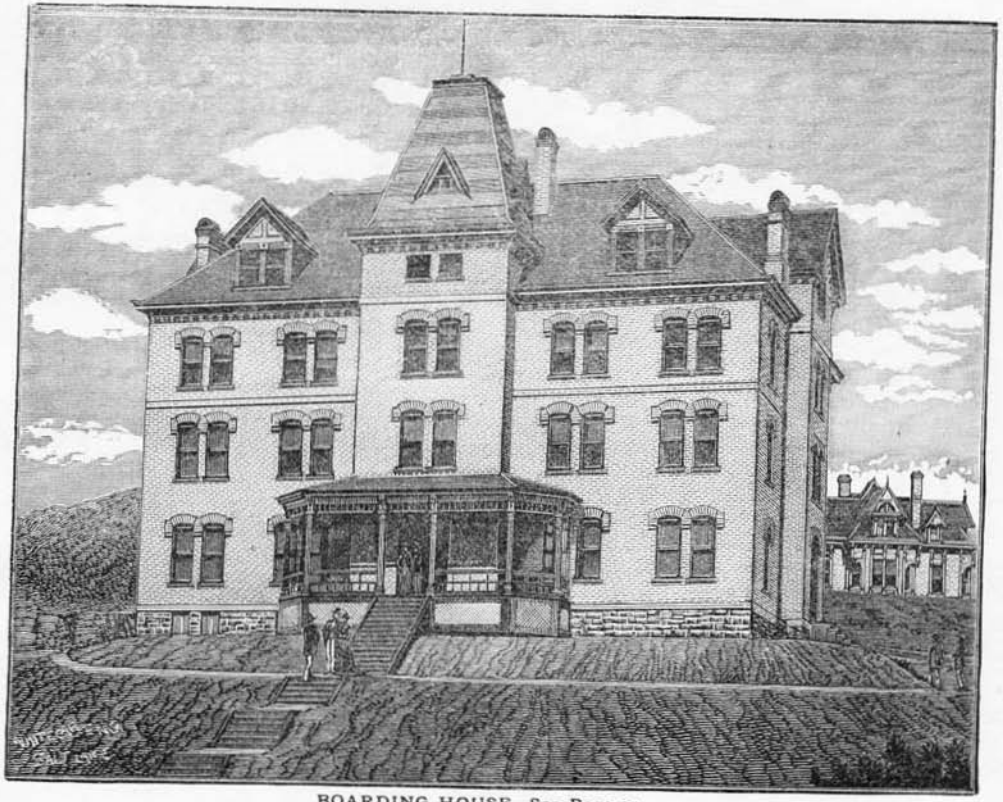
The intention of the nation and of the Territory, in establishing this College, is clear beyond the possibility of misconstruction. It was founded in the interest of the industrial classes in the several pursuits and professions of life, to give not alone a technical education, but, in the language of the law, a "liberal and practical education." It sought to place within reach of the

producing classes, an education that the older institutions, as a rule, had made no provisions for. It was the clear intention of Congress to give special prominence to agriculture and mechanic arts in the order mentioned, and for obvious reasons. The former represents the wealth-producing class of primary importance, the latter that class of next importance to the state.

The instructional policy of the College is in consonance with the letter and the spirit of the laws upon which it was founded. Its courses of instruction represent the five great avocations of the people of Utah, and combine general education with industrial education. This system has been found to meet the wants of our industrial classes.

LOCATION OF THE COLLEGE.

The College is located at Logan, a rural city of 5000 population. It is characterized by that freedom from vice and distraction from study that mark the typical college town. Logan is the capital of Cache County, and commercially of Cache Valley. Cache Valley is about sixty miles long by from ten to twelve miles wide, completely surrounded by the Wasatch Mountains, forming one of the most beautiful valleys in the world. The College is located on an upper bench, in a position that overlooks Logan and commands a view of the entire valley and its surrounding mountain ranges. The beauty of the location is unsurpassed, and, perhaps, unequaled by that of any other College in the country.



BOARDING HOUSE—See Page 15.

COLLEGE EQUIPMENT.

MAIN COLLEGE BUILDING.—This is one of the largest college structures in the country, being 342 feet long by 190 feet deep in the center. The building is completed, as shown in the frontispiece, except eighty feet square, or about one-sixth in front.

It contains well-ventilated recitation rooms for the several departments, and working or practical exercise rooms, ample in dimensions and complete in their conveniences for the work-shops, cooking, sewing, household, dairy, laundry, engineering, agricultural and business departments. It contains laboratory, museum, library and gymnasium rooms and a military drill hall of ample size, each being some eighty feet square. Its audience room, or chapel, will hold 1500. All the rooms are light and pleasant and the halls wide and roomy, extending on each floor the entire length of the building. The building is equipped with the best modern furniture.

A boarding house is connected with the College. It contains thirty-three rooms. These rooms are 12x14 feet, exclusive of a good closet. Each room has registers for ventilation, and is furnished with a looking glass, a full set of chamber ware, a wash stand, table, chairs, and either a beadstead or two cots. In addition to the rooms for the students there are rooms for the matron and for cooks, a fine, large students' reception room, 19x27 feet, a model kitchen, a dining room, a pantry supplied with modern conveniences, a laundry room and bath rooms.

FARM BUILDINGS.—A model barn is connected with the department of agriculture. It contains a silo, a root cellar, an engine room, quarters for swine, for sheep, for cattle, for horses, for hay and other coarse fodder; for grain, for tools and for horticultural uses.

A farm house with dairy rooms associated with it, illustrates the modern conveniences that are found in connection with modern farm houses.

Three laborers' cottages and a house for the farm superintendent are located on the grounds of the College.

All the buildings are new, well adapted to their purposes, and of credit to the Territory.

Connected with the above buildings is the Experiment Station building, where experiment work is constantly in progress.

LIBRARY.—The library contains several hundred pamphlets and 3000 books that have recently been very carefully selected. They cover the fields of thought to which it will be most useful for students to turn their attention—general literature, travel, biography, political economy, sociology, metaphysics, history, fiction, poetry, and the technical works of the several departments.

The library room contains periodicals that represent the leading lines of modern thought. It is a well equipped section of the College work and free to College students.

MUSEUM.—A collection for a general museum upon which the several departments of the College may draw for means of illustrating class-room teachings, has already acquired importance. A fund has been devoted to this feature of the College work.

APPARATUS.—Each of the five departments of instruction has a collection of apparatus and materials for illustration. Under the explanation of each course of instruction will be found a statement of the means provided for illustrating the subjects taught. About $35,000 has been expended, or is being expended, for means of illustration.

FARM.—Eighty-five acres of land are used for instruction in the art and science of agriculture and of horticulture. Three and one-half acres of ground, located close to the College building, are set aside for the sole use of students for athletic sports.

COURSES OF STUDY.

The College work includes five distinctive lines of instruction, four special courses and a Preparatory Department.

1. Course in Agriculture.
2. Course in Domestic Arts.
3. Course in Mechanical Engineering.
4. Course in Civil Engineering.
5. Business Course.

The special courses are as follows:

1. Three years' Course in Agriculture.
2. Irrigation Engineering.
3. Two years' Course in Domestic Arts.

In addition to these special courses there have been organized two courses of winter lectures, covering ten weeks each, namely: A course of lectures for the Agricultural Department and a course of lectures for the Domestic Arts Department.

The courses in Mechanical and Irrigation Engineering have Post Graduate Courses of one year each.

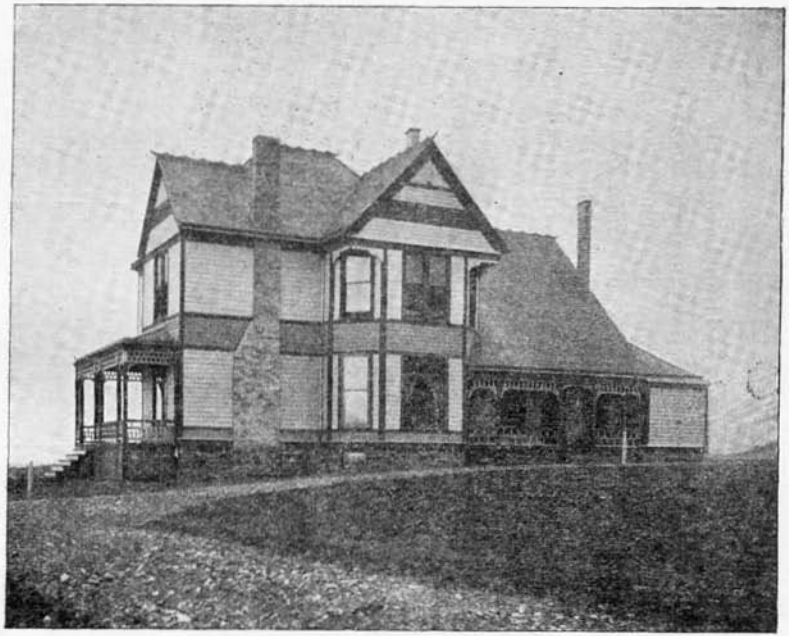
PREPARATORY DEPARTMENT.

Many of the settlements of Utah have barely passed their pioneer days. From such sections no great advance in education could be expected, and in some the schools are quite primitive. As a consequence, many young men and women who have had to work hard with their parents in the varied operations of home making, find themselves without the educational start which their integrity merits. They have given their time to the material progress of the Territory, and now feel that they are entitled to a share in its intellectual advancement. In some of the thinly populated districts schools are not regularly kept, and those that are do not provide instruction generally adapted to the age and wants of the class of whom we speak.

It, therefore, seems obvious that until these young people pass the time they may devote to school, justice demands some provision for them in our higher educational institutions. The College maintains a Preparatory Department for such students, and offers them the following studies:

Hour. FIRST TERM.	SECOND TERM.	THIRD TERM.
1. Penmanship.	Grammar.	Composition.
2. Grammar. Military Drill.	U. S. History. Military Drill.	Arithmetic. Military Drill.
3. Geography.	Arithmetic.	U. S. History.
4. Orthography, 8 weeks. Reading, 8 weeks.	Physical Geography.	Physical Geography.

This preparation fits students for the several courses of college study.



FARM HOUSE.—See Page 15.

COURSE IN AGRICULTURE AND SCIENCE.

