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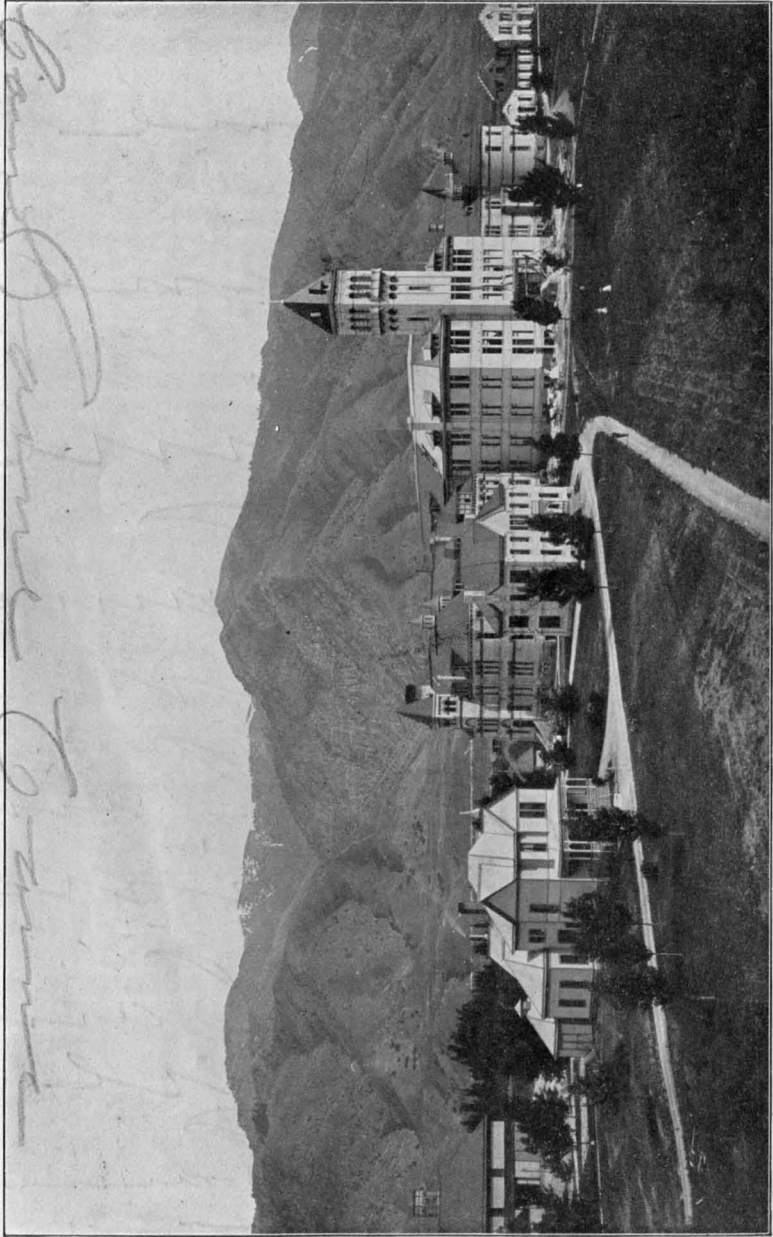


CATALOGUE
OF THE
AGRICULTURAL COLLEGE
OF UTAH,
FOR
1902-1903.

With List of Students for 1901-1902.

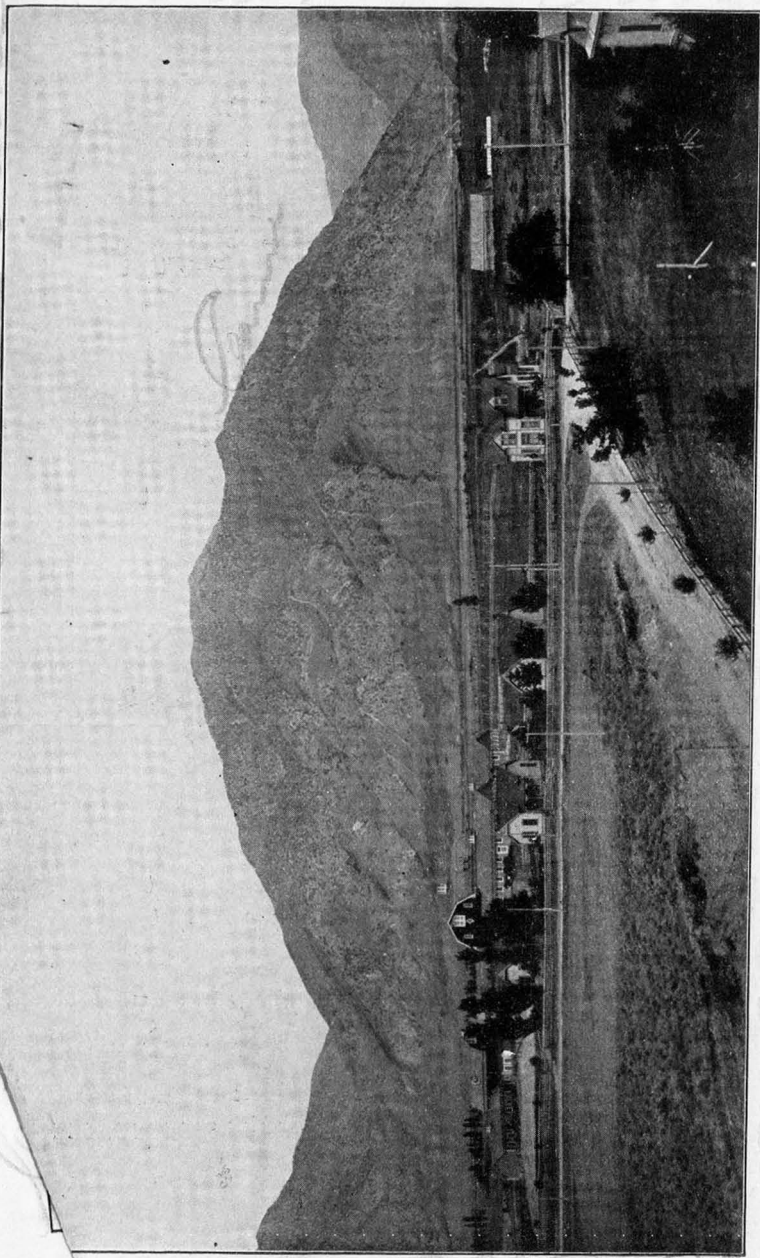
LOGAN, UTAH.

Published by the College.
July, 1902.

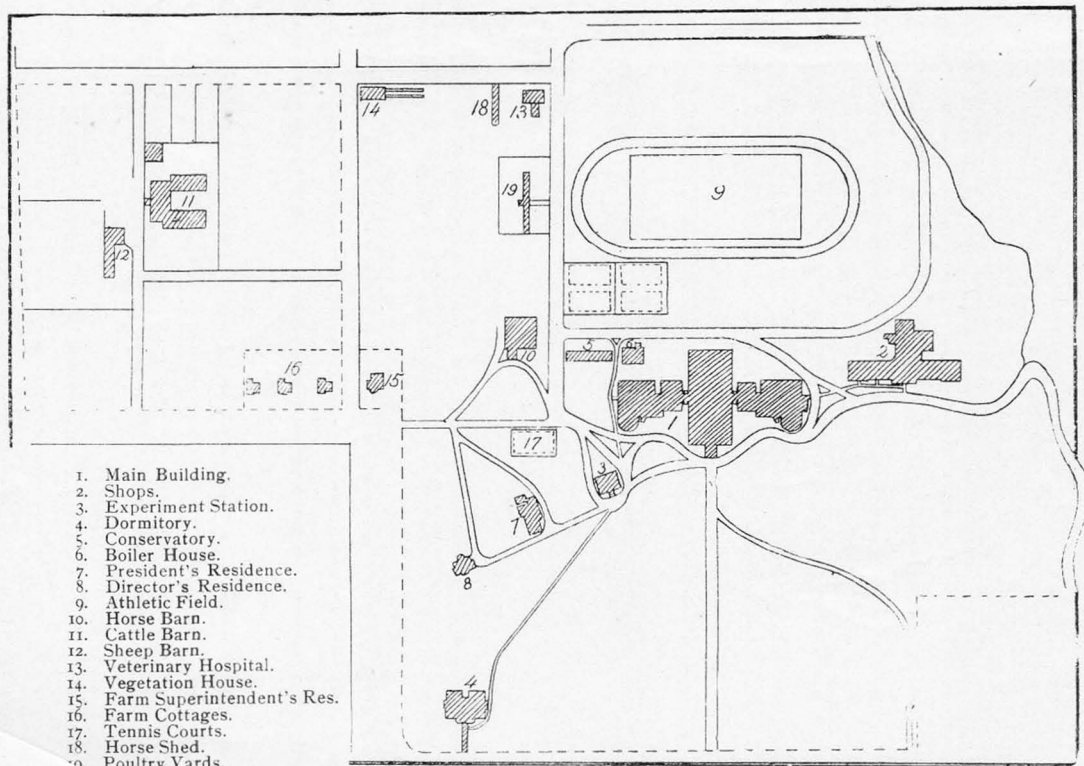


San Rafael College

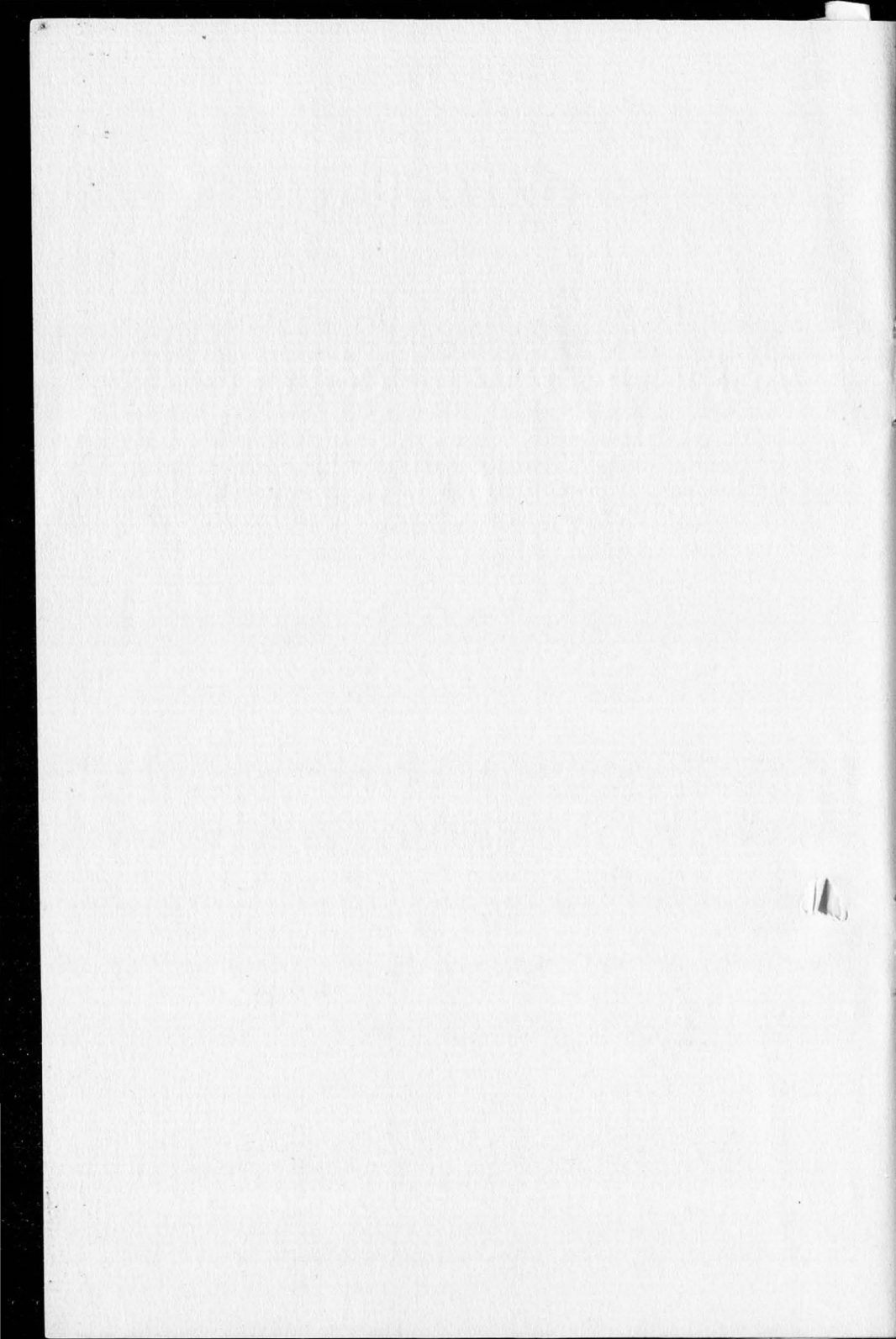
GROUP OF AGRICULTURAL COLLEGE BUILDINGS.



SECTION OF COLLEGE CAMPUS AND BUILDINGS.



PLAN OF COLLEGE CAMPUS.



1902.

JANUARY							FEBRUARY							MARCH							APRIL						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
...	...	...	1	2	3	4	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	1	2	3	4	5
5	6	7	8	9	10	11	2	3	4	5	6	7	8	2	3	4	5	6	7	8	6	7	8	9	10	11	12
12	13	14	15	16	17	18	9	10	11	12	13	14	15	9	10	11	12	13	14	15	13	14	15	16	17	18	19
19	20	21	22	23	24	25	16	17	18	19	20	21	22	16	17	18	19	20	21	22	20	21	22	23	24	25	26
26	27	28	29	30	31	...	23	24	25	26	27	28	...	23	24	25	26	27	28	29	27	28	29	30	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	30	31	...	...	...	...	...	...	...	...	...	...	...
MAY							JUNE							JULY							AUGUST						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
...	1	2	3	1	2	3	4	5	6	7	1	2	3	4	5	1	2	
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11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16
18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23
25	26	27	28	29	30	31	29	30	...	...	...	...	27	28	29	30	31	...	24	25	26	27	28	29	30		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	31	...	...	...	...	...	...
SEPTEMBER							OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
...	...	1	2	3	4	5	6	1	2	3	4	1	1	2	3	4	5	6
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28	29	30	26	27	28	29	30	31	...	23	24	25	26	27	28	29	28	29	30	31
...	30		

1903.

JANUARY							FEBRUARY							MARCH							APRIL							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
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25	26	27	28	29	30	31	29	30	31	26	27	28	29	30			
...			
MAY							JUNE							JULY							AUGUST							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
...	1	2	1	2	3	4	5	6	1	2	3	4	1				
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24	25	26	27	28	29	30	28	29	30	26	27	28	29	30	31	...	23	24	25	26	27	28	29		
31	30	31			
SEPTEMBER							OCTOBER							NOVEMBER							DECEMBER							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
...	...	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7	1	2	3	4	5
6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12	
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20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26	
27	28	29	30	25	26	27	28	29	30	31	29	30	27	28	29	30	31		
...			

COLLEGE CALENDAR, 1902-1903.

FIRST TERM.

1902.

September 16, 17, Tuesday and Wednesday:	Entrance examinations. Registration of former students, and new students who are admitted on certificates.
September 18, Thursday:	Instruction begins.
November 27, Thursday:	Thanksgiving recess.
December 19, Friday:	Holiday recess begins.

1903.

January 6, Tuesday:	Instruction resumed. Winter courses begin.
January 31, Saturday:	First term ends.

SECOND TERM.

February 3, Tuesday:	Second term begins.
March 14, Saturday:	Winter courses end.
April 15, Wednesday:	Arbor Day.
May 30, Saturday:	Decoration Day.
June 7, Sunday:	Baccalaureate sermon.
June 8, Monday:	Class Day.
June 9, Tuesday:	Commencement. Alumni Reunion.
June 10, Wednesday:	Summer vacation begins.

BOARD OF TRUSTEES.

WILLIAM S. McCORNICK.....Salt Lake City
EMILY S. RICHARDS.....Salt Lake City
D. C. ADAMS.....Salt Lake City
LORENZO HANSEN.....Logan
ROSINA N. BAGLEY.....Ogden
JOHN A. McALISTER.....Logan
SETH A. LANGTON.....Logan

OFFICERS OF THE BOARD.

WILLIAM S. McCORNICK.....President
PETER W. MAUGHAN.....Secretary
ALLAN M. FLEMING.....Treasurer

EXECUTIVE COMMITTEE.

WILLIAM S. McCORNICK, Chairman.
D. C. ADAMS. LORENZO HANSEN.

FACULTY AND INSTRUCTORS.

Arranged in Groups in the Order of Seniority of Appointment.

WILLIAM JASPER KERR, B. S., D. Sc.,
PRESIDENT.

FREDERICK B. LINFIELD, B. S. A.,
Professor of Animal Industry.

JOHN A. WIDTSOE, M. A., Ph. D.,
DIRECTOR OF THE EXPERIMENT STATION.
Professor of Chemistry.

DALINDA COTEY, B. S.,
Professor of Domestic Science.

JOSEPH JENSON, S. B.,
DIRECTOR OF WORK SHOPS.
Professor of Mechanical Engineering.

GEORGE L. SWENDSEN, B. S.,
Professor of Civil Engineering.

EPHRAIM GOWANS GOWANS, B. S., M. D.,
Professor of Animal Biology.

JOHN FRANKLIN ENGLE, A. M., Ph. D.,
Professor of History and Civics.

WILLARD S. LANGTON, B. S.,
Professor of Mathematics and Astronomy.

KARL R. MOENCH, Ph. D.,
Professor of Modern Languages.

LEWIS A. MERRILL, B. S.,
Professor of Agronomy and Veterinary Science.

ALFRED HORATIO UPHAM, A. M.,
Professor of English Language and Literature.

D. EARLE BURCHELL,
Professor of Commerce.

Professor of Botany, Horticulture and Entomology.

PETER A. YODER, M. A., Ph. D.,
Associate Professor of Chemistry.

JAMES DRYDEN,
Assistant Professor of Meteorology and Animal Industry.

EDWARD W. ROBINSON,
Assistant Professor of Commercial Law and Geography.

JOHN T. CAINE, JR., B. S.,
PRINCIPAL OF PREPARATORY DEPARTMENT.
Instructor in English.

SARA GODWIN GOODWIN,
Librarian.

RUTH EVELYN MOENCH,
Instructor in English and Physical Culture.

AUGUST J. HANSEN,
Foreman in Carpentry.

JOHN A. CROCKETT,
Instructor in Dairy Husbandry.

WILLIAM PETERSEN, B. S.,
Instructor in Geology and Mathematics.

PETER W. MAUGHAN,
Instructor in Penmanship.

SAMUEL B. MITTON,
Instructor in Music.

HERBERT W. HILL, B. L.,
Instructor in English.

RENA BAKER,
Instructor in English.

LYDIA HOLMGREN,
Instructor in Domestic Science.

EDWARD PARLEY PULLEY, B. S.,
Instructor in Mechanical Engineering.

RHODA B. COOK,
Instructor in Sewing and Millinery.

LOUISE RICHARDS,*

Instructor in Drawing.

WALTER W. McLAUGHLIN, B. S.,

Instructor in Mathematics and Mining.

WILLIAM D. BEERS, B. S.,

*Instructor in Military Science and Assistant in Civil
Engineering.*

L. A. OSTIEN, B. S., LL. B., Ph. B.;

Instructor in Mathematics and Astronomy.

GEORGE PETER CAMPBELL, B. S.,

Instructor in Physics and Athletics.

EDWIN A. WILLIAMS,

Foreman in Forging.

HENRY JEROME STUTTERD,

Instructor in Drawing.

ROBERT STEWART, B. S.,

Station Assistant in Chemistry.

MAMIE S. MORRELL,

Assistant in Household Science.

D. M. STEPHENS,

PRESIDENT'S PRIVATE SECRETARY.

Assistant in Commerce.

NOTE.—Two assistants in sewing and one instructor and one assistant in commerce will be employed before the opening of the College in September.

* On Leave of Absence.

EXPERIMENT STATION STAFF.

W. J. KERR,

President of the College.

JOHN A. WIDTSOE,

Director and Chemist.

FREDERICK B. LINFIELD,

Animal Industry.

JAMES DRYDEN,

Meteorologist and Poultry Manager.

G. L. SWENDSEN,

Irrigation Engineer.

LEWIS A. MERRILL,

Agronomist.

EPHRAIM G. GOWANS,

Biologist.

Horticulturist.

PETER A. YODER,
Associate Chemist.

JOHN A. CROCKETT,
Assistant Dairyman.

W. W. McLAUGHLIN,
Assistant Chemist.

WILLIAM D. BEERS,
Assistant Irrigation Engineer.

ROBERT STEWART,
Assistant Chemist.

JOSEPH NELSON,
Farm Foreman.

ALLAN M. FLEMING,
Treasurer.

PETER W. MAUGHAN,
Secretary.

STANDING COMMITTEES OF THE FACULTY.

1902-1903.

The President of the College is ex-officio a member of all standing committees.

1. *Agriculture*.—Professors Linfield, Merrill, Widtsoe, Gowans, Swendsen, Dryden.

2. *Domestic Science*.—Professors Cotey, Linfield, Moench, Yoder, Mrs. Cook.

3. *Commerce*.—Professors Burchell, Engle, Robinson.

4. *Engineering*.—Professors Swendsen, Jenson, Langton, Mr. McLaughlin, Mr. Ostien.

5. *General Science*.—Professors Widtsoe, Upham, Langton, Moench, Mr. Campbell.

6. *Manual Training*.—Professors Jenson, Cotey, Burchell, Mrs. Cook, Mr. Williams.

7. *Preparatory*.—Principal Caine, Mr. Peterson, Miss Baker, Mr. Ostien.

8. *Farmers' Institute*.—Professors Widtsoe, Linfield, Swendsen, Merrill.

9. *Scholarship and Graduation*.—Professors Swendsen, Langton, Upham.

10. *College Publications*.—Professors Upham, Engle, Dryden, Caine, Mr. Hill.

11. *Students' Affairs*.—Professors Jenson, Caine, Gowans, Engle, Moench, Robinson, Mr. Peterson, Mrs. Cook, Mr. Ostien.

12. *Athletics*.—Professors Langton, Swendsen, Burchell, Gowans, Mr. Campbell, Miss Baker, Mr. McLaughlin.

13. *Amusements and Public Entertainments*.—Professors Gowans, Robinson, Mr. Hill, Miss Moench.

14. *Literary Societies*.—Professors Robinson, Engle, Moench, Mr. Peterson, Miss Moench, Mr. Ostien.

15. *Class Organizations*.—Professors Engle, Moench, Merrill, Mr. Hill, Miss Baker.

AGRICULTURAL COLLEGE OF UTAH.

General Information.

The Agricultural College of Utah constitutes part of the public school system of the State. It comprises practically six different schools: the School of Agriculture, the School of Domestic Science, the Commercial School, the School of Engineering, the School of General Science, and the Manual Training School; also the Agricultural Experiment Station, which, while not providing directly for instructional work, is one of the most important departments of the institution. The character and extent of the work offered by the College are shown, as far as the limits of space will allow, in the following descriptive statements and schedules.

FOUNDATION AND ENDOWMENT.

An Act of Congress, approved July 2, 1862, provided that public lands should be granted to the several states, to the amount of "thirty thousand acres for each Senator and Representative in Congress," from the sale of which there should be established a perpetual fund, "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 such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." The Act forbids the use of any portion of the aforesaid fund, or of the interest thereon, for the purchase, erection, or maintenance of any building or buildings. The states accepting the provisions of the Act are required to provide for the construction and maintenance of the necessary buildings and for the expenses of administration in carrying out the purposes of the Act.

On March 8, 1888, the Utah Legislative Assembly accepted the national law, and, in accordance with its provisions, founded the Agricultural College of Utah. The amount of public lands granted to this institution, under the provisions of the Act of Congress, was 90,000 acres; but by the terms of the Enabling Act, passed by Congress and approved July 16, 1894, providing for the admission of Utah as a state, the amount was increased to 200,000 acres.

Under an Act of Congress, approved March 2, 1887, the College receives \$15,000 annually for the maintenance of the Experiment Station, "to aid in acquiring and diffusing among the people useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science."

Under an Act of Congress, approved August 30, 1890, the College receives \$25,000 annually, "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 application to the industries of life."

In addition to the income from the national government and from the land grant fund, the College is dependent upon the State Legislature for such appropriations as are needed

to meet the requirements of the several departments in accordance with the provisions of the Acts of Congress, and to provide for the further development of the institution consistent with the educational and industrial demands of the state.

HISTORY.

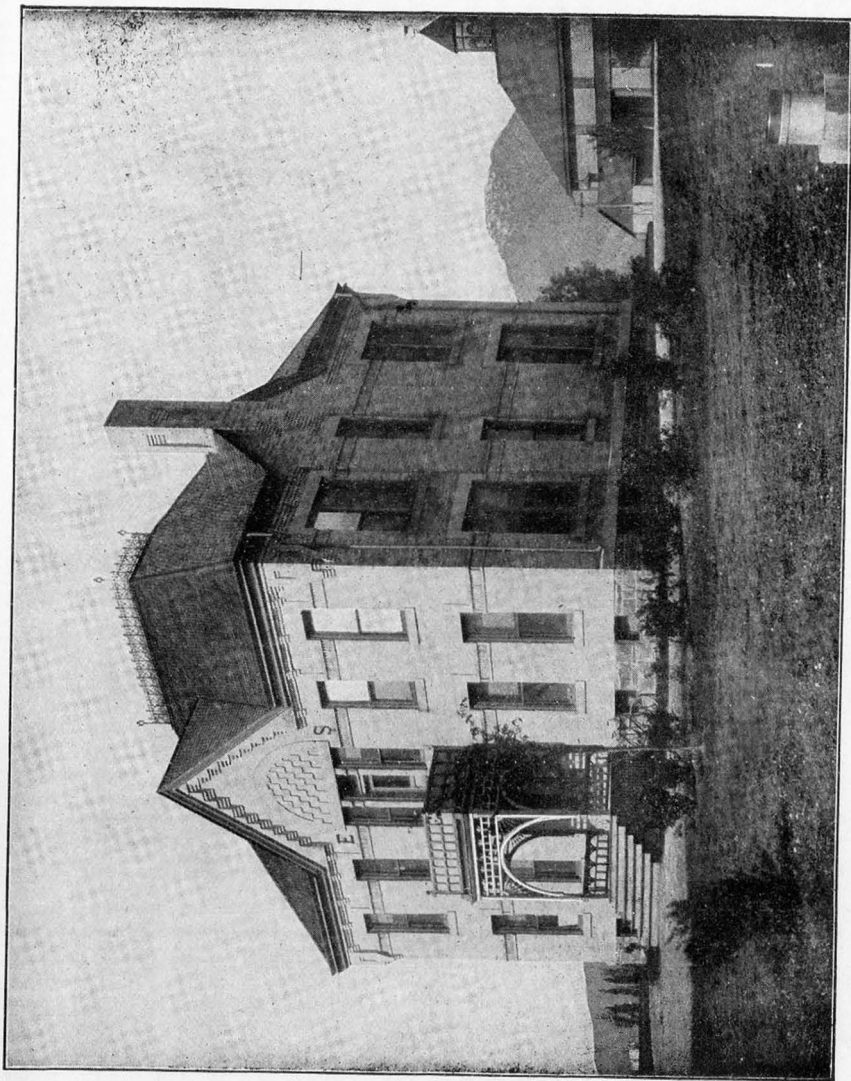
In 1888, the legislature appropriated \$25,000 for buildings, and the county of Cache and the city of Logan gave one hundred acres of land on which to locate the College. Plans were prepared for the main College building, and part of the south wing was completed. In September, 1890, the institution was first opened for the admission of students. Regular courses were offered in agriculture, domestic arts, civil engineering, mechanic arts, and commerce; also a preparatory course, and special courses in agriculture, mining engineering, and irrigation engineering.

The legislature of 1890 appropriated \$48,000 for the construction of an Experiment Station building, two laborers' cottages, and a farm house, and for the purchase of apparatus and the employment of administrative officers. The legislature of 1892 provided \$108,000 with which the south wing, the north wing, and part of the center of the main College building were completed; rooms in the basement were provided with machinery and other facilities for shopwork; the scientific laboratories were more thoroughly equipped; and other additions were made which added greatly to the facilities of the institution for advanced work. In 1894, additional apparatus was provided, and a forcing house and a veterinary laboratory were constructed. In 1896 part of the Mechanic Arts building was completed, and the forge shops were removed from the Main Building. In 1897, the legislature made

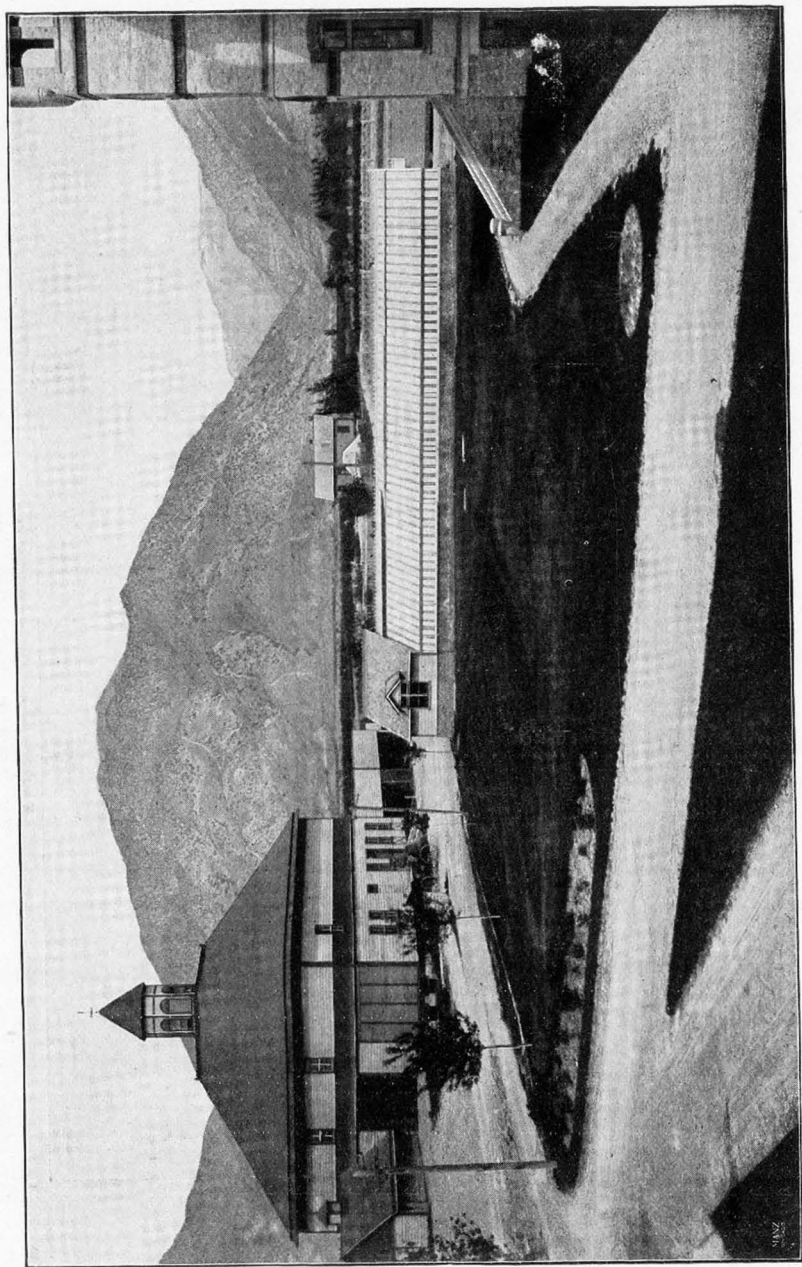
an appropriation for the maintenance of a Manual Training School, and for the extension of the Mechanic Arts Building, providing rooms for the chemical laboratories and the carpentry and machine shops; manual training courses were established in mechanic arts and domestic arts. In 1899, a greenhouse was constructed and equipped. In 1900, a department of art was established, additional class rooms were furnished, the several departments throughout the institution were more thoroughly organized, and other improvements were made, adding to the facilities for thorough and efficient work. The legislature of 1901 appropriated \$108,200 for general maintenance and various improvements, including the completion of the front of the Main Building, the construction of model farm buildings and a vegetation house, and for the purchase of additional land for work in irrigation investigations, and additional apparatus.

POLICY.

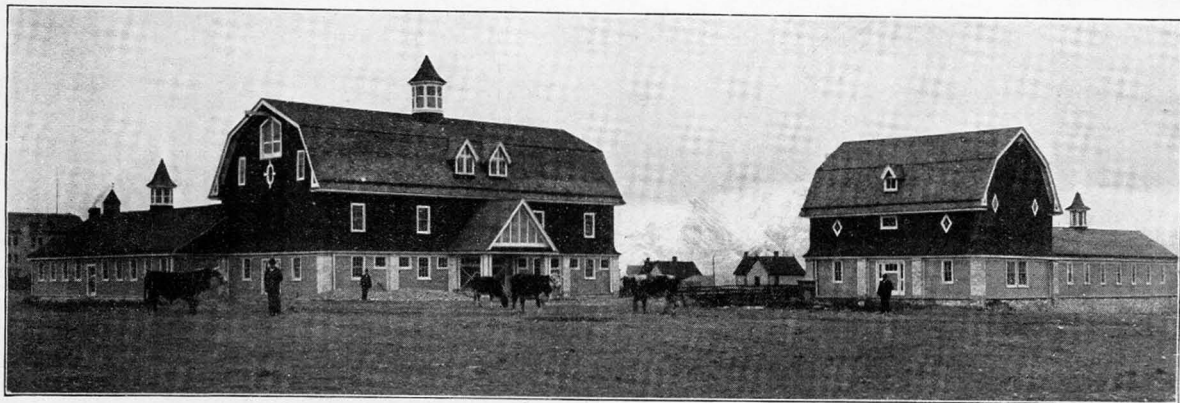
It is the policy of the Agricultural College of Utah, in accordance with the spirit of the law under which it is organized, to provide a liberal, thorough, and practical education. The two extremes in education, empiricism and the purely theoretical, are avoided, the practical being based upon, and united with, the thoroughly scientific. All the practical work, on the farm, in the orchards, vineyard, gardens, dairy, commercial rooms, kitchen, sewing rooms, different scientific laboratories, and carpenter, forge, and machine shops, is done in strict accordance with scientific principles. In addition to the practical work of the different courses, students are thoroughly trained in the related subjects of science, and in mathematics, history, English, and modern languages. While the importance of practical training is emphasized, the disciplinary value of education is kept constantly in view. It is recognized that



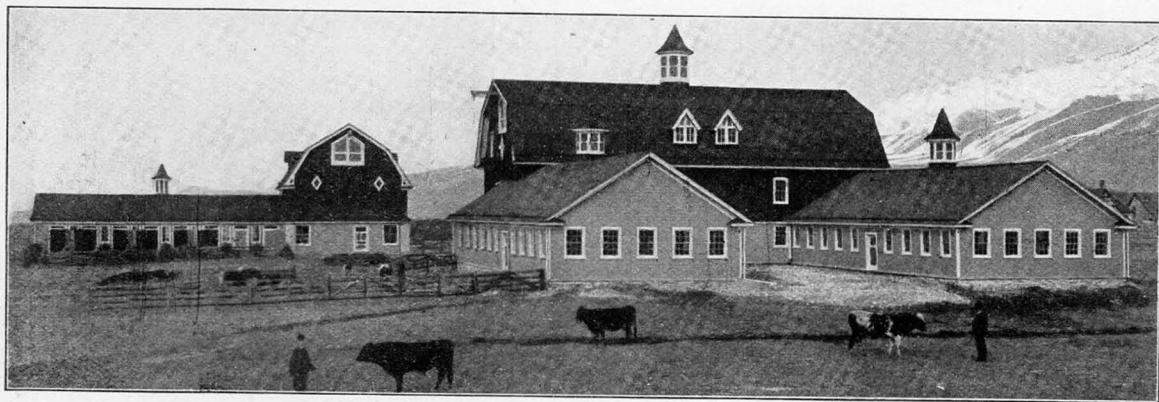
EXPERIMENT STATION BUILDING.



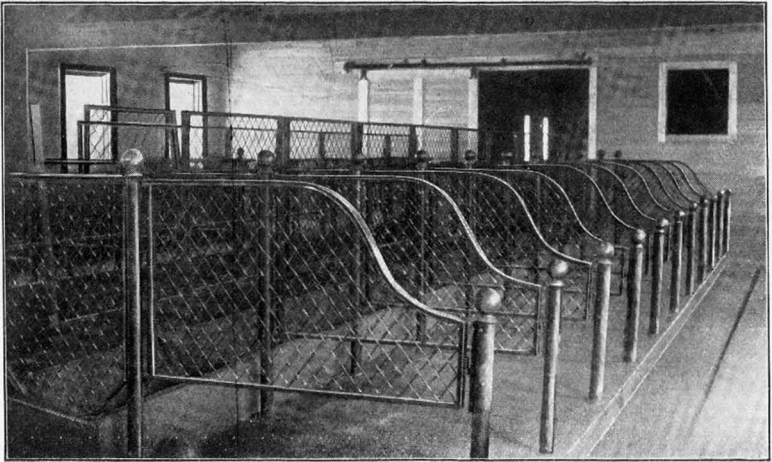
BARN, CONSERVATORY, VETERINARY HOSPITAL.



COLLEGE SHEEP BARN AND CATTLE BARN, FROM NORTH-EAST.



