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COLLEGE OF AGRICULTURE

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COLLEGE OF AGRICULTURE.

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*In the service of the United States Government.

HOME ECONOMICS

COURSES OFFERED BY MISS EDNA D. DAY, A. M.

A. FOR UNDERGRADUATES

1a. The Evolution of the Home—A general course for all University students, including a discussion of problems of food, shelter, dress, family, and home administration as brought out in the study of the development of the modern home. This course is introductory to the other work of the Department of Home Economics. Lectures, discussions, and recitations on assigned reading. Three times a week.

2b. Foods: General Course—A study of the composition and nutritive values of foods, simple tests for adulterations, preparation of food for the table, and dietary standards. This course covers, in a general way, the whole food problem from the Home Economics standpoint, and is planned especially for those who have not the preparation or time for a more thorough study. It is also introductory to course 4b. It must be preceded by High School Chemistry, or at least one year of University Chemistry. One class room and two laboratory periods a week.

3a. House Sanitation—A study of the location, heating, ventilating, lighting, plumbing, and cleaning of the house. This course must be preceded by a High School course in Physics, or its equivalent, and either preceded or accompanied by Home Economics, 1a. and Bacteriology 1a. Three times a week.

B. FOR UNDERGRADUATES AND GRADUATES

4b. Foods: Advanced Course—This course is continued in 5a. It considers the same problems as 2b. in more detail. It includes food chemistry, dietetics, and more practical work than there is time for in 2b. It is necessary for all who wish to prepare to teach the subject. It must be preceded by Home Economics 2b (after the year 1906-7). Physics, High School or University; Chemistry 2 and 2a or 5b; Bacteriology 1a and some Biological course that teaches the structure of the cellular tissue and something of the function of nutrition. One class room and two laboratory periods a week.

C. FOR GRADUATES

6a. Research—Original investigation of unsolved problems of the home. Open to those with sufficient preparation. This preparation includes a reading knowledge of French and German.

THE UNIVERSITY OF MISSOURI.

The University of Missouri was located at Columbia, Missouri, in 1839, and courses of instruction in Academic work began in 1841. A Department of Education was established in 1867. The College of Agriculture and Mechanic Arts and the School of Mines and Metallurgy were made Departments of the University in 1870—the School of Mines being located at Rolla. The Law Department was opened in 1872; the Medical Department in 1873; the School of Engineering in 1877. The Experiment Station was established, under act of Congress, in 1888. The Missouri State Military School was created a Department in 1890. In 1896 the Graduate Department was established.

RESOURCES.

There are thirty-three buildings—twenty-five occupied by the departments at Columbia and eight by the School of Mines at Rolla. The buildings, grounds, and equipment for all departments of the University are worth nearly \$2,000,000. Moreover, the endowment (interest at five or six percent) is \$1,240,000, and the income from the United States Government (Hatch, Morrill, and Adams Acts) is nearly \$45,000 a year. The income of the whole University from all sources for the year 1905 was about \$510,000.

THE COLLEGE OF AGRICULTURE.

The Following Courses Are Offered.

1. A four-years College Course in Agriculture.
2. An eight-weeks Winter Course in Agriculture.
3. An eight-weeks Winter Course in Animal Husbandry.
4. An eight-weeks Winter Course in Dairying.
5. Summer Courses in Agriculture and Horticulture.

The four-years Course is calculated to give the student a thorough training in technical Agriculture and collateral branches. Sufficient election is permitted so that students may acquire good training in some general culture subjects. The purpose of this course is not merely to train highly efficient specialists but at the same time to make educated men and women.

The degree of Bachelor of Science in Agriculture is given to all students successfully completing the four-years Course.

The Short Winter Courses.—Many young men desire to become better farmers, more skillful stockmen, stock judges, dairymen, or orchardists, but have not the time to take a four-years course of study. For these, the short courses are planned. The instruction is in everything practical, having in view especially the needs of men who must immediately turn to account the facts learned in the class room.

ADMISSION.

Students are admitted to the four-years College Course either from Approved High Schools or upon examination. Fifteen units, three conditions (for 1906-7 only) being allowed, are required for entrance to this department. A unit represents one year's work of nine months in one subject in a good high school, academy, or normal school, with five forty-minute periods a week in the class room or laboratory.

Two units must be in English, but all candidates for admission are advised to offer, if possible, at least three units in English.

One unit must be in Algebra.

The remaining units may be offered as follows: Agriculture, one; Algebra, one-half; Plane Geometry, one; Solid Geometry, one; Plane Trigonometry, one-half; History—Ancient, Medieval, and Modern, one, English and American, four; Latin, four; Greek, three; German, three; French, three; Spanish, three; Physics, two; Chemistry, two; General Biology, two; Zoology, two; Botany, two; Drawing, one; Manual Training, one; and Physiography, one. (See General Catalogue for detailed requirements in each subject.)