It has been said by a great poet that "All nature is but art unknown to thee." This being so, agriculture is the art of arts, for it unceasingly deals with nature and is thereby brought into daily contact with life and the sciences relating to life. In the management of soils and in the use of tools it comes in contact with physical and mechanical laws, and in the markets, with commercial and political laws. Very happily agriculture deals with more of the sciences than does any other industry, thereby causing agricultural education to become more nearly a liberal education than the education that is necessary to any other industry or profession. Very nearly all natural sciences are involved in farming, so that a well educated farmer is virtually liberally educated as a citizen.

In the following course of instruction very few studies are involved that are not essential to the most successful farmer. It may be well termed a course in the applied sciences.

Heretofore agriculture has been without guiding laws. It has been a "rule of thumb" business. It is now rapidly becoming the most learned of the industries or professions. Of its profundity there can no longer be any doubt. The inherent fascination of its living forms and of its complex and intricately balanced laws will yet attract to it the best talent, as it is the finest field for industrial gratification and for the development of the highest order of intellectual and physical manhood.

Statistical inquiry has shown that in the several countries of Europe the produce per acre is increased over that of the most illiterate countries by the increased ratio of the population that can read and write. The same fact is found to exist between the States of the Union. A single illustration of the general

law will be given. In 1860 fifty-three per cent of the population of France and nearly all the population of Germany could read and write. In the former country the crops were 18.50 bushels per acre while the latter yielded 22.05 bushels. Germany is a poorer country for agriculture than France, yet the yield is nearly twenty per cent more than that of France. Germany has more Agricultural Colleges and Stations, and erected them earlier.

FRESHMAN YEAR.

Hour.		
9:00 to 9.55. Grammar.	Rhetoric.	Literature.
9.55 to 10.50. Arithmetic, 10 weeks. Algebra, 6½ weeks.	Algebra.	Algebra.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Elocution, 2 Free Hand Drawing. 3	Elocution. 2 Freehand Drawing 3	Elocution. 2 Free Hand Drawing. 3
12:15 to 1:10. Manners and Morals. 2 Horticulture. 2	History of Agriculture. Farm Bldgs. & Fences. 3	History, description and management of Cattle, Horses, Sheep and Hogs. 3
2:10 to 4:00. Shop Work in Wood. 3	Shop Work in Iron.	Shop Work in Wood. 3

SOPHOMORE YEAR.

9:00 to 9:55. Botany. 3	Organic Chemistry.	Agricultural Chemistry.
9:55 to 10:50. Chemistry.	Physics.	Physics.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Geometry.	Book-keeping. 3 Arg. Rhetoric. 2	Horticultural Work. 1 Surveying. 4
12:15 to 1:10. Essays and Arg. Rhetoric. 2 Horticulture. 2	Horticulture. 3	Botany. 2 Surveying. 3
2:10 to 4:00. Chemical Laboratory. 3 Horticultural Practice. 2	Chemical Laboratory. 3 Physical Laboratory. 2	Chemical Laboratory. 2 Physical Laboratory. 2 Botanical Laboratory. 1

JUNIOR YEAR.

9:00 to 9:55. Anatomy and Physiology.	Entomology.	Geology.
9:55 to 10:50. Botany.	History, description and management of Cattle, Horses, Sheep and Hogs. Stock Breeding.	Soils. Farm Machinery.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Literature. 3	Logic. 4	Literature.
12:15 to 1:10. Zoology. 2 General History. 3	Physiology.	Civil Government.
2:10 to 4:00. Botanical Laboratory. 2	Agricultural Practice. 2 Mineralogy & Lithology 3	Farm Practice. 2 Mineralogy, Lithology and Geology. 2

SENIOR YEAR.

9:00 to 9:55. Dairying, Farm Crops and Irrigation.	Irrigation. Manures.	Thesis Work.
9:55 to 10:50. Psychology, 10 weeks. Moral Science, 6½ weeks.	Political Economy.	Veterinary Science.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Veterinary Science.	Veterinary Science.	Farm Management. Animal Nutrition. Drainage.
12:15 to 1:10. Either German, French, Spanish, Veterinary Science and Physiology, or History of Civilization.	Either German, French, Spanish, Veterinary Science and Physiology, or Astronomy.	Either German, French, Spanish, Veterinary Science and Physiology, or Sociology.
2:10 to 4:00. Dairy Practice 3 Veterinary Laboratory 2 Music (optional). 1	Farm Practice. 2 Veterinary Laboratory 2 Music (optional). 1	Farm Practice. 2 Veterinary Laboratory 2 Music (optional). 1

The degree of B. S. (Bachelor of Science) is given to those who complete this course.

POST GRADUATE WORK.

Those completing the above course will have the privilege of any of the classes of the other courses. In addition, advanced work in Chemistry, German, Spanish, French, English, Physics,

Biology, Drawing and Music for a year; Botany three days in the week for a year; Horticulture two days a week for the year; Agriculture, and in other studies.

These studies are added to accommodate our rapidly increasing number of students who may desire advanced work and to obviate the necessity of the youths of the Territory going abroad to secure a more complete education in the direction that this College is teaching.

Aside from the fact that the four years' course is now one of the very strongest technical courses in Agriculture in the country, it becomes a good, strong, general science course when the added year is included.

The technical course in Agriculture brings into use seven specialists who deal directly with farm problems.

REMARKS.

AGRICULTURE.—An exercise a day for two years is given to technical instruction in agriculture. The greater part of the instruction is given by lectures and by field exercises, as very few works on agriculture are adapted to schoolroom study.

In these lectures are considered the history of the development of the art and science of agriculture; farm buildings and fences; farm implements—their development, care and use; the development and characteristics of the various breeds of cattle, horses, sheep and swine; the art and science of breeding; soils—their origin, classification and their physical laws; tillage of soils in its relation to the physical and chemical condition, and to moisture and to crops; manures—their composition, value, preservation, preparation and use; farm crops—their character, improvement, seeding, cultivation, harvesting, preservation; feeding—animal digestion, food value of crops and their combination for feeding to the several classes of animals, and the art of feeding; dairying—in all of its complex relations, and the application of the knowledge acquired to the art of organizing

a successful type of farming of a high order. Text books used: Horning's *Drainage for Profit and Drainage for Health*, Arnold's *Dairying*, Armsby's *Manual of Cattle Feeding*. For reference books, are used *Harris on Manures*, Stewart's *Sheep Husbandry*, Curtis on *Breeds of Domestic Animals*, and a list of other books too full to review.

The dairy work is in charge of one familiar with the art and science of dairying. This feature of the instruction in agriculture will be made prominent. Our Territory imports a large amount of the best grades of butter, notwithstanding it has an exceedingly favorable climate for the production and harvesting of foods fitted to produce these grades in their highest perfection.

Instruction in dairying will be given by lectures, supplemented by practical work in the dairy. The lectures will cover daily recitations for six weeks, the practice work in the dairy to occur three times a week for the same period. The lectures will discuss the elaboration, the composition, the fermentation and the testing of milk, and will be accompanied by presentation of the intricate and varied processes of butter and cheese making, closing with the discussion of the building, equipment and management of factories.

Successful dairying requires a thorough knowledge of the subtle changes that are constantly taking place in milk after it is drawn from the cow. This knowledge can only be gained by practical work in handling it.

The dairy department is thoroughly equipped for the operations of milk testing, butter and cheese making. After the introductory work, each student is required to conduct cheese and butter making through all its processes until the finished product is reached, without relying upon the promptings of the instructor. This necessitates close observation of every detail, an essential factor in dairy work.

Butter and cheese making should command the attention of the young men of Utah, especially so as factories are being started and managed by eastern experts on conditions unfavorable to our interests, aside from the fact that such talent should

be supplied at home. Butter should be exported rather than imported, as it is the most concentrated product of the farm.

The lecture room and the farm will be wedded. Exercises on the farm and excursions to farms successfully conducted will afford means of converting abstract into concrete knowledge, or theoretical into practical knowledge. Successful farmers will be invited to deliver lectures to the students, who will thus be brought into contact with those speaking wholly from the practical side of farm problems. A statement of the means in the possession of the College for illustrating the teachings of the lecture room will be found on the following pages.

HORTICULTURE.—Instruction will be given both by lectures and by field exercises. A daily recitation or a daily exercise for the entire year is required to complete the studies of this subject. Instruction will be given—on the preparation of ground for garden vegetables and in their improvement, planting, cultivation and general care; on the propagation, cultivation and general care of small fruits; harvesting, preservation and general care of large fruits and management of fruit trees. This instruction will include seeding, grafting by the various methods, budding, pruning, as well as picking, packing and marketing fruit.

Forestry will receive considerable attention. Students will have opportunity to work upon the forestry grounds of the College, and to note methods of planting and care of the several kinds of trees, and to observe their habits and rapidity of growth.

The grounds of the Horticultural Department contain a large number of the most promising kinds of economic trees. The extremely high price paid for hard wood lumber in Utah, makes it probable that rare kinds of trees may be grown here at a profit.

The management of greenhouse plants, including flowers, will be taught to the young women of the College.

Horticulture is approximately a polite art, and a knowledge of it is becoming more and more prized by all classes of citizens. This department, therefore, will be made a strong one. Effort

will be made to blend theory and practice as perfectly as possible.

Practice in the department above referred to keeps students in frequent exercise in practical matters and aids in retaining the love of active life which it is claimed is often lost during education at academic institutions.

ENTOMOLOGY.—This subject will be taught with special reference to insects injurious to vegetation. The world is now in a measure conquering the insect foes of plants, and has accumulated valuable information that will be imparted to the students. Packard's *Entomology for Beginners* is used as a guide.

SHOP WORK.—Three exercises of two hours each per week for the fall and winter terms and five days for the spring term, will be devoted to work at the forge with iron and at the bench with wood. Skill in handling ordinary carpenters' tools, and in common blacksmith work will be acquired. Habits of accuracy and of perfection in the details of work will be taught that will remain as a force or mental habit to affect after life. The design is to acquaint young farmers with the manipulation of tools and with some of the principles involved, for their own use on the farm. This work has been found to be one of the most popular and useful parts of courses in agriculture. A bench with a full set of carpenters' tools is assigned to each student. The forge shop with power blasts occupies a separate room, where upsetting, tempering, welding and forming tools are taught.

BOTANY.—Elementary Botany will commence the first term of the Sophomore year. During this term the student will become familiar with the roots, stems, leaves and flowers of plants. Each student will be required to do field work. Gray's *Elementary Botany*.

The third term of the Sophomore year will be given to the study of physiological botany and of plant analysis. Each student will be required to collect, name and properly mount specimen plants.