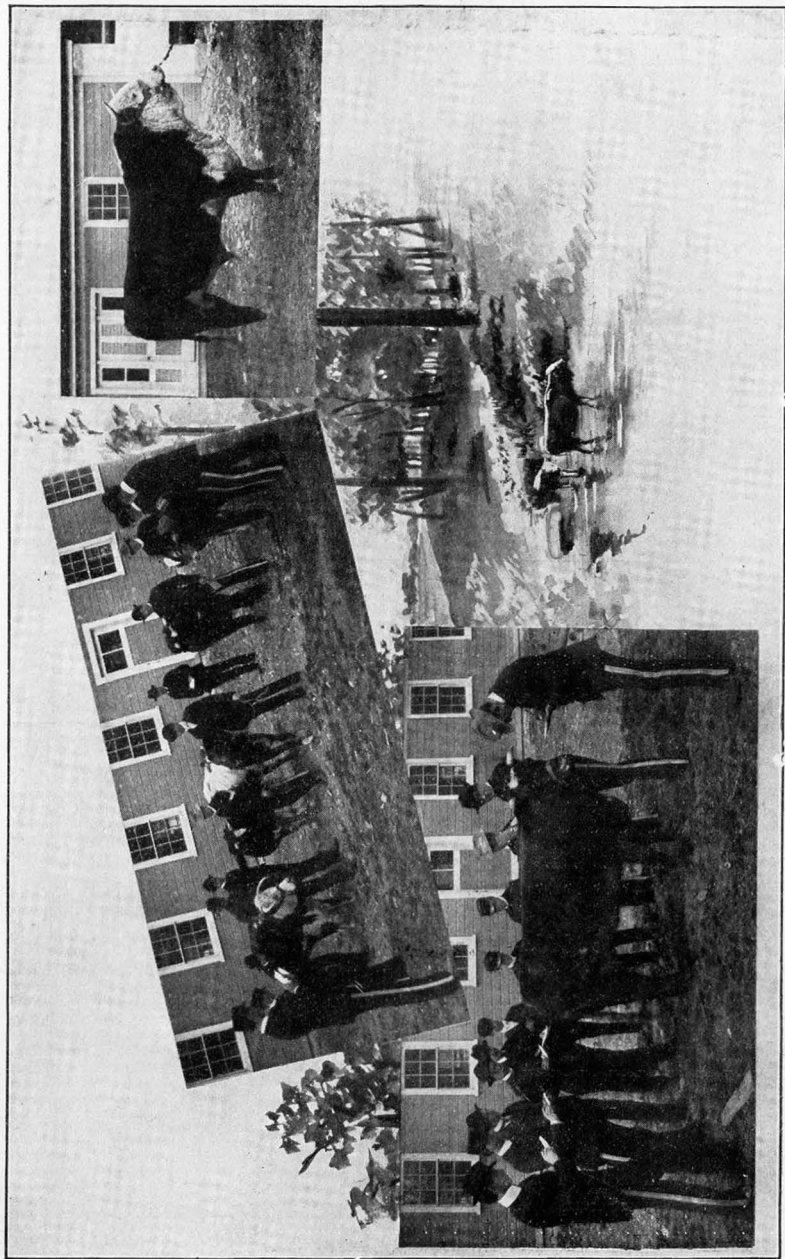
SHEEP BARN AND CATTLE BARN, FROM SOUTH-WEST.



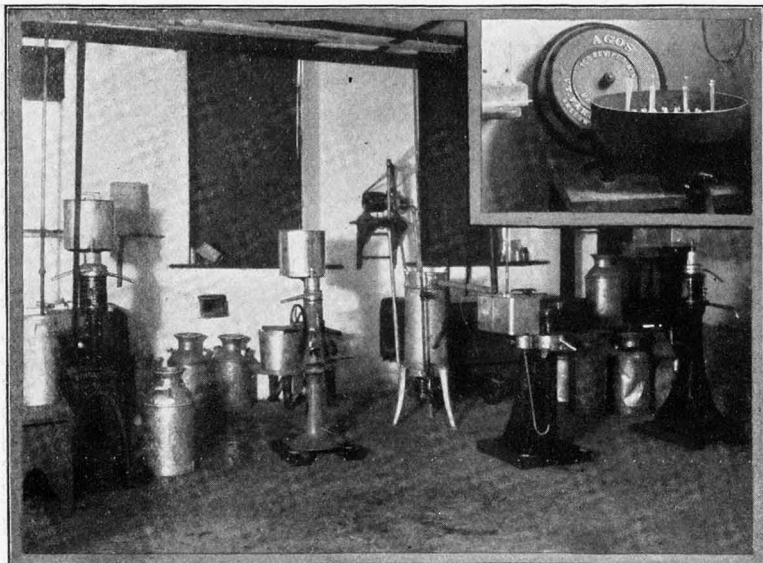
STALLS IN CATTLE BARN.



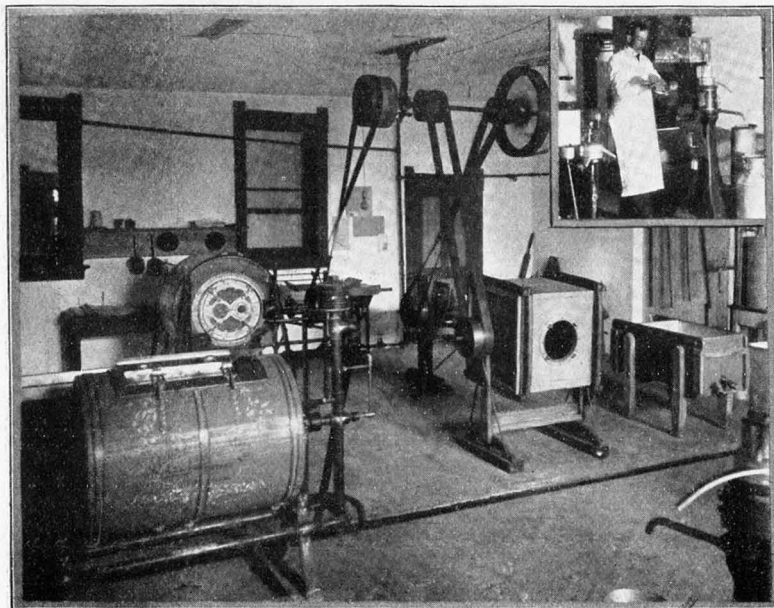
VETERINARY LABORATORY.



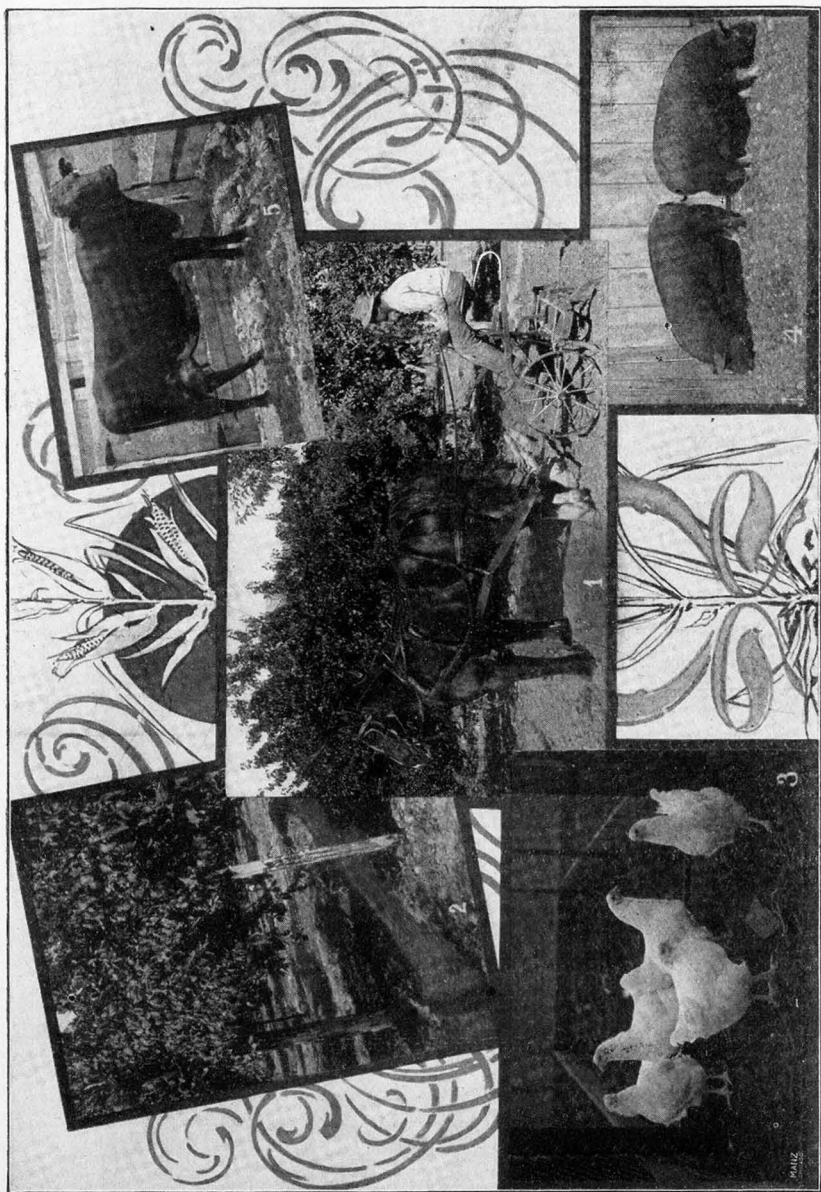
ANIMAL INDUSTRY CLASSES IN STOCK-JUDGING.



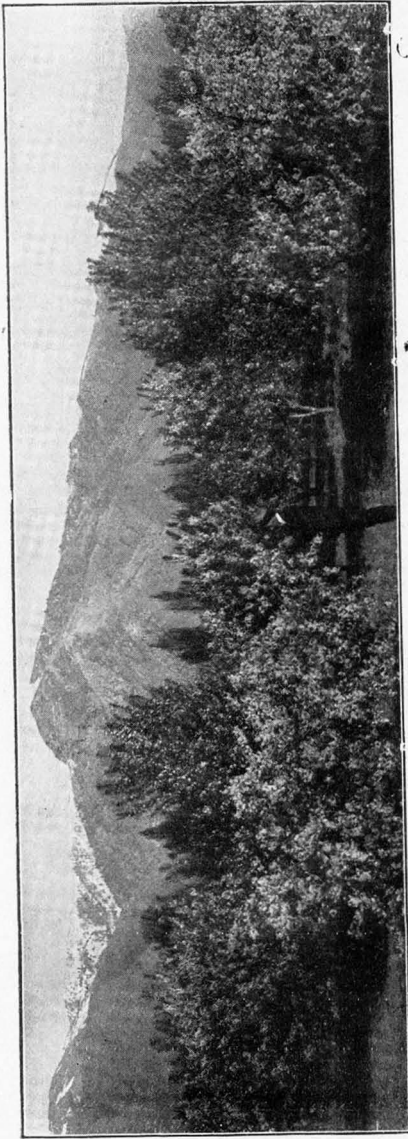
DAIRY—SHOWING SEPARATORS AND BABCOCK TEST.



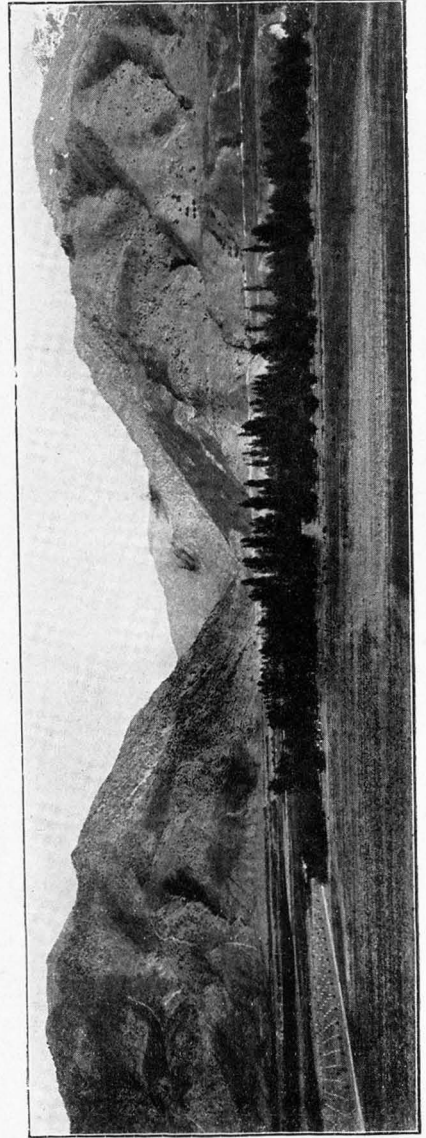
SECTION OF COLLEGE DAIRY.



VIEWS OF STATION WORK.

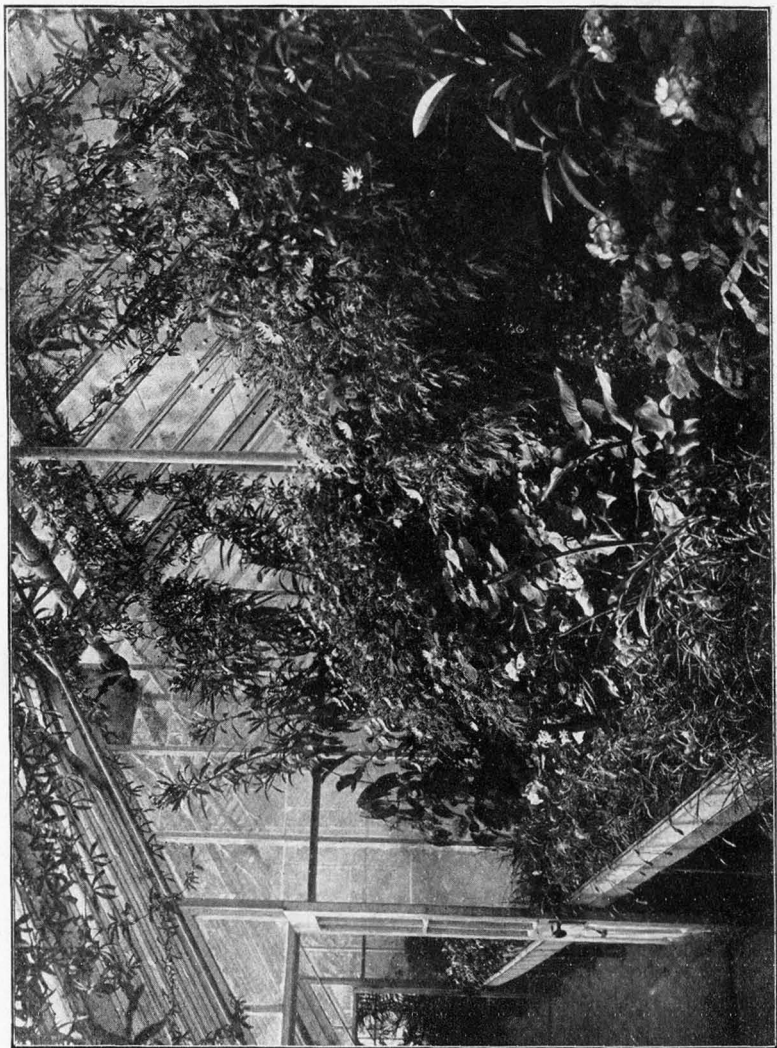


VIEW IN COLLEGE ORCHARD.

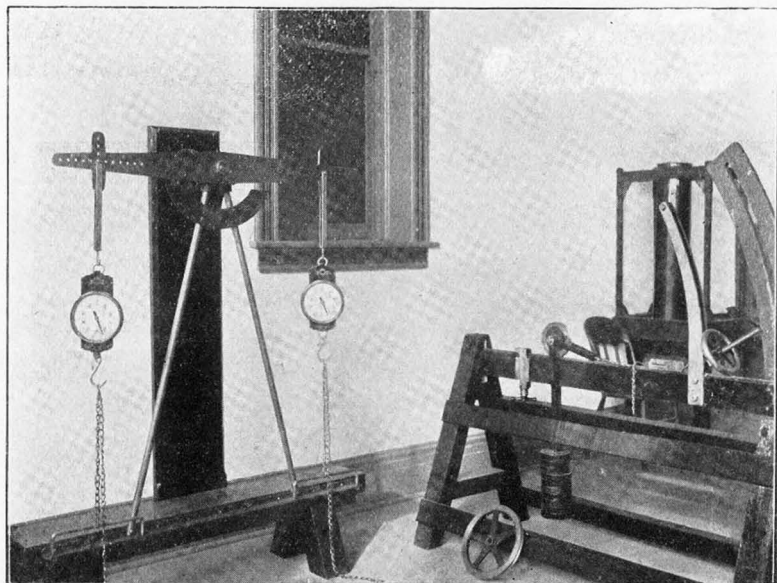




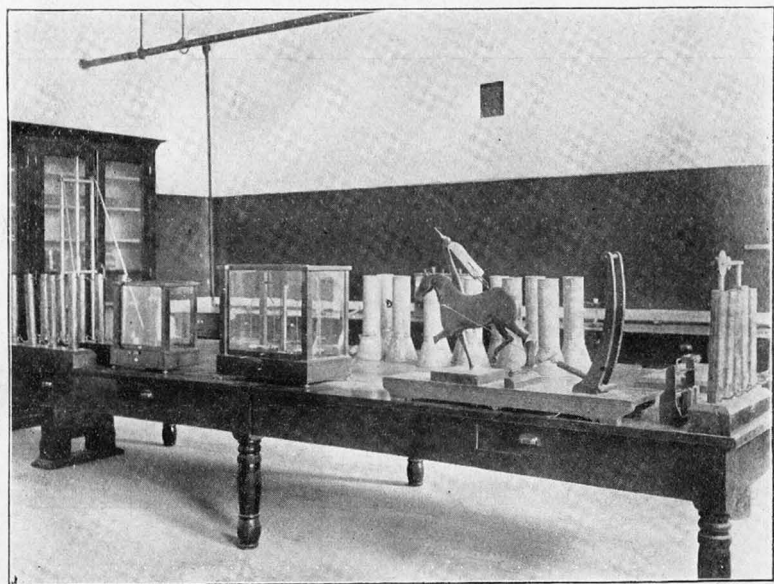
VIEW IN CONSERVATORY.



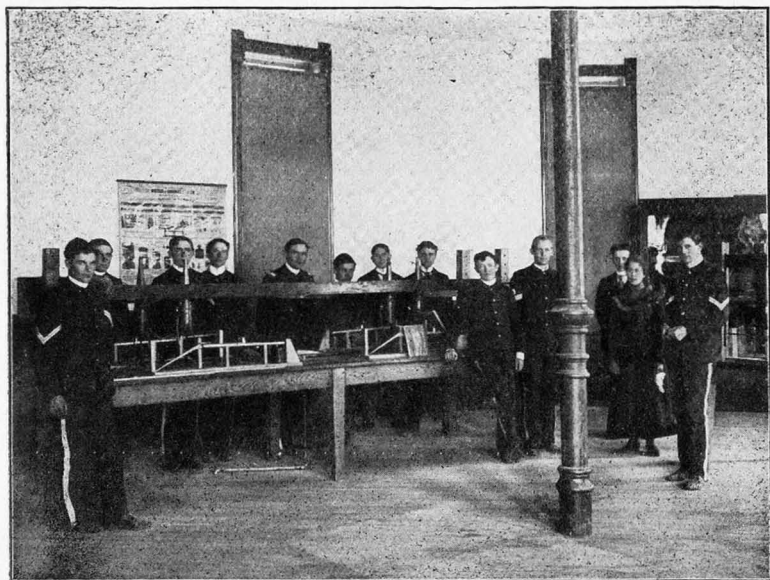
VIEW IN CONSERVATORY.



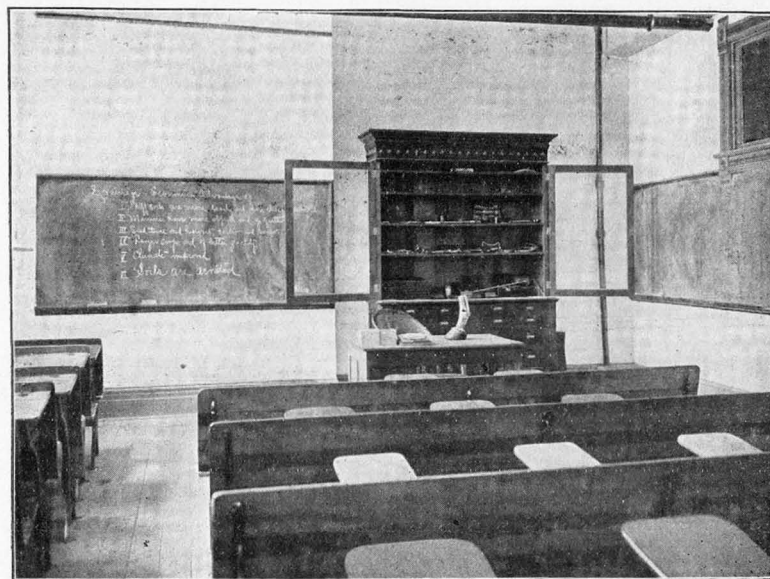
AGRICULTURAL PHYSICS LABORATORY.



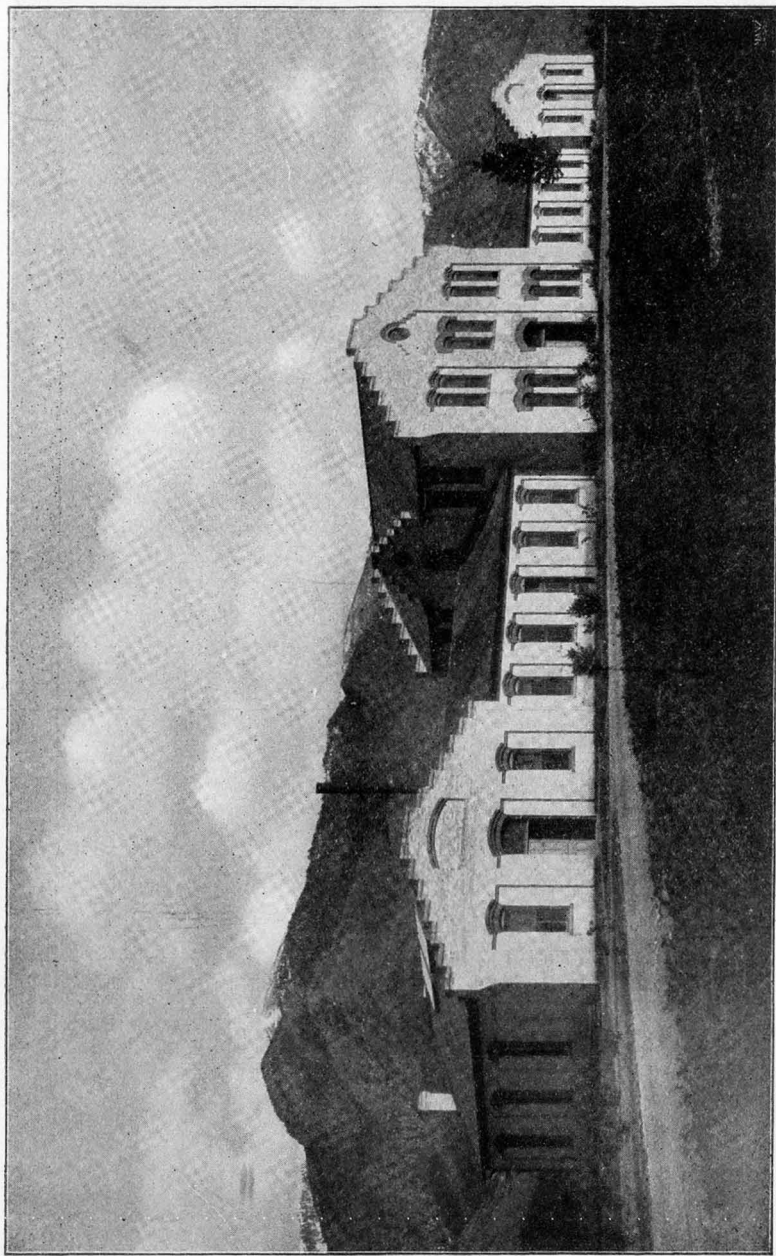
AGRICULTURAL PHYSICS LABORATORY.



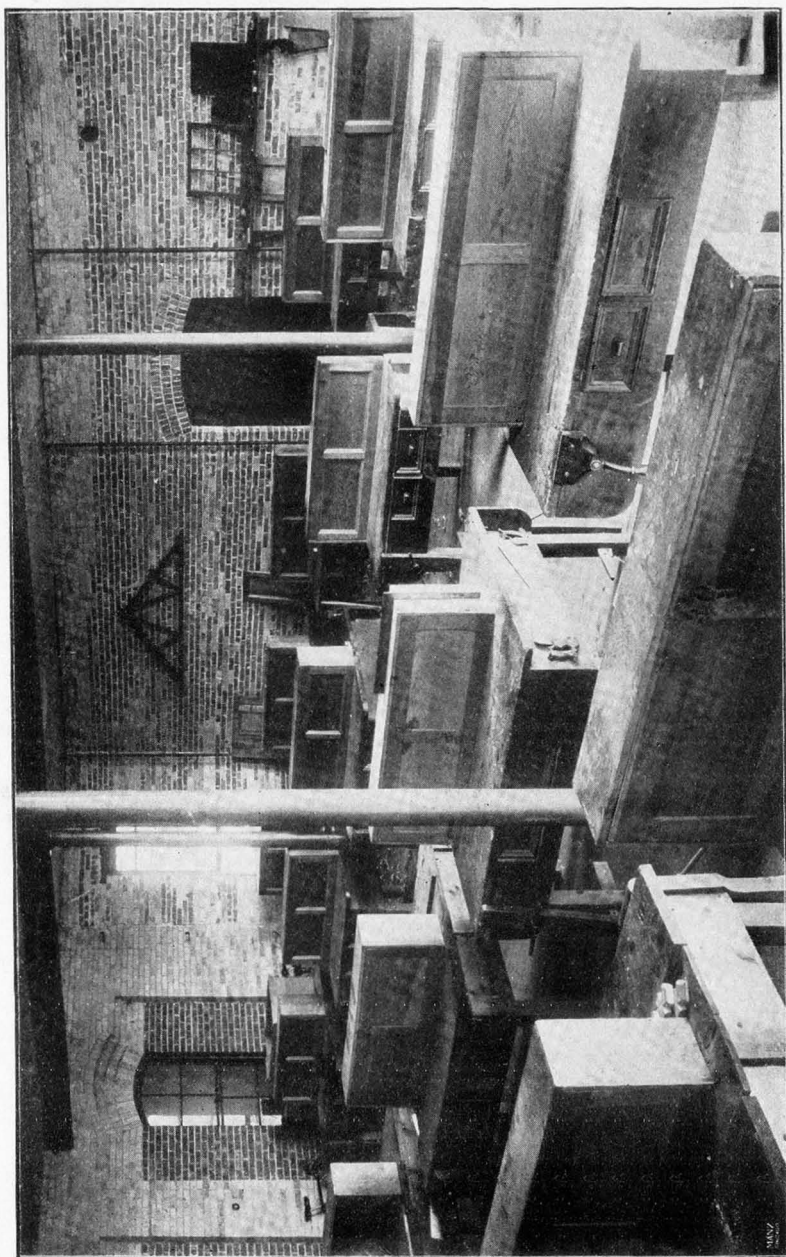
VIEW IN PHYSICAL LABORATORY.



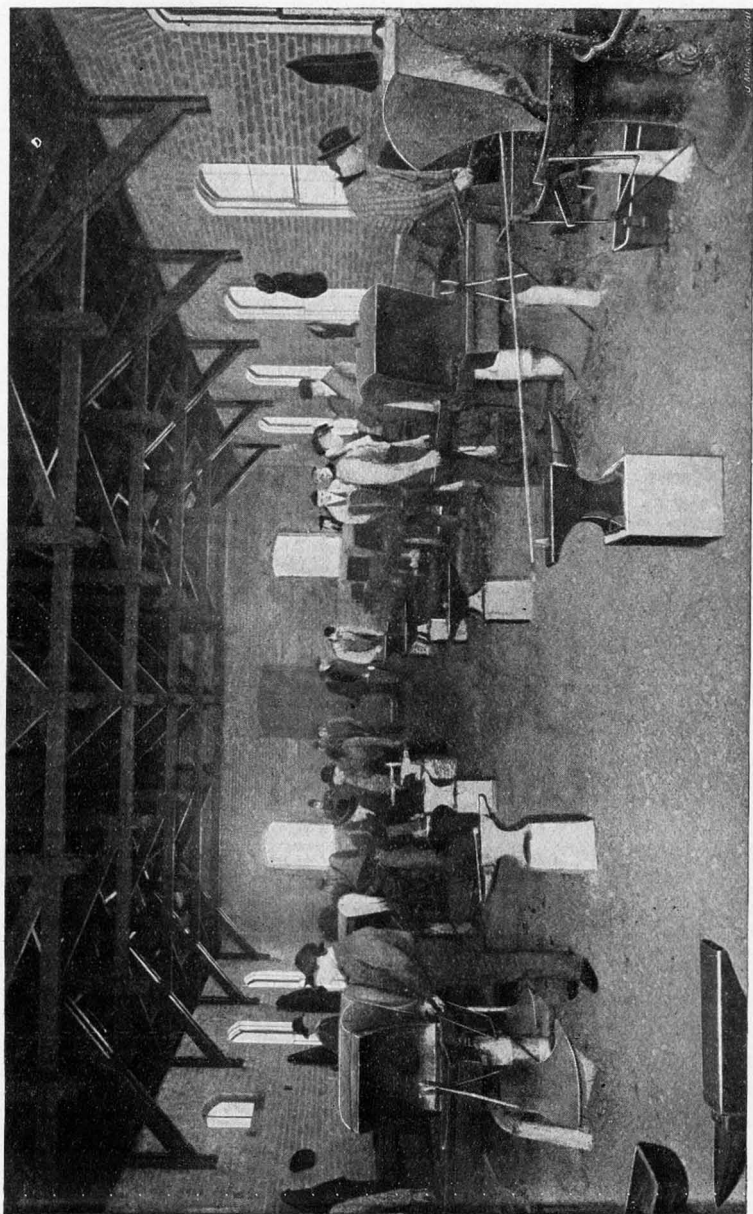
VETERINARY SCIENCE CLASS ROOM.



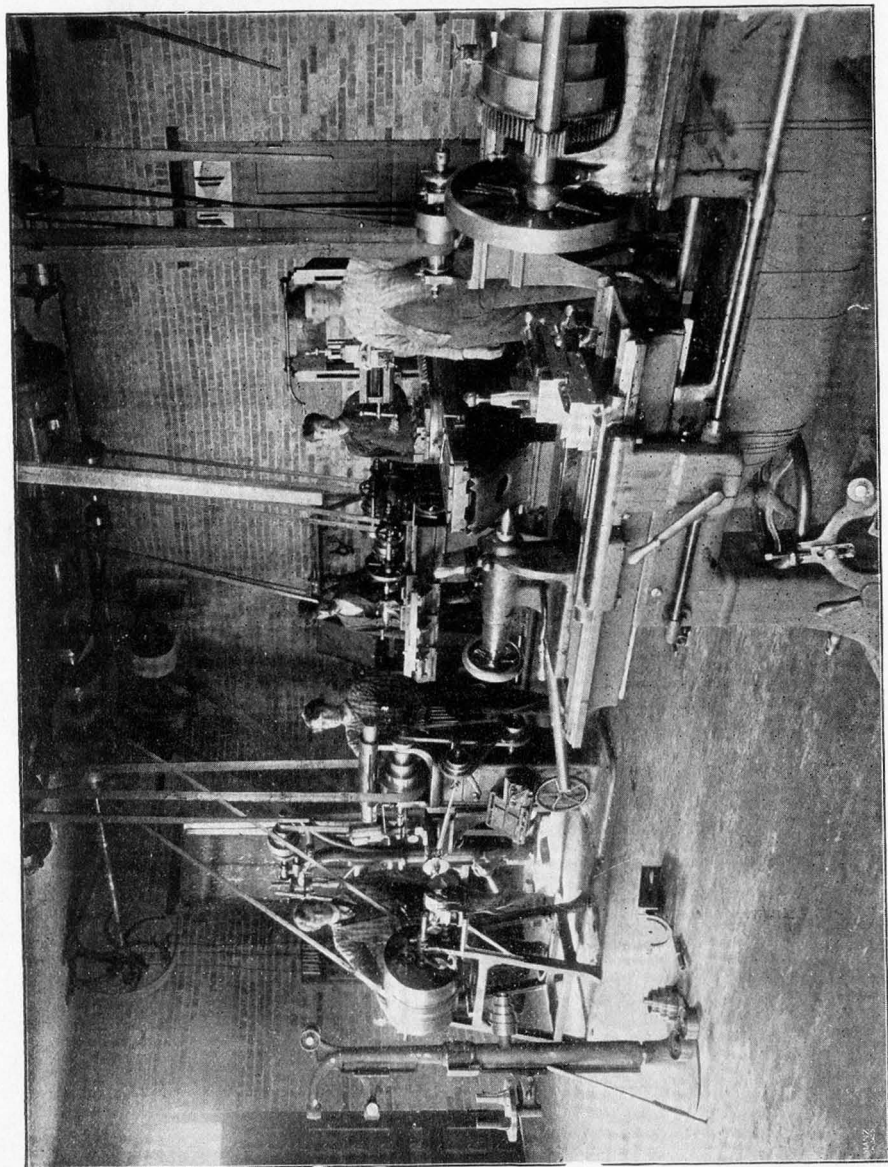
MECHANIC ARTS BUILDING.



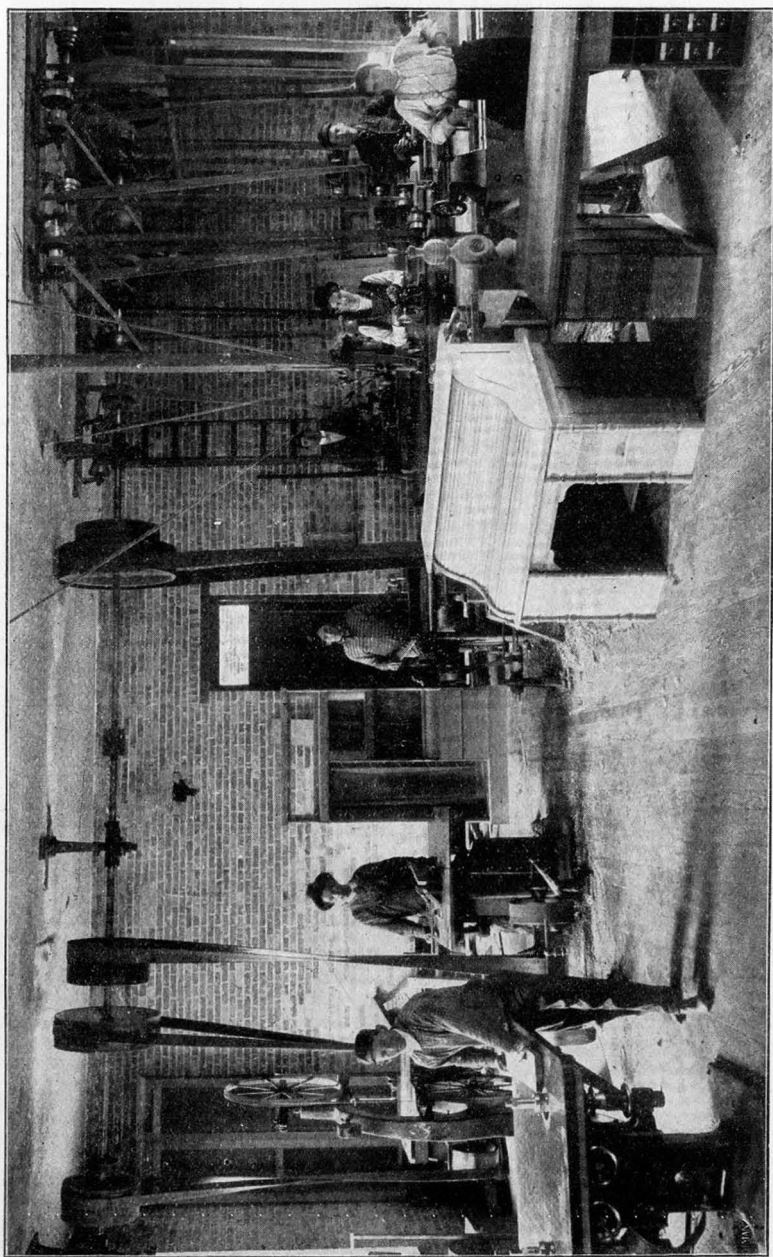
CARPENTER SHOP.



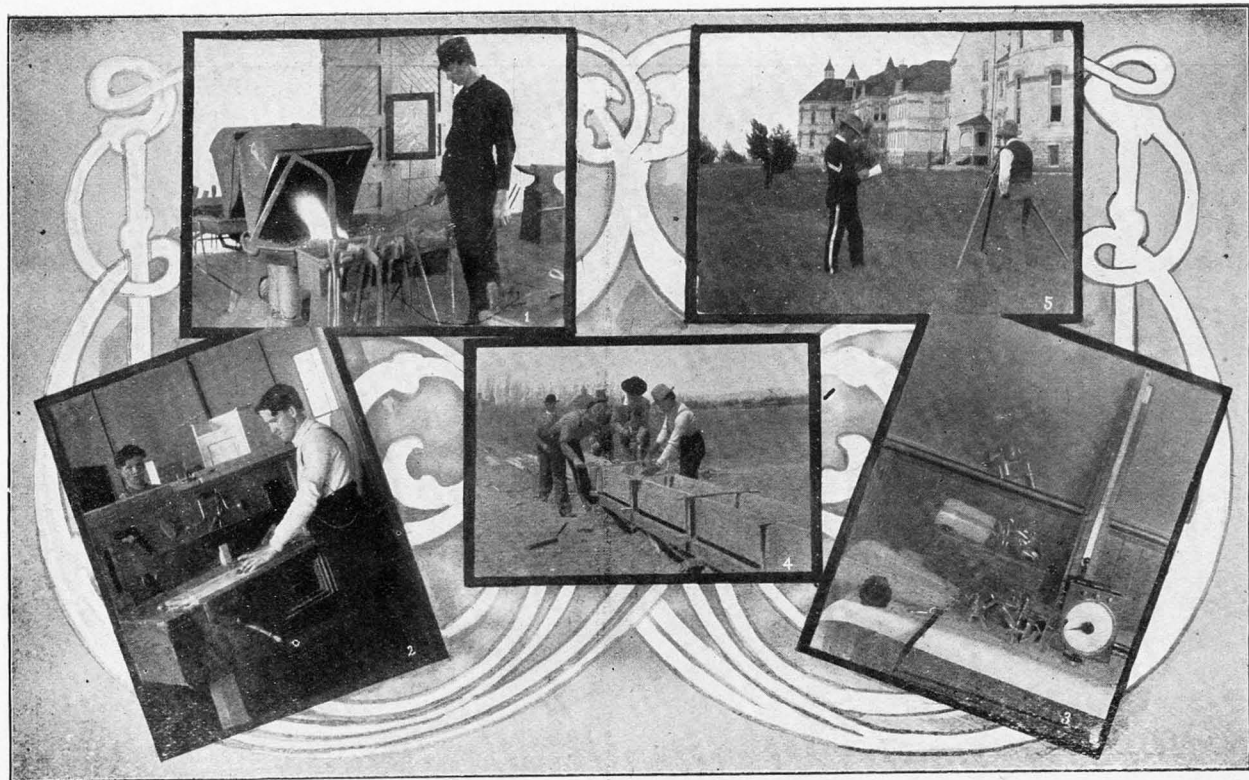
FORGE ROOM.