ENTRANCE EXAMINATIONS.

Examinations for admission will be held 10, 11, and 12 September, 1906.

These examinations are held by the professors in charge of the subjects offered for admission. All persons who desire to enter by examination should present themselves at the Registrar's office, Room 18, Academic Hall, at 8:30 a. m., 10 September. Full information concerning all entrance examinations will be given at that time.

ACCEPTANCE OF GRADES FROM OTHER SCHOOLS.

Grades made in schools not accredited may be submitted to the Committee on Entrance, and, if satisfactory, these will be accepted in lieu of examinations on the subjects submitted.

All candidates for admission from accredited schools or other institutions should write to the Committee on Entrance, Columbia, Missouri, for a printed blank to be filled out by the superintendent or

other properly qualified officer, and returned to this Committee. After examining the records thus submitted, the Committee will notify, by mail, the candidates, whether they will be admitted, without examination, to the University.

ADMISSION OF SPECIAL STUDENTS.

Any mature person may be enrolled as a Special Student, and permitted to elect certain technical courses in the Agricultural Department. No Special student will be permitted to become a candidate for a degree until he has made up the entrance requirements. It is advised that, as far as possible, all students come prepared to enter regularly the Freshman class and take the work as prescribed.

ADMISSION TO THE SHORT WINTER COURSES.

No examinations are required of students who enter any of the Short Winter Courses.

The courses begin 1 January, 1906, and continue for eight weeks. A special circular describing in detail the instruction in these Special Courses may be had upon application to the Dean of the College of Agriculture, Columbia, Missouri.

ADMISSION TO ADVANCED STANDING.

Any student applying for admission from other agricultural colleges or collegiate institutions will be credited with the work taken in such institutions in so far as it is equivalent to the required work of this College. Upon presentation of the official certificate earned in such institutions, the applicant will be admitted without examination and given the rank to which he may be justly entitled.

ADMISSION TO GRADUATE STUDY.

Graduates of this College and other approved institutions of similar grade will be admitted to graduate courses, subject to the rules and regulations governing graduate study.

ADMISSION OF ACADEMIC GRADUATES.

The prescribed course in Agriculture is so arranged that graduates of the Academic Department of this Institution or of similar institutions may secure the Agricultural degree in two years.

EXPENSES.

The annual expenses of attending the University depend largely upon the individual. There are no tuition fees charged in any depart-

ment. An incidental fee of \$5 is paid by each student. A deposit of \$5 is required for each laboratory, to cover the cost of breakage or damage to apparatus; a portion of this money may be returned. Other necessary expenses for the college year will vary, as indicated in the following estimate:

Furnished rooms, without board.....	\$ 40 00 to \$ 90 00
Table board.....	70 00 to 170 00
Books and Stationery.....	20 00 to 30 00
Incidentals, Laundry, etc.....	15 00 to 40 00
Total.....	<hr/> \$145 00 to \$330 00

In the two dormitories, Benton and Lathrop Halls, the University has accommodations for about 140 men. In Lathrop Hall a dining-room and kitchen furnish accommodations for nearly 400 boarders. Application for rooms in either of the Halls should be made at an early date, to Secretary J. G. Babb, Columbia, Missouri.

STUDENT ORGANIZATIONS.

The Agricultural students maintain an Agricultural Club, with a large membership, which has for its object the promotion of all student enterprises undertaken for the good of the College. A Horticultural Club, made up of those especially interested in Horticulture, meets regularly to discuss questions relating to the subject of Horticulture. In addition to these, many of the University debating societies and other organizations are open to Agricultural students.

STUDENTS PUBLICATIONS.

The Agricultural students publish a very successful Agricultural paper, called The Missouri Agricultural College Farmer. This paper is a somewhat technical journal, printed on good paper, with excellent illustrations. It is controlled by a board of editors elected by the Agricultural Club.

FACILITIES FOR INSTRUCTION.

Buildings:

Agricultural Hall, containing offices of Dean and Director, class rooms and offices of the Professors of Animal Husbandry and Agronomy, office of the Secretary of the State Board of Agriculture, office of Division Chief of the United States Weather Bureau, and Agricultural Museum.

Horticultural Hall, a stone building, 120x54 feet, two stories and a well-lighted basement with Plant House and Insectary each 16x50 feet, containing class-rooms, laboratories, offices, and preparation rooms for Horticulture, Botany, and Entomology.