BIOLOGY.—During the Junior and Senior years, lecture courses and laboratory work will be given in this subject. The

differences between living and dead matter will be reviewed, and such subjects as protoplasm, cells, tissues and organs will be considered. Types of the lower vegetable kingdom (not included in the botanical course), and selections from the invertebrate and vertebrate divisions of animal life will be taken for illustration and for examination in the laboratory. Research work in the germ causatives of disease, both human and animal, will be made in connection with the Experiment Station, and students will be familiarized with the processes used in bacteriology, such as the preparation of culture media, culture and separation of germs, staining and mounting specimens of various bacteria, making sections of tissues, etc., and general microscopical mounting. A full set of apparatus for the work of investigation, such as is used in the laboratories of Prof. Koch, in Berlin, and of Prof. Pasteur, in Paris, has been provided. Microscopes, microtomes and the general accessories for laboratory work will also be used by the students. It is intended that the courses shall be so directed as to be of practical value after the college curriculum has been completed.

The first term of the Junior year, the study of cryptogams and economic botany will be taken up. Two afternoons each week will be given to the microscopic study of the structure and diseases of plants. Especial attention will be given to such fungi as are injurious to cultivated plants.

PHYSICS.—The course in General Physics covers two terms. During the first term, especial attention is given to mechanics and heat, every principle being illustrated and explained by the use of the extensive apparatus belonging to the department. Especial prominence is given to those principles on which depend the applications to every day life.

During the second term, lectures are given in electricity, sound and light. Enough knowledge of these subjects is gained so that the student will understand in a general way all the important applications of these subjects.

In the engineering courses, much more time is given to the study of advanced general and experimental mechanics, and the study of the theory of heat.

In the course in Mechanical Engineering, one hour per day for two terms is devoted to the thorough study of the theoretical and practical side of electricity, and the study of modern electrical apparatus.

All the instruction in physics is well supplemented by practice in the laboratory, and the work is so designed as to require quantitative results, even in elementary work. In the advanced work, it is the endeavor to have students derive their own constants and plan their own work.

The physical lecture-room has seats for fifty students, and the laboratory can be arranged to accommodate about the same number.

GEOLOGY, LITHOLOGY AND MINERALOGY.—Fifty lectures in general and economic geology are given in the spring term. More prominence is given to structural geology, including the formation of rocks and soils, than to historical geology. One afternoon each week is devoted to field excursions and to practice in determining the more common rocks.

In the winter term six hours per week are devoted to laboratory practice in determinative mineralogy, giving especial attention to the rock-forming minerals. Two recitations per week, based on Dana's Mineralogy, are designed to supply the necessary theoretical information.

The instruction in mineralogy and geology is rendered more attractive by the frequent use of the College cabinet of rocks and minerals, containing some 5000 specimens.

CHEMISTRY.—1. *Inorganic Chemistry.*—Instruction in this subject begins with the Sophomore year. Five lectures and recitations per week during the first term are devoted to a consideration of the elements of the science, embracing the history of chemistry, chemical affinity and the laws of chemical combination; elementary substances, their geographical distribution, preparations, properties, combinations, technical uses and the applications of chemistry in the arts and manufactures. Textbook—Remsen's *Briefer Course and Lectures.* This work is supplemented by a short course in the laboratory, intended to illustrate principles discussed in the classroom and to train the

students in methods of chemical manipulation. This laboratory course occupies six hours per week for eight weeks.

2. *Organic Chemistry.*—In the second term a course of fifty lectures is given in organic chemistry in which the principles of the science are discussed, and the student is made familiar with the source, preparation and uses of the more important compounds.

3. *Qualitative Analysis.*—One hundred and fifty hours are devoted to laboratory work in this subject. Under the direction and supervision of the Professor of Chemistry the student applies with his own hands the reagents required to determine the composition and properties of bodies; he thus secures a practical knowledge of the methods employed in such investigations. This work is deemed extremely valuable from an educational as well as a practical point of view. Every student is required to make an analysis of at least fifty unknown substances.

4. *Agricultural Chemistry.*—This subject is treated in a course of lectures, given in the spring term of the Sophomore year, in which the following subjects are discussed: Composition of plants, sources of plant food, manures, general and special chemistry of animal nutrition and kindred topics.

Anatomy and Physiology.—This is the Junior study occupying the first two terms. While this is primarily a course in human physiology, the anatomy and physiology of the domestic animals are considered from a comparative point of view. The course is illustrated by models and anatomical preparations, diagrams and dissections representing the comparative structure of the principal organs in the different branches of the animal kingdom.

Each student is expected to become familiar with the appearance, structure and relations of the organs of the animal system in the normal state. Opportunities are given for the study of the minute structure of the various tissues by means of the microscope.

Veterinary Science.—Lectures and recitations occur daily during the Senior year, in which the following topics will

be considered: Anatomy, physiology and hygiene of farm animals; zymotic, parasitic, dietetic and constitutional diseases of domestic animals; prevention of animal plagues by legislative and individual action; general diseases of different systems of organs in domestic animals, together with clinical demonstrations as opportunity offers.

CHEMICAL LABORATORIES.—The rooms of the chemical department are located in the north wing of the College building and include a large, well-lighted lecture-room, a laboratory fitted with hoods, gas, water and individual tables to accommodate sixty students, together with storeroom, balance-room and office.

ENGLISH LITERATURE AND RHETORIC.—The work in English embraces grammar, rhetoric and literature, and runs parallel through all the four-year courses as far as the second term of the Junior year. In grammar, after a review of etymology, with special attention to the formation of the verb, the structure of the English sentence is carefully examined. Nearly a term is spent in analyzing sentences from classic authors. This is believed to secure better results than spending time in the correction of false syntax. This work is followed by a term of elementary rhetoric. In this the principles of invention, the elements of style and the different forms of composition are studied. The preparation of manuscript for the printer is taught in connection with the written work. Essays are required once a fortnight, mostly reproductions, illustrating the laws of description and narrative. In the more advanced rhetoric the rules of argument are studied, and to illustrate and enforce these some masterpieces are critically examined. Frequent oral and written exercises make the work entirely practical. For the elementary work, Longfellow's *Tales of a Wayside Inn*, furnishes matter for reproduction and study in versification. For the more advanced work, Burke's and Webster's speeches are studied, and debates, written and oral, are had on questions of general interest. Each student presents three written exercises.

The first work in literature follows the elementary rhetoric. It is a critical study of short, complete classics—essays, poems

of various kinds, speeches, sketches and stories. Enough of each author and his times is told in familiar lectures to awaken interest, and show the occasion of the production. In this work constant reference is made to rhetorical principles, and the style of different authors is carefully compared, aud both style and form are studied with reference to the thought and sentiment. The second term's work is given to a historical survey of literature, from Chaucer to the present time. Sufficient attention is given to the leading authors of the different periods to make evident the characteristics of their thought and style. The English drama receives special attention, and one day each week for two terms is given to reading Shakespeare. The last term of the Junior year is given to the study of masterpieces. All the important forms of literature are laid under contribution—the drama, the epic, the lyric, the novel, the essay, biographical and critical, the oration and history. One week is given to each piece selected. The work of the classroom is largely a report of students, either oral or written, on what they have done by themselves.

For the first term's work—third term Freshman year—the following texts are read:

Shakespeare's *Merchant of Venice.*

Bacon's *Essays*—Selections.

Milton's *L'Allegro, Il Penseroso, Hymn, and Lycidas.*

Addison's *Sir Roger De Coverly Papers.*

Pope's *Rape of the Lock.*

Gray's *Elegy in a Country Churchyard.*

Goldsmith's *Deserted Village and Traveller.*

Burns's *Cottar's Saturday Night*, and some other poems.

Wordsworth's *Ode on Immortality*, and narratives from *The Excursion.*

Irving's *Sketchbook.*

Tennyson's *Ulysses, Locksley Hall, Enoch Arden.*

Dickens's *Christmas Carols*, and selections from Emerson, Lowell, Holmes, Longfellow and Hawthorne.

Most of these can be found in such compilations as Swinton's and Pancoast's, and in the series of British classics.

For the work of the first term—Junior—*Shaw's English Literature* is used, and such illustrative texts as are available, and do not duplicate previous or subsequent work.

For the third term Junior—an elementary masterpiece course. The following list, or its equivalent—texts changing somewhat from year to year—is offered:

Shakespeare—one great tragedy—*Hamlet*, *Macbeth*, *Lear*, *Othello*.

{ Webster—*Reply to Hayne.*
{ Burke—*Conciliation With American Colonies.*

Macaulay—*Essays on Milton and Addison.*

Milton—*Paradise Lost, I and II; Samson Agonistes.*

Carlyle—{ *Essay on Burns.*
{ *Hero as Prophet.*

Tennyson—*Princess*, or select poems.

Motley—*Peter the Great.*

George Eliot—*Silas Marner.*

Wordsworth—*Select Poems.* Ed. by M. Arnold.

MODERN LANGUAGES.—The German and French languages are optional during the Senior year. The Germans are now the leaders in agricultural science. The advanced student of agriculture must be able to read the literature on his subject coming from the German press. French is necessary to the advanced student of domestic arts. Both are deemed essential to a liberal education. This is the reason for the appearance of these languages in these courses. Both are taught after the same method. Oral and written exercises are accompanied by conversation, making more familiar the vocabulary and accustoming the ear as well as the eye to the words. In the time allotted only the framework of the languages can be mastered; but enough is given to enable the student to prosecute independent study and consult German or French books.

After completing the Joynes-Meissner Grammar and Reading book, German students will be given such scientific reading material as will best equip them for using works of reference, and the publications of scientific institutions and societies. French students first complete Keetel's Grammar and Reader,

and then read modern classics—Hugo, Dumas, Balzac, Souvestre, Daudet.

Text books:

Pancoast's *Representative English Literature.*
Shaw's *Manual of English Literature.*
D. G. Hill's *Rhetoric and Composition.*
A. S. Hill's *Principles of Rhetoric.*
Jevon's *Logic.*
Joynes-Meissner's *German Grammar.*
Joynes-Meissner's *German Reader.*
Keetel's *French Grammar.*
Keetel's *French Reader.*
Gayley's *Classic Myths.*
Hudson's and Rolfe's *School Shakespeare.*

CIVIL GOVERNMENT.—This covers the field of United States history more philosophically in the Junior year and traces the progress of constitutional liberty through the long line of English history and in our National and State Constitutions, and treats of the organization of Territorial and local governments. Interest is imparted to this study by free discussion and occasional debates on questions of the day.