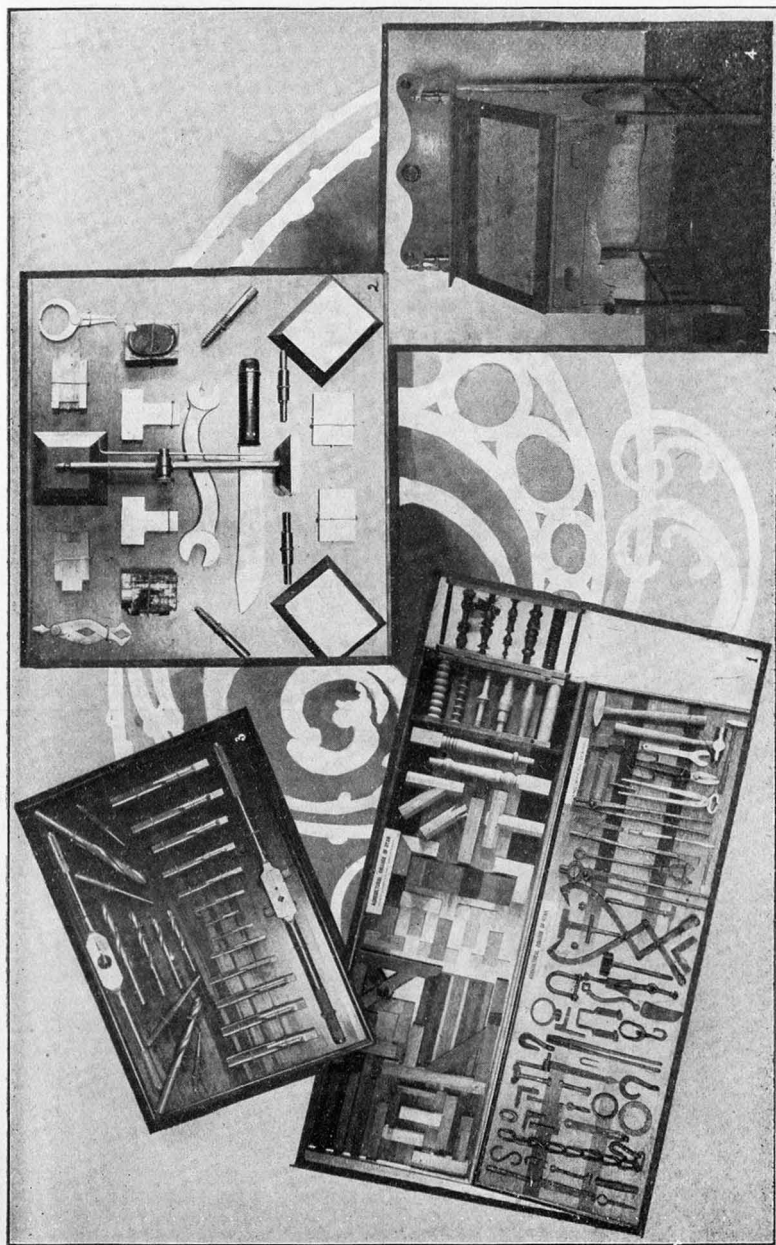
IRON-WORKING MACHINE ROOM.



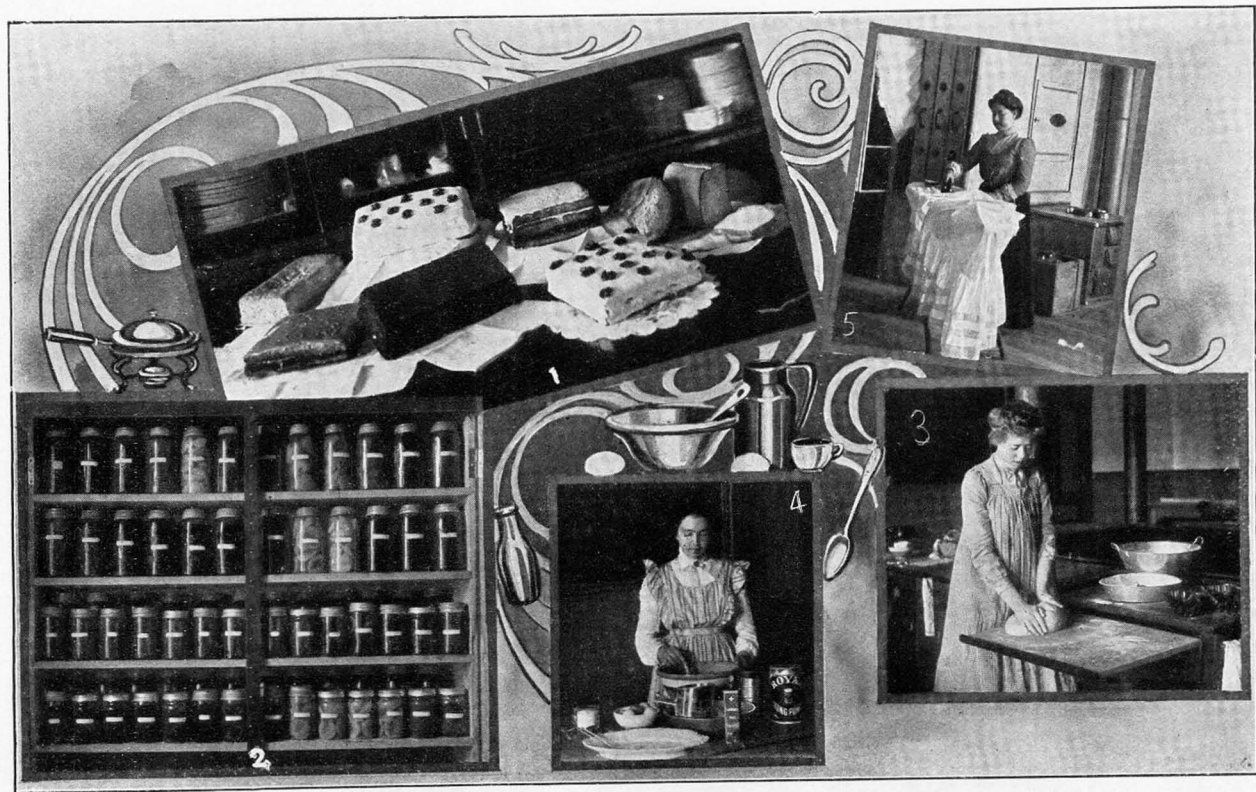
WOOD-WORKING MACHINE ROOM.



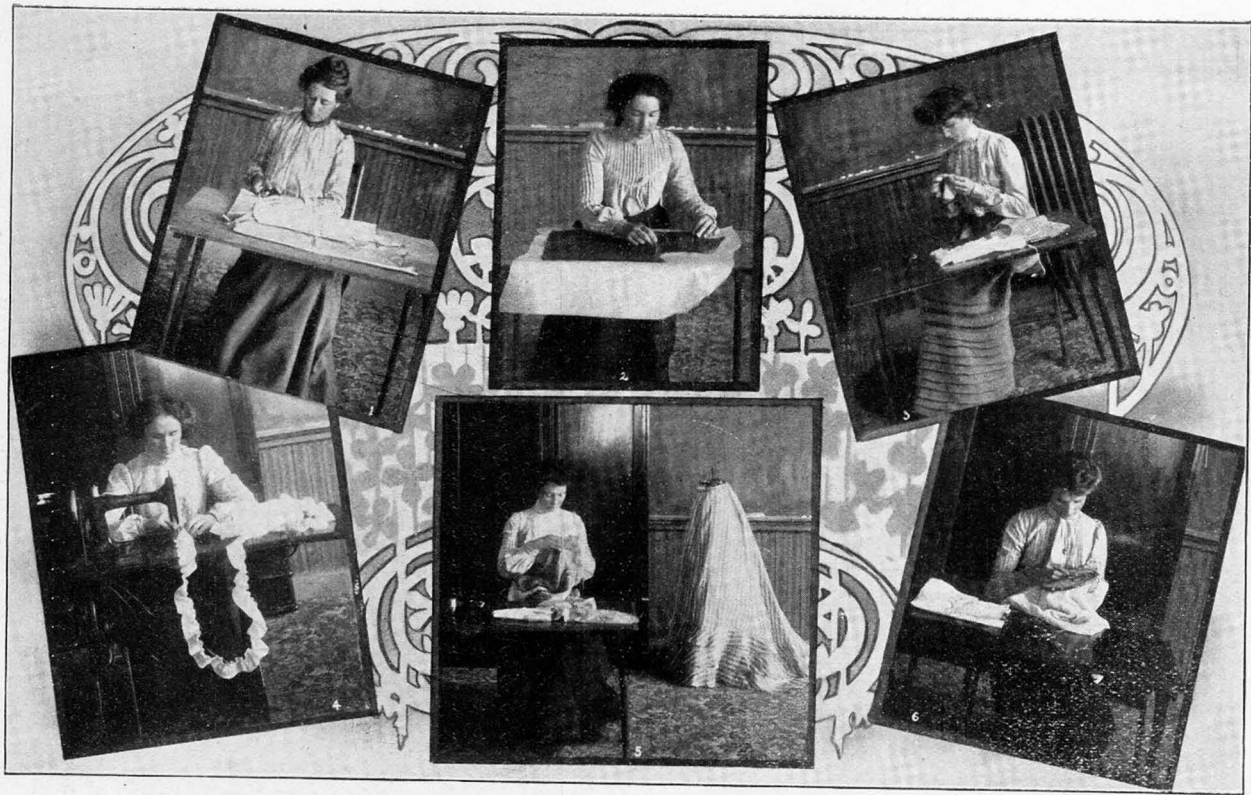
1. STUDENT AT FORGE. 2. STUDENT AT BENCH. 3. APPARATUS USED IN IRRIGATION INVESTIGATIONS.
4. STUDENTS MAKING FLUMES FOR IRRIGATION INVESTIGATIONS. 5. STUDENTS IN CIVIL ENGINEERING.



SAMPLE EXERCISES OF STUDENTS IN MECHANIC ARTS.



1. SAMPLES OF CAKE AND BREAD MADE BY STUDENTS. 2. FRUIT BOTTLED BY STUDENTS. 3. STUDENT
 MAKING BREAD. 4. MAKING PIE. 5. LAUNDERING A SKIRT.



VIEWS IN COLLEGE SEWING ROOMS.

1. CUTTING.

2. DRAUGHTING.

3. PIECE WORK.

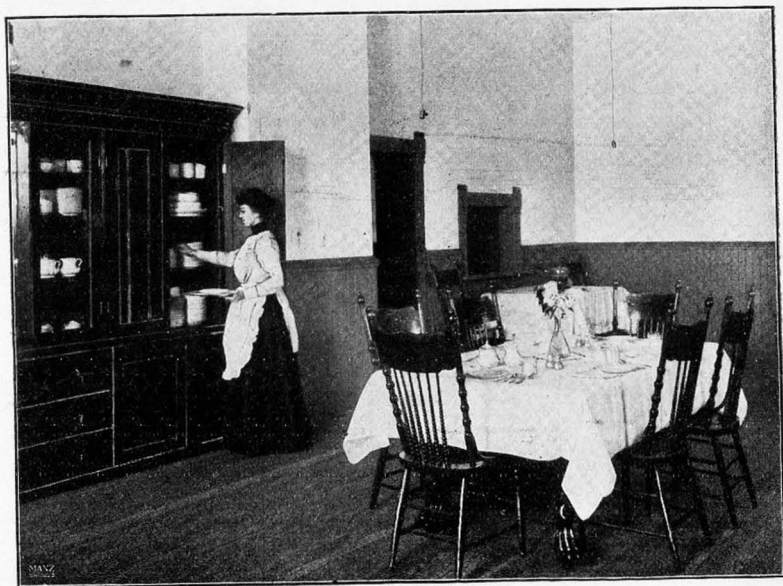
4. MACHINE WORK.

5. DRESSMAKING.

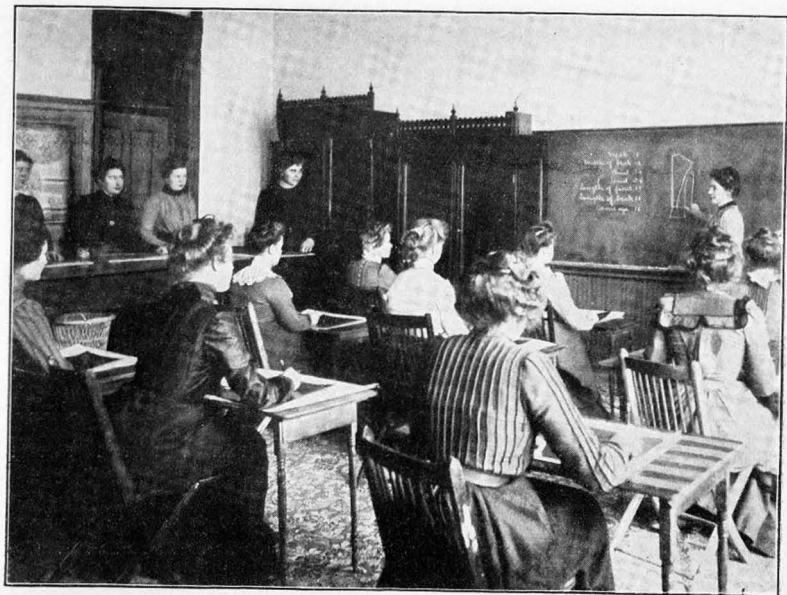
6. FANCY WORK.



VIEW IN COLLEGE KITCHEN.



CORNER OF COLLEGE DINING ROOM.



VIEW IN SEWING ROOMS.



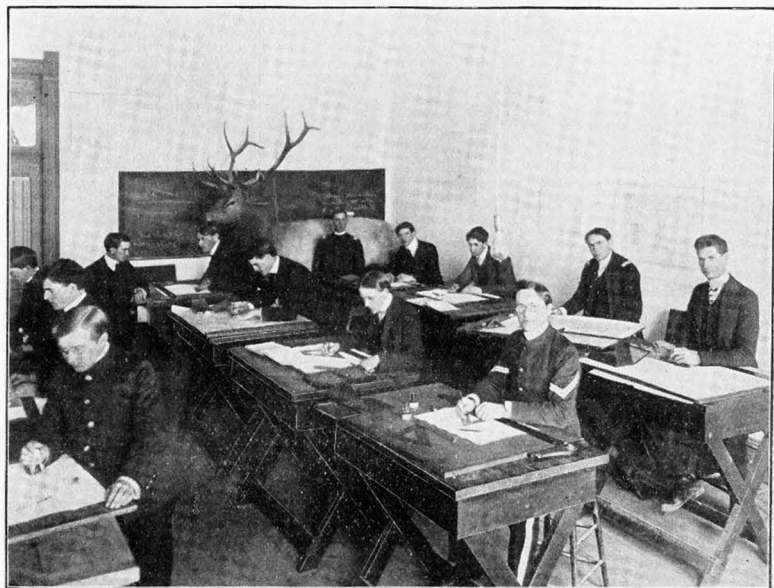
VIEW IN COMMERCIAL ROOMS.



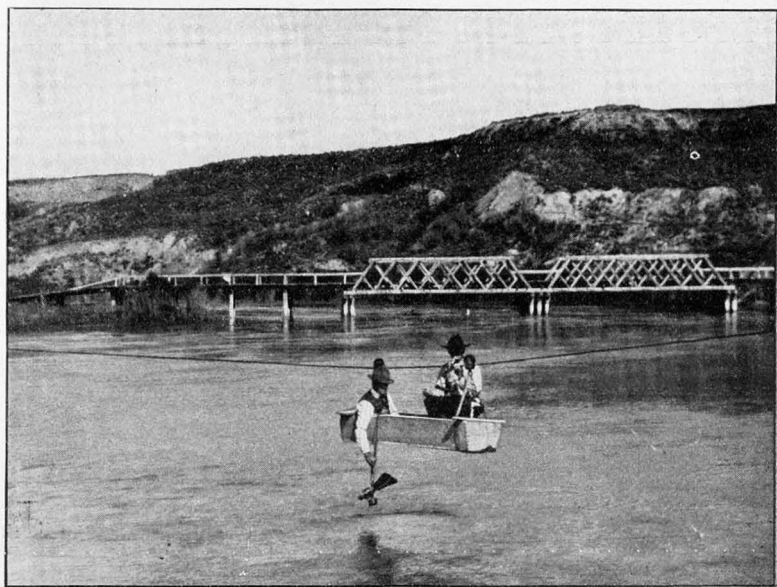
SECTION OF COMMERCIAL ROOM.



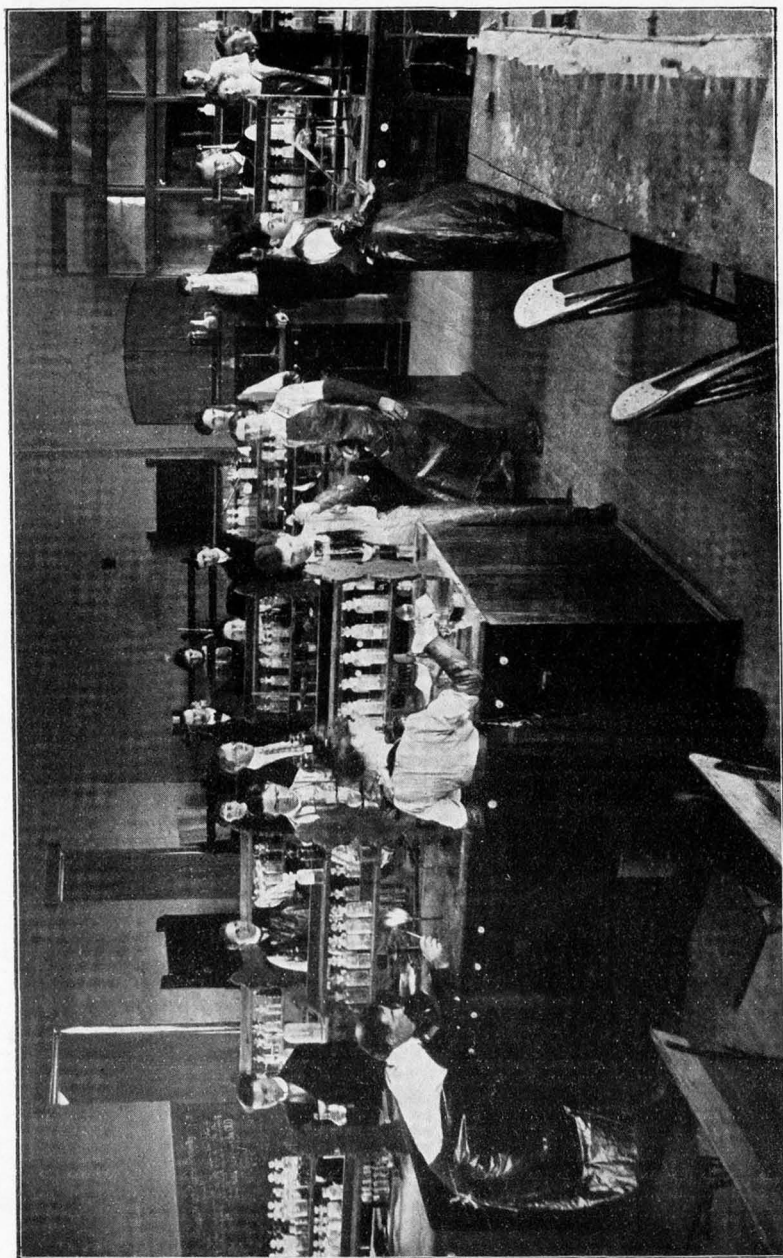
TYPEWRITING ROOM.



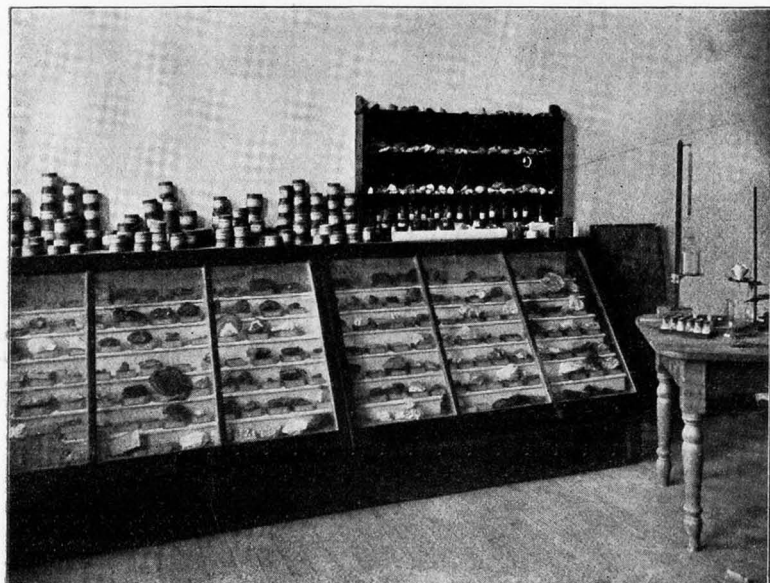
CIVIL ENGINEERING—DRAUGHTING ROOM.



ENGINEERING STUDENTS MEASURING FLOW OF WATER.



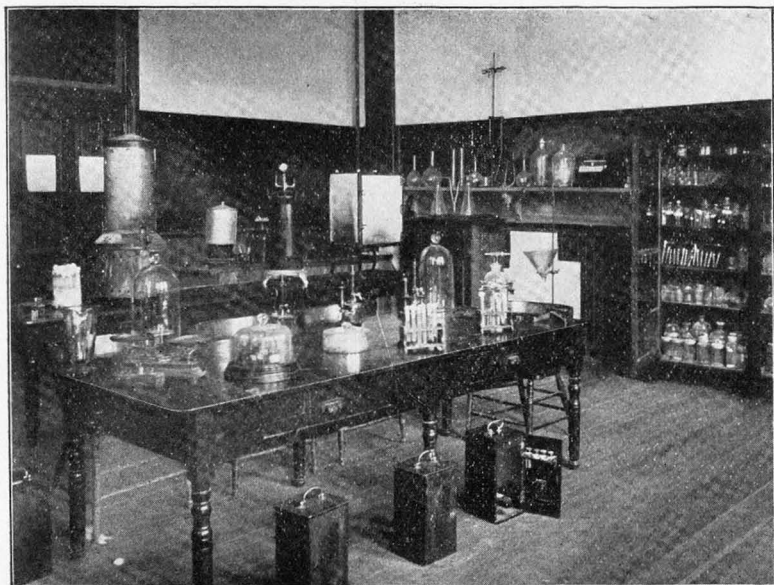
CHEMICAL LABORATORY.



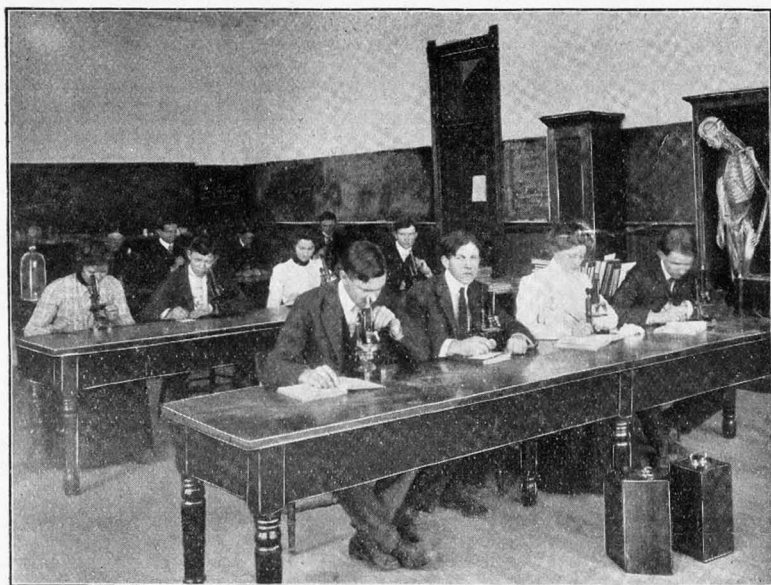
SECTION OF MINERALOGICAL LABORATORY.



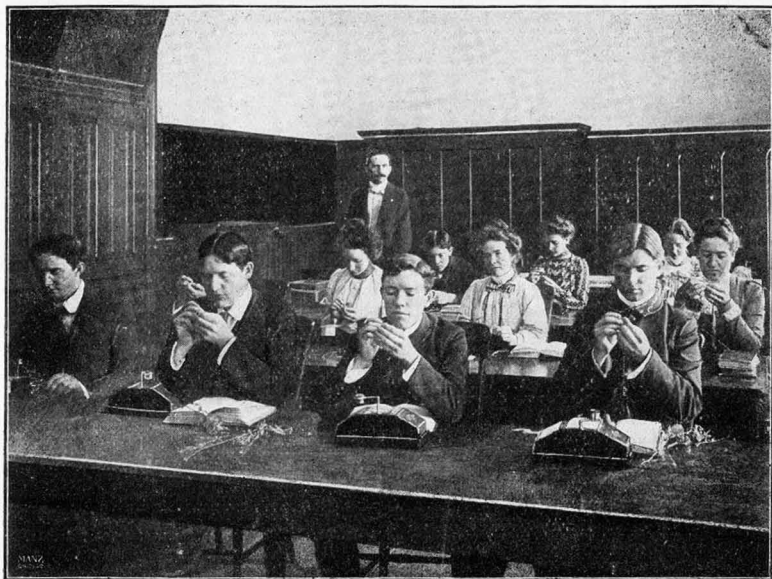
SECTION OF MINERALOGICAL MUSEUM.



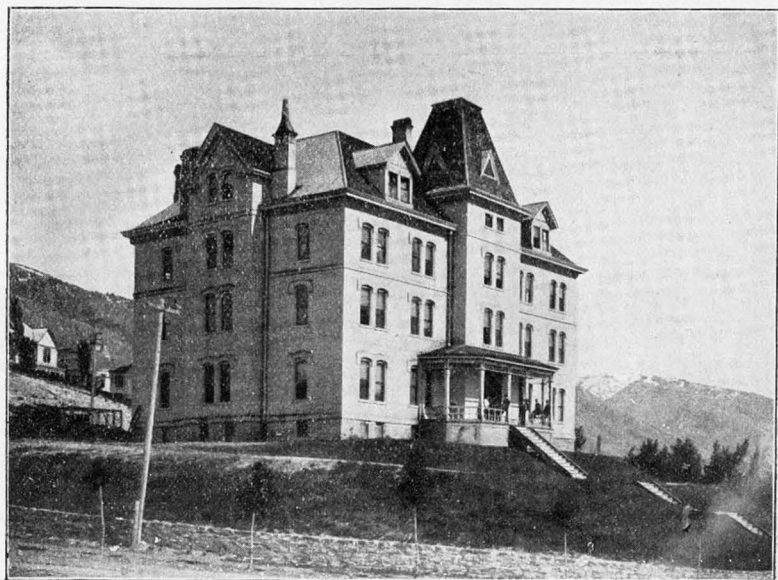
BACTERIOLOGICAL LABORATORY.



BIOLOGICAL LABORATORY.



SECTION IN BOTANICAL LABORATORY.



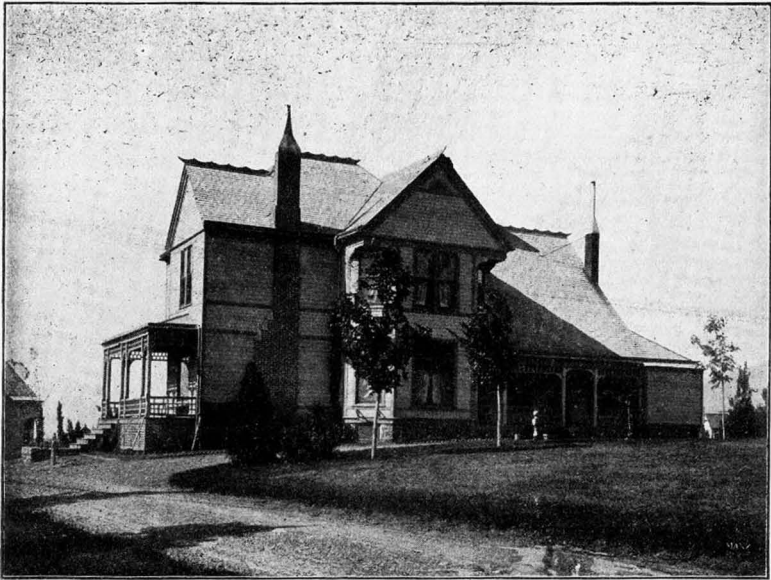
COLLEGE DORMITORY.



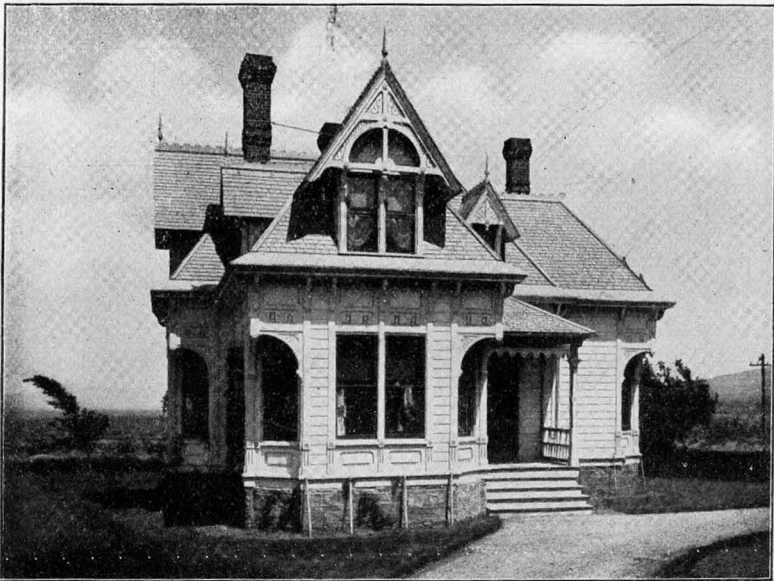
RECEPTION ROOM—COLLEGE DORMITORY.



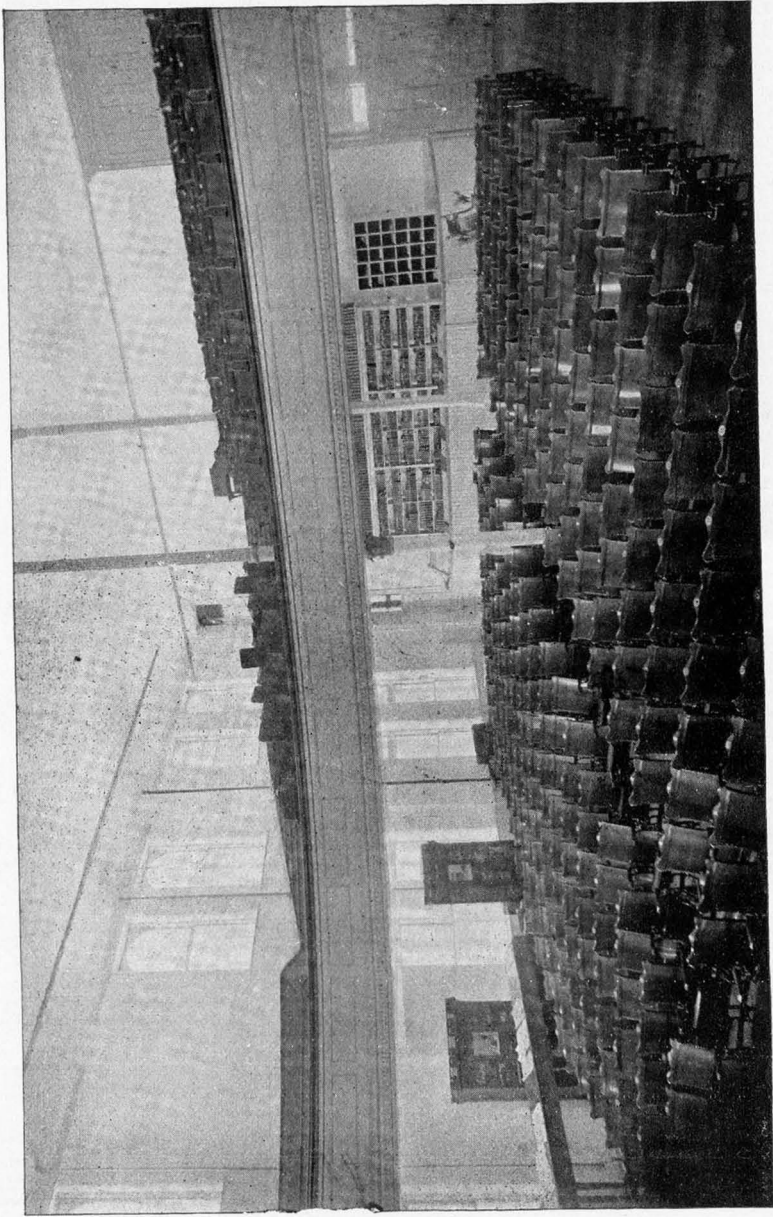
STUDENTS ROOM—COLLEGE DORMITORY.



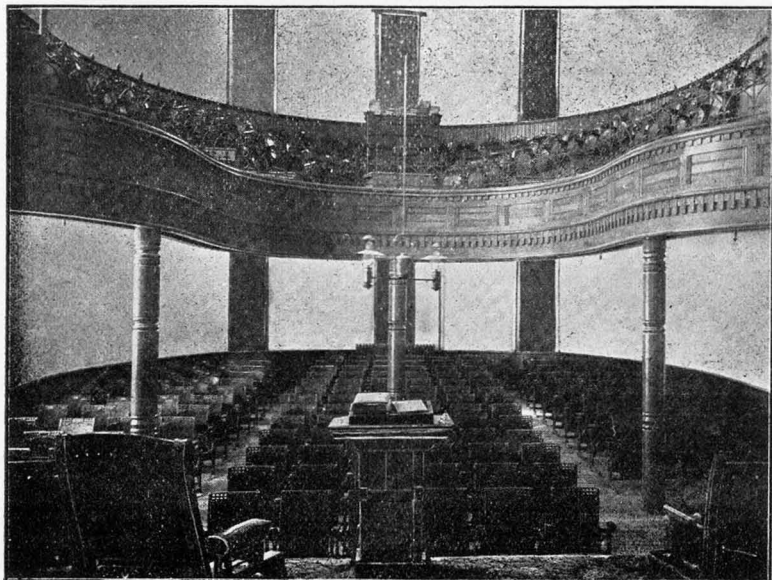
RESIDENCE OF THE PRESIDENT.



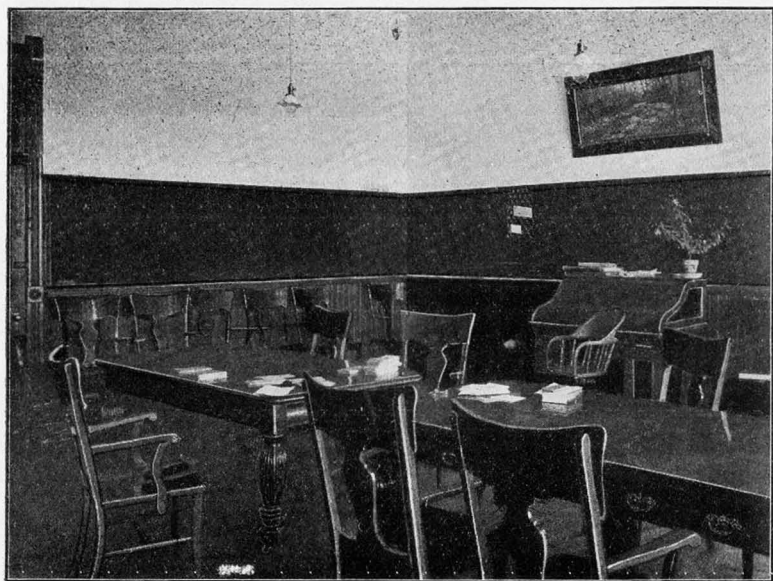
RESIDENCE OF DIRECTOR EXPERIMENT STATION.



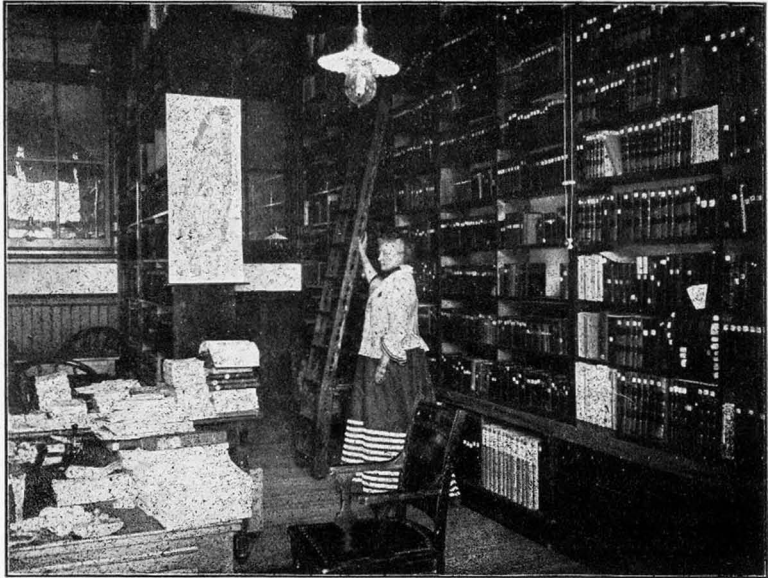
AUDITORIUM.



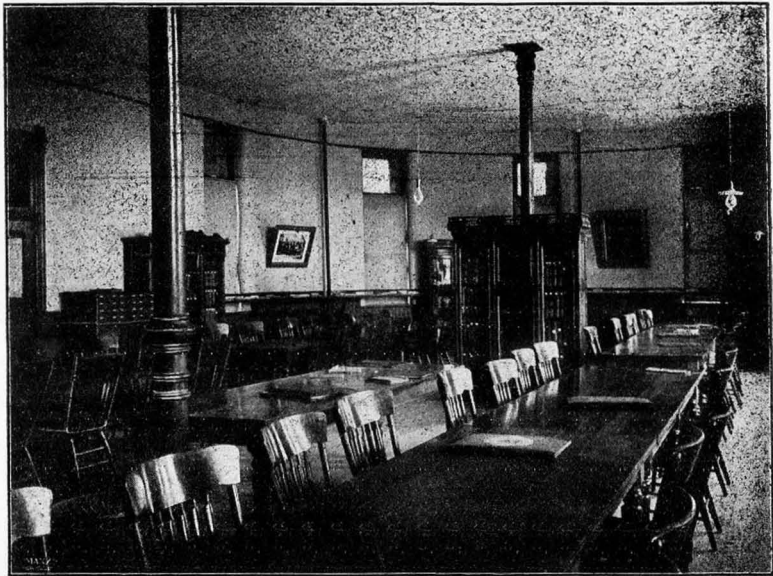
SOCIETY HALL.