Dairy Hall, a stone building 45x150 feet, two stories, with cheese curing room in basement, containing large rooms for creamery manufactures, cheese-making room, dairy work, Milk-testing Laboratory, offices, class-rooms, etc.

Numerous Barns, including a new \$10,000 cattle barn, a cattle-feeding shed 300x30 feet, a sheep barn, a dairy barn, a new \$6,000 implement building, and smaller structures.

Shops, containing work rooms for carpentering, blacksmithing, and wood and iron turning. The Mechanical Shops are excellent.

Instruction is also given to Agricultural Students in the buildings for Chemistry, Geology, Zoology, Physics, and in Academic Hall.

Laboratories:

Live Stock Laboratory, containing rooms for Veterinary Science, Breeding Laboratory, and Stock Judging Pavilion.

Laboratories for Botany. General laboratories for Physiological and Structural Botany, and special laboratories and culture rooms for phases of the Physiological and Mycological work, are located in Horticultural Hall. The laboratories are equipped with compound dissecting microscopes, microtomes, steam and steam-pressure sterilizers, incubators, balances, and much necessary glassware; an herbarium of Missouri plants and general collections from all parts of the country. The Forty-third General Assembly has appropriated funds for the erection and equipment of laboratories for practical and experimental work in Plant Physiology and Pathology, which will give facilities enjoyed by very few institutions in the country.

Laboratories for Entomology. These laboratories are in the new Horticultural Hall, and have in connection a new Insectary. The laboratories are supplied with microscopes, dissecting instruments, microtomes, breeding cages, aquaria, spraying machines, insecticides, and reagents. The Museum contains collections of the more important injurious, and beneficial insects, arranged to illustrate their habits of work and life history. There are several thousand species of adult insects from all orders correctly classified and labeled. Twelve current periodicals on Entomology are regularly received.

Laboratories for Horticulture. The laboratory facilities of the Horticulture Department are as follows:

The experimental grounds, comprising about 1,000 varieties of fruits and a good collection of ornamental shrubs and trees, furnishing excellent facilities for field laboratory work, such as methods of planting, pruning, cultivation, etc.

About 3,000 square feet of forcing house space under glass, which gives opportunity for work in plant propagation and forcing house methods.

Commodious rooms, in the basement of the Horticultural building, for the winter storage of dormant trees, cuttings, bulbs, stocks, scions,

etc., and for performing such work as grafting, budding, making cuttings, and general winter nursery work.

Other Laboratories. There are well-equipped laboratories in Agronomy, Agricultural Chemistry, Veterinary Science, Dairying, Geology, Zoology, and Physics.

Libraries:

The library for Agriculture and allied subjects has been carefully selected and it is believed to be one of the best collections of Agricultural books west of the Mississippi river. Students of Agriculture also have access to the other libraries on the campus. These libraries contain about 120,000 books and pamphlets.

Farm and Live Stock:

A farm comprising 615 acres is used chiefly for instruction and for Agricultural experiments, the experiments including tests of field crops, feeding experiments with cattle, hogs, and sheep, breeding experiments, and investigations in Horticulture, Entomology, Botany, etc. These experiments are of the greatest possible value to students in the regular courses.

Live Stock. The College maintains herds of cattle, swine, and specimen flocks of different breeds of sheep. We now have specimens of the Shorthorn, Hereford, Aberdeen Angus, Jersey, and Holstein breeds of cattle. In addition to these, one hundred feeding cattle are kept continuously on the farm. Duroc Jersey, Berkshire, Tamworth, and Poland China swine are available for purposes of instruction.

Practical Excursions:

Visits to successful farms and breeding establishments are made under the guidance of an instructor for the study of special phases of Agriculture. The principles taught in the class-room are thus observed in their application to Agricultural operations on well-managed farms.

Dairy Husbandry:

The facilities for teaching Dairying include a well-equipped creamery room 40 x 51 feet, arranged for ten power separators and churns; a cheese-room 40 x 42 feet; a farm dairy room 22 x 40 feet; rooms for pasteurizing, refrigerating, and cold storage; milk testing and research laboratories; a library and lecture room. A new laboratory for Dairy Bacteriology has been recently equipped. From 300 to 500 pounds of butter are manufactured each week throughout the year.

COLLEGIATE COURSE IN AGRICULTURE.

There is a constantly increasing demand for thoroughly well-trained men in Agriculture. Graduates of the Collegiate Course are in great demand as farm managers, experiment-station workers, teachers of Agriculture, and editors of Agricultural newspapers. The sons of farmers, also, who will eventually become owners and managers of farms will find this course especially adapted to their needs.