POLITICAL ECONOMY.—This is studied by text books and by lectures. The text book gives the established scientific principles of economics. The lectures examine the subject by the historical and statistical methods and to seek to find in all history and even among prehistoric nations, examples in accordance with which nations, states, cities and private business may be managed to advantage; and then accumulate data from statistics of wages, taxation, population, emigration, profits in all occupations, etc., for the purpose of rigidly testing the comparative methods of various systems and establishing a system which may approach perfection.

ELOCUTION.—It is the object of this department to make good readers, better conversers and good speakers; to make the voice and the body fit instruments to serve the soul and mind. The course then will include the development of the voice and

the training of the body to respond to the changes of the soul's emotion.

First Term—Physical culture, voice culture, articulation and light reading.

Second Term—Inflection, pronunciation, gesture, and expressive reading.

Third Term—Gesture continued, practical work in recitations and impersonation.

MEANS OF ILLUSTRATION.

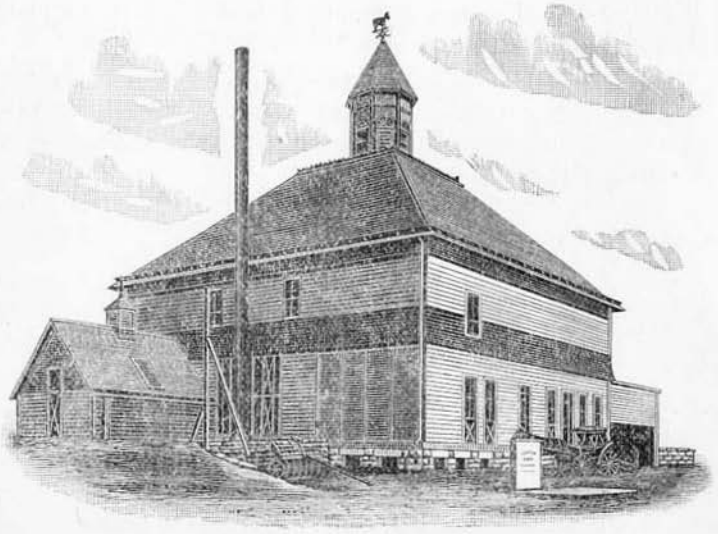
LABORATORIES.—The apparatus and means of illustration in the Chemical, Physical, Botanical, Veterinary, Agricultural and Horticultural Laboratories, Museums and Libraries, together with farm and horticultural appliances and pure-bred stock are valued at $35,000. Already the College has secured from Prof. M. E. Jones, 4500 species of the flora of Utah and the inter-mountain region for the Botanical Laboratory. In addition to the Chemical Laboratory of the College, the Experiment Station has a Chemical Laboratory that is equipped at a cost of $2500.

LIBRARY.—The Library contains a large and choice selection of agricultural books, and the reading-room is supplied with agricultural papers.

MUSEUM.—The Museum contains material for classroom illustrations for this department. Over four hundred slides for use in the magic lantern illustrate processes that cannot be shown in practice, while collections of wools, grain, some forty milling products of wheat, etc., etc., afford means of teaching by the eye rather than by the ear.

The Experiment Station affords a most valuable means of illustrating farm processes, and has the added advantage of stimulating the thinking and observing powers as no other means of object teaching can do; for the station is engaged in testing methods and in searching for unknown laws.

THE FARM.—On the farm proper there are over three hundred and thirty plats laid out for investigations. These cover time for irrigation, amount of water to use, sub-irrigation, night versus day irrigation, method of fitting ground for irrigation, and other irrigation trials. They include trials of variety of wheat, corn, oats, barley, and of forage crops; of mulching; drilling against broadcasting methods of tillage, time of tillage, depth of tillage, several methods of plowing, no tillage, depth of planting, distance of planting, time of sowing, amount to sow, selected seed, time of harvesting, chemical fertilizers, methods of manuring, varieties of grass for hay, varieties of grass for pasture—to be tested by actual grazing trials, mixed grasses for pasture, several crop rotations, soil, and other studies.



THE MODEL BARN.

THE DAIRY.—A series of rooms designed for butter and cheese making, cover a space of 36x80 feet. These rooms are equipped with modern conveniences for the production of the best grades of butter and cheese. In these rooms students will apply in practice the theories learned in the classroom.

Some twenty-six feeding trials with cattle, sheep, horses and hogs are in progress. Pure bred cattle of the Shorthorn, Jersey and Angus breeds, and Shropshire sheep and Berkshire swine are raised. These are all highly bred and model animals.

HORTICULTURAL DEPARTMENT.—In this department there is a series of the most important economic trees under test. Many have been introduced by the Station. One hundred varieties of apples, many varieties of pears, peaches, plums, grapes, strawberries, raspberries, blackberries, potatoes and vegetables of various kinds are on trial, while several lines of horticultural investigations are in progress.

CHEMICAL DEPARTMENT.—The chemist of the Station will carry forward a large amount of chemical work in plant and animal life, and on soils, etc.

It is believed that the Agricultural College and Agricultural Experiment Station of Utah are equipped for first-class work, and will compare favorably with the very best institutions of the kind in this country.

The Bulletins of the Experiment Station will be sent free to any one asking for them.

LITERARY OPPORTUNITIES.

LECTURES.—Members of the faculty and speakers from abroad will deliver lectures in the chapel at regular periods.

LITERARY SOCIETIES.—The students of the College have organized two literary societies, one for young women and one for young men, thereby affording an opportunity of acquiring before an audience self-possession, ease and skill in debate. The other means of advancing the literary tastes and acquirements of its members that are common to such societies—essays, orations, papers, etc.—are included in the exercises of these societies.

GYMNASIUM.

The addition to the College building contains a gymnasium seventy feet square. This room is equipped with modern appliances. Exercises for young women are systematically conducted under the supervision of the department of physical culture, while young men make free use of it.

MILITARY SCIENCE AND TACTICS.

This course includes both theoretical and practical instruction and is in charge of an officer of the United States Army, detailed by the U. S. Government. All male students of the Freshman and Sophomore classes and of the Preparatory Department are required to take the course unless excused by the faculty on account of physical disability or for some other valid reason. Optional for Juniors and Seniors.

Springfield cadet rifles and equipments are furnished by the U. S. Government for infantry drill and two rifled cannon for artillery instruction. A uniform of dark blue, with forage cap, is worn by the cadets, the cost being about fifteen dollars. On all occasions of military ceremony, during drill and when students are receiving any other military instruction, they are required to appear in the uniform as prescribed by the College.

The practical instruction in infantry includes, as far as possible, all the movements described in the drill regulations of the United States Army, from the manual of arms and bayonet exercise in the school of the soldier to the drill by battalion; target practice with the rifle, for which the government makes an annual allowance of ammunition, and instruction in signaling with flag and torch and in military telegraphy.

Artillery instruction embraces drill in the manual of the piece, and target practice.

Near the close of the school year, whenever practicable, the cadet battalion will go into camp for several days' practical exercises in marching, sentinel duty, constructing hasty intrenchments and other field work.

Theoretical instruction by recitations and lectures is given in the drill regulations, the preparation of the reports and returns of a company, the organization and administration of the army, and the elementary principles governing the art of war.

THREE YEARS' COURSE IN AGRICULTURE.

FRESHMAN YEAR.

Hour.		
9:00 to 9:55. Penmanship.	Grammar.	Grammar.
9:55 to 10:50. Grammar.	United States History.	United States History.
10:50 to 11:20. Military Drill	Military Drill.	Military Drill.
11:20 to 12:15. Geography.	Arithmetic.	Arithmetic.
12:15 to 1:10. Reading, 8 weeks. Spelling, 8 "	History of Agriculture. Farm Buildings. Fences.	History, Description and Management of Cattle, Horses, Sheep and Hogs. 3
2:10 to 4:00. Shop Work in Wood. 3	Shop Work. 3	Shop Work in Iron.

JUNIOR YEAR.

9:00 to 9:55. Botany. 3	Organic Chemistry.	Agricultural Chemistry.
9:55 to 10:50. Chemistry.	Physics.	Soils, Farm Machinery.
10:50 to 11:20 Military Drill	Military Drill.	Military Drill.
1:20 to 12:15. Elocution. 2 Free-hand Drawing. 3	Book-keeping. 3 Elocution. 2	Botany. 2 Horticulture. 1 Surveying. 2
12:15 to 1:10. Manners and Morals. 2	Horticulture. 3	Surveying.
2:10 to 4:00. Chemical Laboratory.	Chemical and Physical Laboratories.	Chemical and Botanical Laboratories.

SENIOR YEAR.

9:00 to 9:55. Anatomy and Physiology.	History, Description and Management of Horses, Cattle, Sheep and Hogs, and Stock-breeding.	Geology.
9:55 to 10:50. Botany.		Veterinary Science.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Veterinary Science.	Veterinary Science.	Drainage. Animal Nutrition. Farm Management.
12:15 to 1:10.	Physiology.	Civil Government.
2:10 to 4:00. Dairying. Farm Crops. Irrigation.	Entomology.	Farm Practice.

This course is intended for those who cannot or will not incur the expense of the full course of study. It is a business course in agriculture. It is framed on the same plan that courses in law and medicine are, as a purely technical course, and is intended, as they are, to furnish economic technical information. English grammar is made an exception in the first year of the course. This year furnishes a small degree of preparation without which no student would be prepared to study the abstruse sciences involved in the field of agriculture, as it requires some preliminary training. A certificate stating the fact of the honorable completion of the three years' course will be given.

WINTER LECTURES.

A preliminary test of the public demand for a course of practical lectures on farming, one term duration, was inaugurated for the winter term of 1893. Several farmers entered the course and remained to its close. The class doubled for the year 1894.

Application should be made two or more weeks in advance of the opening lectures. A class of ten or more is required.

SPECIAL LECTURES IN AGRICULTURE.

Agriculture	50 lectures.
Horticulture	30 "
Entomology	10 "
Botany	10 "
Chemistry	20 "
Veterinary Science	20 "
Political Economy	10 "
Special Reading Course	50 exercises.

The lectures in agriculture will be confined to the most important practical questions in farming, such as tillage, drainage, dairying, breeding, stock feeding, manuring and to answering such questions as may occur to those taking the lectures. Horticulture, chemistry and other studies will be treated wholly from the practical side. Those principles that bear directly upon practical operations on the farm will be explained and their application pointed out. Political economy is included for the reason that farmers are now taking an active part in national affairs.

DOMESTIC ARTS.