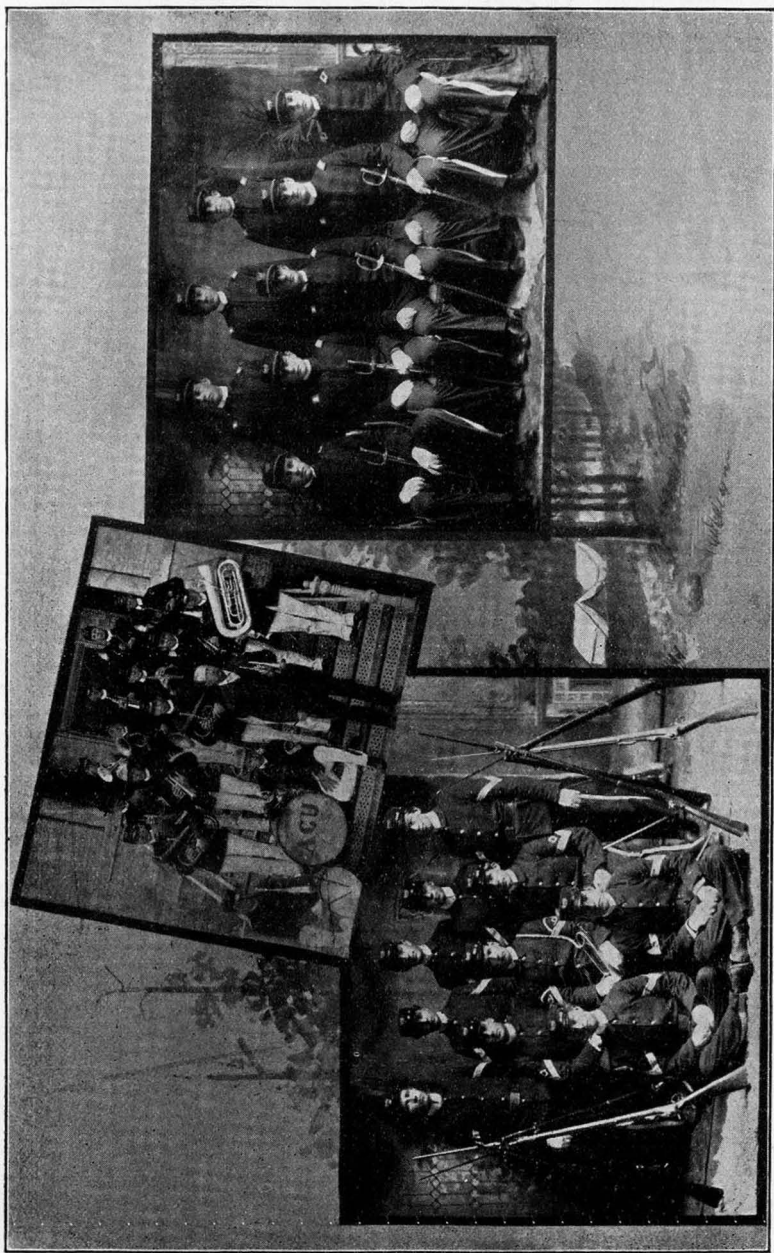
FACULTY ROOM.



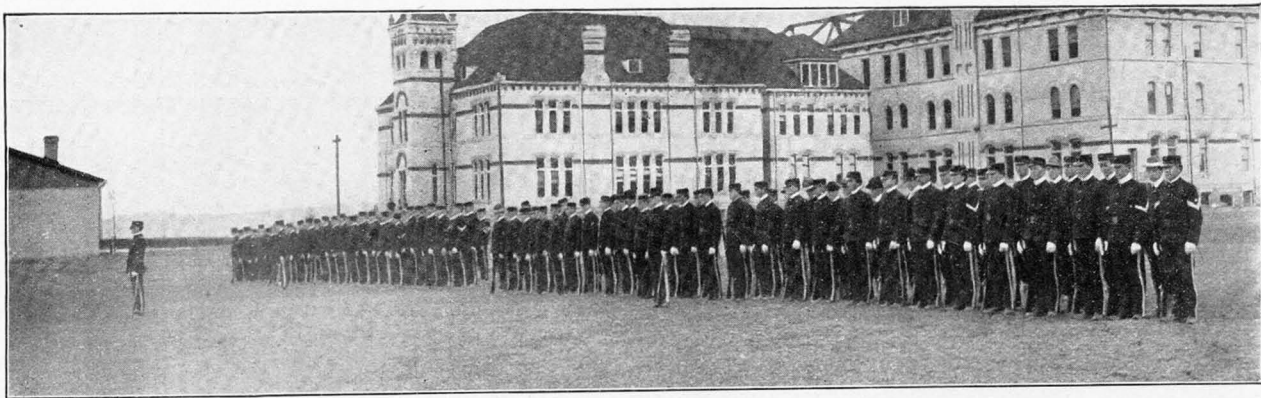
CORNER IN LIBRARY.



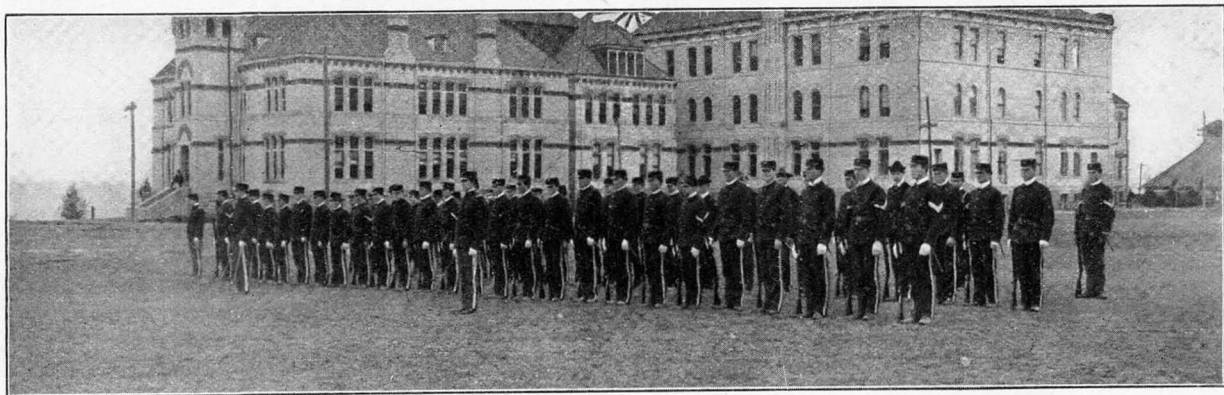
SECTION OF READING ROOM.



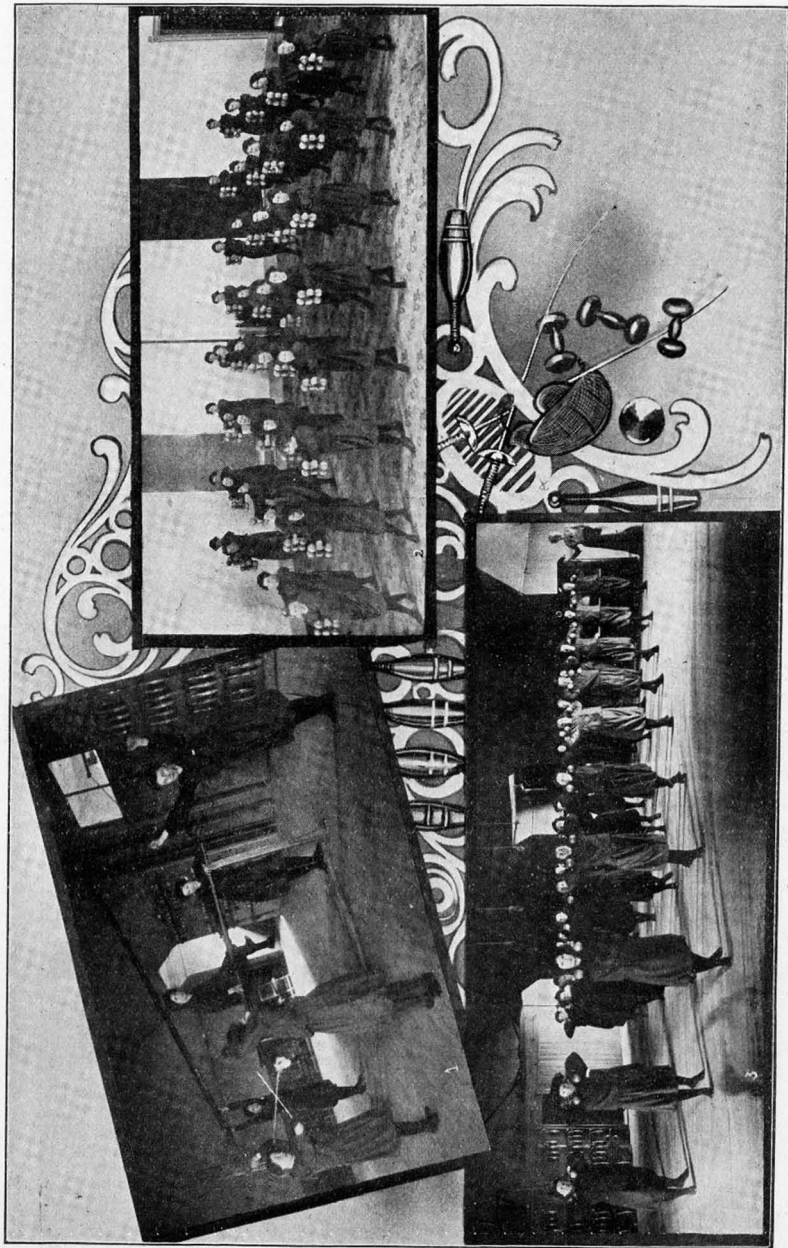
MILITARY OFFICERS AND BAND.



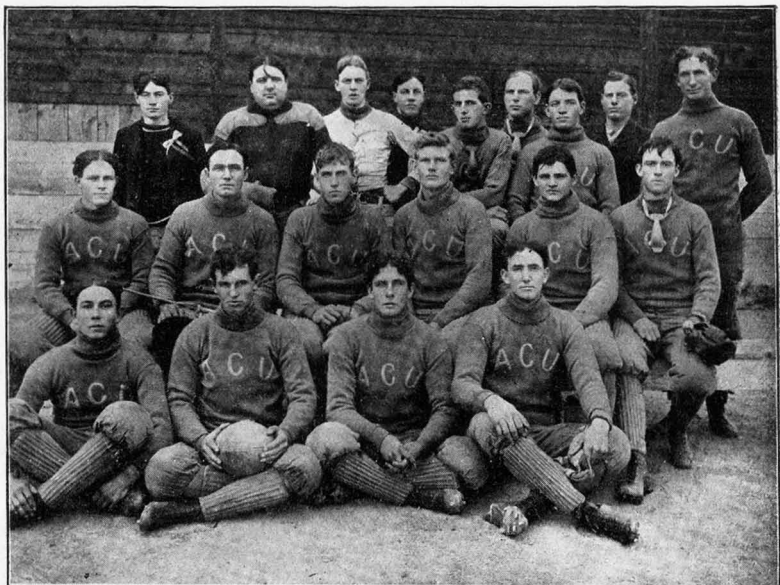
COLLEGE CADETS—BATTALION.



COLLEGE CADETS—COMPANY A.



PHYSICAL CULTURE.



COLLEGE FOOTBALL TEAM.



SECOND FOOTBALL TEAM.

the mind and eye and hand must together be trained in order to secure symmetrical development. The object is to inculcate habits of industry and thrift, of accuracy and reliability, and to foster all that makes for right living and good citizenship.

LOCATION.

The Agricultural College is located in Logan, Utah, the county seat of Cache County, which is one of the most prosperous agricultural counties in the state. The city has a population of about 6,000; it is noted for its freedom from vice, is quiet, orderly, clean, and generally attractive, with neat homes, good, substantial public buildings, electric lights, and water system; the citizens are thrifty and progressive. The College is beautifully situated on a broad hill overlooking the city one mile east of Main street, and commands a view of the entire valley and of its surrounding mountain ranges. The beauty of the location is perhaps unsurpassed by that of any other college in the country. A few hundred yards to the south is the Logan river, with its clear water and luxuriant grasses and shrubs. A mile to the east is a magnificent mountain range and a picturesque canyon. In other directions the towns and farms covering the green surface of Cache Valley, and seen through the clear atmosphere, constitute a delightful and impressive panorama. The valley is a fertile, slightly uneven plain, 4,500 feet above sea level, about twelve by sixty miles in dimensions, almost entirely under cultivation, completely surrounded by the Wasatch mountains, and one of the most beautiful and healthful valleys in the western region.

BUILDINGS AND GROUNDS.

The College buildings comprise the Main Building, the Experiment Station Building, the Mechanic Arts Building, the Dormitory, the Conservatory, the Veterinary Laboratory, three barns, the Poultry Building, and residences for the President of the College, the Director of the Experiment Station, and the Farm Superintendent, and cottages for farm laborers.

THE MAIN BUILDING is constructed of brick and stone. It is 360 feet long, 200 feet deep in the central part, and four stories in height. It is heated by steam and lighted by electricity in every part. The rooms are light and pleasant, and the halls spacious, extending on each floor the entire length of the building. This building contains the large auditorium, with a seating capacity of about 1,500; a small auditorium, or society hall, which will seat 400; the administrative offices; the library and reading rooms; the gymnasium; the agricultural, the biological, the botanical, the chemical, and the physical laboratories, museums and lecture rooms; the Station chemical laboratories and museum; the office and the class rooms of the commercial department; the sewing and millinery rooms, the laundry, kitchen, and dining rooms; the museum, and the offices of the department of domestic science; the dairy rooms; the armory and drill hall; the offices and class rooms of the department of civil engineering; and the class rooms for English, mathematics, modern languages and art.

THE EXPERIMENT STATION BUILDING is a brick structure, 45 feet long and 35 feet wide, two stories in height. It contains the laboratories of the Entomologist and the Horticulturist; the offices of the Director of the Station, the Agronomist, the Horticulturist, and the Poultry Manager; the mailing room; and a dark room for photographic work.

THE MECHANIC ARTS BUILDING, situated south of the Main Building, is 220 feet long by 40 feet wide, with the

central part, 40 feet wide, extending back 120 feet. It is one story high, except the central front part, which is two stories. The walls of brick, and the roof of corrugated iron. The building is heated by steam, and is well lighted and ventilated throughout. It contains the power room, the forge room, the carpentry, or bench room, the machine shops for wood and metal, and the office and class rooms of the director of manual training.

Adjoining the Mechanic Arts Building is a *store room*, 40 by 27 feet, two stories high.

THE DORMITORY is a brick and stone structure, 50 feet wide by 80 feet long, four stories in height. It contains thirty-three rooms for students, each 12 by 14 feet, exclusive of closet; a reception room for students, 19 by 27 feet; a model kitchen; a dining room; a pantry, supplied with all modern conveniences; a laundry room; bath rooms; and rooms for the matron and for the employees. The rooms of this building are well lighted and ventilated, each room having two registers for ventilation.

THE CONSERVATORY is of the most modern type, 90 by 25 feet, and is filled with beautiful flowering and ornamental plants. There are three compartments of equal size, one for semi-tropical plants, such as ferns, palms, bananas, etc., one for roses, and one for carnations and other plants. The equipment is used to supplement class work in botany, floriculture, and horticulture.

THE VETERINARY LABORATORY building, situated several hundred yards to the rear and east of the main College building, is a stone and frame structure, 18 feet wide and 42 feet long, two stories in height. It contains a dispensary, an operating room, stalls, etc. It is heated by steam.

THE BARN. There are three barns, one for horses, one for cattle, and one for sheep. The *horse barn* is a wooden structure, 60 feet square, and contains model sanitary stables for horses, besides storage divisions for hay, grain, and

seeds, and rooms for carriages and wagons, farm implements, and machinery; also the farm foreman's room and repair shop. A ten-horse power electric motor furnishes power for grain threshing, feed grinding, and fodder shredding. The *cattle barn* is 106 feet by 104 feet. It is provided with the most modern equipment throughout, including iron stalls, cement floors, mangers, etc. There are accommodations for seventy-five head of cattle; also hospital rooms, feed rooms, a milk room, a root cellar, and storage room for hay and grain. The *sheep barn* is a modern building, 94 feet by 41 feet in dimensions, with accommodations for seventy-five sheep, and storage room for feed.

THE POULTRY BUILDING is 130 feet long and 10 feet wide, divided for experimental purposes into twenty-two pens. This building is provided with a hot water heating system for winter, also a boiler for cooking food, and an incubator cellar. There are four different makes of incubators and brooders, a bone mill, clover cutter, and other necessary appliances of a modern poultry plant. The principal breeds of poultry are kept, representing the American, Mediterranean, and Asiatic classes.

The land occupied by the College and its several departments embraces about 111 acres. Of this, thirty acres constitute the CAMPUS, which is tastefully laid out and adorned with flower-beds, and individual specimens and groups of ornamental shrubs and trees, both evergreen and deciduous. There are broad stretches of lawn, and wide drives and walks leading gracefully from various parts of the Campus to the College buildings. During the summer the conservatory contributes its hardy plants for lawn decoration.

Immediately east of the main building are the parade grounds and athletic field of about ten acres. The farms comprise 71 acres; the orchards, the forestry, the vineyards, and the small fruit and vegetable gardens, ten acres. All parts of the College grounds are used by the professors in charge of in-

struction in Agriculture and Horticulture for the purpose of practical illustration in their respective departments; they are also used for the work of the Experiment Station.

EQUIPMENT.

The Department of Agronomy is provided with a large collection of agricultural plants and seeds, and other illustrative material. The agricultural laboratory is equipped with balances, a self-registering dynamometer, an appliance for measuring the resistance to tractive force of incline and obstruction, a double-tree hitch apparatus, horse calipers, apparatus for determining the water-holding capacity of soils, specific gravity of soils, etc. There is also a model of a horse arranged for determining, by experiments, the influence on draft of direction of traces, weight of horse, strength of hock muscles, etc. An apparatus has been provided to demonstrate the influence of head diameter, length and bends on the rate of discharge of water through lines of tile and water pipe. The College farm is equipped with the best farming implements and machinery, including plows, cultivators, planters, cutters, shellers, grinders, a binder, a threshing machine, an electric motor, etc. For illustrative and experimental purposes, the farm is divided into numerous plats, on which different classes and varieties of farm crops are grown.

For the work in Animal Industry, general use is made of the College barns, live-stock, dairy, etc. The live-stock consists of Clydesdale and Shire draft horses; Hereford, Short Horn, Holstein, and Guernsey cattle; Shropshire, Cotswold, and Merino sheep. A live-stock class room is provided, where the animals may be brought before the class for inspection and criticism. The Dairy occupies a floor space of about three thousand square feet, which is divided into seven rooms for the

various processes of dairy work. The department is equipped with the apparatus necessary for all the processes of butter and cheese-making and milk testing. For butter-making there are milk vats and heaters, hand and power separators, hand and power churns, a combined churn and worker, and a Mason butter worker. For cheese-making there are four vats, gang and upright presses, and a curing room. Ample facilities are provided for illustrating the handling of milk for the milk trade, including the Star milk cooler, an intermittent pasteurizer, etc. The milk testing laboratory is as well equipped as any similar laboratory in the country. There are two steam and two hand Babcock testers, and nearly every type of Babcock test apparatus and glassware. There is also apparatus for testing the acidity of milk or cream, and a delicate balance, used in testing cheese and butter. The department has an eight-horse power boiler and a six-horse power engine, and model cold storage rooms for butter and cheese. The model poultry house and equipment afford special facilities for illustrative and practical experimental work with poultry.

THE BOTANICAL LABORATORY has a good supply of apparatus with which to do systematic and microscopic work. The herbarium contains 3,000 mounted and named specimens to which the students have access at all times. There are 700 samples of economic seeds for use in economic botany. The general equipment includes a compound microscope for each student's use; 15 Bausch and Lomb dissecting microscopes; microtome; hand section cutters; stains; slides; and everything necessary for successful botanical work. The orchard, with over 300 varieties of apples, pears, peaches, plums, apricots, and cherries; the vineyards with 60 varieties of grapes, including the hardy and tender, or California, kind; the forestry experiment, containing many kinds of hardy trees and shrubs; and the small fruit and vegetable gardens, are all used in connection with the work in botany and horticulture for practical illustrative purposes.

THE VETERINARY LABORATORY is supplied with surgical instruments, a modern operating table, an operating room, box stalls for patients, the necessary medicine, etc. Among the more important surgical instruments are a complete set of dental instruments, mouth speculum, tracheal and roaring instruments, neurotomy set, thermo-cautery, castrating and spaying instruments, obstetrical and parturition instruments, postmortem and diagnostic instruments, and other material found in a well equipped hospital. In this laboratory the agricultural students have practice and observation in the treatment of animals.

THE DEPARTMENT OF DOMESTIC SCIENCE AND ARTS is located in the Main Building, occupying the first floor of the south wing, besides several rooms in the basement. On the first floor are the office and reception room; a large lecture room; a laboratory and museum room, provided with cabinets, charts, and about three hundred specimens showing the composition of food materials and the processes of their manufacture; and sewing rooms, furnished with the latest improved machines, small sewing tables, low chairs, cutting tables, tracing boards, electric stone for pressing iron, wardrobes and cupboards for holding unfinished work, and large display cabinets. On the basement floor are five rooms, including the kitchen, which contains individual combined work tables and cupboards, gas stoves, three coal ranges, an Aladdin oven, an electric stone, utensils, and other modern conveniences for teaching cooking; a dining room, furnished with extension tables, dining room chairs, sideboards, cupboards and a generous supply of silver and table linen; a laundry room, with stationary tubs, Chicago clothes drier, and other accessories.

THE COMMERCIAL DEPARTMENT is completely equipped for thorough and efficient work in modern business courses. The rooms are the largest and most complete of any commercial school in the west. The entire third floor of the front of the Main Building is occupied by the department, cov-

ering a floor area of 7,225 square feet. Each room is specially designed and furnished for the work to be conducted in it. The furniture of the department consists of hard wood counting room desks and counters, arranged in such a way that students may either sit or stand while at work. A complete set of modern banking fixtures, a wholesale house, a retail house, a freight office, a real estate office, and an insurance office, with permanent blank books, letter files, rubber stamps, copying presses, college currency, blanks, etc., are provided by the College. The room for typewriting contains twenty-one machines—ten Remingtons, seven Smith Premier, three Underwood, and one Hammond—each provided with a regular typewriting stand and copyholder. The room for stenography is furnished with tables designed for convenience in practice work in stenography. The penmanship and general class room is seated with single desks.

THE CIVIL ENGINEERING DEPARTMENT is well equipped with instruments and apparatus for field practice in all the courses offered by the department. For the work in surveying there are two first-class transits, two levels, a Johnson plane table, a planimeter, a clinometer, and other supplementary instruments, together with a full supply of chains, tapes, etc. For the work in hydraulics, the equipment includes a number of water meters of different kinds, a hook gauge, water registers, etc. The excellent equipment on the experiment farm in the shape of measuring apparatus, and the many canals, rivers, and power plants in the immediate vicinity, afford excellent opportunity for very thorough training in hydraulic work. The drawing room is equipped with modern drawing desks and such other accessories as are needed for the office work. In the library are to be found a number of standard reference books in the various lines of engineering, and the standard professional periodicals are also available to the students.

THE MECHANICAL ENGINEERING AND MECHANIC ARTS DEPARTMENTS are well equipped for all of the courses offered.

The bench room is provided with forty-five carpenters' benches, with full equipment of tools. In the forge room are twenty-four power blast forges, with anvils and complete tool equipments; also hand-drills, cutting-off machines, tire up-setter, special swageblocks, etc. The wood-working machine room is supplied with nine ordinary turning lathes, one large turning lathe, one jig-saw, one universal saw-table, one wood planer, one new two-spindle shaper and moulder, one band saw, one power mortiser and borer. In the iron-working machine room there are three large engine lathes, one speed lathe, one large drill press, one sensitive drill (made by students), one large iron planer, one universal milling machine, emery wheels, vises, and tool cutters of various kinds. For experimental work in power measurements a ten-horse power Flather hydraulic dynamometer is used.

THE BIOLOGICAL LABORATORIES are located on the first floor, with east and north exposures. They are well equipped for experimental work in the various courses in which the department offers instruction. The equipment includes, high-power Leitz, and Bausch and Lomb microscopes; dissecting microscopes; condensers; microtome; autoclav, anaerobe plate apparatus, anaerobe tube apparatus, freezing apparatus; micrometers; micro-spectroscope; photo-micrographic camera; Thoma-Zeiss haemacytometer; hot air and steam sterilizers; incubator; refrigerators; paper and plaster manikins; a series of plaster models (human); analytical balance; a varied collection of microscopic slides; a well selected stock of microscopic glassware; utensils, dissecting instruments, media, and reagents.

THE CHEMICAL LABORATORIES occupy the second floor of the north wing of the Main Building, which include ten rooms. One large room is devoted to the work in general chemistry and qualitative analyses, and two smaller rooms to work in organic chemistry and quantitative analyses. A pleasant room, centrally located with respect to the laboratories, is used as the lecture room of the department. Adjoining the

main laboratory and the lecture room are a large store room, and a preparation room for the use of the instructor. On the east side of the wing, two large rooms and a store room are used for the work carried on by the Chemical Department of the Experiment Station. A room in the basement is used for the work in fire assaying.

The chemical laboratories are well equipped for elementary and advanced work in chemistry. In the College laboratories especial provision is made for the elementary study of the science. Individual desks, fitted with drawers and cupboards, and a very complete assortment of chemical glassware and chemicals, render the work in the laboratories easy and pleasant. There are also several valuable collections of gums, oils, coloring matters, foods, etc., that are important aids to the students in this department. The laboratories of the Experiment Station are excellently equipped for advanced work. The extensive collection of apparatus includes, among other things, balances; silver calorimeter; half-shade polariscope; several sets of hydrometers; thermometers; spectroscope; vacuum pan; filter press; apparatus for gas and microchemical analysis; a large supply of platinum ware; several models of elutriators; a very complete set of apparatus for food and fodder analysis; stirring apparatus; steam and hot air drying ovens; microscopes; apparatus for soil analysis; and a large supply of Jena glassware, and chemically pure reagents. The laboratories are fitted with water, gas, hoods and all other conveniences.

THE PHYSICAL LABORATORY occupies a suite of three rooms on the second floor, which are used for class purposes and for elementary laboratory work; and a room on the ground floor, used for electrical and magnetic measurements. The equipment is fairly complete, consisting of all the necessary pieces of apparatus for class demonstration; a set of apparatus for elementary laboratory work, sufficient for sixteen students working on the same experiment; and all pieces required for an experimental course in heat and electricity. Some of the more important pieces are balances and weights by Sartorius; plat-

form balances; an Atwood machine, with aluminum friction wheels and electrical attachments; centrifugal apparatus; working models of levers and pulleys; air pumps; thermometers in different scales; barometers; hydrometers; hydraulic press; porte lumiere; telescope; microscope; an assortment of lenses, mirrors, and prisms; spectroscope; sonometer; siren; tuning forks; organ pipes; Chladni's plates; electric static machine; Leyden jars; electroscope; electrophorus; magnetometer; galvanometers of tangent, sine, balastic, astatic, and D'Arsonval types; Wheatstone bridges, both box and wire forms; resistance boxes; standard resistance and standard cell; primary and storage cells of various kinds; Ruhmkorff coils; electric generators and motors; Crooke's tubes and Geissler tubes.

THE COLLEGE MUSEUMS are supplied with a large number of specimens illustrative of geology and palaeontology, vertebrate and invertebrate zoology, mineralogy; also about four thousand five hundred species of the Rocky Mountain flora, and a large number of the woods of the United States. There is also an extensive collection of grains, representing the produce of Utah and other states. A small collection of Indian and Polynesian products and curiosities has been made. Contributions of fossils, ores, animals, relics, or other material of value to the museums will be highly appreciated. All gifts are labeled and preserved, and the name of the donor is kept on record.

THE ART ROOMS contain many valuable casts, most of which are reproductions of the works of the masters, together with many smaller casts suitable for the more simple work in drawing. A few reproductions of the paintings of the masters have been purchased, and the charts to be used in the work in design; also the tables, drawing boards, and cases necessary for the work.

THE LIBRARY occupies the entire second floor of the new front part of the Main Building. Besides the Librarian's office and cataloguing-room, there are the stack-room, 32 by 68 feet, sufficiently high for two stories of bookstacks, with a

capacity of between forty and fifty thousand volumes; and the main reading room, 52 by 74 feet. In the stack-room, the book-stacks are so arranged as to form department alcoves, which are abundantly lighted and well ventilated, and will be used as study rooms. The library contains about 10,500 bound volumes, and 11,000 pamphlets. Additions are made from time to time to meet the requirements of the several departments. The subjects covered are general literature, including poetry, fiction, and criticism, history, travel, biography, political economy, and sociology, mental and moral philosophy; commerce, engineering, natural science, agriculture, domestic science and art.

THE READING ROOM is provided with racks and shelves for newspapers and other current serials, and with reading-tables. Ninety of the best literary, scientific, technical and agricultural periodicals are taken by subscription. Through the liberality of the publishers, forty-seven of the Utah newspapers are regularly received, and ninety-four of the best agricultural papers of the country are sent to the library in exchange for the publications of the Experiment Station. These are all placed in the reading room for the use of readers. The principal dictionaries and encyclopedias, including the Encyclopedia Britannica, American Cyclopedias, Appleton's Cyclopedias of American Biography, Allibone's Dictionary of Authors, Encyclopedic Dictionary, Century Dictionary, are kept in cases in the reading room within easy access of the readers.

THE AGRICULTURAL EXPERIMENT STATION.

THE AGRICULTURAL EXPERIMENT STATION is a department of the College, supported mainly by Congressional appropriations, supplemented by the receipts from the sales of farm products. The Station was created for the special pur-

pose of discovering new truths that may be applied in agriculture, and of making new applications of well established laws. It is, therefore, essentially a department devoted to research; and as such, it does the most advanced work of the College.

The Experiment Station is not, in the ordinary sense, an institution where model farming is carried on. It has a much higher purpose. The practices of the farmer, good and bad alike, are subjected to scientific tests, in order to determine why the one is bad and the other good. Acting on the suggestions thus obtained, new lines of investigation are begun, with the hope that truths of great value to the farmer may be discovered.

The Station has for its present object the study of the underlying laws of irrigation. On the farm, in the orchards, gardens, and barns, experiments are going on that, in time, will lead to the establishment of an art of irrigation that will be based on laws developed by scientific methods. Investigations for the purpose of encouraging the horticultural, dairy, and poultry industries, are also in progress.

The Experiment Station has a high educational value. Nearly all the members of the Station Staff are also members of the College Faculty, and the students, therefore, receive directly, and at first hand, an account of the methods and results of the work of the Station. On the farm, in the gardens, orchards, barns and laboratories, the students receive training in the application of scientific truths in the practical affairs of men. The opportunities that the Experiment Station offers for advanced work in several branches of science are of great importance. The methods of science have been carried into the operations of every human occupation, and the more fully scientific methods of accuracy, persistence, and adjustment are understood by a man, the greater, as a rule, will be his success in any walk of life. The scientific method and spirit characterize all the operations of the Station, and none can fail to be benefited by a study of the experiments that go on at all times of the year.

The Station Staff are always glad to assist the advanced students of the institution in any investigations they may wish to undertake.

COLLEGE SOCIETIES.

Six different societies are maintained by the students of the College, and afford opportunity for drill in parliamentary practice, and for training in declamation, debate, and essay writing. The SOROSIS SOCIETY for women only; the OLYMPIA CLUB for men only; and the PROGRESSIVE SOCIETY for both men and women, are primarily literary organizations. A public debate between two of the societies is occasionally arranged, thereby stimulating the students to greater literary and oratorical effort. The AGRICULTURAL SOCIETY is an organization of instructors and students interested in agricultural education. This society is open to all students, and is becoming a potent factor in the development of the agricultural work of the College. The ENGINEERING SOCIETY is organized for the advancement of the interests of the engineering students. Meetings are regularly held for the purpose of listening to addresses upon important phases of engineering work, and for the discussion of various engineering problems.

THE ATHLETIC ASSOCIATION is organized for the promotion of the general physical culture of the students, and the encouragement of a proper spirit in favor of hearty, manly sports. This association is sustained with universal interest, and constitutes an important means of physical education.

STUDENTS' EXPENSES

Tuition is free. Students pay an annual entrance fee of \$5. The privileges of the library and museum are free. In the laboratories, workshops, cooking rooms, and in typewriting, students are charged an incidental fee to cover the cost of materials used by them in their exercises. With proper care this expense need not exceed from \$2 to \$5 per year in each course.

The fee charged for a certificate of graduation is \$2.50; and for a diploma \$5. Students are held responsible for any injury done by them to the College property.

Good board and rooms can be obtained in private houses for from \$2.50 to \$3.50 per week. By renting rooms and boarding themselves, students are able to reduce the cost of room and board to less than \$2 per week.

THE COLLEGE DORMITORY has accommodations for sixty. The second floor is used exclusively for women, and the third floor for men, there being no communicating passage between the two. Each floor has bath room and toilet accommodations. The cost of room and board, including fuel and light, is from \$13 to \$15 a month, according to the kind of room used. Students furnish their own bedding; also rug or carpet, if desired. Board is payable in advance every month. The Dormitory discipline corresponds as nearly as possible to that of home life. Boisterous and rude conduct is not allowed. Parents or guardians of students in the Dormitory receive a monthly report. For particulars regarding Dormitory accommodations, address Mrs. Karl R. Moench, Agricultural College, Logan, Utah.

Admission and Graduation.

CONDITIONS OF ADMISSION.

Candidates for admission to the Preparatory course, and to the Manual Training courses in Domestic Arts and Mechanic Arts, must be at least sixteen years of age; to all other courses, fifteen. Students are admitted to the Preparatory Course and to the Manual Training courses without examination, except such as may be necessary in order to determine the section in which they can work to the best advantage; the classes in these courses being divided into sections, which are graded in such a way as to be especially adapted to those who are not prepared to enter any of the more advanced courses.

Graduates of the district schools, and those who have completed the Preparatory course of the College, are admitted without examination to the Engineering Preparatory Course, and to the three year courses in agriculture, domestic science, and commerce. Other applicants for admission to these courses must pass a satisfactory examination in the subjects of the Preparatory Course.*

Students who have completed the Engineering Preparatory Course are admitted without examination to the engineering courses, and to the General Science Course. They are also admitted without examination to the four year courses in agriculture, domestic science, and commerce, being conditioned in the technical work preceding the freshman year in the course taken.

*For a description of these subjects, see Preparatory Course.

Students who have completed the first two years of the three year courses in agriculture, domestic science, or commerce, are admitted without examination to the regular four year courses in agriculture, domestic science, or commerce, respectively. They are also admitted without examination to the engineering courses, the Mechanical Engineering Course, and to the General Science Course, being conditioned in any of the subjects not already completed of the Engineering Preparatory Course.

Those who have completed any of the three year courses are admitted without examination to the sophomore year in the corresponding courses leading to degrees. Students may transfer from one regular course to another by making up all the technical work not completed of the course to which they transfer. Students will be allowed to substitute technical work of one course for that of another, only by permission of the Faculty.

Other students are admitted to any of the courses leading to degrees, either upon the certificate of accredited schools, or upon satisfactory examination in the subjects of the Engineering Preparatory Course. For a description of these subjects, see "Engineering Preparatory Course" and "Departments of Instruction." By permission of the Faculty, students may be allowed upon entrance to substitute work in other courses for Drawing 1, History 2, Carpentry 5, and Forging 4a. Certificates from schools not accredited will be considered as the merits of each case may warrant.

Candidates for admission to advanced standing are required to pass satisfactory examinations in all the work of the preceding years, or to present satisfactory evidence of having completed an equivalent of such work in some other school or college.

SPECIAL STUDENTS.

Persons of mature years who, for satisfactory reasons, desire to pursue a special line of study, may be admitted as special students, provided they give evidence of ability to do the work desired. Special students may be allowed to graduate in any of the courses, on condition that they complete the required work and pass the necessary examinations.

REGISTRATION.

All students register at the beginning of the collegiate year for the work of the whole year. Changes in registration, and credit for work not registered, will be allowed only by special permission of the Faculty.

CLASSIFICATION.

All regular students are classified as first, second, and third year students in Agriculture, Domestic Science, Manual Training in Domestic Arts, or Commerce; or as first and second year students in the Engineering Preparatory Course; or as first, second, third, and fourth year students in the Manual Training Course in Mechanic Arts; or as freshman, sophomore, junior, and senior students in any of the four year courses leading to degrees; according to the lowest year in which they have subjects, provided such subjects are equivalent to one-third of all the work taken; otherwise in the next year above.

GRADUATION.

Students who complete the three year courses in agriculture, domestic science, commerce or manual training in domestic arts, or the four year course in manual training in mechanic arts, receive certificates of graduation. The degrees of Bachelor of Science, Bachelor of Science in Agriculture, Bachelor of Science in Domestic Science, Bachelor of Science in Commerce, Bachelor of Science in Civil Engineering, Bachelor of Science in Mechanical Engineering, Bachelor of Science in Electrical Engineering, and Bachelor of Science in Mining Engineering, are conferred upon those who complete the regular four year courses in General Science, Agriculture, Domestic Science, Commerce, Civil Engineering, Mechanical Engineering, Electrical Engineering, and Mining Engineering, respectively.

To obtain a degree, the student must complete an equivalent of sixteen hours of class work weekly for four years. Three hours of laboratory work count as one hour of class work.

Instructors keep a record of recitations, marked according to the decimal system. In making up final examination percentages, this is counted one-third, written papers during the term, one-third, and final examination for the term, one-third. In all courses, an average standing of not less than 75 per cent., with no grade less than 60 per cent., is required for graduation.

Students who completed the work of the freshman, sophomore, or junior year in 1901-1902 will be allowed to continue their courses and graduate upon completion of the amount of work required at the time of entrance.

Courses of Study.

The College offers the following courses: (1) Agricultural Course, four years; (2) Domestic Science Course, four years; (3) Commercial Course, four years; (4) Civil Engineering Course, four years; (5) Mechanical Engineering Course, four years; (6) Electrical Engineering Course, four years; (7) Mining Engineering Course, four years; (8) General Science Course, four years; (9) Agricultural Course, three years; (10) Domestic Science Course, three years; (11) Commercial course, three years; (12) Manual Training Course in Domestic Arts, three years; (13) Manual Training Course in Mechanic Arts, four years; (14) Engineering Preparatory Course, two years; (15) Preparatory Course, one year; (16) Special Winter Courses in Agriculture, Domestic Arts, and Mechanic Arts.

THE AGRICULTURAL COURSES are arranged especially for the general education and scientific training of agriculturists. In arranging the work of instruction in the three year course, the first purpose kept in view has been to meet the needs of that large class who expect to make the farm their home. The agricultural work begins in the first year, and continues through the second and third years, making a fairly complete practical course. Those who can attend only one, two, or three years, will thus be made acquainted with facts and principles that cannot fail to help them in their farm work. Thorough courses are also given in English and mathematics, with sufficient elementary science to enable the student readily to comprehend the agricultural work given.

In the advanced course leading to a degree, the student is given that fundamental knowledge of science which will enable him to understand and grapple with the deeper prob-

lems in agricultural practice. In the junior and senior years the student is allowed to specialize either in Agronomy, in Animal Industry and Dairying, or in Horticulture. Those who complete this course are qualified to take positions as teachers and assistants in colleges and experiment stations, or as managers of large farms. This course, however, is designed not only to give special agricultural training, but to give a broad scientific education. The farmer in America is both proprietor and manager of his farm, and is, moreover, a citizen in a country where the citizen is sovereign. The education of such a man should be broad and suggestive. The Agricultural Course, as arranged, brings the student into contact with nearly all the specialists of the College, and opens to him many fields that invite future study and research.

The course is not arranged as a manual training course. As practically all the students are from the farm, it is assumed that they are acquainted with the various manual operations of farm work. The aim is, therefore, to supplement this work by that technical training which, as a rule, the farm does not afford. Special emphasis is laid on the training of the faculties of observation, reason, and judgment; and from the first year of the course the student is made acquainted with those matters that will enable him to study profitably and with interest the best books and papers on agricultural topics.

The general and department libraries enable the student to become acquainted with a wide range of agricultural and related literature, while the laboratories of the College and the experiment station afford opportunity for training and experience that it would be impossible to get from books. The outline of the course and the description of the studies prescribed, will give a fuller understanding of the work offered.

A WINTER COURSE in agriculture is provided, designed to meet the needs of young men of mature years, who desire to follow some agricultural pursuit, and who, though feeling the need of more thorough preparation for

their work, can devote only the winter season for such preparation. The subjects presented are those about which every one engaged in agricultural pursuits should have a definite knowledge. They embody the underlying principles and the best practice. The class room instruction is supplemented by practice in the live-stock judging room, veterinary hospital, College dairy, agricultural and horticultural laboratories and greenhouses, and by visits of inspection to herds and farms and other places of interest.

The courses in DOMESTIC SCIENCE and Arts have for their object to broaden the minds of women and enable them to meet more intelligently the home demands of modern life. When woman has learned to apply the principles of science to the problems of daily living, she will realize that housekeeping is an occupation worthy of the best efforts of the brightest minds; and that the broadest courses in science, economics, and ethics can be applied to the betterment of home life. Formerly the higher education of woman led her away from the practical interests of the home. The recent establishment of domestic science courses in many leading colleges and universities shows a public demand for education towards home life rather than away from it. This state wisely established such courses when this College was first organized; and the favor with which the work has been received by the public shows the wisdom of the plans. The Domestic Science Course has been strengthened and improved each year, and better facilities for instruction and study have been generously provided. The four year course gives the same training in mathematics, in English, and in science as is given in other courses, together with a broader culture in literature and modern languages than offered in any others, in addition to the special studies in home science, which are its distinctive features. The three year course is arranged for the accommodation of those who are unable to complete the longer course. The MANUAL

TRAINING COURSE in Domestic Arts is offered for the benefit of those young women who do not wish to take the studies of the regular college course, but desire to devote more time to the subjects of especial interest to women. Such other studies as the student is qualified to pursue may, with the consent of the Faculty, be substituted for those offered in this course.

The primary object of the COMMERCIAL COURSE is to broaden the intelligence of accountants, and prepare students for positions as business men. These form a large class, having a direct and important relation to the material, social, and political life of the nation. They should, then, have associated with their technical work a knowledge of those subjects that will give them an enlarged view of their varied relations as citizens of the state. The College, therefore, offers here a much broader general education than is common in commercial schools. The course is so arranged that students who complete the first three years, will receive a certificate of graduation, and on completion of the full course, the regular baccalaureate degree. Students who are unable to continue through the entire course, but finish the first three years, will be well prepared to do office work. The technical feature of the course is a thorough training in penmanship, typewriting, stenography, commercial calculations, bookkeeping, business economics, political economy, history of commerce, commercial law, commercial geography, constitutional and international law.

Those who expect to enter upon the profession of law will find this course affords an admirable preparation. Students who complete the course will be well prepared for positions as teachers in commercial and department schools where courses in commerce are given. The demand for thoroughly qualified teachers along this line of work is greater than the supply, and many desirable positions are open to those prepared to do the required work.

THE CIVIL ENGINEERING COURSE is designed to afford a training in those subjects which pertain to the profession of the civil engineer, in regard to different classes of structure and public works. The theoretical portion of the instruction is based largely on the courses given in the departments of Mathematics and Physics, and the results obtained are applied to practical problems in field work and engineering designs. The first two years are devoted to studies which belong naturally to the beginning years of undergraduate study, but the last two years are devoted largely to those subjects which have a more immediate relation to professional work. Unusual opportunities are afforded the student for practical hydrographic work by reason of the irrigation experiments on the station farm and the co-operation of the department with the Division of Hydrography of the United States Geological Survey and the United States Irrigation Investigations. Other prominent features of the course are the drawing room practice, and supplementary reading in the College library.

The aim of the MECHANICAL ENGINEERING COURSE is to afford the student such training as will qualify him to deal intelligently with engineering problems in general, and prepare him for a professional career. The instruction in all branches aims to blend the theoretical with the practical, so that the student may become familiar not only with the purely scientific phase of the work, but with its application to modern practice. As early as possible the student is brought into contact with practical problems, the graphical as well as the analytical method being used throughout their solution. Besides the practical tendency of the course, it has a high disciplinary value, and is especially adapted to develop originality of thought and action. The more strictly professional work may be classified as mathematics, physics, applied mechanics, drawing, and shopwork. Sufficient work in English, history, and other general subjects is given throughout the course to meet all ordinary demands.

THE ELECTRICAL ENGINEERING COURSE is outlined with a view to meeting the needs of young men who desire to practice electrical engineering in any of its various applications. In addition to the courses in English and modern languages that are given during the first three years, special emphasis is placed on the sciences of mathematics, physics, and chemistry, the principles of which underlie all electrical engineering practice. As a knowledge of mechanical engineering is essential to many electrical engineering operations, a large part of the student's time is devoted to training in this direction. The subjects included in this work are mechanical drawing, shopwork, machine design, applied mechanics, hydraulics, etc. The distinctive work in electrical engineering is given during the junior and senior years.

THE MINING ENGINEERING COURSE is planned to give the student a practical and scientific knowledge of mines and mining operations. Thorough training is given in the fundamental subjects of mathematics, physics, chemistry, geology, and mineralogy. Such work is given in mechanical, civil, and electrical engineering as require application in the more distinctive mining engineering courses. The class, laboratory, and field work at the College is supplemented by two eight week summer courses in the field. The first summer practicum follows the sophomore year, and is devoted to mine surveying. The students visit some mining district, and, under the direction of one of the professors, make careful surface and underground surveys of its properties. Following the junior year, the students spend eight weeks in the mining, milling, sampling, and smelting plants of the state, making a practical study of designing and operating mining and ore dressing plants; and of the different chemical and metallurgical problems involved.

The GENERAL SCIENCE COURSE corresponds to the usual baccalaureate course in science in higher institutions of learning. It is designed to furnish a liberal and thorough education, embracing the broad field of general science, mathemat-

ics, language, history, and literature. Scientific subjects characterize the work of the course. During the freshman year the students are thoroughly drilled in the subjects necessary to the more advanced special work of investigation. During the sophomore, junior, and senior years, students elect the subjects in which they have greatest interest; being allowed, under direction of the committee on General Science Work, to specialize in any of the subjects of chemistry, biology, mathematics, physics, etc.

The MANUAL TRAINING COURSE IN MECHANIC ARTS extends through four years, during the whole of which the students spend three hours daily in the workshop. While the general object is to give students taking the course a good elementary education, the special aim is to make tradesmen in three branches, carpentry, forging, and machine work. In the assignment of exercises in the shop and draughting room, the application of these exercises to practical construction or design is constantly kept in mind. In the shop, the method of instruction is to exhibit each new process before the class with such explanation as shall render each step plain. Then each student is supplied with material and scale drawing of the article to be made, and proceeds with his work under the constant supervision of the instructor. The principles of economy, neatness, and rigid accuracy are insisted upon in the construction of even the most trivial objects. Each student, whether specializing in wood or iron, is required to take at the beginning, one year in wood-work. In all cases, students are required to do at least one year's work with hand tools before beginning machine work.

In the ENGINEERING PREPARATORY COURSE students are thoroughly drilled in the subjects required for admission to the courses in Engineering and General Science.

The PREPARATORY COURSE is arranged to accommodate those young men and women who have been deprived of educational advantages until they have reached an age when they cannot advantageously attend the district schools.

The special aim is to prepare the students for admission to the more advanced courses of the College, and to provide such training as will be of most value to those who are unable to continue their educational work beyond this course.

AGRICULTURAL COURSE.

This course leads to the degree B. S. in Agriculture.

<i>Freshman Year.</i>		1st Term.	2nd Term.
Chemistry 1.....	5	.....	5
Physics 1.....	3	Vet. Science 2.....	3
An. Industry 2.....	3	Agronomy 3.....	3
An. Industry 9, 6; or... Horticulture 1.....	} 3	Bus. Customs.....	3
History and Civics 3.....		.....	3
	17		17
<i>Sophomore Year.</i>		1st Term.	2nd Term.
English 6.....	3	.....	3
Mathematics 4.....	5	.....	5
Animal Biology 2.....	3	.....	3
Botany 2.....	5	Physics 1.....	3
		Meteorology.....	2
	16		16
<i>Junior Year.</i>		1st Term.	2nd Term.
English 7.....	3	.....	3
German or French.....	3	.....	3
Geology 1.....	3	.....	3
Chemistry 3.....	3	.....	3
An. Industry 3, 4; or An. Biology 10 and Agronomy 5	} ... 4	Vet. Sc. 3; or Agronomy 4, 5	} 4
	16		16
<i>Senior Year.</i>		1st Term.	2nd Term.
German or French.....	3	.....	3
Economics.....	3	.....	3
Mineralogy.....	2	Entomology.....	2
Thesis.....	1	.....	1
Vet. Sc. 4 and An. Biology 8; or Engineering 3a, b and Agronomy 6; or Hortical. 2, 3, 4, 5	} 7	An. Industry 5 and *Elective; or Engineering 5d and †Elective; or Hortical. 2, 3, 4, 5,	} 7
	16		16

*Animal Industry 7 or 10, Agronomy 4, or Engineering 5d.
 †Animal Industry 5 or Horticulture 2b.

DOMESTIC SCIENCE COURSE.

This course leads to the degree B. S. in Domestic Science.

<i>Freshmen Year.</i>	1st Term.	2nd Term.
English 6.....	3	3
Drawing 3	2	2
Chemistry 1	5	5
H. S. 8, 9, 11.....	5	5
H. S. 5, 10, 12.....	2	2
	—	—
	17	17

<i>Sophomore Year.</i>	1st Term.	2nd Term.
German or French	3	3
Mathematics 4	5	5
Physics 1	3	3
Botany 2	5	Horticulture 6..... 5
	—	—
	16	16

<i>Junior Year.</i>	1st Term.	2nd Term.
English 7.....	3	3
German or French	3	3
Chemistry 2	4	4
An. Biology 8, 9	3	3
Elective	3	3
	—	—
	16	16

<i>Senior Year.</i>	1st Term.	2nd Term.
H. S. 13, 14	5	5
Mineralogy	2	Entomology
Chemistry 4	2	2
Economics	3	3
Elective.....	4	4
	—	—
	16	16

COMMERCIAL COURSE.

This course leads to the degree B. S. in Commerce.

<i>Freshman Year.</i>	1st Term.	2nd Term.
English 6	3	3
Mathematics 3.....	5	5
Civil Government.....	2	2
Commercial Law.....	3	3
Commercial Geography ..	2	2
Bookkeeping III or Stenography II }	... 3	3
	—	—
	18	18
<i>Sophomore Year.</i>	1st Term.	2nd Term.
Mathematics 4.....	5	5
Chemistry I	5	5
Physics I.....	3	3
History of Commerce	3 Const. and Int. Law... 3	3
	—	—
	16	16
<i>Junior Year.</i>	1st Term.	2nd Term.
English 7.....	3	3
German, French, or Spanish }	... 3	3
Sociology	3	3
Transportation.....	2	2
Elective.....	5	5
	—	—
	16	16
<i>Senior Year.</i>	1st Term.	2nd Term.
German, French, } or Spanish }	... 3	3
Banking and Finance	2	2
Economics	3	3
Elective.....	8	8
	—	—
	16	16

CIVIL ENGINEERING COURSE.

This course leads to the degree of B. S. in Civil Engineering.

<i>Freshman Year.</i>	1st Term.	2nd Term.
English 6	3	3
Mathematics 4.....	5	5
Chemistry 1	5	5
Physics 1.....	3	3
Engineering 1a	2	2
	18	18
<i>Sophomore Year.</i>	1st Term.	2nd Term.
German or French	3	3
Mathematics 5.....	5	5
Physics 2.....	3	3
Engineering 1b	2	2
Engineering 3a	3	Engineering 3b..... 3
	16	16
<i>Junior Year.</i>	1st Term.	2nd Term.
German or French	3	3
Mathematics 7.....	3	Engineering 12a 3
Engineering 5a, b	3	3
Engineering 9	4	Engineering 4a..... 4
Geology 2	2	2
Engineering 15	1	1
	16	16
<i>Senior Year.</i>	1st Term.	2nd Term.
Engineering 4b, c.....	5	5
Engineering 5c, e	3	3
Engineering 5f.....	3	Engineering 10..... 3
Engineering 5g	2	2
Economics	3	3
	16	16

MECHANICAL ENGINEERING COURSE.

This course leads to the degree B. S. in Mechanical Engineering.

<i>Freshman Year.</i>	1st Term.	2nd Term.
English 6	3	3
Mathematics 4.....	5	5
Physics 1.....	3	3
Chemistry 1	5	5
Engineering 1a	2	2
	18	18
<i>Sophomore Year.</i>	1st Term.	2nd Term.
German or French	3	3
Mathematics 5.....	5	5
Physics 2.....	3	3
Engineering 1b	2	2
Engineering 3a	3	Engineering 6a..... 3
	16	16
<i>Junior Year.</i>	1st Term.	2nd Term.
German or French	3	3
Mathematics 7.....	3	Engineering 12a..... 3
Engineering 2	4	Engineering 4a..... 4
Engineering 5a, b	3	3
Engineering 6b	2	2
Engineering 15	1	1
	16	16
<i>Senior Year.</i>	1st Term.	2nd Term.
Engineering 4b, c	5	5
Engineering 11	3	3
Engineering 7a	3	3
Engineering 8	2	2
Economics	3	3
	16	16

ELECTRICAL ENGINEERING COURSE.

This course leads to the degree B. S. in Electrical Engineering.

<i>Freshman Year.</i>	1st Term.	2nd Term.
English 6.....	3	3
Mathematics 4.....	5	5
Chemistry 1	5	5
Physics 1.....	3	3
Engineering 1a	2	2
	18	18

<i>Sophomore Year.</i>	1st Term.	2nd Term.
German or French	3	3
Mathematics 5.....	5	5
Engineering 1b.....	2	2
Physics 2.....	3	3
Engineering 3a, b.....	3	3
	16	16

<i>Junior Year.</i>	1st Term.	2nd Term.
German or French	3	3
Mathematics 7.....	3	Engineering 12a..... 3
Engineering 12b	4	4
Engineering 5a, b.....	3	3
Engineering 2	4	Engineering 4a..... 4
	17	17

<i>Senior Year.</i>	1st Term.	2nd Term.
Engineering 4b, c.....	5	5
Engineering 7a	3	3
Engineering 12c.....	5	5
Economics	3	3
	16	16

MINING ENGINEERING COURSE.

This course leads to the degree of B. S. in Mining Engineering.

<i>Freshman Year.</i>	1st Term.	2nd Term.
English 6.....	3	3
Mathematics 4.....	5	5
Chemistry 1	5	5
Physics 1	3	3
Engineering 1a	2	2
	—	—
	18	18
<i>Sophomore Year.</i>	1st Term.	2nd Term.
Mathematics 5	5	5
Physics 2	3	3
Chemistry 5	3	3
Mineralogy.....	2	Chemistry 9 2
Engineering 3a	3	Engineering 3b 3
	—	—
	16	16
Summer Practicum, Eight Weeks—Engineering 13c.		
<i>Junior Year.</i>	1st Term.	2nd Term.
Chemistry 11	4	4
Geology.....	3	3
Engineering 5a	3	Engineering 12a 3
Engineering 2	4	Engineering 4a 4
Chemistry 10	2	2
	—	—
	16	16
Summer Practicum, Eight Weeks—Engineering 13d.		
<i>Senior Year.</i>	1st Term.	2nd Term.
Geology.....	2	2
Engineering 13a	5	5
Engineering 13b	4	4
Engineering 4b	5	Engineering 5h 5
	—	—
	16	16

GENERAL SCIENCE COURSE.

This course leads to the degree B. S.

<i>Freshman Year.</i>	1st Term.	2nd Term.
English 6.....	3	3
Mathematics 4	5	5
Physics I	3	3
Chemistry I	5	5
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	16	16

All the work of the sophomore, junior, and senior years is elective; but students are required to complete two years' work in modern languages, and to take an equivalent of five hours through one year in biology, five hours through one year in English, and one course in history and civics. To obtain a degree, the student must complete an equivalent of sixteen hours of class work weekly for four years.

AGRICULTURAL COURSE.

Those who complete this course receive certificates of graduation.

<i>First Year.</i>	1st Term.	2nd Term.
English 3.....	4	4
English 4.....	2	2
Mathematics 2.....	5	5
Agronomy 1.....	4	An. Industry 1, 8... 4
Drawing 1.....	2	2
Military Drill.....	1	1
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	18	18
<i>Second Year.</i>	1st Term.	2nd Term.
English 5.....	5	5
Mathematics 3.....	5	5
Animal Biology 1.....	2	2
Agronomy 2.....	3	Botany 1..... 3
Carpentry 5.....	2	Forging 4b..... 2
Military Drill.....	1	1
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	18	18
<i>Third Year.</i>	1st Term.	2nd Term.
Chemistry 1.....	5	5
Physics 1.....	3	Vet. Science 2..... 3
An. Industry 2.....	3	Agronomy 3..... 3
An. Ind. 9, 6, or Hort. 1.....	3	Bus. Customs..... 3
History and Civics 3.....	3	3
	<hr style="width: 100%; border: 0.5px solid black;"/>	<hr style="width: 100%; border: 0.5px solid black;"/>
	17	17

DOMESTIC SCIENCE COURSE.

Those who complete this course receive certificates of graduation.

<i>First Year.</i>	1st Term.	2nd Term.
English 3.....	4	4
English 4.....	2	2
Mathematics 2	5	5
History I.....	3	3
Sewing 1, 2	3	3
Physical Culture	1	1
	18	18

<i>Second Year.</i>	1st Term.	2nd Term.
English 5.....	5	5
Mathematics 3.....	5	5
Animal Biology I	2	2
History 2.....	3	Botany I..... 3
H. S. 1, Sewing 3, 4.....	2	2
Physical Culture	1	2
	18	18

<i>Third Year.</i>	1st Term.	2nd Term.
English 6.....	3	3
Drawing 3.....	2	2
Chemistry I.....	5	5
H. S. 8, 9, 11.....	5	5
H. S. 5, 10, 12.....	2	2
	17	17

COMMERCIAL COURSE.

Those who complete this course receive certificates of graduation.

<i>First Year.</i>	1st Term.	2nd Term.
English 3.....	4	4
English 4.....	2	2
Mathematics 2	5	5
History 1.....	3	3
Bookkeeping 1.....	3	3
Military Drill or } Physical Culture }	1	1
	—	—
	18	18
<i>Second Year.</i>	1st Term.	2nd Term.
English 5.....	5	5
Commercial Calculations..	3	3
Animal Biology 1.....	2	2
History 2.....	3	3
Bookkeeping II or } * Stenography I }	3	3
Typewriting	2	2
Military Drill or } Physical Culture }	1	1
	—	—
	19	19
<i>Third Year.</i>	1st Term.	2nd Term.
English 6.....	3	3
Mathematics 3.....	5	5
Civil Government.....	2	2
Commercial Law.....	3	3
Commercial Geography ...	2	2
Bookkeeping III or } Stenography II }	3	3
	—	—
	18	18

*Students who elect stenography or bookkeeping the second year must continue the same subject during the third year.

MANUAL TRAINING COURSE IN DOMESTIC ARTS.

Those who complete this course receive certificates of graduation.

<i>First Year.</i>	1st Term.	2nd Term.
English 1.....	5	5
English 2.....	5	5
Mathematics 1.....	5	5
Sewing 1, 2, 3.....	5	5
Phys. Culture.....	1	1
	21	21

<i>Second Year.</i>	1st Term.	2nd Term.
English 3.....	4	4
Drawing 1	2	2
H. S. 1, 2, 3.....	3	3
H. S. 6	5	5
Sewing 4, 5	3	3
Phys. Culture	1	1
	18	18

<i>Third Year.</i>	1st Term.	2nd Term.
English 4.....	2	2
Mathematics 2	5	5
History 1.....	3	3
H. S. 7	2	2
H. S. 4, 5.....	2	2
Sewing 6, 7	3	3
	17	17

MANUAL TRAINING COURSE IN MECHANIC ARTS.

Those who complete this course receive certificates of graduation.

<i>First Year.</i>	1st Term.	2nd Term.
English 2.....	5	5
Mathematics 1	5	5
Penmanship	2	2
Geography	3	3
* <i>(1)(2)(3)Carpentry 1...</i>	5	5
	(1)(2)Carpentry I or	(3) Machine work I
	}	}
	5	5
	20	20
 <i>Second Year.</i>	 1st Term.	 2nd Term.
English 1.....	5	5
Mathematics 2	5	5
Drawing 2.....	2	2
(1) Carpentry 2, or	}	5
(2) Forging 1, or		
(3) Machine Work 2		
Military Drill.....	1	1
	18	18
 <i>Third Year.</i>	 1st Term.	 2nd Term.
English 3.....	4	4
Mathematics 3	5	5
Drawing 5	2	2
(1) Carpentry 3 or	}	5
(2) Forging 2, or		
(3) Machine Work 3		
Military Drill.....	1	1
	17	17
 <i>Fourth Year.</i>	 1st Term.	 2nd Term.
Physics 1.....	3	3
History 1.....	3	3
Animal Biology 1.....	2	2
Drawing 6	3	3
(1) Carpentry 4, or	}	5
(2) Forging 3, or		
(3) Machine Work 4		
	16	16

*The numbers preceding the shop courses indicate the order in which students who intend completing the course are required to take the subjects; e. g., a student having elected (3) in the second term of the first year will be expected to continue with the subject marked (3) in each succeeding year. A student having taken carpentry during the first year, may elect (2) in the second year and continue with (2) through each succeeding year.

ENGINEERING PREPARATORY COURSE.

<i>First Year.</i>	1st Term.	2nd Term.
English 3.....	4	4
English 4.....	2	2
Mathematics 2	5	5
History 1.....	3	3
Drawing 1.....	2	2
Military Drill.....	1	1
	17	17

<i>Second Year.</i>	1st Term.	2nd Term.
English 5.....	5	5
Mathematics 3	5	5
Animal Biology 1.....	2	2
History 2.....	3	3
Carpentry 5	2	Forging 4a 2
Military Drill	1	1
	18	18

PREPARATORY COURSE.

	1st Term.	2nd Term.
English 1.....	5	5
Mathematics I	5	5
Geography 1.....	3	3
English 2.....	5	5
Penmanship	2	2
Physical Culture }	1	1
Military Drill }		
	21	21

WINTER COURSES.

For the accommodation of persons who can attend school during the winter months only, the following special courses are provided, beginning January 5, 1903, and continuing ten weeks. The work is elective, the student being allowed, with the approval of the professor in charge, to select the studies desired.

Students who take any of the winter courses may elect such other regular college studies as they are prepared to pursue advantageously.

AGRICULTURE.

Agronomy	5	Agricultural Chemistry	2
Stock Judging and Man-		Horticulture	3
agement	3	Entomology	2
Stock Feeding.....	3	Vet. Science.....	3
Dairying Lectures	2	Farm Accounts.....	3
Dairying Practice.....	4	Irrigation	2
Agricultural Bacteriology	2	Poultry Keeping.....	2

DOMESTIC SCIENCE AND ART.

Cooking Lectures.....	5	Sewing	2
Cooking Practice	2	Dressmaking	2
Hygiene	5	Fancy Work	2

MECHANIC ARTS.

Carpentry 1	5	Forging 1.....	5
Carpentry 2	5	Forging 2.....	5

Departments of Instruction.

AGRONOMY.

PROFESSOR MERRILL.

1. **ELEMENTARY AGRICULTURE.** This course is intended to show the relation of the natural sciences to agriculture and explain how these facts may be applied in farm practice. Special attention is given to the problems in agriculture peculiar to the arid region. The work is designed to give young men who remain at the College but a short time an idea of the importance and value of agricultural pursuits. Required of all first year students in agriculture. Four hours a week during the first term.

2. **RURAL ENGINEERING.** The course of instruction included under this head embraces the subjects of irrigation, drainage, buildings and fences, and machinery. Required of all second year students in agriculture. Three hours a week during the first term.

(a) *Irrigation:* In this course the subject is studied with reference to its history, its different methods, the time of application of water, and the water requirements of different crops. Students have excellent opportunities to study the work in irrigation at the Experiment Station.

(b) *Farm Drainage:* A study is made of the practical effects of drainage, land needing drainage, and of the different problems involved in laying out and putting in a system of drains.

(c) *Buildings and Fences*: The arrangement, design, location, and cost of farm buildings is explained; fences and gates—their necessity, cost, kinds, and construction; wood for gates and fences—time to cut, conditions favorable to decay, and methods of preservation; discussion of fence laws.

(d) *Farm Machinery*: Attention is given to the tools and machinery of the farm—hoes, spades, plows, harrows, cultivators, rollers, planters, cutters, grinders, mowers, rakes, binders, wagons, etc.; their development, design, construction, draft, efficiency, durability, and care. The department has a large collection of lantern slides which are used in illustrating this subject.

3. SOILS AND FARM CROPS. This course is required of all third year students in agriculture. Three hours a week during the second term.

(a) *Soils*: The origin, composition, and physical and chemical properties of soils receive attention; different methods of treatment are examined, and the influence of these methods upon moisture, texture, fertility, and production; soil texture as affecting capillarity, osmosis, and diffusion, and as affected by cultivation and cropping. Special attention is given to the preservation of original soil fertility and the reclamation of alkali soils; and a general discussion of the proper use of different kinds of manure is presented. These lectures are supplemented by laboratory work, comprising the determination of the specific gravity of different soils, their water holding capacity, their adhesive and cohesive qualities, their capillary power, etc.

(b) *Farm Crops*: This is a study of the conditions of germination and growth and the circumstances modifying these conditions; the selection of crops for Utah; the system of rotation best adapted to the state, taking into consideration the distribution of labor, the production of manure, and the extermination of weeds; summer fallow; and the management of meadows and pastures. The laboratory and field work consists of a study of the vitality of seeds and their preservation.

The student makes observations, on the farm, on the habits of growth of the different farm crops.

4. SOIL PHYSICS. This work is intended for students wishing to specialize further along the lines of soil study, and must be preceded by Agronomy 3. It includes the determination of temperature, moisture, and soluble salt content of various soils under field conditions; the effect of subsoiling and various methods of tillage upon soil moisture and plant growth; the effect of different crops upon the soil and upon succeeding crops; the effect of special and general farming upon the productive capacity of soils. Required of all students in agriculture who elect Agronomy as a major. Three hours a week during the second term of the junior year.

5. AGRICULTURAL EXPERIMENTATION. In this course students have access to the Experiment Station library, and make a study of the work of experiment stations and experimenters in this and other countries. The students are required to make abstracts of a sufficient number of bulletins, bearing on a selected line of work, to become familiar with their scope and aim. Required of all students in agriculture electing Agronomy as a major. One hour a week throughout the junior year.

6. RURAL ECONOMICS. Required of all students in agriculture electing a major in Agronomy. Three hours a week during the first term of the senior year.

(a) *History of Agriculture*: The course covers the general development of the agriculture of those nations which have contributed most to agricultural progress. The development of Roman agriculture is specially emphasized influencing as it has the agricultural practices in other nations.

(b) *Farm Management*. This course includes a discussion of special and general systems of farming, of different systems of rotation, laying out and improving farms, economic bestowal of labor, and the profitable use of machinery.

ANIMAL INDUSTRY.

PROFESSOR LINFIELD.

ASSISTANT PROFESSOR DRYDEN.

MR. CROCKETT.

1. ANIMAL TYPES. The aim of this course is to study the qualities of the animal as indicated by the external form. The work also includes practice in keeping score cards. In judging animals, students are required to give reasons for their rating. Required of all first year students in agriculture. Four hours a week during the first fourteen weeks of the second term.

2. GENERAL COURSE. This course consists largely of lectures illustrated by charts, photographs, and lantern slides. It includes a brief study of the history and characteristics of those breeds of live-stock best adapted to Utah conditions; the laws of heredity; the feeding and management of different kinds of live-stock; the selection and judging of live-stock; compiling and study of pedigrees. Required of all third year students in agriculture. Three hours a week during the first term.

3. PRINCIPLES OF HEREDITY. This course includes a study of the laws of heredity, law of correlation, reversion, variation, fecundity, the methods of breeding, cross-breeding, in-and-in breeding, selection. These laws are practically illustrated by their application to the improvement of the live-stock on the farm. Practical work is given in the study of herd books, tabulation of pedigrees, and such other exercises as enable the students to learn the value of a pedigree, and how to keep the records of any breeding herd. The crops, live-stock, and poultry on the College farm are available for study and illustration. Elective to juniors in agriculture. Two hours a week during the first term.

4. BREEDS AND BREEDING. The object of this course is to show the zoological relation of our domestic animals to

the rest of the animal kingdom, emphasizing the principles illustrated in their development into specialized animals; and to study the different breeds of horses, cattle, sheep, and swine for the purpose of learning their qualities, characteristics, and adaptabilities. Elective to juniors in agriculture. Two hours a week during the first term.

5. STOCK FEEDING. This is a study of the principles underlying the profitable feeding of animals; the composition of plants, animals, and animal products. A study is made of the practices which give best results, as indicated by available data, gathered from the work of experiment stations in this and other countries. Special attention is devoted to the study of Utah conditions in the handling of live-stock. The hygiene, care, and management necessary to successful feeding are also studied. In connection with this course, the live-stock, farm buildings, and other equipment are available for practice and advanced study. Elective to seniors in agriculture. Four hours a week during the second term.

6. DAIRYING. Required of third year students in agriculture who do not take horticulture. Two hours a week during the first term.

(a) *Milk*: This course includes a thorough study of the methods used in testing, buying, and preserving milk for food or manufacturing purposes. The farm problem of milk production is studied in connection with the management of dairy cows.

(b) *Butter*: Factory and hand methods in butter production, creaming of milk by different methods, handling and ripening cream, churning, salting, working, packing, and marketing are studied. The work of the class room is illustrated and applied in the College dairy.

(c) *Cheese*: The process of Cheddar cheesemaking is emphasized. The principles and practice necessary to make a uniform product and to overcome characteristic difficulties are described and illustrated in the class room and dairy. The methods of manufacture of other kinds of cheese, particularly

of such kinds as may be made at the home dairy, are also studied.

7. **ADVANCED DAIRYING.** This course consists of a study of special dairy problems, and of experimental work in handling dairy products. Elective to students who have completed Course 6, and Animal Biology 8. Three hours a week during the second term.

8. **POULTRY MANAGEMENT.** This course includes a study of breeds of poultry, poultry buildings, feeding and management, and the practical operation of incubators and brooders. Required of all first year students in agriculture. Three hours a week during the last four weeks of the second term.

9. **BREEDS OF POULTRY.** This course is a more extended study of breeds, breeding, and types, including a study of the American Standard of Perfection, and practice in judging; rations; the best methods of handling for specific purposes; natural and artificial incubation; poultry diseases; buildings and appliances; and the practices of successful poultry keepers. Required of all third year students in agriculture. One hour a week during the first term.

10. **POULTRY EXPERIMENTS.** In this course special work is offered to those who wish to specialize in this branch of animal industry. The time of the student is devoted largely to assisting in experimental work and recording his observations on the same. Elective to students taking a major in Animal Industry. Three hours a week during the second term of the senior year.

11. **THESIS.** In their thesis work, students are allowed to experiment with any of the live-stock on the College farm, with poultry, or in the dairy work. Required of students who elect Animal Industry as a major. One hour a week during the senior year.

HORTICULTURE.

1. PROPAGATION AND CARE OF PLANTS. During the first term's work *Principles of Plant Culture*, by Goff, and Green's Vegetable Gardening, are used as a guide in the study of the principles underlying an intelligent understanding of the care, growth, and development of orchard and garden plants and trees. Instruction is also given in propagation by seeding, budding, grafting, layering, and by cuttings, and in the management of hot-beds and forcing houses. The special requirements of the different vegetables both in garden and in the forcing house are discussed. Required of freshmen in agriculture. Four hours a week during the first term.

2. GENERAL HORTICULTURE AND ECONOMIC ENTOMOLOGY. The object of this course is to give the students as broad a grasp of these subjects from an economic standpoint as is possible in the time allotted to the work. Insect pests and plant diseases of the orchard and garden, together with remedies for each, are thoroughly discussed. Other phases of the work are, orchard management, cultivation, tree planting, pruning, location of orchards, and desirable varieties to be planted. During the second term the subjects of pomology and orchard management are taken up, including the choice of fruit lands, their cultivation, and the maintenance of fertility; the planting of orchards and other fruit plantations; choice of trees and selection of varieties; pruning; insect and fungus pests, and means of combating them. Required of seniors in agriculture who elect a major in Horticulture. Three hours a week throughout the year.

3. LANDSCAPE GARDENING AND FORESTRY. Following the history of gardening, the practical side of ornamenting private and public grounds is taken up. This includes the making of lawns, drives, and flower and shrubbery beds; sodding, tree planting, etc. The native trees of Utah, together with desirable trees for introduction, are studied under the head of

forestry. Required of seniors in agriculture who elect a major in Horticulture. Three hours a week during the first term.

4. FLORICULTURE. This course deals with the propagation and care of house plants, the planting and care of the flower garden, and home grounds. So far as possible, the work of the class room is supplemented by actual practice in the conservatory and on the College grounds. Taft's *Greenhouse Management*. Required of sophomore students in the Domestic Science Course. Three hours a week during the second term.

5. THESIS. As far as possible the thesis work must show result of original investigation by the student under the direction of the Horticulturist. Required of seniors in agriculture who elect a major in Horticulture. One hour a week throughout the year.

BOTANY.

1. STRUCTURAL AND SYSTEMATIC BOTANY. The aim of the work in structural and systematic botany is to help students to become familiar with the higher plants, the terms used in describing them, and their classification. Students are provided with microscopes and dissecting instruments for laboratory work, but must furnish their own collecting and mounting outfits. Fifty mounted and named plants are required. Gray's *Lesson's in Botany*. Required of second year students in the Agricultural and Domestic Science courses. Three hours a week during the second term.

2. PHYSIOLOGICAL BOTANY. Plant anatomy and the functions, growth, and nutrition of plant organs are studied. All laboratory equipment and materials are furnished. Bessey's *Essentials in Botany*. Required of sophomores in the Agricultural and Domestic Science courses; elective to others. Five hours a week during the first term.

ENTOMOLOGY.

1. GENERAL ENTOMOLOGY. In this course students are expected to acquire a general knowledge of the structure and classification of insects, especially the common insect pests. Insecticides and methods of applying them are given some consideration. Smith's *Economic Entomology*. Required of seniors in the Agricultural and Domestic Science courses; elective in the General Science Course. Two hours a week during the second term.

VETERINARY SCIENCE.

PROFESSOR MERRILL.

1. VETERINARY ELEMENTS. This subject is taught by lectures and text books on the diseases of domestic animals, and is illustrated by observation and practice at the free clinics. Part of the term is given to the study of the diseases and conditions that require surgical treatment—such as lameness, wounds, abscesses, tumors, and the like. A few lectures are given in which the various methods and principles of shoeing are discussed, as well as the proper treatment of the horse's foot. Required of all third year students in agriculture. Three hours a week during the second term.

2. VETERINARY ANATOMY. This subject is taught in part by lectures, and is illustrated by charts, skeletons, etc. During this term there is a complete dissection of a horse. Required of students electing Animal Industry as a major, and elective to students in the General Science Course. Four hours a week during the second term of the junior year.

3. VETERINARY MEDICINE. This subject includes therapeutics and materia medica. Students are instructed in the compounding and administering of medicines. The course

must be preceded by Veterinary Science 3. Finlay Dun's *Materia Medica* is used as a text book. Required of students who elect Animal Industry as a major. Four hours a week during the first term of the senior year.

4. THE FREE CLINIC. Every Monday during the second term clinics are held to which diseased animals are brought for free treatment. Students are required to assist in the work and perform such operations as they are prepared for. Required of students taking any of the courses in Veterinary Science.

DOMESTIC SCIENCE.

PROFESSOR COTEY.

MRS. COOK.

MISS HOLMGREN.

MISS MORRELL.

The purpose of the following courses is to give instruction and practice in those subjects most intimately associated with the daily life of women at home.

I. HOUSEHOLD SCIENCE.

✓ I. LAUNDERING. The work consists of practice alternating with lectures. The practice includes plain white washing and removing stains, clear starching, best methods of doing up fine mull, of ironing shirts, cuffs, and collars, washing flannels, and cleaning silk and fine woolen goods. The lectures treat of the chemistry of the various materials used, and of hard waters and the process of softening them. Soaps, washing fluids, bleaching powders, bluing, and starch, are discussed in their scientific and practical relations to laundry work. Required of second year students in the Domestic Science Course, and in the Manual Training Course in Domestic Arts. Two hours a week during the first third of year.

2. **COOKING I.** The student receives instruction in selecting different cuts of meats and in the methods of cooking best adapted to them. Practice is given in roasting, braizing, broiling, in stews and pot roasts; in preparing fowls for cooking, and in making dressings; in boning, larding, and skewering, in making croquets, scallops, etc. Instruction is given in preparing soup stocks, in making cream soups, vegetable soups, and purees. Students are taught to prepare sauces suited to different kinds of meats and to make various meat pies, dumplings for stews, and noodles for soups. Required of second year students in the Manual Training Course in Domestic Arts. Two hours a week during the second third of year.

3. **COOKING II.** Instruction is given in the making of various kinds of yeast, salt rising, wet and dry yeast; white and graham bread, corn bread, Boston brown bread; many varieties of rolls and buns. This work includes lessons in making baking powder and in making a great variety of the breakfast breads in which it is used; biscuits, muffins, gems, Johnny cake, pancakes, and waffles. Part of the term is devoted to plain pastry cooking. Required of second year students in the Manual Training Course in Domestic Arts. Two hours a week during the last third of year.