The course for young women will in general be the same as for young men in the four years' course in agriculture, except in the hours devoted to shop, farm, or horticultural work. In the place of these there will be special studies adapted to woman's work.

The value and necessity of special training in household economy is too well known to require explanation.

In view of this, special attention will be given to those branches of study in which young women require proficiency and to those studies which tend to adorn life in the sphere in which they move.

FRESHMAN YEAR.

Hour			
9:30 to 9:55.	Grammar.	Rhetoric.	Literature.
9:55 to 10:50.	Arithmetic.	Algebra.	Algebra.
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15.	Elocution. 2 Free-hand Drawing. 3	Elocution. 2 Free-hand Drawing. 3	Elocution. 2 Free-hand Drawing. 3
12:15 to 1:10.	Social Ethics and Morals. 2 Sewing. 3	Sewing.	Sewing.
2:10 to 4:00	Laundry Work. 3		

SOPHOMORE YEAR.

9:00 to 9:55. Botany. 3	Organic Chemistry.	Horticulture. 3
9:55 to 10:50. Chemistry.	Cooking Lecture.	Science of Nutrition.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Geometry.	Bookkeeping. 3 Rhetorical Argum't. 2	Cutting, Sewing and Designing.
12:15 to 1:10. Essays and Rhetoric. 2 Horticulture. 2		Botany. 2
2:10 to 4:00. Chemical Laboratory. 3 Horticultural Practice. 2	Chemical Laboratory and Cooking Practice.	Chemical Laboratory 2 Botanical Laboratory 1 Cooking Laboratory 2

JUNIOR YEAR.

9:00 to 9:55. Anatomy and Physiology.	Entomology.	Geology.
9:55 to 10:50. Botany. 3	Physics.	Physics.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Literature. 3	Logic.	Civil Government.
12:15 to 1:10. Zoology. 2 General History. 3	Physiology.	Hygiene and Laboratory Practice.
2:10 to 4:00. Cooking and Canning Fruits. Botanical Laboratory.	Physical Laboratory. 2 Mineralogy and Lithology. 3	Physical Laboratory.

SENIOR YEAR.

9:00 to 9:55. Household Management.	Advanced Cooking.	Thesis Work.
9:55 to 10:50. Psychology, 10 weeks. Moral Science, 6 weeks.	Political Economy,	Fancy Work.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 1:10. Either Painting, Music, Fancy Work, Drawing, Chemistry, German, French, Spanish or History of Civilization.	Either Painting, Music, Fancy Work, Drawing, Chemistry, German, French, Spanish or Astronomy.	Literature.
2:10 to 4:00. Dairy Practice.		Either Painting, Music, Drawing, Chemistry, German, French, Spanish or Sociology.

This course brings the degree of B. S. (Bachelor of Science.)

POST-GRADUATE COURSE.

The studies named in the post-graduate Course in Agriculture may be taken by the graduates of the Course in Domestic Arts, and in addition, science of nutrition, hygiene and home-nursing, music, drawing, sewing and elocution, each for the full year.

REMARKS ON THE SPECIAL STUDIES OF THE ABOVE COURSE.

PHYSICAL CULTURE.—Young women excused from military drill will be required to devote the time to the gymnasium.

COOKING.—The art as well as the science is taught. Exercises in the application of the knowledge acquired in the lecture-room are a regular feature of the work. Lectures in chemistry are succeeded by cooking. The cooking exercises are accompanied by practice in table-setting, table-waiting and presiding at the table as hostess. These exercises develop the knowledge and grace that characterize a well-bred hostess. For the development of this feature of the course the College is provided with a kitchen, dining-room, pantry, a cooking-range and stove, kitchen and table-ware, and individual work-tables with full equipment. Fee for laboratory practice, $2.00.

SCIENCE OF NUTRITION.—A term's work is given to the study of foods, with reference to their special effects on the human system in both health and disease.

The study of dietaries for the healthy person is based largely on the results of the experiments of Prof. Atwater and his assistants.

Five weeks of the term are given to the study of the proper foods to be given in the different diseases. This work includes practice in the proper methods of cooking the foods.

HOUSEHOLD MANAGEMENT.—This embraces the study of economy of time and strength in performing household duties; the arrangement of entertainments; the relations of mistress to maid; the relation of the housekeeper to her environments. The sanitary location of the house, convenient arrangement of the rooms and artistic and economical furnishing of the same. Talks on the history of furniture, on rugs and carpets, and artistic hangings and wall paper. In all of which the laws of harmony are taught.

DRESSMAKING, CUTTING AND SEWING.—These are taught in the Freshman year, with instruction in the after years in fancy work and in the designing of artistic gowns. The work begins with hand-sewing, hemming, overcasting, blind-stitching, making button-holes, patching and darning. At least two muslin garments are made. A gown is cut out, basted, fitted, draped, trimmed and entirely finished by the student. Regular practice is given in the care of the machine, and its mechanism is illustrated. The students furnish materials and make their own garments. It will be the aim also to teach hygienic modes of dress.

DAIRYING.—Butter-making and cheese-making are arts requiring rare skill. Milk is one of the most complex and unstable compounds known in the whole range of farm life. No other field of farm economy presents a product so irregular and with results so unfortunate. The problems involved are very complex and interesting. Very decided attention will be given to this most important field of work, over which woman has general charge. Fortunately, the more exacting work of the dairy now falls to other hands, but the necessity remains of mastery by woman of the philosophy of dairying.

HYGIENE.—A special course of lectures on hygiene will be given to the young women of this course.

MUSIC AND PAINTING.—Music and painting are not made compulsory studies, but those who have a taste for these accom-

plishments and can acquire them are encouraged to devote time to them. No student will be allowed to take music who does not devote at least one hour daily to practice.

FRENCH.—This is made an optional study, in deference to the wishes of many of our citizens. Young women are, however, encouraged to acquire French. Its terms are used in the special studies of the young women of the College, and it is also more used in the domestic affairs of women than those of any other foreign language.

HORTICULTURE.—Horticulture has a fascination for all classes. Man has an inherent love of nature. Her living forms everywhere claim the admiration and almost the affection of every cultivated or refined person. Garden and household plants are varied, are very plastic in our hands, and are either beautiful or useful. In either case they minister to our pleasure. Household plants and the farm and village garden are always objects of interest and of importance to women, and often the source of physical health, inducing, as they do, frequency in the open air. This does not necessitate the added drudgery of physical work in the garden any further than pleasure may dictate.

The growing taste for this refined field of agriculture warrants the devotion of some time on the part of young women to the principles and practices of at least a restricted field in horticulture. A special class is taught in floriculture, especially as adapted to window gardening; in the preparation of soil and in the growth of vegetables and small fruits.

SHORT COURSE IN DOMESTIC ARTS.

The same reasons that led to the organization of a short course in agriculture gave rise to the formation of a short course for those young women who desire to avail themselves of the distinctly technical work of the four years' course in Domestic Arts, but who are unable to pursue all its studies. Those entering this course, must pass, with a high grade, the examinations required for the full course, or successfully pass through the preparatory year's work of this College. Fee of two dollars for laboratory expenses.

FIRST YEAR.

Passing Grade on Preparatory Year.

Hour.			
9:00 to 9:55.	Grammar.	Rhetoric.	Literature.
9:55 to 10:50.	Arithmetic.	Sewing.	Sewing.
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15.	Elocution. 2 Free-hand Drawing. 3	Elocution. 2 Free-hand Drawing. 3	Elocution. 2 Free-hand Drawing. 3
12:15 to 1:10.	Manners and Morals. 2 Sewing. 3	Fancy Work.	Sewing.
2:10 to 4:00.	Laundry.		Cutting, Fitting and Designing.

SECOND YEAR.

9:00 to 9:55.	Anatomy and Physiology.	Organic Chemistry.	Household Plants. Small Fruits and Garden Culture.
9:55 to 10:50.	Chemistry.	Cooking Lectures.	Science of Nutrition.
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15.	Optionals, including Music, Painting, Drawing, Fancy Work.	Optionals, including Painting, Music, Drawing, etc.	Optionals, including Music, Drawing, Painting, etc.
12:15 to 1:10.	Cooking and Canning Fruits. 3	Physiology.	Hygiene and Laboratory Practice.
2:10 to 4:00.	Dairying and Dairy Practice.	Chemical Laboratory.	

SPECIAL COURSE IN COOKING.

A special course in cooking will be given in the winter term to women desiring to perfect themselves in this work. No examination will be required, as the course is designed for those who, from lack of opportunity, have been unable to become proficient in this important art. This work will include lectures in chemistry, household gardening, hygiene and cooking.

SCIENCE OF NUTRITION.—One term is devoted to the study of food materials in reference to their effect on man during health and during sickness. This includes how best to regulate the diet so that the proper nutritive ratio may be given more economically.

COURSE IN MECHANICAL ENGINEERING.

FRESHMAN YEAR.

HOUR.	First Term.	Second Term.	Third Term.
9:00 to 9:55.	Grammar.	Rhetoric.	Literature.
9:55 to 10:50.	Arithmetic. 10 Algebra. 6	Algebra.	Algebra.
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15.	Elocution 2 Free-hand Drawing. 3	Elocution. 2 Mechanical Drawing. 3	Elocution. 2 Mechanical Drawing. 3
12:15 to 1:10.	Manners and Morals. 2 Lectures on Use of Tools. 2	Mechanical Drawing.	Mechanical Drawing.
2:10 to 4:00.	Bench Work in Wood.	Forge Work.	Wood Turning. 3

SOPHOMORE YEAR.

9:00 to 9:55.	Higher Algebra.	Organic Chemistry.	Descriptive Geometry.
9:55 to 10:50.	Chemistry.	Physics.	Physics.
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15.	Geometry.	Arg. Rhetoric. 2 Mechanical Drawing. 3	Surveying. 4 Mechanical Drawing. 1
12:15 to 1:10.	Rhetoric. 2 Mechanical Drawing. 3	Solid Geom'try, 4 w'eks, Trigonometry, 7 "	Surveying. 3 Mechanical Drawing. 2
2:10 to 4:00.	Chemical Laboratory. 3	Chemical Lab'ratory 3 Physical " 2	Chemical and Physical Laboratories.

JUNIOR YEAR.

9:00 to 9:55. Heat.	Hydraulics.	Applied Mechanics.
9:55 to 10:50. Analytical Geometry.	Calculus.	Calculus.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Literature. 3	Mechanical Drawing. 4 Shakespeare. 1	Metallurgy. 3 Mechanical Drawing. 2
12:15 to 1:10. Theory of Pattern-making. 2 Mechanical Drawing. 3	Elementary Mechanism	Civil Government.
2:10 to 4:00. Pattern-making. 4 Foundry Practice. 1	Machine and Vise W'rk in Iron.	Machine Work in Iron.