4. **COOKING III.** Practice is given in making a variety of layer and loaf cakes, sponges, cream puffs, cookies, jumbles and fancy cakes, plain pastry, puff paste, tarts, patties, etc. The student is also given practice in a great variety of baked, boiled, and steamed puddings; custards, blancmanges, whips, creams, jellies, etc. Instruction is given in laying tables for dinner and lunch parties, and in waiting on tables. A few lessons are given in making taffy and sugar candies with French cream fondant. The work includes instruction in cooking vegetables and serving dinners during both winter terms. Required of third year students in the Manual Training Course in Domestic Arts. Two hours a week during the last two thirds of year.

✓ 5. **FRUIT WORK.** This includes canning by various methods, and making all kinds of preserves and marmalade; different methods of making jellies, and experiments with green and ripe fruits; the making of all kinds of ketchups, spiced fruits, sweet and sour pickles, table sauces and meat relishes; the preparing of fruit juices, cordials and syrups. The latter part of the term's work is a course of lectures on the chemical nature of fruit, its acids and sugars; the value of fruit as food, and its action on the human system; the causes of fruit fermentation, and a study of antiseptics. Young women doing this work are required to make use of reference books in the library, and to write essays upon the food value of fruit. Required of third year students in the Domestic Science Course, and in the Manual Training Course in Domestic Arts. Two hours a week during the first third of year.

✓ 6. **FOODS.** Foods are studied as to their sources, processes of manufacture, conditions in which they are found in the market, and methods of cooking best adapted to each. Talks are given on marketing and the selection of foods, and their care before cooking. Sanitary conditions of the kitchen and store rooms are discussed. General rules of measuring and mixing food materials and their proper proportions and combinations are taught, along with the best methods of baking and boiling; deep and shallow frying; carving and serving food. The principles taught in the class are put into practice by each student in the kitchen. Required of second year students in the Manual Training Course in Domestic Arts. Four hours a week throughout the year.

✓ 7. **SANITATION AND HYGIENE.** The lectures on these subjects treat of sanitary conditions about the home; dangers from damp and unclean cellars, foul drains and sinks; ventilation, heating and lighting; instructions especially necessary to women on the care of personal health; home nursing, with illustrative lessons on changing beds for the sick. Required of third year students in the Manual Training Course in Domestic Arts. Two hours a week throughout the year.

8. HOME NURSING AND FIRST AIDS TO INJURED. These subjects are taught by lectures and enforced by illustrations, with references to such authorities as Park, Wilson, Nightingale, Stoney, Hampton, Shaw, Canfield, and Stockholm. Required of third year students in the Domestic Science Course. Five hours a week during the first third of year.

9. COOKING IV. The purpose of this course is to give instruction in the best methods of selecting, preserving, and cooking all common food materials. All principles learned in the class room are demonstrated in the kitchen. William's *Chemistry of Cookery*, Richard's *Chemistry of Cooking*, and various bulletins issued by the United States Government are used as texts. Required of third year students in the Domestic Science Course. Five hours a week during second third of year.

10. COOKING V. This course includes all kinds of plain and some fancy cooking, and covers in a general way all the subjects with which a housekeeper in moderate circumstances needs to be familiar. Demonstration lessons are given at various times throughout the term, on subjects difficult of treatment in the general practice. A three-course lunch is served daily during the winter months. Members of the class take turns in presiding as hostess at the table, carving and serving plates and looking after the needs of the guests; they also take turns in waiting upon the table. The confidence and skill thus acquired are invaluable to them. Required of third year students in the Domestic Science Course. Two hours a week during the second third of year.

11. THE SCIENCE OF NUTRITION. This is a study of foods, their chemical composition, characteristics, digestibility; the way in which they nourish the body; the effect of age, climate, and occupation on the amount and kind of food required. Books on food by such authors as Yeo, Smith, Sir Henry Thompson, Green, Atkinson, Youmans, Parks, and Hoy are used for reference. Constant use is made of government bulletins on the composition and digestibility of foods.

A full set of charts and bottles illustrating the composition of food are used as aids to the study. Required of third year students in the Domestic Science Course. Five hours a week during the last third of year.

12. DIETETICS AND INVALID COOKING. The course aims to determine the best foods to be given in diseases, with practice in their preparation and serving. The preparation of liquid diet, light diet and convalescent diet is taught the same as in hospital training schools. *Invalid Cooking*, by Mary Boland; *Food in Diseases*, by Yeo; *How to Feed the Sick*, by Dr. Gatchell, and other similar works, are used as texts. Required of third year students in the Domestic Science Course. Two hours a week during the last third of year.

13. SANITATION. The course embraces a study of the conditions necessary to a healthful home—fresh air, pure water, heating, lighting, and drainage. *Household Sanitation*, issued by the Collegiate Alumni Association, is used as a text book, together with the *Sanitarian*. Reports of various boards of health are used as reference books. Required of seniors in the Domestic Science Course; elective to others who have had course 12. Five hours a week during the first term.

14. HOUSEHOLD ECONOMICS. Lectures are given on the convenient arrangement and economical furnishing of rooms; the best methods of doing all kinds of housework, with a view to economy of time and strength; the duties of mistress and servants; the entertainment of guests; and many other subjects of interest to the home-maker. Books by prominent writers on these subjects, and a number of periodicals of especial value to students of the class, are found in the library. Required of seniors in the Domestic Science Course.

II. SEWING.

Besides the general advantages derived from industrial education, the object of this branch is to give a practical

training in the sewing which every household requires. Neatness of work is insisted upon. The student provides material and makes her own garments.

1. **HAND AND MACHINE MODELS.** (a) During the first term of the first year, in the Manual Training Course, the student makes a set of models, covering the full course in hand sewing, involving practice in basting, overcasting, back stitching, hemming, felling, gathering and stroking gathers, gusset, buttonholes, loops, eyelets, patching, darning, blanket stitch, slip stitch, chain stitch, French hem, French seam, etc. Instruction is given in the care and use of various machines. Regular practice is given in running, hemming, felling, gathering, puffing, tucking, quilting, etc. Talks are given on the position of the body and care of the eyes while sewing, on color, and on the nature and manufacture of materials used.

(b) During the second term, drawers, skirt, and under-patterns made according to the system used throughout the course, and to fit and finish a dress of washable material; also to cut, fit, and finish one shirtwaist. Required of first year students in the Manual Training Course in Domestic Arts. Two hours a week throughout the year.

2. (a) **DRESSMAKING.** This course includes draughting from measurements, patterns for waists, skirts, sleeves, etc.; practice in cutting and basting; also cutting, fitting, and finishing a worsted dress and fancy waist.

(b) **DESIGNING, CUTTING, AND FITTING.** Instruction is given by talks on grace in design of costume, and harmony of color. Further practice is given in cutting and fitting. Required of second year students in Manual Training Course in Domestic Arts. Three hours a week throughout the year.

3. **ADVANCED DRESSMAKING.** Further work is done in practical costume making, cutting, basting, fitting, pressing, trimming, and finishing. Draughting from measurements, patterns for waists, skirts, sleeves, princess gowns, jackets, coats, etc., forms a large part of the work. Required of third

year students in the Manual Training Course in Domestic Arts. Three hours a week during the first term.

4. **FANCY WORK.** This consists of hemstitching, drawn work, Kensington embroidery, Roman cut work, Spanish laid work, jeweled embroidery, Bulgarian embroidery, and modern lace making. Required of third year students in the Manual Training Course in Domestic Arts. Three hours a week during the second term.

5. **HAND STITCHES.** During the first part of the first year, the student makes a set of models, covering the full course in hand sewing, and involving practice in basting, overhanding, overcasting, backstitching, hemming, felling, gathering and stroking gathers, gusset, buttonholes, loops, eyelets, patching, darning, blanket stitch, slip stitch, blind stitch, herring bone stitch, feather stitch, chain stitch, French hem, French seam, etc. Talks are given on the position of the body and care of the eyes while sewing, on color, and on the nature and manufacture of materials used. Required of first year students in the Domestic Science Course. Two hours a week during the first term.

6. **MACHINE WORK.** The student is taught the use and care of various machines. Regular practice is given in running, hemming, felling, gathering, puffing, tucking, quilting, etc. Drawers, skirt, and underwaist are cut and made. Required of first year students in the Domestic Science Course. Two hours a week during the second term.

7. **MACHINE WORK.** The students are taught to adapt and use patterns; to cut, fit, and finish a dress of washable material; and to cut, fit, hang, and finish one lined skirt of worsted material. Required of second year students in Domestic Science. Two hours a week during the first term.

8. **DRESSMAKING.** This course includes plain draughting from measurements, practice in cutting and basting, and cutting, fitting, and finishing one fancy waist. Required of second year students in Domestic Science. Two hours a week during the second term.

COMMERCE.

PROFESSOR BURCHELL.

ASSISTANT PROFESSOR ROBINSON.

1. BOOKKEEPING I. *Science of Accounts*: The course of instruction in the science of accounts embraces a careful study of the fundamental principles of bookkeeping. The principles of debit and credit are thoroughly developed by means of repeated drills and lectures. Journal and day-book entries are given careful attention. Much care and practice in penmanship, ruling, spacing, arrangement of work, etc., with special reference to figures, is exacted, thus giving students, in addition to principles on which the work is based, that manual training necessary for neat, accurate, and rapid bookkeeping. Required of first year students in the Commercial Course. Three hours a week throughout the year.

2. BOOKKEEPING II. (a) *Practical Bookkeeping* (6 mo.): In this work a regular laboratory method is used. Each student assumes the responsibility of a bookkeeper, and actually keeps books according to the shortest and most approved methods in various kinds of business—such as grocery, general merchandise, jobbing, commission, etc. College currency, bills of exchange, notes, checks, deeds, leases, mortgages, receipts, invoices and all other forms of commercial paper incident to the several kinds of business are used. All banking is done directly with the college bank. The work is largely individual, and so arranged that no two students will arrive at the same result. Every step in the progress of a student is carefully examined, and by a rigid system of checking, accuracy is exacted.

(b) *Business Practice* (3 mo.): Students form a business community, and each one not only keeps books but conducts and manages a business. All transactions are made either by correspondence or face to face with members of the class. Well furnished offices are run for the accommodation of the

business circle. Optional with Stenography I to second year students in the Commercial Course. Three hours a week throughout the year.

3. BOOKKEEPING III. (a) *Corporation Bookkeeping* (3 mo.): The subject of corporation bookkeeping is fully developed. Every step in the organization of a corporation for the purpose of conducting a general manufacturing business is performed by the student, special care being given to the laws of Utah pertaining to corporations. After the corporation is fully organized, the books are kept by the latest and most approved *voucher system*. Bank bookkeeping is thoroughly developed in this course.

(b) *Expert Accounting*. The duties, qualifications and requirements of expert accountants, are studied. Books suitable for different kinds of business with the most approved ruling, special columns, etc., are discussed. Much practical work is given in opening and closing sets of books used in various business enterprises.

(c) *Office Work*. In this course students conduct the several offices—bank, wholesale, retail, etc., filling successively the various positions in each. The work is done in connection with the *business practice* of the second year students, and is as nearly actual business as can be reached in the school-room. The course is fascinating and requires skill, accuracy and rapid work. Optional with Stenography II to third year students in the Commercial Course. Three hours a week throughout the year.

4. BUSINESS CUSTOMS. The fundamental principles of account keeping are applied in this course by means of practical work in the use of different forms and blanks pertaining to actual business. Instruction and practice are given in simple bookkeeping as related to farm accounting, in the principles of banking, in the use of notes and checks, in ordinary commercial law, such as leases, contracts, and papers commonly used, with special reference to marketing farm products and buying farm supplies, including actual experience in

following market fluctuations, studying crop reports and results, from the standpoint of cause and effect. Required of third year students in the Agricultural Course. Three hours a week during the second term.

5. **COMMERCIAL CALCULATIONS.** This consists of a review and drill on the fundamental principles of arithmetic, weights and measures, 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 studied, and practical devices presented. Required of second year students in the Commercial Course. Three hours a week throughout the year.

6. **COMMERCIAL LAW.** This embraces a study of the customs, law, nature, formation, operation, interpretation, and discharge of contracts; including agency, partnership, corporation, bills, notes and checks, purchase and sale of personal property, guarantee or suretyship, limitation of the time to sue; commission merchants and brokers, agreements for personal services, bailments, insurance, telegraphic communication, patents, copyright, trade marks, real estate conveyances, and the business and legal forms that are used to carry on trade. Required of third year students in the Commercial Course. Three hours a week throughout the year.

7. **COMMERCIAL GEOGRAPHY.** The subjects of mathematical, physical, and political geography are briefly reviewed with particular reference to their relation to climate, productions, transportation, commercial centers, etc. The student makes 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. Internal and ocean communications with reference to seaport cities and markets are emphasized. There is no subject connected with commerce more interesting than commercial geography. It is a live subject, and any one who reads, sees, and thinks will not want for material to

assist in making the subject attractive and beneficial. Required of third year students in the Commercial Course. Two hours a week throughout the year.

8. HISTORY OF COMMERCE. The purposes of this course are to convey a general knowledge of the origin and early development of commerce; to trace its influence on the world's civilization; to show the effects of great discoveries, inventions, public works, legislative enactments, and other important influences by which the progress of commerce has been effected. A thorough research of the commercial history of our own country is required. Special stress is placed on the consular system and commercial relations of the United States. The student is led to a clear understanding of the beginning of commerce as the inevitable outcome of man's needs and desires. Required of sophomores in the Commercial Course. Three hours a week during the first term.

9. CONSTITUTIONAL AND INTERNATIONAL LAW. In this course, after a review of civil government, a study is made of the leading cases of constitutional law that have been passed upon by the Supreme Court of the United States. The great debates pertaining to the Constitution and the opinion of the constitutional lawyers are read and discussed. Students are led to investigate the relation that our government bears to other governments of the world. The rights and duties of nations as independent political communities, and a systematic outline of the existing rules of international conduct, by which the harmony of the national state-system of Christendom is maintained, are made a prominent feature of the course. Required of sophomores in the Commercial Course. Three hours a week during the second term.

10. TRANSPORTATION. This subject deals with those questions of railroad, canal, river, lake, and ocean transportation which have become matters of public concern. The history and management of railroads, canals, and steamship lines is given careful attention. The effect of improved methods of transportation upon internal and foreign commerce is con-

sidered. Government ownership combinations, competition, legislation, and the policies pursued by other nations are given careful attention. Required of juniors in the Commercial Course. Two hours a week during the year.

11. BANKING AND FINANCE. The theory of banking, ancient and modern, is first studied, after which a comparison is made of the system in use in the leading commercial nations. Crises and their causes are made a prominent feature of the course. Monetary units, coins, and coinage of different nations are discussed. A careful study of the legislation of the United States Congress pertaining to finance and banking is made. Required of seniors in the Commercial Course. Two hours a week during the year.

12. STENOGRAPHY I. This is an elementary course in the Gregg system of shorthand. The system is adapted perfectly to the hand, the shape of the characters being based upon movements common in ordinary handwriting. Other important features are, no position writing, no shading, and no detaching of vowels. These advantages enable the student to master the principles in a short time and to begin work from dictation early in the course. Business letters constitute the greater part of the dictation exercises. In addition to the regular class drill, individual instruction is given, enabling the student to work to the best possible advantage. *Gregg's Shorthand* and supplementary publications. Optional with Bookkeeping II to second year students in the Commercial Course. Three hours a week throughout the year.

13. STENOGRAPHY II. All the time allotted to this work is devoted to practice in writing and transcribing business letters, legal work, depositions, lectures, and general matter. The aim is to prepare students for positions as stenographers upon completion of the course. Optional with Bookkeeping III to third year students in the Commercial Course who have completed Course 12. Three hours a week throughout the year.

14. **TYPEWRITING.** The work includes instruction in the care and mechanism of the typewriter; exercises in fingering; practice in writing business letters, legal forms, specifications, tabulated statements, and general work; and manifold writing. Three different kinds of machines are used, all having the "universal" keyboard. Required of second year students in the Commercial Course. Two hours a week throughout the year. Two sections.

ENGINEERING.

PROFESSOR JENSON.

PROFESSOR SWENDSEN.

MR. PULLEY.

MR. BEERS.

MR. McLAUGHLIN.

MR. HANSEN.

1a. **MECHANICAL DRAWING I.** This course is intended as a preparation for the work which follows in the courses in engineering. It consists of a thorough drill in the elementary principles of projection, including linear perspective and the more common conventions of engineering drawing. Required of freshmen in the engineering courses who have had Drawing I. Three hours a week throughout the year.

1b. **DESCRIPTIVE GEOMETRY.** The representation of problems, and the solution of problems relating to geometrical magnitudes in space, including orthographic projections and development; projections of plane and solid figures; curved surfaces and tangent planes; shades and shadows; construction of maps; solutions of problems relating to geometrical magnitudes. Required of sophomores in the engineering courses. Two hours a week throughout the year.

2. **ELEMENTS OF MECHANISM.** This includes a consideration of the various forms of motion and its production;

link motions, and their modifications as used in machinery; cam and wiper outlines; wheel trains and aggregate motions; design and construction of gear teeth; mechanism of special machinery. This subject deals with the purely geometrical relations of machinery, rather than with the form and design of articulating parts. Required of juniors in the Mechanical Engineering Course. Five hours a week during the first term.

3a. SURVEYING I. The general methods of plane and topographic surveying, and the use, care, and adjustments of instruments. The practical work in the field receives particular attention. Raymond's *Plane Surveying*. Required of sophomores in all engineering courses and seniors in agriculture who elect a major in agronomy. Three hours a week during the first term.

3b. SURVEYING II. This course deals especially with the advanced problems of city, railway, and hydrographic surveying. Raymond's *Plane Surveying* and Searles' or Trautwine's field book. Required of all sophomores in the Civil Engineering Course. Three hours a week during the second term.

3c. MINE SURVEYING. This course includes the theory and practice of determining a true meridian by means of direct solar and stellar observations; the location and patenting of mining claims and the laws relative thereto; a discussion of the general instructions issued to U. S. Deputy Mineral Surveyors. Each party of students undertakes a complete survey of a mining claim for patent, going through all field and office work required by the surveyor general for securing a patent. The theory and practice of underground surveying is fully discussed; the more difficult and unique problems and the different objects for which surveys are made being emphasized. Required of sophomores in Mining Engineering. Three hours a week during the second term.

4a. ANALYTICAL MECHANICS. In this subject are treated the general laws of statics and dynamics as illustrated in the composition and resolution of forces, determinations of cen-

ters of gravity, moments of inertia, dynamics of a particle and of rigid bodies. Required of juniors in the Mechanical Engineering Course. Four hours a week during the second term.

4b. APPLIED MECHANICS. This course begins with a discussion of the materials of engineering and their use in engineering structures, derivation of formula for stress in members, and a careful comparison with the results of experimental research in the strength of materials. This is followed by a study of stresses and strains in framed structures, analytical and graphical methods being used in all cases. These are illustrated by complete analyses of roof and bridge trusses and modern high framed buildings. The subject is concluded with the discussions of the continuous girder, the elastic arch, and the general theory of elasticity. Required of seniors in the Engineering Courses. Five hours a week throughout the year.

4d. HIGH FRAME BUILDINGS. This course will consist of a complete design of a modern high steel frame building, based upon the theory of stresses in framed structures and on modern practice. The instruction will consist of 12 or 15 lectures and an equivalent of 6 hours per week for one-half year in the draughting room. Students who have completed 4 b and 4 c are eligible.

5a. HYDRAULICS I. A thorough study of the general theories of hydraulics, the flow of water through pipes, weirs, orifices and open channels. Merriman's *Hydraulics*. Required of all juniors in Engineering. Three hours a week during the first term.

5b. HYDRAULICS II. A thorough study of methods and theories of the measurement of flow of water in conduits and canals, measurement of water power, dynamic pressure of flowing water, and an introduction to the general theories of water power. Merriman's *Hydraulics*. Required of juniors in the Civil, Mechanical, and Electrical Engineering Courses. Three hours a week during the second term.

5c. IRRIGATION I. The location, design, construction, and operation of irrigation canals; design and construction of dams, reservoirs, headgates, etc.; the duty of water, subdivision systems, and other subjects relating to irrigation systems. Wilson's *Manual of Irrigation*. Required of seniors in the Civil Engineering Course. Three hours a week during the first term.

5d. IRRIGATION II. This course deals especially with the problems in irrigation relating to the farm; the measurement and division of water, design of subdivision systems, methods of application of water. Required of seniors in the Agricultural Course who elect Agronomy as a major. Three hours a week during the second term.

5e. WATER POWER. A general treatment of the theories of hydraulic motors. The development of water power; design and construction of penstocks, pipe lines, power houses, etc. Frizell's *Water Power*. Required of seniors in the Civil Engineering Course. Three hours a week during the second term.

5f. WATER SUPPLY AND SEWERAGE. A detailed study of the questions pertaining to public water supplies, reservoirs, filtration; distribution systems, classes of water pipes, and the design of water supply systems. The course also includes a study of the problems relating to drainage, construction and capacity of sewers, and sewerage disposal. Fanning's *Water Supply Engineering*. Required of seniors in the Civil Engineering Course. Three hours a week during the first term.

5g. HYDRAULIC LABORATORY. This course is intended to apply the theoretical work of courses of 5 a, b, c, e, and f, to practical problems in the measurement of water, establishment of lines and grades for canals, aqueducts, and pipes; rating of meters; making of estimates, etc. Required of seniors in the Civil Engineering Course. Two hours a week throughout the year.

AGRICULTURAL COLLEGE OF UTAH.

5h. HYDRAULICS OF MINING PLANTS. Pumping plants, water supply, compressors, heaters, and general subjects relating to mine hydraulics. Required of seniors in the Mining Engineering Course. Five hours a week during the second term.

6a. PATTERN MAKING. This is an elementary course in making patterns of pipe fittings, groove pulleys, hangers, core boxes, etc. Required of sophomores in the Mechanical Engineering Course; open to others who have completed Course 5. Three hours a week during the second term.

6b MACHINE WORK. This course consists of selected exercises from courses 2 and 3 in machine work, Mechanic Arts. Required of juniors in the Mechanical Engineering Course. Two hours a week throughout the year.

7a. STEAM ENGINEERING. This course begins with a consideration of the elements of a steam power plant, followed by a more detailed study of engines and boilers according to type and adaptability to different services. A careful study is made of thermodynamics, including refrigerating machinery. Standard methods of engine and boiler testing, and modern practice in design and construction are also considered. Required of seniors in the Mechanical Engineering Course. Three hours a week throughout the year.

7b. HEATING AND VENTILATION. This course will consist of a complete design of a modern heating and ventilating plant according to one of the approved systems. The instruction will consist of three lectures a week for one-half of the year. An equivalent of not less than six hours a week one-half of the year in the draughting room will be required. Students who have completed 7 a are eligible.

8. POWER. This course considers the sources of power, prime movers and their efficiencies, methods of distribution and transmission, with a careful study of losses due to friction, dissipation, etc.; power measurement, and power absorption, by various methods of working machinery; also a careful study of lubricants and their economy as such. In connection

with the class-room work, laboratory experiments are made on the performance and efficiency of mechanical apparatus of various kinds, and on the efficiency of fuels, gas analysis, etc. Tests of heating and power plants are made as opportunity is afforded. Required of seniors in the Mechanical Engineering Course. Two hours a week throughout the year.

9. ROADS AND PAVEMENTS. The location, construction, and maintenance of country roads; the pavement of city streets; materials used and methods of construction. *Byrne's Highway Construction*. Required of juniors in the Civil Engineering Course. Four hours a week during the first term.

10. MASONRY STRUCTURES. This course includes a treatment of the materials used in masonry structures; a discussion of the theories relating to retaining walls, dams, arches, and other masonry structures. *Baker's Masonry Structures*. Required of seniors in the Civil Engineering Course. Three hours a week during the second term.

11. MACHINE DESIGN. In this course are considered the effects of the moving parts of machinery, such as the reciprocating parts of the steam engine, flywheels, governors, etc.; and the general principles of design in machinery, carrying into effect the principles of the course in mechanism combined with those of the course in applied mechanics. The theory of design is supplemented throughout by the practical design of specific parts. Required of seniors in the Mechanical Engineering Course. Five hours a week throughout the year.

12a. DYNAMO MACHINERY. This course consists of lectures and assigned readings on the theory and practice of dynamo construction, special attention being given to forms and systems now in use. Shop methods will be illustrated as far as possible. Required of juniors in the Mechanical and Civil Engineering Courses. Three hours a week during the second term.

12b. DIRECT CURRENT DYNAMO ELECTRIC MACHINERY. A study of electrical measuring instruments, the theory, test-

ing, and design of direct current generators and motors. Required of juniors in the Electrical Engineering Course. Four hours a week throughout the year.

12c. ALTERNATING CURRENTS AND ALTERNATING MACHINERY AND APPARATUS, AND TRANSMISSION OF ELECTRICAL ENERGY. The course follows Engineering 12b, and treats alternating electric currents in a way similar to that in which course 12b treats continuous currents. The latter part of this course is devoted to a study of the electrical transmission and distribution of power. Required of seniors in the Electrical Engineering Course. Five hours a week throughout the year.

13a MINING AND MINE OPERATIONS. This course deals with the practical problems of mining and mine operations, and includes the classification and probable mode of the formation of ore deposits; the different operations of "sinking," "tunneling," etc.; drilling and breaking ground; blasting and explosives; different methods of exploration; supporting excavations by rock pillars, timber, masonry, and metallic supports; means of transportation, both underground and surface; hoisting and hoisting equipments; drainage, ventilation, illumination; safety appliances, both life and property. Required of seniors in the Mining Engineering Course. Five hours a week throughout the year.

13b. METALLURGY II. This course is a continuation of Metallurgy I of the junior year, described as Chemistry II, and deals almost entirely with the mechanical problems, or the methods and principles of graphical statics and mechanics, as applied, both architecturally and mechanically, to the design and construction of various mine, mill, and smelter plants. The different classes of machinery used in the mine and in the treatment of ore are discussed, including surface and underground mine machinery; smelters, mills, samplers; roasting, cyanide, and other plants. Standard specifications of different mining plants will be discussed and the economic considerations noted. Each student will make a design and

complete working drawings of some mine or ore treatment plant. Required of seniors in the Mining Engineering Course. Four hours a week throughout the year.

13c. **SUMMER WORK IN MINE SURVEYING.** This course is the practical application of the course in Mine Surveying. The students visit some mining district for a period of eight weeks during the interval between the sophomore and junior years, under direct charge of one of the professors of Engineering. One of the typical mines of the district will be selected and a careful surface and underground survey made of its properties. The mapping and calculating of the work will be left for the winter term in drafting. Incidentally, the machinery, buildings, general mine equipment, and the geology and nature of the veins and ores will receive consideration. Mine inspecting and reporting will be one of the features of this course.

13d. **SUMMER WORK IN METALLURGY.** In this course, students spend eight weeks, during the summer following the junior year, in some of the mining, milling, sampling, and smelting plants of the state. They are given a thorough course in the practical work of operating and designing mining and ore dressing plants. A careful study is made of the different chemical and metallurgical problems involved in the several plants visited.

14. **MACHINERY.** This course will afford an opportunity to apply the general principles of machine design to a more detailed study of a particular type of machinery. The selection of the type to be studied will be left largely to the individual student. The following types are suggested: A more detailed study of steam machinery in general; locomotive construction; mining machinery; cotton and wool manufacturing machinery, etc. The work will consist of (a) prescribed reading, (b) study of catalogues and bulletins of manufacturers, (c) draughting board designs, (d) visits of inspection to such installations as are within reach. Regular hours will be assigned for consultation with the instructor, whose function

will be to aid in getting materials for study and to render such criticism and aid as will secure thorough and thoughtful work and reasonable progress. A definite scheme must be submitted and approved at the beginning of the year, and adhered to throughout the course. The course will be arranged according to the time at the disposal of the student, with ten hours a week throughout the year as a minimum. No student will be admitted to this course who has not completed all the technical work of the regular course in Mechanical Engineering.

MECHANIC ARTS.

PROFESSOR JENSON.

MR. HANSEN.

MR. WILLIAMS.

MR. PULLEY.

I. CARPENTRY.

MR. HANSEN.

1. (a) Rudimentary exercises in sawing, ripping, planing, mortising, dovetailing, and the application of these to simple articles of furniture, furnish the details of this course. Correct methods of using and handling tools are emphasized. Required of all first year students in the Manual Training Course in Mechanic Arts. Five* hours a week during the first term.

(b) Sharpening and adjusting carpenter's tools, and saw filing, followed by practice in making panels, doors, and sashes, and in sample cabinet work, constitute the work of this course. Open to first year students in the Manual Training Course in Mechanic Arts. Five hours a week during the second term.

*In all the courses in Mechanic Arts, each hour's credit represents three hours work in the shops.

2. Open to second year students in the Manual Training Course in Mechanic Arts who have completed Course 1 (b). Five hours a week throughout the year.

(a) Plain cabinet making, concluding with a standard carpenter's tool chest. First term.

(b) Wood turning and other machine work in wood. Second term.

3. In this course the principles and practice gained in the foregoing courses are applied to frame house building. If possible, practice in building a regular house is given; but when such opportunity cannot be had, small scale building is done at the shops. Open to third year students in the Manual Training Course in Mechanic Arts who have completed Course 1 (b), and preferably Course 2 (a). Five hours a week throughout the year.

4. In this course the student is allowed to specialize in cabinet making, including carving and fitting and finishing, or in inside finishing of houses, or special work in stair building. In whichever branch he may specialize he is required to finish a complete design. Open to fourth year students in the Manual Training Course in Mechanic Arts who have completed Course 3. Five hours a week throughout the year.

5. This course consists of selected exercises from Courses 1 (a) and 2 (b). Required of all second year students in the Engineering Preparatory Course and in the Agricultural Course. Two hours a week during the first term.

6. This is an elementary course in pattern making. Patterns of pipe fittings, groove pulleys, hangers, and core boxes are sample exercises of the course. Required of sophomores in the Mechanical Engineering Course; open to others who have completed Course 5. Three hours a week during the second term.

II. FORGING.

MR. WILLIAMS.

1. Open to second year students in the Manual Training Course in Mechanic Arts who have completed Course 1 in Carpentry. Five hours a week throughout the year.

(a) This course consists of preliminary exercises, such as drawing, bending, twisting, and shaping, followed by exercises in iron welding and making iron tools. Accuracy in methods and results is insisted upon. First term.

(b) The work of this course consists of practice in steel and iron welds, steel and steel welds, and general work in steel tool forging and dressing. Chisels, punches, reamers, hammers, tin shears, nippers, etc., are sample exercises. Second term. Prerequisite, Course 1 (a).

2. Open to third year students in the Manual Training Course in Mechanic Arts who have completed Course 1. Five hours a week throughout the year.

(a) This course consists of elementary work in horse-shoeing and spring building, and in making and repairing different kinds of agricultural and other implements. First term.

(b) The work of this course consists of filing, chipping, hand fitting, and polishing, and general vise work; also practice in special forms of forging, such as wicket gates, cultivator teeth and irons, etc.

3. The work of this course consists of practical carriage building. Open to fourth year students in the Manual Training Course in Mechanic Arts who have completed Course 2. Five hours a week throughout the year.

4. (a) The work of this course consists of selected exercises from Course 1. Required of second year students in the Engineering Preparatory Course. Two hours a week throughout the second term.

(b) This course consists of selected exercises from

Course I (a), followed by work in horseshoeing and in repairing agricultural implements. Required of second year students in the Agricultural Course. Two hours a week during the second term.

III. MACHINE WORK.

PROFESSOR JENSON.

MR. PULLEY.

1. This course consists of selected exercises from Forging I, the same as Forging 4 (a), followed by the vise work of Forging 2 (b). Open to first year students in the Manual Training Course in Mechanic Arts who have completed Course I (a) in Carpentry. Five hours a week during the second term.

2. Open to second year students in the Manual Training Course in Mechanic Arts who have completed Course 1. Five hours a week throughout the year.

(a) This course consists of preliminary exercises in straight and taper turning, drilling, planing, and milling, accompanied by instruction in the care and use of machinery. First term.

(b) The work of this course consists of boring and chucking in the lathe, thread cutting, polishing, etc., and such other exercises on other machines as will be required in making shaft couplings, tap wrenches, etc. Second term.

3. Open to third year students in the Manual Training Course in Mechanic Arts who have completed Course 2. Five hours a week throughout the year.

(a) The work of this course consists chiefly of making taps, spiral drills, fluted reamers, and mandrills, with practice in finishing tempered articles on the universal grinding machine. First term.

(b) This course consists of the manufacture of parts of machinery, such as engine connecting rods. Second term.

4. The work of this course consists of practice in actual machine construction. Speed lathes and sensitive drills may be taken as sample exercises. Open to fourth year students in the Manual Training Course in Mechanic Arts who have completed Course 3 (b). Five hours a week throughout the year.

5. This course consists of selected exercises from Courses 2 and 3. Required of juniors in the Mechanical Engineering Course. Two hours a week throughout the year.

ANIMAL BIOLOGY.

PROFESSOR GOWANS.

1. **ELEMENTARY ANATOMY AND PHYSIOLOGY.** The purpose of this course is to familiarize the student with the important principles of the science of physiology, and furnish a basis for the study of hygiene. The student is encouraged to make a practical application of the laws upon which his health and proper physical development depend. Required of second year students in the Agricultural, Domestic Science, Commercial, and Engineering Preparatory Courses; and of fourth year students in the Manual Training Course in Mechanic Arts. Two sections. Two hours a week throughout the year.

2. **GENERAL BIOLOGY.** This work may be taken as a three-hour or a five-hour course. The lectures of the shorter course deal with some of the general principles of biology. The laboratory work consists of the detailed study of a number of representative vegetable and animal organisms. The longer course includes the above and an introduction to elementary histology and embryology. Required of those who elect a major in biology; of sophomores in the Agricultural Course; and as a prerequisite to Courses 3, 4, 5, and 6. Three hours (one lecture and two laboratory periods), or five hours (two lectures and three laboratory periods) a week throughout the year.

3. ZOOLOGY. The laboratory work consists of the dissection of a number of types, which are studied in considerable detail. The lectures and recitations are based upon the laboratory work and consider the important characteristics of the principal groups of animals, especially morphology and physiology, the principles of classification, and the general principles of zoology. Required of sophomores in the Agricultural Course; elective to others who have taken Course 1. Three hours a week throughout the year.

4. ADVANCED PHYSIOLOGY. The subjects discussed are, the phenomena of life; the physiology of the cell; chemical composition of the body; the physiology of nutrition; irritability and contractility; physiology of the circulation; physiology of the nervous system and sense organs. The laboratory work is an introduction to experimental physiology. Elective to those who have completed Course 2, and Chemistry 1. Three hours a week (lectures, conferences, and laboratory work) throughout the year.

5. HISTOLOGY. A minute study of the elementary tissues, excepting the nervous system. Some time in the beginning is devoted to the preparation of stains, hardening, fixing and other fluids, each student being required to prepare the reagents for his own use. A typical mammal is used for material. Prepared slides of human tissues are furnished the student. The course includes methods of fixing, decalcifying, staining, imbedding, sectioning, mounting, and drawing. Elective to those who have completed Course 2. Five hours a week during first term.

6. COMPARATIVE ANATOMY AND EMBRYOLOGY OF THE VERTEBRATES. This course is based upon Wiedersheim's *Comparative Anatomy of Vertebrates*, and Foster and Balfour's *Embryology*. The course aims to consider more thoroughly than is possible in Course 3 the subject of vertebrate zoology. Elective to those who have taken Courses 2 and 3. The extent of this course will be arranged to suit the convenience of students.

7. **NEUROLOGY.** The course includes general histological technique, as in Course 5, and some special neurological methods not included in that course. (a) A study of the comparative structure of the brain and nervous system of the higher and lower animals; (b) histology of the nervous system and sense organs. Elective to those who have completed Courses 2 and 5. Five hours a week during the second term.

8. **BACTERIOLOGY.** This course consists of a study of elementary technique; the non-pathogenic bacteria; the work on yeasts and moulds; and the examination of air, water, and soil. Required of juniors in the Domestic Science Course, of students in the Agricultural Course who elect a major in Animal Industry, and of students in the General Science Course who elect a major in Biology; elective to others. Three hours a week during the first term.

9. **PATHOGENIC BACTERIA.** Required of juniors in the Domestic Science Course and of students in the General Science Course who elect a major in Biology; elective to others who have completed Course 8. Three hours a week during the second term.

10. **SOIL BACTERIA.** After considering the elementary technique, this course deals with the examination of soils. The nitrifying organisms and the relationship of bacteria to soil fertility are discussed. Required of seniors in the Agricultural Course who elect a major in Agronomy; elective to others. Three hours a week during the first term.

CHEMISTRY.

PROFESSOR WIDTSOE.

ASSOCIATE PROFESSOR YODER.

MR. McLAUGHLIN.

1. **GENERAL CHEMISTRY.** Required of sophomores in the Commercial Course and of freshmen in all other courses. Five hours a week throughout the year.

(a) *Elementary Chemistry*: This course deals with the important facts and fundamental theories of chemistry, and with the applications of chemistry in the arts and manufactures. The laws of chemical combination; the writing of reactions, and the solving of stoichiometrical problems are given special, careful consideration. Students taking this course must also take Courses 1 (b) and 1 (c).

(b) *Elementary Practical Chemistry*: This course supplements Chemistry 1 (a) and furnishes the necessary practical preparation for qualitative analysis. The non-metallic elements, mainly, are studied with reference to their combinations with each other; their reactions are verified, and the facts and theories of the lecture room are tested by experiments.

(c) *Qualitative Analysis*: This course runs parallel with and supplements the descriptive study of the metals and their compounds. Under the direction of the instructor the students apply with their own hands the reagents necessary to determine the composition and properties of chemical compounds. They thus gain a practical knowledge of the methods of chemical analysis and manipulation. Each student is required to analyze and report on a number of unknown substances. This work is deemed extremely important from an educational as well as from a practical point of view.

2. ORGANIC CHEMISTRY. This course consists of a brief survey of the more important reactions and compounds of the fatty and aromatic series of hydrocarbons and their derivatives, together with a full discussion of the nature and influence of molecular structure. Opportunity is given the student to prepare a number of organic compounds which illustrate in their preparation the methods of work of the organic laboratory. Required of juniors in the Domestic Science Course. Four hours a week throughout the year. Prerequisite: Chemistry 1.

3. AGRICULTURAL CHEMISTRY. This course consists of lectures and assigned readings on the chemical problems of

agriculture. The aim is to make the student familiar with our present knowledge of the composition of the plant; the sources of plant food; the composition of the animal; the principles of animal nutrition; and the chemical nature of soils, waters, dairy products, etc. In the laboratory are taught the methods of agricultural analysis. Required of juniors in the Agricultural Course. Three hours a week throughout the year. Prerequisite: Chemistry I.