SENIOR YEAR.

9:00 to 9:55. Applied Mechanics.	Measurement & Transmission of Power.	Geology.
9:55 to 10:50. Steam Engine.	Political Economy.	Thesis Work.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Municipal Engineering.	Steam Boilers.	Applied Electricity.
12:15 to 1:10. Electricity and Magnetism.	Steam Engine Designs.	Machine Designs.
2:10 to 4:00.	Mechanical Drawing.	Experimental Work.

The following is a detailed explanation of the technical work in the course of Mechanical Engineering:

LECTURES ON THE USE OF TOOLS.—Including growth, sawing and seasoning of timber, care of tools, principles of construction, and elementary mechanical drawing.

MECHANICAL DRAWING.—In the Freshman year is taught the use of the drawing instruments in the solution of problems involving geometric principles, and the principles of projection. Later, the student is required to make accurate sketches from actual machine from which he is to prepare working drawings.

In the Sophomore year attention is given to shading and tinting and to the solution of problems in Descriptive Geometry.

During the Junior and Senior years, much time will be given to the construction of drawings for machines and parts of machines designed by the student to work under given conditions.

SHOP WORK.—The purpose of this exercise is to give the student a certain amount of skill in the use of common carpenter, blacksmith and machine tools. In the Freshman year, the exercises in the woodroom include laying out work, sawing, planing, mortising, tenoning, splicing, etc., and in wood turning and circular and scroll sawing. In forge work, exercises in drawing, upsetting, bending, welding, annealing, case hardening and the construction and tempering of punches, cold chisels, springs and machine tools.

In the Junior year, exercises in the construction of simple and built-up patterns and core boxes and in molding. In the machine-room, exercises in clipping, filing, surface scraping, planing, drilling, turning, polishing, gear-cutting, and the construction of special tools, such as taps, reamers, etc. In all cases the exercises will be so arranged as to lead from the simpler to the more difficult operations, and to illustrate as many principles as possible in the time at command.

HEAT.—The effect of heat, its measurement, temperature, expansion, liquefaction, latent heat, specific heat, convection, radiation, relation of heat to mechanical energy, and principles of thermo-dynamics.

ELEMENTARY MECHANISM.—Under this head is studied the principles of linkwork, toothed gearing, cams, belting, automatic feeds, parallel motions and quick-return motions.

METALLURGY.—Fuels and refractory materials, with reference to their application in metallurgical processes, the principal ores of iron, and modern practice in the manufacture of iron and steel.

STEAM ENGINE.—A study of the various types of steam engines, the economic advantage in the compound and condensing engine, valves and valve-gear, Zenner's diagram, principles

and operation of the indicator, the effect of reciprocating parts, inertia of fly wheels, etc.

STEAM ENGINE DESIGN.—Calculation of parts and making working drawings for an engine complete. This involves the design of the valve and the proportioning of the reciprocating to produce the ideal indicator card.

STEAM BOILERS.—Modern forms of steam boilers, their advantages and disadvantages, the methods employed in their construction, number and size of flues or tubes, riveting, staying, area of grate and heating surface, steam and water gauges, safety valves and injectors, boiler setting, methods of preventing foaming and incrustation.

ELECTRICITY AND MAGNETISM.—The aim is to familiarize the student with the measurement of current, electric transformers, the electro-magnet in its application to electric machinery, and the size and efficiency of conductors. This is supplemented by the study of dynamo-electric machinery in its application to transmission of power and in electric lighting.

MEASUREMENT AND TRANSMISSION OF POWER.—Measurement of power by means of dynamometers and Prouy brakes, the efficiency of steam, gas, compressed air and electric motors. Power absorbed by rope and leather belting and shafting. Cost of equipment, erection and maintenance.

THESIS WORK.—Early in his Senior year the student will be required to select a subject for individual investigation, and to prepare a thesis based upon the results. In this work he must depend very largely upon his own resources.

For information on the subjects, Descriptive Geometry, Analytical and Applied Mechanics, and Hydraulics and Municipal Engineering, the student should refer to the course in Civil Engineering. For the subjects, English, Civil Government, Political Economy, etc., to the course in Agriculture.

The various departments of the mechanical laboratory are equipped as follows:

For bench-work in wood, wood turning and pattern making—thirty benches and ten lathes with necessary tools, pattern

makers, rip and cross-cutting circular saw, band saw, and a variety of special tools.

For forge work—twenty-four power-blast forges, with anvils, vises and all necessary tools.

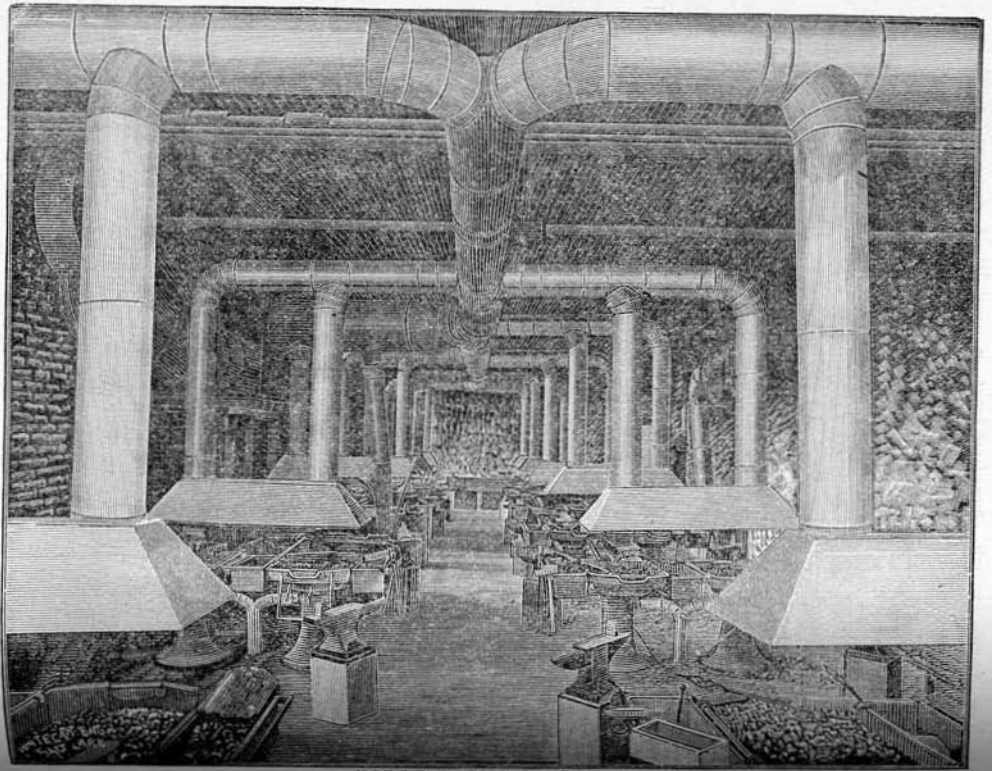
For moulding—a commodious room with flasks and fittings for practical work.

For machine work—24x24 inches by 6 feet iron planer, a universal milling machine, two 14-inch engine lathes with various attachments, speed lathes, a 20-inch drill press, emery grinder, grindstones, and special tools, such as standard gauges, etc.

The machinery will be driven by an 8x10-inch Dick & Church automatic cut-off, high-speed engine, which will also be used for experimental work in engineering. All of the equipment is of high quality, with the latest improvements.

No charge will be made for use of appliances, but a deposit will be required, from which the cost of the material used will be deducted. This cost will be $4.00 yearly for two years of the course.

The degree of B. M. E. (Bachelor of Mechanical Engineering) will be given to those who complete the course.



FORGE ROOM.—See Page 27.

COURSE IN CIVIL ENGINEERING.

FRESHMAN YEAR.

HOUR.	FIRST TERM.	SECOND TERM.	THIRD TERM.
9:00 to 9:55.	Grammar.	Rhetoric,	Literature.
9:55 to 10:50.	Arithmetic, 10 weeks. Algebra, 6 weeks.	Algebra.	Algebra.
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15.	Elocution. 2 Free-hand Drawing. 3	Elocution. 2 Mechanical Drawing. 3	Elocution 2 Mechanical Drawing. 3
12:15 to 1:10.	Manners and Morals. 2 Lectures on Use of Tools 1	Mechanical Drawing.	Mechanical Drawing.
2:10 to 4:00.	Shop Work.	Shop Work.	Shop Work—Iron.

SOPHOMORE YEAR.

9:00 to 9:55.	Higher Algebra.	Organic Chemistry.	Descriptive Geometry.
9:55 to 10:50.	Chemistry.	Physics.	Physics.
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15.	Geometry.	Arg. Rhetoric. 2 Mechanical Drawing. 3	Surveying. 4 Mechanical Drawing. 1
12:15 to 1:10.	Arg. Rhetoric.	Solid Geometry, 5 wks. Trigonometry, 6 wks.	Surveying. 3 Mechanical Drawing. 2
2:10 to 4:00.	Chemical Laboratory.	Chemical Laboratory 3 Physical Laboratory 2	Chemical Laboratory. Physical Laboratory.

JUNIOR YEAR.

9:00 to 9:55. Surveying.	Hydraulics.	Analytical Mechanics.
9:55 to 10:50. Analytical Geometry.	Calculus.	Calculus.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Literature.	Descriptive Geometry.	Roads and Pavements.
12:15 to 1:10. Materials of Engineering.	Elements of Mechanism.	Civil Government.
2:10 to 4:00. Field Practice in Engineering.	Drawing.	Hydrographic Surveying and Field Practice.

SENIOR YEAR.

9:00 to 9:55. Applied Mechanics.	Power, Measurement and Transmission.	Geology.
9:55 to 10:50. Surveying and Geodesy.	Political Economy.	Railroad Engineering.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Municipal Engineering.	Irrigation Engineering.	Applied Electricity.
12:15 to 1:10. Electricity and Magnetism.	Graphical Statics.	Roofs and Bridges.
2:10 to 4:00. Experimental Work and Engineering Designs.	Engineering Designs.	Thesis Work.

The instruction in this course extends over a period of four years and is designed to afford a training of a practical as well as theoretical nature to such students as are preparing to enter the profession of Civil Engineering.

Successful students receive at the end of the four years' course the degree of B. C. E. (Bachelor of Civil Engineering).