4. CHEMISTRY OF FOODS AND COOKERY. In this course, foods and methods of cooking are studied experimentally, with especial reference to human nutrition. The common foods, both animal and vegetable, are separated by physical and chemical means, into their constituents, after which the effects of different methods of cooking upon the various constituents are investigated. Wine, beer, tea, coffee, milk, and other drinks are also examined, and separated into their constituent parts. Spices and condiments are studied with the especial purpose of learning simple methods for the detection of the common adulterants. Some attention is also given to the effect of different kinds of heating apparatus upon the chemical changes that take place during cooking. Required of seniors in the Domestic Science Course; elective to others. Two hours a week throughout the year.

5. QUANTITATIVE ANALYSIS. This is mainly a laboratory course, giving the student practice in the typical methods of proximate and ultimate quantitative chemical analysis. It aims also to give, in familiar talks, a due appreciation of the importance of accuracy in chemical work, and of the relation of quantitative analysis to theoretical chemistry. After the necessary introductory practice, samples of waters, soils, ores, agricultural products, and foods are analyzed and reported upon. The work of the Experiment Station chemical laboratory furnishes a good opportunity for the study of methods of analysis. Elective to those who have completed Course I.

6. ANALYSIS OF FOODS AND FEEDING STUFFS. In this course, various articles of food or farm products, used for

food, are analyzed to determine quantitatively the different constituents, as proteids, carbohydrates, fats, crude fibre, etc. In this work the Methods of Analysis adopted by the Association of Official Agricultural Chemists are in the main followed. Besides this work, numerous exercises in the detection of adulterants are carried out. Prerequisites: Course 1, and preferably Courses 2 and 5. In connection with the work going on in the Experiment Station laboratory, there is excellent opportunity for students to pursue this course. This course is especially valuable to students of Domestic Science or of Agriculture, by giving them a scientific basis for judging the dietetic value of any food, or of determining a rational ration for man or beast. A direct aim of this course, also, is to fit the student for positions as analysts in agricultural experiment station chemical laboratories, or food inspection laboratories. Credit is given according to the work done.

7. **TOXICOLOGY.** This is a laboratory course including a study of some of the more common poisons, and their detection and separation from articles of food, contents of stomach, etc. Some attention is also given to the symptoms of poisoning, antidotes, and post-mortem examinations. The course is intended especially for students who expect to follow the profession of medicine, or who are preparing to work in laboratories as public analysts. Prerequisites: Chemistry 1 and 2, and preferably Chemistry 5. Three hours a week during the second term.

8. **RESEARCH WORK.** The laboratories of the College and the Experiment Station are open to students, with the necessary preparation, who desire to pursue special independent studies in the domain of chemistry. The researches carried on by the chemical department of the Experiment Station are of great aid to students who are engaged in the solution of scientific problems. Elective to those who have completed Courses 2 and 5.

9. **ASSAYING.** The fire and wet methods of assaying continue and supplement the work of Course 5 in quantitative

analysis. This course includes (a) a study of the principles of fluxing and their application to typical silicious, barytic, and pyritic ores; (b) the assaying of rich, medium, and low grade silver, gold and lead ores by means of the "nitre," "nail," and "roasting" methods, and the comparison of results; the assaying of copper mattes and bullion by the combined dry and wet methods; and an explanation of mine, mill, and smelter assays. The wet methods of assaying are the ordinary methods of volumetric analysis so modified as to be applicable to the several purposes of the "assay requirements," and will include the rapid determination and estimation of silver, lead, copper, iron, silica, sulphur, zinc, lime, manganese, cobalt, nickel, etc. Large numbers of "smelter checked" samples are given as exercises to the students to assay. The practice in "fire" and "wet" assaying, as given by this course, aims to make of the student a practical and capable assayer. Prerequisites: Chemistry I, and preferably Chemistry 5.

10. METALLURGY I. This subject begins in the junior year and is continued in the senior year as Engineering 13 b. During the junior year, the time is devoted as far as practicable to the chemical side of the metallurgy, the mechanical equipment being discussed only as far as is necessary for a full understanding of the chemistry of the metallurgical problems involved. Some of the subjects to be dealt with in this course are the general principles of metallurgy, including first a thorough study of the general properties of the metals, followed by a consideration of the thermo and other treatments of metals and alloys, the properties, occurrence, and use of refractory materials and fluxing materials; the study of furnace slags; calculation of furnace charges; smelting and refining of coppers; and the metallurgy of gold, silver, lead, iron, zinc, aluminum, mercury, platinum, cobalt, and nickel. To students especially interested in the oil industry, some time will be devoted to a study of the chemical problems involved. The chemical problems of roasting, cyaniding, amalgamating, and other metallurgical processes form the basis for laboratory

tests to be made by the students. Four hours a week throughout the year.

II. PHOTOGRAPHY. A course in practical photography will be offered, consisting principally of practical work by the students, introduced and supplemented by lectures and demonstrations by the instructor. The students will be given the use of a camera, and will expose plates or films under various conditions as to light and subject in and out doors, develop plates and films, study effect of over and underexposure and over and underdevelopment, print pictures on the several classes of paper, as "blue-print" paper, "printing-out" paper, and "development" paper, tone with gold and with platinum, make transparencies and lantern slides, and enlarge or reduce pictures. Fees will be charged to cover cost of material consumed. One hour a week during the second term. Open to students having had one term's work in Chemistry. Students desiring it will be given opportunity for more advanced experimentation along the several phases of photography.

NOTE:—In courses 5, 6, 7 and 8, a reading knowledge of German is highly desirable.

GEOLOGY AND MINERALOGY.

MR. PETERSON.

I. GENERAL GEOLOGY. The instruction given is intended to familiarize the student with the physiographic changes now in progress and the agencies which produce them, with the origin and structure of the various materials composing the earth's crust, and with the chronological succession of the great formations. A careful study of the development of the North American continent from the earliest time will comprise most of the second term's work. Several field trips will be made and enough field practice given to introduce the methods by which the geological phenomena of a given area may be interpreted. Required of juniors in the

Agricultural and Mining Engineering Courses; elective to others. Three hours a week throughout the year.

2. **STRUCTURAL GEOLOGY.** The work in this course will begin with a classification of the common rocks, and a careful study of their characteristics, source and economic value. Work will then be taken up along the lines of structural and topographical geology, with stress laid upon the problems of stratification, cleavage, faulting, disintegration, etc., as it may affect the work of the engineer. Each principle is supplemented by field and laboratory work. Required of juniors in the Civil Engineering Course. Two hours a week throughout the year.

3. **ECONOMIC GEOLOGY.** The object of this course is to give the student some idea of the mineral resources of the United States. The work will include a careful study of the vein-forming minerals, origin of ore deposits, mining terms and methods, the source production and economic value of iron, gold, platinum, silver, copper, lead, zinc, mercury, tin, aluminum, etc.; also the sources, with outlines of the processes of preparation, and economic value of coal, petroleum, natural gas, asphaltum, building stones, cements, soils, clays, mineral fertilizers, mineral water, fullers earth, lithographic stone, precious stone, etc. Much of the information will be taken from the Reports of the United States Geological Survey. Required of seniors in the Mining Engineering Course. Elective to others who have completed Courses 1 and 4 and Chemistry 1. Two hours a week throughout the year.

4. **MINERALOGY.** This course is a systematic study of the common minerals as outlined in Dana's Manual. The student will be required to make a collection of the minerals close to the College. Blow pipe analysis and determinative mineralogy constitute the laboratory work. Required of seniors in the Agricultural and Domestic Science Courses, and of sophomores in the Mining Engineering Course. Two hours a week during the first term.

METEOROLOGY.

ASSISTANT PROFESSOR DRYDEN.

I. METEOROLOGY. This course includes an elementary study of air pressure, humidity, temperature, rainfall, evaporation, wind velocity, theory of storms, methods of forecasting, and a general study of the United States Weather Service, with special reference to the relation of climate to health and to agriculture. The reading of the weather instruments in use at the College is made a part of the work. Required of sophomores in the Agricultural and Domestic Science Courses. Two hours a week during the second term.

[The College receives the telegraphic *weather forecasts* from the forecast official of the Department of Agriculture located at San Francisco. The forecasts are telegraphed each day (Sundays and holidays excepted) at government expense. These forecasts or warnings are of great value to the farming community. In 1893 the percentage of verifications of the forecasts of the Pacific coast division was 83.7. For Utah, which is part of this division, the percentage was likewise 83.7. Great value is placed upon these forecasts by the Department of Agriculture at Washington. From their timely warnings much property is saved both on sea and land. The department considers that \$10,000,000 is a conservative estimate of the value of property saved in 1895. Doubtless some means will be devised in the near future whereby these forecasts will be made more accessible to the farming community. An explanation of the flag signals is shown on the third page of the cover.]

PHYSICS.

MR. CAMPBELL.

I. ELEMENTARY PHYSICS. The object of this course is to enable every student to obtain a practical acquaintance with laboratory methods of work, and with the elementary facts and laws which are the foundation of the science and physics.

The lectures are illustrated by experiments performed by the instructor, and numerous problems are worked in and out of class. The laboratory work consists of about forty-five experiments, chiefly quantitative, performed by each student. Hall and Bergen's *Text Book of Physics*. Required of sophomores in the Domestic Science Course, and of freshmen in all other courses. Three hours a week throughout the year.

2. GENERAL PHYSICS. This is a more advanced course than Physics I. Stress is laid on the subjects of mechanics, heat, and electricity. Hastings and Beach's *General Physics* Required of sophomores in the Civil Engineering and Mechanical Engineering Courses; elective to others. Three hours a week throughout the year.

3. ELECTRICAL AND MAGNETIC MEASUREMENTS. This course is intended mainly for the students in the Electrical Engineering Course, but may be taken by others who have the necessary preparation. Most of the work will be in the laboratory, lectures being given from time to time as required. The laboratory work consists of accurate measurements of current strength, resistance, electromotive force, mutual induction, and the determination of the magnetic properties of a specimen of iron. Two hours a week during the second term.

4. THERMOMETRY AND PHYSICAL OPTICS. This course is arranged for those students in the General Science Course who elect Physics as a major. Elective to students who have completed Course 3 and Mathematics 5. Four hours a week throughout the year.

MATHEMATICS AND ASTRONOMY.

PROFESSOR LANGTON.
MR. PETERSON.
MR. OSTIEN.
MR. McLAUGHLIN.

The elective courses in mathematics are not all given each year, but vary from year to year to suit the convenience of students who desire to specialize in mathematical science. Any elective course not applied for at the beginning of the year by at least three students properly prepared may not be given. If applied for by the requisite number of students, additional courses in quaternions, determinants, theory of equations, projective geometry will be given.

1. ARITHMETIC. This course consists of a thorough treatment of elementary arithmetic. Required of all students in the Preparatory Course, and of first year students in the Manual Training Courses in Mechanic Arts and Domestic Arts. Four sections. Five hours a week throughout the year.

2. ARITHMETIC AND ALGEBRA. Required of second year students in the Manual Training Course in Mechanic Arts, third year students in the Manual Training Course in Domestic Arts, and first year students in all other courses. Five sections. Five hours a week throughout the year.

(a) *Advanced Arithmetic*: Special attention is given to the nature, origin, and development of number. The class recitation hour is devoted to thorough consideration of the fundamental processes of arithmetic, including contracted methods of multiplication and division, common and decimal fractions, factors and multiples, mensuration, the metric system of weights and measures, square and cube root, proportion, percentage and interest, and practical problems. First term.

(b) *Algebra*: This course includes a thorough treatment of the fundamental operations, use of parentheses, fac-

toring, highest common factor, lowest common multiple, fractions, and simple equations. Second term.

3. ALGEBRA, GEOMETRY. Required of third year students in the Commercial Course and the Manual Training Course in Mechanic Arts, and of second year students in all other courses, except the Manual Training Course in Domestic Arts. Two sections. Five hours per week throughout the year.

(a) *Higher Algebra*: After a brief review of the subjects treated in Course 2 (b), the following subjects are considered: Simple equations, inequalities, involution and evolution, theory of exponents, radicals, quadratic equations, ratio and proportion, progressions, and binomial theorem. Fisher and Schwatt's *Higher Algebra*. First term.

(b) *Plane Geometry*: This course includes the general properties of regular polygons, their construction, perimeters, and areas; regular polygons and circles, with problems for construction; maxima and minima; and methods for determining the ratio of the circumference to the diameter. Wells's *Plane Geometry*. Second term

4. GEOMETRY, ALGEBRA, TRIGONOMETRY. Required of sophomores in the Agricultural, Domestic Science, and Commercial Courses; of freshmen in all other courses. Five hours a week throughout the year.

(a) *Solid Geometry*: Phillips and Fisher's *Geometry*. First third of year.

(b) *Advanced Algebra*: This course is a continuation of Course 3 (a), and includes a thorough drill in the most important principles of higher algebra required in the engineering and other courses. Second third of year.

(c) *Trigonometry*: The deduction of general trigonometric formulae, the solution of plane and spherical triangles, and practice in the use of logarithmic tables. Lyman and Goddard's *Trigonometry*. Last third of year.

5. ANALYTIC GEOMETRY, CALCULUS. Required of sophomores in the engineering courses; elective to others who have

completed Course 4. Five hours a week throughout the year.

(a) *Analytic Geometry*: The analytic geometry of the straight line, the circle, and the conic sections, including a discussion of the general equations of the second degree, and some special examples in transcendental and higher plane curves.

(b) *Differential Calculus*: The development of the fundamental principles and formulae of the differential calculus; applications to various problems in plane geometry and analysis, such as indeterminate forms, maxima and minima, curvature, expansions of functions in series, evolutes and involutes, and curve tracing.

(c) *Integral Calculus*: Integration of various forms; development of the formulae of the integral calculus; application in rectification of curves, quadrature of plane and curved surfaces, cubature of volumes, etc.

6. DIFFERENTIAL EQUATIONS. This course is arranged to meet the special requirements of engineering students, and includes a treatment of the theory and methods of the solution of total differential equations, with a short introduction to partial differential equations. Required of juniors in the engineering courses. Three hours a week during the first term.

7. MODERN GEOMETRY. This course treats the most important theorems and examples connected with harmonics, anharmonics, involution, projection (including homology) and reciprocation, including the following: Harmonic ranges and pencils; conics and focal projections; anharmonic ratios; homographic ranges; anharmonic properties of points on a conic, of tangents of a conic; poles and polars, reciprocation; properties of triangles; Pascal's and Brianchon's theorems; homographic ranges on a conic; ranges and pencils in involution; involution of conjugate points and lines; involution range on the conic, of a quadrangle, of a quadrilateral; constructions of the first and second degree; the principle of continuity; circular points and lines; real and imaginary projection, generalization by projection, and homology. Cremona's

Projective Geometry, Russell's *Treatise on Pure Geometry*, and Lachlan's *Modern Pure Geometry*. Elective to those who have completed Course 5. Five hours a week throughout the year.

8. PLANE AND SOLID ANALYTICAL GEOMETRY, ADVANCED COURSE. This course includes the equations and properties of the point, right line, and plane, of the sphere, cylinder and cone, and of the paraboloids, ellipsoids, and hyperboloids; the modern algebraical methods of the conic sections; a short discussion of the general theory of higher plane curves and surfaces; applications of the differential and integral calculus to problems involving functions of two or more variables, such as development in series and transformation of functions, curvatures, areas of surfaces, volumes of solids, etc. The work of this course will consist in the discussion of portions of Salmon's *Conic Sections*, *Higher Plane Curves*, and *Analytic Geometry of Three Dimensions*. Elective to students who have completed Course 5. Five hours a week throughout the year.

9. DIFFERENTIAL AND INTEGRAL CALCULUS, ADVANCED COURSE. This course embraces the elements of the theory of functions of imaginary variables; the various methods of integration, systematically treated; the elements of the theory of the elliptic functions; the mechanical and geometrical applications of the calculus treated more fully than in Course 5; and some of the more important cases of Differential Equations. Todhunter's *Differential Calculus* and Williamson's *Integral Calculus*. Elective to students who have completed Course 9. Five hours a week throughout the year.

10. HISTORY AND PHILOSOPHY OF MATHEMATICS. This course deals with the origin, development, and logical relation of the various subjects of mathematical science, including a series of synoptic lectures, which may be roughly outlined as follows: Mathematics among the ancients; Descartes and the discovery of analytic geometry; Newton, Leibnitz, and the

calculus; Hamilton and the invention of quaternions; modern geometry; mathematics and mathematicians of the United States. Ball's *History of Mathematics*. Comte's and Bledsoe's *Philosophy of Mathematics*, the *Encyclopædia Britannica*, and other works of reference. Elective to students who have completed Course 9. One hour a week throughout the year.

11. GENERAL ASTRONOMY. This course deals with the general facts and principles underlying the science of astronomy, with solutions of many problems, particularly those relating to the determination of latitude, longitude, and time. Instruction is given by means of recitations and lectures. Young's *General Astronomy*. Elective to students who have completed Course 4. Two hours a week throughout the year.

12. PRACTICAL ASTRONOMY. A continuation and completion of Course 11. Theory and use of instruments—sextant, transit instrument, zenith telescope, and equatorial; various methods of determining longitude and latitude; graphical methods of predicting eclipses, etc. Doolittle's *Practical Astronomy*; Clarke's *Geodesy*. Elective to those who have completed Courses 5 and 11. Two hours a week throughout the year.

ENGLISH LANGUAGE AND LITERATURE.

PROFESSOR UPHAM.

MR. CAINE.

MR. HILL.

MISS MOENCH.

MISS BAKER.

I. GRAMMAR AND COMPOSITION I. This work includes:— Orthography; the parts of speech; the construction, analysis, and punctuation of easy sentences; the correction of common errors in language; and the writing of brief compositions. The written work is in part suggested by the

text book, and in part correlated with the lessons in reading and in geography. Hyde's *Lessons in English, Second Book* for sections I and 2; Hyde's *Two Book Course, Book II*, for sections 3 and 4. Required of all Preparatory students. Four sections. Five hours a week throughout the year.

2. READING AND SPELLING. The following books are read: *The Lady of the Lake, The Sketch Book, The Vicar of Wakefield, Pope's Homer's Iliad, I, VI, XXII, XXIV, The De Coverly Papers, The Merchant of Venice*. The purpose of the work is the acquisition of a vocabulary, of a knowledge of the contents of the books, and of a correct oral expression. Written summaries and reproductions are required, and due attention is given to spelling. *Student's Series of English Classics; Handy Edition*. Required of all Preparatory students. Four sections. Five hours a week throughout the year.

3. GRAMMAR AND COMPOSITION II. The study of Grammar is completed in this course. There is some work in etymology, but attention is given chiefly to the principles of syntax, and to the construction and analysis of sentences. Later in the year an elementary text-book on Rhetoric is introduced, and the student is drilled in the correct use of words and sentences. Material for composition work is drawn from the text-books, and from the lessons in English Classics and U. S. History. Required of all first-year students. Four hours' credit. Four sections. Five recitations a week throughout the year.

4. READING OF ENGLISH CLASSICS. The books read are selected from those prescribed for study and practice in the uniform college entrance requirements: Macaulay—*Essay on Milton, Essay on Addison*; Milton—*Minor Poems, Paradise Lost, I-III*; Shakespeare—*Macbeth*; Burke—*Speech on Conciliation with America*; George Eliot—*Silas Marner*; Tennyson—*The Princess*; Coleridge—*Ancient Mariner*; Lowell—*Vision of Sir Launfal*; Scott—*Ivanhoe*. This course aims at a thorough understanding of the material, and en-

courages the student in giving his own expression of the thoughts there found. The elementary qualities of style are explained and illustrated. Frequent written exercises are required, and memory passages are assigned. *College Entrance Requirements.* Required of all first year students. Four sections. Two hours a week throughout the year.

5. RHETORIC AND COMPOSITION. It is intended to make this an extremely practical course in the writing of English. Lectures and recitations, based on an advanced text-book, give continued attention to the principles of Rhetoric. The reading of prescribed pieces of prose and poetry, in and out of class, affords contact with the best models. The composition work proper consists of at least three short exercises a week, more or less related to the other work of the course. A longer theme is required each month. These exercises are criticised and returned, and private conferences are given the writers as often as possible. *The Principles of Rhetoric—Adams Sherman Hill.* Required of all second year students. Two sections. Five hours a week throughout the year.

6a. ENGLISH PROSE. A detailed critical study of selected examples of description, narration, exposition, and argumentation. Particular attention is paid to the principles of argumentation. Frequent written exercises and debates may be required, and each student is assigned one author for special study. The handbooks of *English Readings*, published by Holt and Co., will form the basis of the work. Required of freshmen. Three hours a week during the first term.

6b. THE ENGLISH VOCABULARY. This course will be chiefly concerned with the following points: The history of the English language; the development of the literary language from a dialect; the sources of our vocabulary; the processes of change in the meanings of words. *Words and Their Ways in English Speech—G. L. Kittredge.* Required of freshmen. Three hours a week during the second term.

7. THE HISTORY OF ENGLISH LITERATURE. A general survey of the progress of English literature from the Anglo-Saxon period to the present time. Important movements and significant authors are studied at considerable length, with due attention to social and political relations, and to contemporary foreign literature. The work is carried on by lectures and recitations, a large amount of work being prescribed for reading and discussion. Required of students in the Agricultural, Domestic Science, Commercial, and General Science Courses. Three hours a week throughout the year.

8. THE ELIZABETHAN MOVEMENT. This course offers an opportunity for more advanced work in one particular period of English literature. Beginning with the rise of the Renaissance spirit in England, it will give particular attention to the drama of Shakespeare and his contemporaries, and then follow the decline of the movement to the Closing of the Theatres, 1642. If possible, the Restoration period will be studied in its relation to this movement. Lectures, prescribed reading, and theses. Elective. Two hours a week throughout the year.

9. THE ROMANTIC MOVEMENT. Similar to English 8 in method and requirements. Elective. Two hours a week throughout the year. *Omitted in 1902-1903.*

10. CHAUCER AND SHAKESPEARE. This is a course in careful detail study. The first term is devoted to Chaucer's Canterbury Tales, including the Prologue. Matters of grammar, pronunciation, sources, social and political allusions, and literary art all receive attention. Prominence is given to Chaucer's place in the development of the language. The second term is occupied with the interpretation of four plays of Shakespeare in somewhat the same manner. The plays read in 1902-1903 will be King Lear; Henry IV, part I; Winter's Tale; Hamlet. *Chaucer; Prologue, Knight's Tale, etc.;—ed. Morris and Skeat. Chaucer; Man of Lawe, etc.,*

—*ed. Morris and Skeat. Shakespeare; Rolfe edition.* Elective. Three hours a week throughout the year.

11. ANGLO-SAXON AND MIDDLE ENGLISH. This course is designed to furnish a basis for advanced study of the English language, and to acquaint the student with early literature in English. The text-book in Anglo-Saxon will be *Bright's Anglo-Saxon Reader*; that in Middle English will be announced later. Elective. Three hours a week throughout the year. *Omitted in 1902-1903.*

12. ELOCUTION. The principal aim in this course is to develop easy, natural readers, who will be able to express the thought of the author in a clear and impressive manner. It also includes practical work in recitation and impersonation. Each student is expected to learn and present a recitation to the class once each month, or as often as the number in the class will allow. Elective to students who have completed Course 4.

MODERN LANGUAGES.

PROFESSOR MOENCH.

The courses in modern languages are designed to give the student a technical knowledge of the German, French, and Spanish languages, sufficient to read and to speak them with facility and accuracy; to present the general facts of the literary history of each language with a detailed statement of special important epochs; and to give the student, by occasional lectures, illustrated by the stereopticon, some idea of the cities, customs, and life of the people whose language is studied.

I. GERMAN.

1. ELEMENTARY COURSE. Practice is had in pronunciation, and systematic drill is given in grammar with special

reference to syntax. The latter part of the course is given to reading Schiller's *Das Lied von der Glocke* and about 150 pages of easy prose, with special reference to scientific matters. Optional with French or Spanish in the Commercial Course, and with French in all other college courses. Three hours credit, five recitations a week throughout the year.

2. INTERMEDIATE COURSE. A scientific reader is used; and Schiller's *Wilhelm Tell*; Lessing's *Minna von Barnhelm* and *Nathan der Weise* are read, in connection with German composition. Optional, as Course 1. Three hours a week throughout the year.

3. ADVANCED COURSE. Scientific reading, and the reading of Goethe's *Faust*, will be accompanied with essays on literary and philosophical subjects suggested by the reading. Conversation is practiced through the entire three years and is made a feature of importance. Elective to those who have completed courses 1 and 2. Three hours a week throughout the year.

II. FRENCH.

1. ELEMENTARY COURSE. An outline of the essentials of French grammar is given along with exercises on pronunciation; translations are made from French into English and from English into French; easy prose selections are read from representative writers. Optional with German or Spanish in the Commercial Course, and with German in all other college courses. Three hours credit, five recitations, a week throughout the year.

2. ADVANCED COURSE. Scientific readers and other reading matter are used, with readings from the various classic authors, as Corneille, Racine, Molière, and Daudet. Conversation is made a marked feature. Optional, as Course 1. Three hours a week throughout the year.

III. SPANISH.

1. ELEMENTARY COURSE. Considerable time is given to the colloquial Spanish. The close relations of the United States with Central and South America and the various islands where Spanish is spoken, have increased the value of a speaking knowledge of this language. The essentials of Spanish grammar are taught; readings are selected from Spanish authors, and are made the basis of conversation. Optional with German or French in the Commercial Course. Three hours credit, five recitations, a week throughout the year.

2. ADVANCED COURSE. The more advanced work includes business correspondence, commercial terms and conversation, and readings from Spanish newspaper and magazine articles of the day. Open to those who have completed Course 1. Three hours a week throughout the year.

IV. LATIN.

To meet the demands of a large number of college students who require Latin in certain special lines of scientific work, the following courses are offered:

1. ELEMENTARY COURSE. In this course the students are given systematic drill in grammar and a thorough practice in pronunciation. Special attention is given to the relationship of Latin to the English language. Translations from English into Latin. During the latter part of the year, the first book of Caesar's *De Bello Gallico* are read. Smiley and Storke's *The Beginners' Latin*. Elective; five hours a week throughout the year.

2. ADVANCED COURSE. During the second year some select orations of Cicero and Livy, Books XXI and XXII, are read. Latin prose composition and the work in grammar and syntax are continued. Special work in scientific Latin

nomenclature is given, including instruction in the classification of prefixes and suffixes of Latin words used in pharmacy and medical study. Elective. Five hours a week throughout the year.

HISTORY AND CIVICS.

PROFESSOR ENGLE.

The purpose of this department is to arouse interest in historical investigation, to prepare for citizenship, to give information concerning the structure and mechanism of industrial society, to stimulate research work, and to improve methods of historical study.

1. GREEK AND ROMAN HISTORY. This course is intended chiefly as an introduction to Greek and Roman history. Thorough text-book work is required. Such reading is done as is necessary to supplement the text. It is the purpose of this work gradually to give the student broader views of history, and thus lay the foundations for advanced work in United States history. In this course the lines of historical study usually followed will be taken up. Greek history occupies the first semester, Roman history the second. Botsford's texts are to be used. Three hours a week throughout the year.

2. UNITED STATES HISTORY I. This course includes a study of the social life, political parties, territorial expansion, biography of leading characters, industrial development, military history, and historical literature of the United States. Lectures are occasionally given. Reading in the library is encouraged; written reviews are required. Contemporaneous history receives proper attention. Channing's *Student's History* is the text. Required of second year students in the Engineering Preparatory and Domestic Science courses, and of the third and fourth year students in the Manual Training

courses in Mechanic Arts and Domestic Arts respectively. Two sections, three hours a week throughout the year.

3. UNITED STATES HISTORY II. This course is designed especially for Agricultural students. It includes most of the features of the preceding course, and involves a fuller treatment of constitutional questions and the civics of history. It aims to furnish adequate preparation for intelligent American citizenship. Required of freshmen in the Agricultural course. Recitation work is based on Johnson's *Constitutional History of the United States*. Three hours a week throughout the year.

4. GENERAL HISTORY. In this course a brief outline is given of the world's history. Oriental nations, Greece, Rome, the Middle Ages, and Modern Europe are considered. The origin and development of religions, political institutions, art, philosophy, education, and laws and social life receive proper attention. The work is supplemented by appropriate lectures. Myers' *General History*. Required of second year students in the Manual Training Course in Domestic Arts, the Commercial Course, and the Engineering Preparatory Course. Two sections, three hours a week throughout the year.

(On account of the readjustment of the courses in history, course 4 will not be given after 1902-1903.)

5. CIVIL GOVERNMENT. This course deals with the history and science of government. Brief reviews are made of the development of government in the leading nations of the world. Special attention is given to the structure of government in the United States. In this course minimum time is to be given to negative criticism. Comparative work is to receive a large share of attention. Readings and book reviews are to be made an important feature. Required of students in the Commercial and General Science courses. Two hours a week throughout the year. Woodrow Wilson's *The State*.

6. INDUSTRIAL HISTORY OF THE UNITED STATES. The history of our country is here reviewed as an outgrowth of in-

ventions, manufactures, commerce, and navigation. The effect of inventions upon industrial activity and civilization in general is traced with care. The Civil War is explained as an outgrowth of conflicting industrial systems. Elective to those who have completed Courses 1 and 2. Three hours a week during the first term.

7. CONSTITUTIONAL AMERICAN HISTORY. The work in this subject includes the evolution and interpretation of our national constitution, the relation of the commonwealth constitutions to our national government, governmental forms as they develop from early colonial activity, and the relative value of written and unwritten constitutions. Supreme court decisions, as influencing the course of our government, are studied. Landon's *Constitutional History*. Elective to those who have completed Courses 1, 2 and 3. Three hours a week during the second term.

8. ENGLISH HISTORY. In this course racial traits, literary development, constitutional growth, social life at different stages, English conservatism, origins, contributions, colonial systems, art, architecture, and pauperism are some of the topics discussed. A chief aim in the course is to teach the philosophy of history concretely. Research work is an important feature. Gardiner's *History of England*. Elective to those who have completed Courses 1 and 2. Three hours a week throughout the year.

9. MODERN EUROPEAN HISTORY. In this course European history during the eighteenth and nineteenth centuries is to be considered. Prominent among the topics discussed are the causes and effects of the French revolution, the unification of Italy, the formation of the German Empire, development of the Swiss Confederation, the Crimean war, the Boer war, the Revolutions of 1832 and 1848, the Napoleonic wars, and recent affairs in Russia. Questions relating to Turkey and to the balance of power are to be carefully discussed. English reforms during the nineteenth century and her policies in India and Africa will be studied. Texts: *Re-*

construction of Europe; Europe in the Nineteenth Century; Adams' European History. Elective to college students. Three hours a week throughout the year.

10. SOCIOLOGY. This course presents a fundamental discussion of the elements of society—their origin, growth, relations, and interactions. The mechanism of society as it appears in modern times is discussed typically. Among the points emphasized are social composition, social constitutions, and the principle of association. Gidding's *Elements of Sociology*; Fairbank's *Sociology*. Required of juniors in the Commercial Course. Three hours a week throughout the year.

11. ECONOMICS. Three main purposes are kept in view in this course: A clear analysis of the mechanism and functions of industrial society; a fundamental discussion of wealth and monopoly—their origin, uses, and abuses; a dispassionate discussion of economic questions that have become political questions. Much reading and many theses are required. Bulloch's *Introduction to Economics* and the *Ashley Series*. Required of seniors in all college courses. Three hours a week throughout the year.

12. PHILOSOPHY OF HISTORY. This course deals with casual relations, fundamental principles, comparative discussions of civilizations, historical values, relation of geography and history, historical sources, and appropriate tests of the truthfulness of facts. Draysens' *Principles of History*. Elective to those who have completed Courses 1, 2, and 3. Three hours a week during one term.

DRAWING.

MR. STUTTERED.

The work in drawing is varied to meet the needs of the several classes for whom it is designed.

1. FREE HAND DRAWING I. Required of all first year students in the Agricultural and Engineering Preparatory Courses. Two sections, two hours a week throughout the year.

(a) *Elementary*: This work embraces drawing in outline and in mass from simple casts and objects, particular attention being paid to proportion and the simple rules of perspective; the history of art and architecture; sketching in pencil and charcoal from life and objects; the history of painting and the study of composition. First term.

(b) *Advanced*: This embraces more advanced work in light and shade, drawing from full figure casts, modeling in clay, sketching in pencil and charcoal, the students making sketches to bring to class; work in color by students who have attained reasonable efficiency in drawing. Second term.

2. FREE HAND DRAWING II. Required of second year students in the Manual Training Course in Mechanic Arts. Two hours a week throughout the year.

(a) *Elementary*: This includes drawing in outline and mass from simple casts and objects, as in Course 1 (a); the history of art and architecture, its relation to the industrial arts; the study of industrial design. First term.

(b) *Advanced*: The same work is given in light and shade, drawing, modeling, and sketching, as in Course 1 (b). Original work in design is an important feature of the course.

3. FREE HAND DRAWING III. Required of third year students in the Domestic Science Course. Two hours a week throughout the year.

(a) *Elementary*: This includes drawing in outline and mass, as in Course 1 (a); the history of art, architecture, and painting; the study of household decoration and the use of color. First term.

(b) *Advanced*: This embraces more advanced work in light and shade, drawing, modeling, and sketching, as in Course 1 (b); dress and its relation to art; design. Second term.

4. **ADVANCED DRAWING.** This course is designed to enable those who have completed the first year's work to continue their study in the most desirable line. To those wishing to make a more earnest study of art, instruction in drawing in black and white, pen and ink, also water color and oil painting, will be given. The history of painting and composition will be more carefully entered into, in connection with a study of the lives and works of the masters of the different schools. Modeling in clay may be done by those desiring this work, casts in plaster being made in order to preserve the studies. Open as an elective to those who have completed Drawing 1, 2 or 3. Three hours a week throughout the year.

5. **MECHANICAL DRAWING.** This is the introductory course in mechanical drawing for students taking the Manual Training Course in Mechanic Arts. It consists of simple projections, orthographic, isometric and oblique, and linear perspective. These are illustrated as far as possible by making working drawings of the simpler exercises of the shopwork. Required of third year students in the Manual Training Course in Mechanic Arts who have completed Course 2. Two hours a week throughout the year.

6. **DRAWING AND DESIGN.** In this course the work is adapted to the line of shopwork which the student is pursuing. It is intended to give practice in design with consideration for proper proportion for strength as well as for aesthetic qualities. In this course the student is expected to make his own designs for his work in the shops. Required of fourth year students in the Manual Training Course in Mechanics Arts who have completed Drawing 5. Three hours a week throughout the year.

PSYCHOLOGY.

In this course the life of the normal individual is considered. Especial attention is given to those problems that have

a living interest for the student, and find illustration in his every day life. The principal topics discussed are the relation of mind and body, habit, attention, memory, imagination, association of ideas, instinct, reasoning, emotion, will, and time and space phenomena. Elective in the General Science Course.

GEOGRAPHY.

ASSISTANT PROFESSOR ROBINSON.

To get an intelligent conception of the natural resources of countries, the physical features receive special attention. Astronomical and geological features are presented as far as the course will permit. The principal changes that have wrought the present conditions are studied, and the atmosphere and water receive attention. Map drawing and frequent reviews are features of the course. Commerce and its effect upon nations are considered, as are also the classifications of mankind, animals, and plants. Required of all students in the Preparatory Course, and of first year students in the Manual Training Course in Mechanic Arts. Four sections; five hours a week throughout the year.

MILITARY SCIENCE AND TACTICS.

MR. BEERS.

All male students of the College, except those physically disabled, are required to take two years' work in the military department. The government furnishes Springfield cadet rifles and equipment for infantry drill, and two three-inch rifled cannons for artillery instruction. A uniform, consisting of campaign hat, dark blue blouse, light blue trousers, and white

regulation gloves must be worn by the cadets. Arrangements have been made for obtaining this uniform through the secretary of the college at actual cost. The cost of the uniform is about \$13.50. All students of the College taking drill are required to obtain the prescribed uniform, which must be worn upon all occasions of drill, or when students are receiving any other military instruction.

The attention of students intending to enter College is called to the fact that this uniform has been found more serviceable than a suit of civilian clothes of the same price, and students are required to make arrangements so as to be able to order this uniform when they enter.

Twice a week throughout the year, the officers of the department meet for discussion of matters relating to military work, and for recitations in the United States Infantry drill regulations.

1. **INFANTRY DRILL.** This includes all the movements described in the drill regulations of the U. S. army, from the gymnastic instruction in the setting-up exercise, the school of the soldier, the bayonet exercise, to the drill by company and battalion; exercise in estimating distances by sign and also by sound; target practice with rifle, for which the government makes an annual allowance of ammunition; instruction in signaling with flag, and in military telegraphy.

2. **ARTILLERY DRILL.** This embraces drill in the manual of the piece, and target practice when practicable.

3. **CALISTHENICS.** During the winter months systematic progress cannot be made in the regular drill work. The purpose of the department, during this time, is to maintain the ground already covered. With this object in view, the regular drill is given only twice a week. However, during the remainder of the time a thorough course is given in military calisthenics. The object of this course is to give the cadets a healthy body with a proper military carriage. Required of all cadets.

4. THEORETICAL INSTRUCTION. During the second term of the second year, a systematic course is given in military science, by means of lectures. The following texts are used in this course: Califf's *Notes on Military Science*; Hamilton's *Elementary Principles Connected with the Art of War*; Wagner's *Tactics*.

PENMANSHIP.

MR. MAUGHAN.

The course in penmanship consists of blackboard and individual instruction. Required of all students in the Preparatory Course, and of first year students in the Manual Training Courses in Mechanic Arts and Domestic Arts. Two sections; section 1 (1, 2), daily, at 10:40 ;section 2 (3, 4), daily, at 2:50.

MUSIC.

MR. MITTON.

A chorus of mixed voices, and also a male chorus, is organized, composed of all students who wish to join; and instruction in choral work of a high order is given. Every effort is made to cultivate a taste for music and to assist the students in acquiring a knowledge of the same. An orchestra and a military band will be organized at the beginning of the year, and arrangements will be made for regular instruction and practice. Persons desiring to join the orchestra or the band, who own instruments, will find it advantageous to bring their instruments with them for home practice.

PHYSICAL CULTURE.

MISS MOENCH.

All lady students of the College are required to have two years of physical training. For this work it will be necessary that each student have a suit consisting of divided skirt, blouse, and slippers, with rubber soles. The entire costume will be ordered by the College, and furnished to the student at the actual wholesale cost. The student will thus be saved the labor of making the suit, and will have the advantage of a suit well made, neatly fitting, comfortable, and serviceable. Every student will be expected to come prepared to order her suit immediately upon entering the College. The cost of the entire suit, including slippers, will be about \$4.

1. JUNIOR GYMNASTICS. Students entering the College having had no previous training in physical education, will register for this course. The aim will be to establish a correct carriage of the body, to overcome physical defects, to produce symmetrical development, to strengthen the muscles, and to relieve the tension of brain work. To this end, work will be given in German free-hand movements, Swedish gymnastics, military and fancy marching, the famous Gilbert steps, and light work with dumb-bells, Indian clubs, wands, etc.