COURSE OF STUDY.

HYDRAULICS.—This subject precedes hydrographic surveying, irrigation and waterworks construction. The student is instructed in the fundamental laws governing the equilibrium of fluids; the flow through orifices, over weirs, through pipes and in open channels. The measurement of water, the action of water upon vanes, water-wheels and pumping engines are also considered.

Text Book.—Merriman's *Hydraulics*.

IRRIGATION ENGINEERING.—This branch includes the location, grades, cross-sections, etc., of canals; the design and construction of flumes, head-gates, diversion weirs and dams; pipe irrigation and inverted siphons; rainfall, evaporation and seepage; methods of irrigation; duty of water; windmills, artesian wells, etc.

Text Books.—Wilson's *Manual of Irrigation.* Works of Reference—Buckley, Moncrief, Flynn, and Reports.

SURVEYING AND GEODESY.—Elementary surveying, with field practice, is taught in the second year; and ordinary surveying, including the location of railways, pipe lines and canals, together with city, mining and hydrographic surveying, form part of the third year—the afternoons of the first and third terms being devoted to field work. In the Senior year, practical astronomy is considered in connection with the more difficult problems of surveying, such as the determination of time, the measurements of base lines, etc.

Text Books.—Johnson's *Surveying*, Merriman's *Geodesy.*

DESCRIPTIVE GEOMETRY.—Embraces orthographic projections, developments, etc.; projections of plane and solid figures, curved surfaces and tangent planes; shades and shadows; construction of maps.

Text Book.—

APPLIED MECHANICS.—This subject is begun in the Junior year under the heading of *analytical mechanics* and forms the *applied mechanics and graphical statics* of the Senior year.

It includes the determination of the stresses in the several members of framed structures, as e. g. flumes, cranes, roofs, bridges, etc.; the proper proportioning of the materials in piers, retaining walls, dams, etc.; the methods of ascertaining and representing shearing forces and bending moments; a study of the strength, stiffness and resistance of materials and their adaptability to particular purposes.

ROOFS AND BRIDGES.—Under this heading is described, with the aid of blue-prints, the various kinds of roofs, roof coverings, highway bridges and railway bridges. When the student has acquired the requisite knowledge, he is asked to apply it in the design of new structures.

MATERIALS OF ENGINEERING.—The object of these lectures is to supplement the practical knowledge obtained in the carpentry, blacksmith, foundry and machine shops by notes on stone, brick, lime, cement, iron, steel and alloys.

RAILROAD ENGINEERING.—The instruction given includes track-laying, foundations, piles and pile-driving, embankments, tunnels, trestles and railroad structures in general. Also, the cost, maintenance and operation of railways.

ROADS AND PAVEMENTS.—This subject deals with country roads and highways, their location, construction and maintenance; and with the paving of streets and sidewalks, the materials used and modes of construction.

Text Book.—Bryne's *Highway Construction.*

MUNICIPAL ENGINEERING.—This course of lectures embraces water-works systems, gas and electric lighting, rapid transit and sewerage.

English Language, Literature, Mathematics, Mathematical Physics, Mechanism, Electricity and Magnetism, Applied Electricity, Civil Government, Political Economy, Chemistry and Geology are as outlined in the other departments.

SUMMER REPORT.—Each student upon entering the Senior year is required to present a report prepared by himself during the summer months on some structural work connected with the profession of civil engineering.

COMMERCIAL COURSE.

Three years ago, after mature reflection, a commercial course was placed in association with the other courses of the College. This course offered a broader general education than is common to the commercial courses of the country. Its success has exceeded expectations, in view of the fact that such courses have not been successful when associated with similar colleges. Its success is ascribed to the extremely practical character of the technical work, and to the fact that there were associated with this instruction other studies, that give to the business man an enlarged view of his varied relations as a citizen of the State.

In now offering a commercial course of four years, we make an entirely new departure in the history of commercial education in this country. This departure is based upon the success of the present course, and to a desire to bring it into harmony with the aim of the institution. This aim is a liberal and practical education for the industrial classes, education for citizenship, and for industrial life. No other large industrial class has a more direct and important relation to the material, social and political life of the nation, and it now appears that if a general education should be associated with technical education in agriculture, mechanic arts, civil engineering and domestic arts, it certainly should be associated with the commercial course. In thus bringing this department into accord with the philosophy of the National and Territorial acts founding this College, we do so with the hope that it will meet with the approval and support of the public.

FRESHMAN YEAR.

Hour.			
9:00 to 9:55.	Grammar.	Rhetoric.	Literature.
9:55 to 10:50.	Arithmetic.	Algebra.	Algebra.
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15.	Elocution. 2 Free-hand Drawing. 3	Elocution. 2 Free-hand Drawing. 3	Elocution. 2 Free-hand Drawing. 3
12:15 to 1:10.	Manners and Morals. 2 Horticulture. 2	Commercial Spelling.	Business Penmanship.
2:10 to 4:00.	Shop Work in Wood. 2	Business Penmanship.	Shop Work in Wood.

SOPHOMORE YEAR.

9:00 to 9:55.	Botany. 3	Organic Chemistry.	History of Commerce and Commercial Geography.
9:55 to 10:50.	Chemistry.	Physics.	Physics.
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15	Geometry.	Arg. Rhetoric. 2	Special Course of Reading in General History.
12:15 to 1:10.	Essays and Arg. Rhetoric. 2 Horticulture. 2	Geometry. 5 weeks. Trigonometry. 6 weeks.	Roads and Pavements.
2:10 to 4:00.	Chemical Laboratory. 3 Horticulture Practice. 2	Chemical Laboratory. 3 Physical Laboratory. 2	Physical Laboratory. 2

JUNIOR YEAR.

9:00 to 9:55.	Anatomy and Physiology.	Commercial Law.	Geology.
9:55 to 10:50.	Commercial Law.	Science of Bookkeeping.	Business and Legal Forms.
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15.	Literature. 3	Logic.	Literature.
12:15 to 1:10.	Zoology. 2 General History. 3	Physiology.	Civil Government.
2:10 to 4:00.	Typewriting.	Typewriting.	Typewriting.

SENIOR YEAR.

9:00 to 9:55. Commercial Arithmetic.	Stenography. (Optional.)	Thesis Work.
9:55 to 10:50. Psychology. 10 weeks. Moral Science. 6½ weeks.	Political Economy.	Stenography and Business Correspondence.
10:50 to 11:20. Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15. Stenography. (Optional.)	Commercial Arithmetic and Rapid Calculations.	Political Economy.
12:15 to 1:10. Spanish or German.	Spanish or German.	Spanish or German.
2:10 to 4:00. Practical Work in Bookkeeping, Banking, Freighting, Insurance, etc.	Same as First Term.	Same as First Term.

TECHNICAL STUDIES.

BOOKKEEPING.—The principal objection that the business man of to-day finds to the Business College graduate is, that he receives too much theory and not enough practice. To overcome this, bookkeeping is taught throughout according to a system of actual business. Each student rents his own place of business, deposits money in the bank, buys and sells merchandise on all kinds of terms, thereby bringing into daily use such business forms as notes, drafts, checks, bill heads, statements, shipping invoices, account sales, receipts, deposit slips, certificates of deposit, mortgages, deeds, leases, insurance policies, bills of exchange and bills of sale.

He is keeping books according to the shortest and most approved methods in various kinds of business, such as general merchandise, grocery, dry goods, clothing, boot and shoe, hay and grain, coal, jobbing, commission, brokerage, manufacturing, joint stock companies and corporations. It will be observed that no two students' books are alike. Each one is buying and selling on his own account and recording his own transactions, and is relying upon his own judgment under the guidance of his instructor.

Banking and business counters afford the students opportunity for practice in banking exchange, and for the use of the various instruments that enter into business accounts and transactions. The bank is regularly equipped with books, stationery, etc., affording the student an opportunity to study banking from a practical standpoint. The same relation exists between it and the students as is found between a bank and business men in actual life.

COMMERCIAL LAW.—One of the fundamental principles of our law is that "Ignorance of the law excuses no one." Every one must bear the consequences of his own actions. It

is therefore very necessary that one about to enter upon an active business career be quite familiar with the rules and principles governing commercial transactions. The student is thoroughly drilled in the customs and the law regulating such important subjects as contracts, agency, partnership, corporation, guaranty or suretyship, limitation of time to sue, sale of goods, commission merchants and brokers, agreement for personal services, common carriers, insurance, telegraphs, patents, copyrights, trade marks, real estate conveyances, and all the business and legal forms that are used to carry on trade. It being our object to prepare our students for a position in the world as business men rather than mere clerks, this subject is given considerable prominence in the course.

The text book used is Parson's *Laws of Business.*

History of Commerce and Commercial Geography. —In supplying the demands created by the division of labor, business men become important factors in interchanging commercial products. Their success as exchangers will depend largely upon their ability to discover a market and in being able to supply that market. The student will make a careful study of the principal countries of the world from which such staple articles of commerce as food, textile and mineral substances, metals and manufactured products are obtained. He will note the kinds and amount of such products from those countries, and the dependence of each upon every other for the necessaries and luxuries of life; how markets are created and controlled; how waterways and railways afford a ready means of transportation, and influence trade; and how the improved mail, postal, telephone and telegraph services facilitate the interchange of thought and also influence trade. A historical knowledge of the development of nations, and of the increase of commerce and its effect upon the growth of cities is deemed of much importance. Statistics will be gathered showing the magnitude of the world's production. Practical commercial problems of the day will be discussed in class.

Commercial Arithmetic and Rapid Calculation.— This is largely drill work. Every business man realizes the

importance of being able to make his own calculations, and to perform the work quickly and accurately. To possess this accomplishment it not only requires a knowledge of underlying principles of commercial problems, but continued practice in executing them. A business man above all others should be able to apply his knowledge anywhere and at any time. The student is drilled daily for two terms in addition, multiplication, division, fractions, measurements, metric system, percentage, profit and loss, commission, interest, discount, storage, equation of accounts, partnership settlements, and all problems that the average business man is called upon to solve. Short methods are also studied. Our plan of presenting the subject is a very practical one.

GRAMMAR.—To secure a first-class clerkship in this age, requires a command of good English. Business and professional men find that a knowledge of capitalization, punctuation, of grammatical construction and good diction is a commercial power, and whether they possess it or not they find it necessary to rely upon clerks, when their business is a large one, to write creditable letters. Grammar is therefore given a prominent place in this course.

HISTORY, CIVIL GOVERNMENT AND POLITICAL ECONOMY.—United States history, geography, civil government, business ethics and political economy are deemed acquisitions important to both a business man and his aids. These studies give knowledge of the genius of our people, the spirit of their laws, of the moral code that governs in honorable business transactions, and of the great laws that underlie the commercial growth of a nation, and upon which its laws should be based. Business men are active factors in the national existence, and find that their purposes and commercial powers are widened by knowledge in the fields covered by the studies named.

For observations regarding other studies more directly related to education for citizenship see the notes under the course in agriculture.

Those completing the Preparatory Course of this College will be admitted without further examination.

SHORT COMMERCIAL COURSE.

FRESHMAN YEAR.

Same as Preparatory Year.

JUNIOR YEAR.

Hour.	FIRST TERM.	SECOND TERM.	THIRD TERM.
9:00 to 9:55.	Grammar.	Rhetoric.	Literature.
9:55 to 10:50.	Arithmetic.	Spelling.	Typewriting (optional)
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15.	Elocution. 2 Typewriting (optional.) 3	Elocution. 2 Penmanship. 2	Business Correspondence.
12:15 to 1:10.	Manners and Morals. 2 General History. 3	Book-keeping.	Civil Government.
2:10 to 3:00.	Penmanship.	Typewriting (optional)	Penmanship.

SENIOR YEAR.

9.00 to 9:55.	Book-keeping.	Commercial Arithmetic	Book-keeping.
9:55 to 10:50.	Book-keeping.	Political Economy.	Book-keeping.
10:50 to 11:20.	Military Drill.	Military Drill.	Military Drill.
11:20 to 12:15.	Arg. Rhetoric. 2 Commercial Arithmetic. 3	Arg. Rhetoric. 2	Literature.
12:15 to 1:10.	Commercial Law.	Stenography (optional.)	Commercial Arithmetic
2:10 to 4:00.	Stenography (optional.)	Book-keeping.	Stenography (optional)

This course is intended for those who are unable to take the four years' course. In order to secure its success and to insure the other courses against injury from those who are inclined to get a mere smattering of book-keeping and a little grammar, and then to pass out into the world as college graduates, it has been determined that those desiring the advantages of any commercial studies must take the full course, or pass a critical examination in each study. A certificate stating the fact of the honorable completion of this course will be given.

The degree of B. S. (Bachelor of Science) is given to those who complete the four years' course.

DIRECTION TO STUDENTS.

Logan is reached over a branch of the Union Pacific Railway, formerly known as the Utah & Northern Railway. Two passenger trains connect with Logan daily.

New students will be examined on Tuesday and Wednesday, September 4th and 5th. On passing their examinations students will be directed to the proper officer to pay their entrance fees. The receipt of this officer will be shown to the Secretary of the Board of Trustees, who will sign the same and enroll the name of the bearer, and record certain required data on his books. This receipt will then be taken to the President of the College, who will issue a class card containing the course of studies that may be selected. This class card will be shown to each professor under whom the studies are to be taken, for class enrollment. The card must be returned to the secretary of the faculty within three days of its receipt, or a demerit of five for each day that it is withheld will be given, after the expiration of the three days' limit. If retained over one week the student will be dropped from his classes.

On students entering for the second and third terms, the cards will be secured from the secretary, when the studies will be assigned by the president and the cards signed by the professors; cards will be returned to the secretary, as before.

EXAMINATIONS.

Examinations for admission to the full College Courses will cover arithmetic to percentage, the elements of grammar, geography, and the elementary branches taught in our common schools.

To enter the Preparatory Department pupils will be examined in arithmetic to fractions, on the plan of Harper's Second Book, and in simple sentences in grammar.

Students completing the course in the Preparatory Department of this College will be admitted to the College courses without further examination.

COLLEGE CHARGES.

Tuition is free, but $5 will be charged as an entrance fee for each year of the College course. For a single term for irregular students, the charge will be $3. This sum is in lieu of the charges ordinarily made at colleges for library and other fees, so that the library, museums, etc., will be free to students.

In the chemical laboratory, work shops and cooking rooms, students will be charged for the cost of the materials actually used up by them in their exercises. This charge will be made only for the terms when the materials are used. This cost will vary from $2 to $4 per year.

Board at the new Club House will cost not over $2 per week. This cost will include fires and lights, but not room rent. The room rent will be 50 cents per week. The income from this is used in paying the matron, the breakage of dishes and the wear and insurance of the building.

The character of the board is controlled by students who room at the Club House, and therefore the cost is determined by their wishes. Plain but good, substantial board should be furnished at $2 per week.

Students boarding at private homes can secure board at from $2.75 to $3.50 per week. They are neither required nor urged to board at the Club House. Students frequently rent rooms and board themselves for less than $2 per week.

REQUIREMENTS AND DISCIPLINE.

1. Evidence of good moral character must be furnished by students when required. Daily attendance at chapel exercises is required. These exercises will be wholly devotional and completely non-sectarian. They are conducted by the faculty, and in part by members of each of the churches represented in Logan, but wholly as worship.

2. Students are forbidden to enter saloons. On the first infraction of this rule, the students disobeying it will be called before the faculty. On the second infraction, the fact will be stated to the school. The third infraction will result in expulsion from the College.

3. Non-resident students, under twenty-one years of age, are required to attend the church of their choice on Sundays during day service. Students bringing from their parents a written request to be excused from church attendance, will not be required to comply with this rule. When students do not bring a request to be excused from church attendance, it is assumed that the parents desire the faculty to enforce the rule in this respect. This assumption is made because it is known that parents generally desire that their children attend church; and as it is impracticable to communicate with parents, this method is adopted.

4. Students will be required to take four full studies, unless excused by the faculty.

5. Prompt attention to all duties assigned will be required of each student. Gentlemanly deportment towards all with whom the student comes in contact, whether the faculty, fellow students or citizens, will be expected. Failure in this direction will become, when the aggregate reaches a given standard, a matter of record and of faculty action.

6. Students having no class during any hour from 9 a. m. to 1 p. m., shall, if they remain upon the College grounds, pass the time in their boarding-rooms, in the library, or some other place assigned them by the president.

Any student failing to comply with this regulation for the full hour will be demerited.

7. A student absent from either chapel or classroom will receive five demerits.

These demerits will be canceled if a satisfactory excuse is rendered within three days after return of a student who has been absent. If required, the recitation missed shall be made up.

8. Students will be excused from chapel exercises on written request of parents or guardians.

9. Misconduct in class may be demerited to the extent of five demerits. More demerits may be added by faculty action.

10. Misconduct in chapel or College halls or on College grounds may be demerited by the president or by faculty action.

11. Whenever in the opinion of the faculty the number of demerits warrants, the student and his parents or guardian shall be notified of his unsatisfactory conduct. When the number of demerits given to any student during any school year reaches 100, the student shall be expelled.

12. A perfect recitation shall receive a mark of 100 ; a monthly class record of less than 60 shall drop a student from a class. An average of less than 60 for all classes excludes from continuing in college.

13. Each instructor shall make a weekly report to the secretary of the faculty of the demerits given, and a term report of the class grades of students.

14. Scholarship marking will be as follows:

Above 95 per cent. - - -	Distinction.
90 to 95 " - -	1st Grade.
75 to 90 " - - -	2d Grade.
60 to 75 " - -	Pass.

The passing grade in the Business Course will be 80. Less than 90 will be second grade. Above 90 is regarded as in the other courses.

Grades will be determined as follows : Examination papers will be returned to students when they are requested. These papers will have marked upon them the grading of each answer.

Daily recitation will count one-third.
Inter-term examinations count one-third.
Final examinations count one-third.

15. Students not entering their classes within five minutes after the bell rings shall receive two demerits, unless they render a good excuse.

16. The absence of a professor for five minutes after the bell rings excuses a class for the hour.

At the ringing of the bell the students have the privilege of leaving the classroom.

17. Students cannot drop or change a class without faculty action.

18. No society bearing the name of the College or purporting to emanate from it shall be organized without the consent of the faculty, and the approval of its constitution and by-laws by the faculty.

19. Injury to College property by students shall be paid for to the extent of the injury, and if the injury be malicious, the student shall pay double the amount.

20. The use of tobacco in any form on the College grounds is prohibited.

21. Students from other towns boarding or living in Logan, must obtain excuses from the president in advance, when they desire to leave town during term time.

22. No excuses for absence are accepted unless for sickness, certified to by parents or boarding mistress, or for detention at home by parents for necessary reasons, to which parents or guardians certify.

23. Misconduct anywhere outside of the classroom exercises or beyond the College grounds, will be cause for demerit.

24. For the first offense of cheating in examinations, a student shall receive twenty-five demerits, and for a second offense the student will be suspended.

LIST OF STUDENTS.

A

Allen, A. T.....Coalville
Allison, Carl.....Ogden
Allred, William L., Jr.....St. Charles, Idaho
Amos, William T.....Payson
Anderson, Adam.....Hyde Park
Anderson, Anthon E.....Logan
Anderson, Charles T.....Brigham City
Anderson, J. A., Jr.....Ephraim
Anderson, Mamie.....Logan
Anderson, Sarah S.....Smithfield
Ashton, Lynne.....Vernal

B

Ballif, Jos. F.....Logan
Bankhead, John.....Wellsville
Barrett, Arthur.....Logan
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Robertson, Alex.....Spanish Fork
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Robinson, Robert L.....Logan
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Roskelly, Cassie.....Smithfield
Roskelly. Hannah.....Smithfield
Roskelly, Libbie.....Smithfield
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Smith, Rochester.....Preston
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Stewart, Isaac P.....Logan
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Webb, William M.....Fillmore
Webster, Chas. A.....Montpelier, Idaho

Webster, Rosemon ..... Montpelier, Idaho
Welsh, J. W ..... Coalville
Whitney, Herbert B ..... Mendon
Whitmore, George M ..... Nephi
Wilkinson, F. G ..... Logan
Wright, Lester T ..... Ogden

SPECIAL FARMERS' CLASS.

Aebischer, Charles.....Logan
Ashcroft, Enoch.....Hyde Park
Behunin, J. H.....Ferron
Burnham, L. C.....Hyde Park
Daines, Robert H.....Hyde Park
Hiltbrand, John.....Logan
Larsen, Christian.....Logan
Larsen, R. O.....Logan
Olsen, C. L.....Logan

SPECIAL COOKING CLASS.

Broberg, Annie.....Logan
Dewel, Leonora.....Pleasant View
Hansen, Mary.....Logan
Hendrickson, Mary D.....Logan
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