2. SENIOR GYMNASTICS. Students who have had in the College gymnasium, first year work, or who have had its equivalent elsewhere, will be admitted to the senior class. The aim of this course will be to strengthen the results already accomplished, and to acquire elasticity, poise, grace, and ease of manner. For this purpose will be given more difficult exercises with the light apparatus, drill with heavy apparatus, advanced movements in the Swedish and in the German systems, Grecian dances, the Old Colonial Minuet, etc.

A special class in modern French duel fencing will be organized the latter part of the second term. In addition to the

gymnasium work, ladies' basket-ball teams and tennis clubs will be formed under the direction of the Athletic Committee.

Once a month the students in both courses will meet for instruction on topics pertaining to physical education, health, and social decorum.

ATHLETICS.

MR. CAMPBELL.

There has been seeded a ten-acre plat of ground east of the College building for athletic work. Baths and lockers have been provided for the accommodation of the men in training. The work in athletics is under the supervision of an instructor, whose aim is the proper physical education of the students. Men competing on the various College teams must first pass a satisfactory physical examination. The work includes football, basket-ball, base-ball, tennis, track athletics, etc. During the winter months, arrangements will be made for regular, systematic gymnasium work.

Winter Courses.

AGRICULTURE.

1. **AGRONOMY.** This course will embrace a discussion of the following topics: The atmosphere as a source of plant food; the soil—its formation and classification, the compounds it contains as sources of plant food; the plant—how it grows, feeds, matures, and the animal food product it yields; how to maintain the fertility of Utah soils; rotation of crops; irrigation in its relation to the production of crops. Five hours a week.

2. **JUDGING AND MANAGEMENT OF LIVE STOCK.** A discussion of the various types of live stock in relation to their adaptability for various purposes on the farm, and of the principles involved in their improvement. As much time as possible will be given to the practical handling and judging of the living animals on the College farm. Craig's *Judging Live Stock*. Three hours a week.

3. **FEEDING LIVE STOCK.** The principles underlying the successful feeding of live stock on the farm and the practical applications to Utah conditions. Jordan's *Feeding Animals*. Three hours a week.

4. **DAIRYING.** A discussion of the composition and properties of milk, of milk testing, and of milk fermentation, etc. The manufacture of butter and cheese is fully explained. Wing's *Milk and Its Products*. Two hours a week.

5. **DAIRY PRACTICE.** Those who wish to specialize in dairying have opportunity for ample practice in the College dairy, which is well equipped with modern dairy apparatus.

6. **POULTRY.** The instruction covers breeds of poultry, foods and feeding, buildings, and management. Where de-

sired, arrangements can be made for practice in operating incubators. Two hours a week.

7. HORTICULTURE. The subject of horticulture will be treated in a course of fifty lectures covering the following subjects: Selection of varieties; soil adaptation; preparation for planting; care and cultivation; commercial orcharding; picking, packing, and marketing fruit; orchard disinfection, including a careful study of prevalent orchard diseases and injurious insects, and the means of combating them; pruning of trees and treatment of tree wounds, to be demonstrated by practical work in the College orchard; top-grafting of mature trees; orchard irrigation and conservation of moisture; drainage of orchard lands; fertilization of trees for growth and for fruit, etc. Three hours a week.

8. ECONOMIC ENTOMOLOGY. This course is designed as an introduction to the more advanced work in entomology. In addition to the lectures and text-book work, students receive some training in the use of the microscope. Special attention is given to the general principles involved in dealing with injurious insects. Two hours a week.

9. VETERINARY SCIENCE. Instruction will be given on how to locate and detect the more common ailments of our domestic animals, and methods of prevention and curing are discussed. Those diseases most frequently met with in this intermountain region will receive special attention. Attention is given to ideal sanitary conditions for different animals; and common errors are pointed out and corrections suggested. Students taking this course are expected to attend the clinic each Monday. Three hours a week.

10. CHEMISTRY. A series of elementary lectures on the facts and principles of chemistry, with their application to the art of agriculture. Experimental demonstrations of the statements made will be an important feature of the work; and the collections of the College chemical department will be drawn upon freely as a mean of illustration. Two hours a week.

11. **AGRICULTURAL BACTERIOLOGY.** This course consists of a series of lectures and demonstrations on the relationship of bacteria to agriculture. The purpose is to give the agriculturist a general knowledge of the fundamental facts of bacteriology, as they are related to agriculture; and to show that his various occupations are concerned in an attempt to obtain the aid of micro-organisms where they may be of advantage, and prevent their action where they would be a detriment. The subjects considered are the general nature of bacteria and fermentations; the bacteria in soil and water; the bacteria in dairy products; the relation of bacteria to miscellaneous farm products; and parasitic bacteria. Two hours a week.

12. **IRRIGATION.** Lectures on application of water, duty, seepage, evaporation, etc. Units for measurement of water, methods of subdivision and measurement, and other subjects relative to the irrigation interests on the farm. Two hours a week.

13. **FARM ACCOUNTING.** The importance and necessity of keeping accounts on the farm are emphasized. Methods are discussed and developed. Business forms and customs are studied, and after the underlying principles have been mastered, practical work in accounting is given. Three hours a week.

DOMESTIC SCIENCE AND ART.

1. **COOKING LECTURES.** Preceding the cooking practice is one hour's lecture each day. These lectures treat of the composition of foods and the general chemistry of cooking; rules for measuring and mixing; best methods of baking and boiling; deep and shallow frying; marketing and the selection of food; carving and serving food. The study of bills of fare, nutritive value of different foods, and of foods that are appropriately served together, is included in this course. The regular time allowed each class for practice is two hours in two

afternoons of the week. Special arrangements will be made, however, for those who wish to devote more time to this course; also for those who wish to perfect themselves in any particular line of cooking. Five hours a week.

2. **COOKING PRACTICE.** This course includes practice in all kinds of plain and pastry cooking, and some fancy cooking and confectionery making. Demonstration lessons are given on breakfast breads and hot cakes; croquettes of various kinds; dressing for fowls; boning, skewering, and larding meats; braizing, roasting, broiling, and other methods of cooking meats; the preparation of soups, sauces, salads, and salad dressing, together with other subjects difficult of treatment in class practice. A three course lunch is served daily throughout the term by the members of the cooking classes. The young ladies take turns in presiding at the table as hostess, and also in waiting upon the table. The skill and confidence that they acquire by this practice is of great value to them. Two hours a week.

3. **HYGIENE.** Lectures are given on the sanitary conditions best for the home; the danger from damp and unclean cellars; foul drains and sinks; the necessity for pure air and sunlight in the house. Talks on diet, on the regularity of habits, on the necessity for a regular and sufficient amount of sleep; instruction on the care of personal health; home nursing and talks on hospital methods; illustrative lessons on changing beds for the sick. Five hours a week.

4. **SEWING.** This course includes hand and machine sewing, the students completing as much of the work outlined in Courses 1 and 2 in Sewing, given on pages 72 and 73, as they can do successfully in the time allowed for the work.

5. **DRESSMAKING.** Gowns are cut out, basted, and entirely made by the students. Students furnish material and make their own garments. Two hours a week.

6. **DESIGNING, CUTTING, AND FITTING.** Instruction is given by talks on grace in designs of costumes and harmony

of colors. Special attention is given to hygienic modes of dress. The students are taught to make drawings of the costumes they design; they also learn to draft patterns from measurements. Further practice is given in cutting and fitting. Two hours a week.

7. FANCY WORK. This course includes Kensington embroidery, Roman cut work, Spanish laid work, drawn work, jeweled embroidery, and modern lace making. Two hours a week.

8. DAIRYING. Instruction in cheese and butter-making will be given on both the factory and home dairy plans in the College dairy, to which the students of this course will be admitted. For lectures and plan of work, see Agricultural Course.

MECHANIC ARTS.

1. CARPENTRY I. Rudimentary exercises in sawing, ripping, planing, mortising, dovetailing, and the application of these to simple articles of furniture, furnish the details of this course. Correct methods of using and handling tools are emphasized.

2. CARPENTRY II. Sharpening and adjusting carpenters' tools, and saw filing, followed by practice in making panels, doors, and sashes, and simple cabinet work, constitute the work of this course.

3. FORGING I. This course consists of preliminary exercises, such as drawing, bending, twisting, and shaping, followed by exercises in iron welding and making iron tools. Accuracy in methods and results is insisted upon.

4. FORGING II. The work of this course consists of practice in steel and iron welds, steel and steel welds and general work in steel tool forging and dressing. Chisels, punches, reamers, hammers, tin shears, nippers, etc., are sample exercises. Prerequisite, Course 3.

Library and Museum Accessions.

LIBRARY ADDITIONS.

Among those to whom the Library is indebted for books and other favors received during the year 1901-1902 are: Hon. J. L. Rawlins, Hon. Thomas Kearns, Hon. George Sutherland, the Skelton Publishing Company of Provo, the several national departments and bureaus at Washington and colleges and universities of the United States and Canada.

In addition to newspapers from Utah and Southern Idaho, sent to the college through the courtesy of the publishers, and a large number of agricultural periodicals received at the Experiment Station library in exchange for the publications of the station, the following magazines are placed in the reading room for the use of the students:

LITERARY MAGAZINES.

Atlantic Monthly.	Education.
Autumn Leaves.	Educational Review.
Book News.	Fortnightly Review.
Century.	Forum.
Churchman.	Harper's Bazar.
Collier's Illustrated Weekly.	Harper's Monthly.
Contemporary Review.	Harper's Weekly.
Cosmopolitan.	Improvement Era.
Country Life.	Journal of Education.
Critic.	Ladies' Home Journal.
Dial.	Literary Digest.
Eclectic Magazine.	McClure's Magazine.
Edinburgh Review.	Munsey's Magazine.

Nation.	Scribner's Magazine.
Nineteenth Century Review.	University Chronicle.
North American Review.	Westminster Review.
Outlook.	White and Blue.
Philippine Review.	World's Work.
Reader's Guide to Periodical Literature.	Woman's Journal.
Review of Reviews, Am. Ed.	Young Woman's Journal.
Saturday Evening Post.	Youth's Companion.

SCIENTIFIC AND TECHNICAL MAGAZINES.

American Cabinet Maker and Upholsterer.	Designer.
American Florist.	Dietic Magazine.
American Gardening.	Dun's Review.
American Geologist.	Engineering Magazine.
American Historical Review.	Etude.
American Kitchen Magazine.	Farm Poultry.
American Machinist.	Farmer's Review.
American Naturalist.	Good Health.
American Veterinary Review.	Good Housekeeping.
Art Journal.	Home Art.
Blacksmith and Wheel Wright.	House Beautiful.
Bookkeeper.	Johns Hopkins' University Studies.
Boston Cooking School Magazine.	Journal of American Chemical Society.
Botanical Gazette.	Journal of Geology.
Breeder's Gazette.	Le Bon Ton.
Business World.	Library Journal.
Carpentry and Building.	Modern Priscilla.
Country Gentleman.	Nature.
Delineator.	Pacific Rural Press.
	Political Science Quarterly.
	Popular Science Monthly.
	Poultry Monthly.
	Public Libraries.

Quarterly Journal of Economics.	Scientific American, Supplement.
Sanitarian.	Torrey Botanical Club.
School Review.	Werner's Magazine.
Science.	Western Penman, Professional Edition.
Scientific American.	
Scientific American, Builder's Edition.	

DONATIONS TO THE MUSEUMS.

During the year 1901-1902 the College Museums have received the following contributions:

DEPARTMENT OF ANIMAL INDUSTRY.

Articles.	Donors.
Cattle Salt, 100 lbs.....	Inland Crystal Salt Co.
Butter Culture, four samples..	O'Douglass Butter Culture Co.
Chloro. Napthalene Sheep Dip, 5 gallons.....	The West Disinfectant Co.
Butter Color, one gallon.....	Wells, Richardson & Co.
One Calf Feeder.....	Our Husbands Mfg. Co.
"U. S." Hand Cream Separ- ator, loan.....	Vermont Farm Machine Co.
"Empire" Hand Cream Sep- arator, loan	U. S. Butter Extractor Co.
"Argos" Hand Babcock Milk Test, loan	Vermont Farm Machine Co.
Cattle Breeding Record	John Sparks.
Two Rambouillet Ewes.....	W. S. Hansen.
Shropshire Sheep Record, 15 volumes	Mortimer Levering.
Leicester Sheep Record, 3 volumes	A. J. Temple.
Southdown Sheep Record, 8 volumes	John L. Springer.

- Hampshire Down Sheep
 Record, 4 volumes.....C. A. Taylor.
 Acaprin Sheep Dip, two 10-
 kilo tinsFarbenfabriken Elberfeld Co.
 A pair of Persian Fat-tailed
 Sheep.....John Sparks.
 Collections of Drawings of
 Percheron and French
 Coach Horses... ..Dunham, Fletcher & Coleman.
 Stewart Sheep Shearing Ma-
 chine (Hand).....Chicago Flexible Shaft Co.

DEPARTMENT OF AGRONOMY.

- | Articles. | Donors. |
|--|---------------------------|
| One Stubble Plow (Walking) | Syracuse Chilled Plow Co. |
| One Model Solid Comfort Sulky Plow | George A. Lowe. |
| One Model Plant Cultivator | George A. Lowe. |
| One Old English Broad Ax | James Lofthouse. |

DEPARTMENT OF ANIMAL BIOLOGY.

- | Articles. | Donors. |
|---|-----------------------------|
| Ninety-six Species of Marine Invertebrates. | |
| ..... | National Museum, Washington |

Alumini Association.

The Alumni Association was organized in June, 1899. All those who hold degrees in any of the courses of the College are eligible to membership. In the first two classes, three students were graduated with the degree of Bachelor of Civil Engineering (B. C. E.). Since 1895, five prescribed courses have been offered, but the degree in each has been Bachelor of Science (B. S.), the particular course being specified in the diploma.

OFFICERS FOR 1902-1903.

Rose Homer, '00, President.
William Peterson, '99, First Vice President.
Mrs. Anna Beers Petty, '98, Second Vice President.
Lewis A. Merrill, '95, Secretary.
William D. Beers, '99, Treasurer.

Ninth Annual Commencement.

GRADUATES, 1902.

WITH DEGREES.

Amanda Holmgren (General Science in Domestic Science)
..... Brigham City.
Edward Parley Pulley (General Science in Mechanical
Engineering) American Fork.
Robert Stewart (General Science) Plain City.

WITH CERTIFICATES.

Anne J. Davis ((Commercial Course) Malad, Idaho.
Charles Arthur McCausland (Commercial Course)..... Logan.
Lafayette Mills Sidwell (Manual Training Course in Me-
chanic Arts)..... Manti.
David M. Stephens (Commercial Course)..... Malad, Idaho

Catalogue of Students.

SENIORS.

Holmgren, Amanda.....Brigham City.
Pulley, Edward ParleyLogan.
Stewart, Robert..Plain City.

JUNIORS.

Borlase, John Albert West Jordan.
Caine, John T.....Logan.
Callister, Thomas Clark.....Fillmore.
Fisher, GraceOrleans, Indiana.
Fisher, Ray Homer.....Oxford, Idaho.
Holmgren, Lydia.....Brigham City.
Homer, Roy Fisher.....Oxford, Idaho.
Maughan, Josephine F.Petersboro.
Maughan, May.....Logan.
Merrill, Ambrose Pond.....Richmond.
Merrill, Preston Reynolds.....Richmond.
Nebeker, Aquilla ChaunceyLaketown
Pile, Frederick Dole.....Opal, Wyoming
Santschi, Eugene.....Castle Gate.

SOPHOMORES.

Ballantyne, Richard Stewart.....Logan.
Caine, Blanche E.Logan
Crawford, EdmundManti.
Davis, Richard BowenCherry Creek, Idaho.
Egbert, Geneva.....Logan.
Greaves, Joseph F.....Preston, Idaho.
Jardine, William.....Cherry Creek, Idaho.

Maughan, Alice F.....	Petersboro.
Maughan, Ella.....	Logan.
Pierce, Eugenie Snow ..	Brigham City.
Stephens, David.....	Malad, Idaho.
Swendsen, Warrren Gibbs	Blackfoot, Idaho.
West, Frank Lorenzo.....	Ogden.
West, Ray Benedict.....	Ogden.

FRESHMEN.

Adams, Orvaal Webster.....	Logan.
Allred, Irvin.....	Spring City.
Cotterall, Archie S.....	Farmington.
Darley, Charles Thirkell	Wellsville.
Goodwin, Sarah Logan	Logan
Hansen, Seth Alfred	Logan.
Harrison, Eliza.....	Liberty, Idaho.
Hepworth, James Edward	Salt Lake City.
Howard, Lila	Rockland, Idaho
Humphreys, LeGrand	Paris, Idaho.
Jardine, James	Cherry Creek, Idaho.
Jenkins, John Lewis	Elkhorn, Idaho.
Jensen, William Arthur.....	Logan.
Jeppson, David Fernando.....	Brigham City.
Kerr, William Horace.....	Logan.
La Munyon, Lynne ..	Shoshone, Idaho.
Lee, Oscar Severin.....	Brigham City.
Lemmon, Claude Alumbee.....	Parowan.
Littlefield, John Cottle	Ogden.
Lundberg, Fred Lorraine.....	Logan.
Mather, Howard Artemas.....	Salmon, Idaho.
Merrill, Melvin Clarence	Richmond.
Neilsen, Teresa.....	Preston, Idaho.
Peterson, Elmer George	Baker City, Oregon.
Rees, David, Jr.....	Castle Rock.
Rich, Samuel Grover.....	Blackfoot, Idaho.
Smart, Iva.....	Franklin, Idaho.

Smith, James Henry	Boise, Idaho.
Snow, Joseph Marcellus	Salt Lake City.
Snow, Valentine Simmons	Salt Lake City
Wright, Mabel Lucille	Logan.

SPECIAL.

Adams, Rufus William	Kaysville
Baker, Rena.....	Salt Lake City.
Ball, Lizzie May.....	Wasatch.
Barber, Lucile	Logan.
Barnes, Joseph.....	Fairview.
Beck, Moroni Thomas	Newton.
Child, Gladys..	Lima, Montana.
Child, Nellie	Lima, Montana.
Clark, Avery	Logan
Cole, Ira Arnold	Logan.
Dewey, Edna.....	Dewey.
Eakle, Henry Kennedy.....	Salt Lake City.
Farr, Sarah A.....	Logan.
Grace, Margaret Alice.....	Weston, Idaho.
Hansen, Charles W.....	Logan
Hansen, Dagmar...	Logan.
Hansen, Nellie Page.....	Logan.
Hansen, Oswald.....	Logan.
Hohl, Margaret Abigail	Ouray, Colorado.
Hohn, E. S.....	Logan.
Howell, Millie	Logan.
Iverson, Orlando.....	Brigham City.
Jacobson, Alma Gustave.....	Logan.
Jardine, Frank...	Clarkston.
Jennings, Lucile.....	Salt Lake City.
Jensen, George..	Logan.
Jones, Rose...	Logan.
Kerr, Leonora Hamilton	Logan.
Knox, John Gatlin.....	Logan.
LaFount, Arthur Charles.....	Logan.

Lundgren,, Alice M.....	Lund, Idaho.
Marble, E. H.....	Dewey.
Merrill, Ellmer Justin.....	Richmond.
Nebeker, Hella.....	Logan.
Nibley, Joel	Logan.
Nibley, Josseph.....	Baker, Oregon.
Nibley, Preston	Logan.
Nielsen, Dora.....	Logan.
Ormsby, Mabel.....	Logan.
Ormsby, Mrs. M. S.	Logan.
Osmond, Alice Maud.....	Bloomington, Idaho.
Parkinson, George Taggart.....	Logan.
Paulson, Nfels Peter.....	Logan.
Peterson, MAtilda.....	Logan.
Peterson, Minnie	Logan.
Peterson, Thyra	Logan.
Preston, Ktatharine.....	Logan.
Raymond, Annie L.....	Logan.
Reed, Benjamin	Payette, Idaho.
Reeder, Aketha	Logan
Roberts, Viida Margaret..	Layton.
Shanklin, Mathew Alexander	Erie, Michigan.
Shurtliff, A. E.....	Baker, Oregon.
Smith, Dawid	Kaysville.
Smith, Daviid H.....	Logan
Smith, Effie E	Logan.
Smith, Johm P.....	Logan
Stewart, Isrrael	Logan.
Taylor, George F.....	Plain City.
Taylor, Sarza.....	Logan.
Thatcher, Florence B.....	Logan.
Thatcher, Genevieve.....	Logan.
Thatcher, Lawrence	Logan
Thomas, Buirton L.....	Bloomington, Idaho.
Welker, Georgina	Bloomington, Idaho.
Wendelboe, Charlie C.....	Logan.

Wilkinson, Margaret	Logan.
Young, George Franklin	Fairview.

AGRICULTURE.*Second Year.*

Crismon, George W.	Salt Lake City.
Dunford, Isaac Clayton	Salt Lake City.
Hanks, Alfred Lyman.	Tooele.
Howard, Edward Lorenzo	Rockland, Idaho.
Squires, Alonzo.	Logan.

First Year.

Ford, Alfred	Wallsburg.
Irvine, Cecil	Salt Lake City.
Jordan, Alvin Edgar.	Alicel, Oregon.
McCarty, Edgar Cox.	Monroe.
Nibley, Merrill	Baker, Oregon
Page, Thomas P.	Riverton.
Peterson, John A.	Ogden.
Pond, Casper Whittle	Thatcher, Idaho.
Taylor, Joseph Edward	Salt Lake City.

Winter Course.

Andreason, Andrew.	Mink Creek, Idaho.
Atkin, Joseph Thompson	St. George
Ballantyne, Alando B.	Logan.
Christensen, Ephraim.	Logan.
Crockett, Henry Wallace	Logan.
Fredrickson, Fred.	Brigham City.
Lowe, Charles.	Ward, Idaho.
Smith, Richard William	Logan.

DOMESTIC ARTS.*Second Year.*

Barber, Myrtle.	Marysvale.
Merrill, Mrs. Effie.	Logan.
Stephens, Lydia	Malad, Idaho.

First Year.

Bishop, Della	Logan.
Bishop, Frances	Logan.
Cooper, Mary	McCammon, Idaho
Crookston, Allie.....	Logan.
Davidson, Martha.....	Greenville.
Davidson, Nellie.....	Greenville.
Duckworth, Verna.....	Greenville.
Egbert, Maude.....	Logan.
Eliason, Elva.....	Logan.
Hayball, Nellie	Logan.
Jorgensen, Orilla	Hyde Park
Kidd, Iva	Providence
King, Priscilla	Logan.
Matthews, Ada.....	Grantsville.
Munk, Josie.....	Manti.
Nebeker, Laura.....	Logan.
Ormsby, Sybil	Logan.
Parkinson, Thresa	Franklin, Idaho.
Peterson, Lena.....	Preston, Idaho.
Reeder, Hattie.....	Hyde Park.
Scarborough, Tressie.....	Franklin, Idaho.
Smith, Mabel.....	Greenville.
Sprague, Minnie.....	Ogden.
Stoddard, Eva	Logan.
Swendsen, Meda.....	Richmond.
Thomas, Rose.....	Ogden.
Vibrans, Gertrude	Cokeville, Wyoming.
Whipple, Annie M.....	St. George.
Wright, Blanche Evelyn.....	Logan.

COMMERCE.

Third Year.

Davis, Anne J.....	Malad, Idaho.
McCausland, Charles Arthur.....	Logan.

Second Year.

Affleck, Alonzo Adam	Logan.
Beckstead, Bertie.....	Swan Lake, Idaho.
Beckstead, Leo.....	Swan Lake, Idaho.
Bradley, Louisa.....	Hyrum
Clark, Edward John	Benson.
Coburn, John Leatham.. ..	Wellsville.
Cooper, Coral	McCammion, Idaho.
Cooper, Robert McEwan.....	Nephi.
Cordon, Edwin V.....	Willard
Duncan, Leonard Ellsworth	American Fork.
Ellsmore, James Austin	American Fork.
Farrell, Francis David	Smithfield.
Forgeon, Mildred.....	Cokeville, Wyoming.
Fredrickson, John Julius.....	Malad, Idaho.
Hammond, Joseph	Ursine, Nevada
Hansen, Corinne.....	Salt Lake City.
Hansen, Severin	Weston, Idaho.
Hellewell, George Edward.....	Downey, Idaho.
Hellewell, Mary Ann Bennett	Downey, Idaho.
Howard, Charles.....	Rockland, Idaho.
Hyde, John William	Nephi.
Jacobsen, Marie.....	Cokeville, Wyoming.
Jeppson, August.....	Brigham City.
Johnson, Willis DeWitt	Laketown.
Jones, Richard William	Logan.
Lish, Emma	Logan.
Lytle, Freeland	Ursine, Nevada.
Lytle, Samuel	Ursine, Nevada
McNeil, Charles	Logan.
Nebeker, Effie.....	Logan.
Nielsen, Niels Peter, Jr.....	Logan
Olsen, Swan.....	Logan.
Parkinson, Leonard	Franklin, Idaho.
Peterson, Mattie Othelia.. ..	Smithfield.

Quayle, William	Logan.
Richardson, Parley C.	Plain City.
Robinson, John R.	Paragoonah.
Smith, Magnus C.	Philadelphia, Pa.
Stevens, Clarence E.	Holden.
Tuttle, John Henry	Manti
Tyson, Abraham.	Randolph.
Walton, George Ossian.	Logan.
Whitmore, Roscoe Philip	Nephi.

First Year.

Adams, Hugh Robert	Logan.
Berryman, Harry	Blackfoot, Idaho.
Black, William Henry	Kanosh.
Brossard, Fredl Utilus.	Logan.
Busenbark, Mabel Doris	Collinston
Chipman, Dell	Salt Lake City.
Corlett, Moria.	Cleveland, Ohio.
Coy, Walter, James.	Plain City.
Daniels, Mary.	Malad, Idaho.
Darley, William Owen	Wellsville.
Davidson, John Nutin.	Spencer, Idaho.
Dunn, Charles Welch.	College.
Eldredge, Earl	Coalville.
Farnsworth, Dennis	Beaver.
Fife, Lewis.	Providence.
Findlay, John Fuller.	Kanab.
Gleed, Henry	Lima, Montana.
Green, Margaret Davinie	Layton.
Grose, George	Park City.
Gulley, Clarence.	Butte, Montana.
Hess, Florence Edna.	Georgetown, Idaho.
Hill, Leroy S.	Wellsville.
Hobson, George C.	Logan.
Izatt, Kate.	Logan.
Jensen, Emille (George).	Brigham City.

Jenson, Fred Russell	Manti.
Jessop, Lilliath..	Millville.
Jones, Charles Albert.....	Dayton, Idaho.
Lee, Camilla :.....	Brigham City
McKinnon, Archibald William	Randolph.
Madsen, Parley Christian	Manti.
Mawhinney, Hugh Sloan	Park City.
Morgan, Wayne....	Brigham City.
Mortesen, Anna...	Huntsville.
Nebeker, Lurena.....	Laketown.
Nicholas, Martha..	Malad, Idaho.
Nielsen, Hyrum Carl	Preston, Idaho.
Owens, Madison S.....	Logan.
Parkinson, Edward S...	Franklin, Idaho.
Raymond, Alonzo	McCammon, Idaho.
Rich, Joseph C.....	Hot Springs, Idaho.
Riter, Benajmin Franklin	Logan
Roberts, Ernest Peter.... ..	Afton, Wyoming.
Sampson, Irving	Silver City, Idaho.
Smart, Carl	Logan.
Smith, Abraham.....	Poplar, Idaho.
Sorenson, Rose.....	Logan.
Stephens, Daniel	Challis, Idaho.
Stoddard, Archibald W.....	Spencer, Idaho.
Stohl, David....	Brigham City.
Tarbet, William	Logan.
Tarbet, David.....	Logan.
Yearsley, William.....	Menan, Idaho.

MANUAL TRAINING.

DOMESTIC ARTS.

Third Year.

Benson, Eva Logan.

Second Year.

Campbell, Rachel Salt Lake City.
 Davis, Mary C. Malad, Idaho.
 Gillett, Ursula Tooele.
 Hansen, Ida Logan.
 Hess, May Georgetown, Idaho.
 Lowe, Laura Franklin, Idaho.
 Morrell, Mamie Logan.
 Nelson, Cora Salt Lake City.
 Nibley, Julia Logan.
 Schettler, Anna E. Logan.
 Simmons, Melissa J. Richfield.
 Thomas, Louie Logan.
 West, Lucretia Salt Lake City.
 Wilson, Dorothea Randolph.

First Year.

Blechert, Augusta Geneva, Idaho.
 Davis, Dora M. Clifton, Idaho.
 Drysdale, Sadie Logan.
 Evans, Maude Arbon, Idaho.
 Gregory, Amy L. Cove.
 Hanson, Etta Logan.
 Kerr, Bertha Richmond.
 Lowe, Nora M. Franklin, Idaho.
 Miller, Eva Providence.
 Moon, Annie Henderson Creek, Idaho.
 Moon, Nellie Henderson Creek, Idaho.
 Nokes, Matilda Riverton.
 Porter, Bertha Porterville.

Quayle, Catherine	Dingle, Idaho.
Quayle, Dora.....	Dingle, Idaho.
Quayle, Nettie	Dingle, Idaho.
Racker, Maud Lillian.....	Lehi.
Snowball, Silva.....	Randolph.
Ward, Rose.....	Pocatello, Idaho.

MECHANIC ARTS.

Third Year.

Sidwell, Lafayette Mills	Manti.
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Second Year.

Casto, Raymond R.....	Custer, Idaho.
Clark, Elijah.....	St. Charles, Idaho.
Davis, Levi Thomas.....	Castle Gate.
Fonnesbeck, Victor.....	Logan.
Hepworth, Samuel Leroy.....	Salt Lake City.
McKinney, Clarence	Salmon, Idaho
Madsen, Howard Peter.....	Manti.
Palmer, Parley.....	Aurora.
Pugmire, Jonathan Rich..	St. Charles, Idaho.
Taylor, David Matthew.....	Payson.
Young, William.....	Castle Gate.

First Year.

Archibald, James Henry.....	Wellsville.
Beck, Anthon Louis	Paris, Idaho.
Blake, Isaac Brigham	Pima, Arizona.
Brenchley, John.....	Wellsville.
Briggs, John Thomas.....	Bountiful.
Brown, George Washington..	Ogden.
Chesley, Charles Frederick	Fillmore.
Eccles, William, Jr.....	Ogden.
Eccles, William Elmer.....	Ogden.
Elam, Millard.....	Salt Lake City.
Fisher, Roscoe Albert.....	Bountiful.

Fuhriman, Godfrey Jared	Providence
Fullmer, Joseph Thatcher	Logan.
Gordon, Benjamin	Murray.
Grant, Charles Henry	Oxford, Idaho.
Gregory, Thomas Joseph	Cove.
Hansen, George	
Hinckey, Nathan Roy	Rexburg, Idaho.
Hughes, Gomer	Samaria, Idaho.
Jinks, Edwim	Logan.
Kearl, Christopher James	Laketown.
Kerr, John Andrew	Richmond.
Kidman, Frederick James	Mendon.
Labrum, William Arthur	Meadow.
Larsen, Lorenzo	Georgetown, Idaho.
Larson, William	Newton.
Mason, Frank Marion	Willard.
Nelsen, Francis Eugene	Greenville.
Nicholes, Josiah Ernest	Coyoto.
Passey, Edward John	Paris, Idaho.
Peck, Edward Burton	Roswell, Idaho.
Redford, Abraham Knight	Logan.
Rolapp, Henry Karl	Ogden.
Ross, Ray Arthur	Ogden.
Scarborough, Joseph	Franklin, Idaho.
Shurtliff, Jesse	Harrisville.
Squires, Leo Maiben	Logan.
Stoddard, Delbert Chase	Georgetown, Idaho.
Swenson, Daniel Arthur	Pleasant Grove.
Tegtmeier, Christian	Logan.
Toombs, Roy Chandler	Carlin, Nevada.
Webb, Melvin Jesse	Monroe.
West, Frank Leroy	Morgan.
Whipple, Charles	St. George.
Wilde, Benjamin Charles	Coalville.
Wilde, Joseph	Coalville.
Willis, Arthur Willis	Kanarra

Winter Course, Second Year.

Blanchard, Henry	Logan.
Davis, Earl	Wallsburg.
Hughes, Robert.....	Samaria, Idaho.
Miller, Alma.....	Providence.

Winter Course, First Year.

Allred, Emanuel A.....	Fairview,
Andrews, Jobin Lynon.....	Logan.
Andrews, John Montgomery.....	Logan.
Andrews, Junius James	Logan.
Bissegger, August John.....	Providence.
Blanchard, Asarl	Logan.
Chugg, Ezra Albert.....	Providence.
Crookston, Oscar.....	Greenville.
Erickson, Joseph Alma	Willard
Glenn, Israel Lund.....	Wellsville.
Gray, Bert.....	.....
Hugi, William Christian	Logan.
Johnson, Joseph Erastus.....	Moroni.
Larsen, Peter.....	Greenville.
Maughan, George.....	Greenville.
McDermaid, William ..	Diamondville, Wyoming.
McNeal, Robert	Logan
Nelson, Alex.....	Logan.
Nelson, Thomas Edward.....	Logan.
Nyman, Andrew.....	Greenville.
Peterson, Austin.....	Logan.
Peterson, Nephi.....	Logan.
Peterson, Oliver.....	Logan.
Rees, Philip.....	Cherry Creek, Idaho.
Robbins, Walter James.....	Stone, Idaho
Scott, George Washington.....	Salt Lake City.
Smith, Leroy.....	Greenville.

ENGINEERING PREPARATORY.

First Year.

Allan, Ernest Maughan	Wellsville.
Archibald, Allen Henry	Wellsville.
Bjerregard, Walter	Ephraim.
Christensen, Peter Victor	Hyrum.
Colby, LeGrande	Mendon.
Davenport, Frank Remington	Hood River, Oregon.
Dunn, Oscar Smith	College.
Eccles, Royal	Ogden.
Finlayson, George Clifford	Logan.
Gillett, Perry	Tooele.
Harris, Francis Meville	Butte, Montana.
Hoggan, Walter John	Manti.
Holdaway, Dean David	Price.
Horton, John Raymond	Ogden.
Howell, Luther Maughan	Wellsville.
Jennings, Frank Kimball	Salt Lake.
Jennings, Joseph Devereaux	Salt Lake.
Johnson, Chester Kearl	Laketown.
Johnson, Harvey Cris	Logan.
Johnson, Heleman	Logan.
Kearns, James Leonard	Park City.
Langton, Seth Alma, Jr.	Logan.
Laughney, Clarence Edmund	Ogden.
Lee, Oscar Richard	American Fork.
Lewis, James Leonard	Logan.
Lewis, William	Logan.
McDonald, Richard	Hayden, Idaho.
McNaughton, Lorenzo Ellsworth	Vernal.
Mortensen, Hardy	Levan.
Moses, Jesse Tilton	Smithfield.
Oldham, James Henry	Logan.
Palmer, A. M.	Oxford, Idaho.

Perry, Seth Eugene.....	Vernal.
Powell, Jonathan Sockwell.....	Payson.
Schaub, Eugene.....	Logan.
Thatcher, Edgar.....	Logan.
Turner, Thomas Henry.....	Ogden.

PREPARATORY.

Abel, Robert.....	Lewiston.
Adams, Dennis Elias.....	Thatcher.
Adams, George Edward.....	Logan.
Adams, George Winfield.....	Layton.
Adams, Jabez Samuel.....	Layton.
Andrews, Michael.....	Logan.
Beck, Heber.....	Newton.
Bickmore, Newman David.....	Paradise.
Blechert, Johanna.....	Geneva, Idaho.
Bloom, Charles Ernest.....	Salmon, Idaho.
Bunce, John.....	Logan.
Byers, Mary.....	Kemerer, Wyoming.
Caine, Lawrence Ballif.....	Logan.
Carlos, Oscar.....	Layton.
Carruthers, Clyde.....	Market Lake, Idaho.
Clark, Roy W.....	Gunnison.
Cohn, Jerome Guy.....	Oneida, Idaho.
Davis, Thomas Jones.....	Malad, Idaho.
Edmunds, Lorenzo.....	Salt Lake City.
Egbert, Reuben Gardner.....	Logan.
Fjelsted, Martha.....	Riverside, Idaho.
Fonnesbeck, Leon.....	Logan.
Gabrielson, Hans Martin.....	Logan.
Germer, Martin Louis.....	Bay Horse, Idaho.
Hall, Leroy Williamson.....	Wellsville.
Hansen, Hyrum Orson.....	Weston, Idaho.
Hellewell, Jannetta I.....	Downey, Idaho.
Hess, Clarence Wilson.....	Georgetown, Idaho.

Jacques, David.....	Logan.
Johnson, Christian	Logan.
Johnson, Eugene.....	Millville.
Kearl, Willis Ellsworth.....	Laketown.
Kennington, George	Afton, Wyoming.
Kerr, Joseph Marion	Ora, Idaho.
Kidman, Harriet Maria.....	Petersboro.
Larsen, Orsen	Millville
Larson, August.....	Millville.
Layton, Benjamin.....	Layton.
Lowe, Mahias.....	Franklin, Idaho.
McCulloch, Lorinda.....	Weston, Idaho.
McNeil, William.....	Logan.
Marriott, Bertha Delania	Plain City.
Mouritzen, Andrew.....	Logan.
Nebeker, Eva Magdalene	Logan.
Nebeker, Luella.....	Laketown.
Nebeker, Mabel.....	Laketown.
Olofson, Oscar.....	Logan.
Olson, John Emil	Logan
Parkinson, William Franklin.....	Baker, Oregon.
Pearce, Flora.....	Randolph.
Peterson, Charles Joel	Preston, Idaho
Peterson, Rebecca Amelia.....	Smithfield.
Poulsen, George W.....	Logan
Poulter, Lee.....	Logan.
Pullum, Isaac Leroy.....	Trenton.
Quayle, Jeannette.....	Dingle, Idaho.
Robb, Thomas William	Paragoonah
Roberts, David Willen	Logan.
Roberts, Frank Arthur.....	Afton, Wyoming.
Scott, Arthur Leroy.....	Millville.
Sidwell, Gideon Wilson	Manti.
Simmons, Robert.....	Layton.
Smith, Alexander	Logan.
Taylor, Clara Ethel.....	Cokeville, Wyoming.

Thomas, Carrie.....	Logan.
Thomas, Daniel Francis.....	Ogden.
Thompson, Terrence.....	Ogden.
Thomsen, Alvin Winger ..	Logan.
Toombs, Wallace R.....	Carlin, Nevada.
Walsh, William James.....	Huston, Idaho.
Walton, William Wallace.....	Auburn.
Woodward, Harry Thomas	Corinne
Wright, George William..	Franklin, Idaho.

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