The impression that this course is less practical than the Short Winter Courses is wholly unwarranted. The instruction in the practical subjects is more thorough than is possible in the shorter courses. The instruction given in the related sciences is essential to a clear understanding of the principles and methods of practice.

The course includes general culture subjects, and the opportunities for free electives make it possible for the student to secure a liberal education while pursuing the technical work of the course.

COURSE OF INSTRUCTION.

Freshman

<i>First Semester</i>		<i>Second Semester.</i>	
	Hrs. cr.		Hrs. cr.
Horticulture 1a, M. W. F., at 8.	3	English 1, M. W. F., at 8.	3
English 1, T. Th. S., at 8.	3	Chemistry 1, M. W. F., 9 to 12:30	3
Gen. Chem. 1, M. W. F., 9 to 12:30	3	Botany 2b, T., 11:30; T. Th., 1:30 to 4	3
Botany 1a, T., 11:30; T. Th., 1:30 to 4	3	Dairing 1b, M. W. F., 1:30 to 4	3
Animal Husbandry 1a, M. W. F., 1:30 to 4	3	Agronomy 1b, T, Th. S., 8 to 10	3

Sophomore

<i>First Semester.</i>		<i>Second Semester.</i>	
	Hrs. cr.		Hrs. cr.
Agronomy 2a, T, Th. S., 8., to 10	3	Physiology, T. Th. S., 1:30 to 4	3
Anatomy, T. Th. S., 1:30 to 4	3	Horticulture 2b, 4b, or 7b, M. W. F., at 8	3
Zoology 1, W. F., at 11:30; M. W., 1:30 to 3:30	3	Zoology 1, W. F., at 11:30; M. W., 1:30 to 3:30	3
Organic Chemistry 11, T. Th., at 4; Th., 1:30 to 4	3	Organic Chemistry 11, T. Th., at 4; Th., 1:30 to 4	3
Elective	3	Elective	3

Junior.

<i>First Semester.</i>	<i>Second Semester.</i>
Hrs. cr.	Hrs. cr.
Horticulture 3a, T. Th. S., at 8 3	Agronomy 3b, M. W. F., 1:30
Agr. Chemistry, T. Th. S., at 11:30..... 3	to 4. 3
An. Husbandry 3a, M. W. F., at 9 3	An. Husbandry 2b, T. Th. S., at 9 3
Veterinary Medicine, T. Th. S., 1:30 to 4 3	Elective 9
Elective 3	

Senior.

<i>First Semester.</i>	<i>Second Semester.</i>
Hrs. cr.	Hrs. cr.
Geology 4a. T. Th. S., at 10:30. 3	Elective 15
Entomology 2a, M. W. F., at 10:30..... 3	
Elective 9	

Required Work:

All students who are candidates for a degree must satisfactorily complete 120 hours of work. Of this work, 81 hours must consist of the subjects laid down in the foregoing schedule.

Elective Work:

Students who have finished the required course in any subject may elect work in accordance with the advice and approval of the Dean. Sufficient time is given for electives in the course so that students in the upper classes may concentrate their energies upon a chosen line of work. It is advised in all cases that students elect not only a technical subject but also related science courses. A student who specializes in Horticulture should also do special work in Botany and Entomology, while a student who elects Animal Husbandry as a major should take certain courses in Zoology and Veterinary Science, and a student who elects Agronomy should give more time to Chemistry and Physiological Botany. It is expected that those who intend to engage in college or experiment station work will elect modern languages at the beginning of the Sophomore year. The students should in all cases advise with the professors and secure the written approval of the Dean before electing courses.

Degree:

The degree of Bachelor of Science in Agriculture is conferred upon all students who successfully complete the course.

Graduate Work:

The College of Agriculture fosters and encourages graduate work. Advanced courses are offered leading to graduate degrees. The demand for thoroughly trained investigators and teachers is rapidly increasing and the Graduate Department aims to give the thorough training desired.

The degree of Master of Science in Agriculture is conferred upon graduate students who have successfully completed at least one year of graduate work and submitted a satisfactory thesis.

The degree of Doctor of Philosophy is given by the College of Agriculture under conditions prescribed by the Faculty and described in the Announcement of the Graduate Department.

Fellowships:

There are three Fellowships offered in the College of Agriculture: in Agronomy, Animal Husbandry, and Horticulture, respectively. These Fellowships are offered by the State Board of Agriculture and by the Board of Curators to graduates of this College, and pay \$400 annually. Persons appointed Fellows are permitted to do graduate work leading to the degree of Master of Science in Agriculture, and are required to give regular assistance to the Professors of the subjects in which they hold fellowships.

COURSES IN DETAIL.

[Courses designated by a number with the letter *a* attached, thus; 4a, 6a, are given the first semester only. Those designated by a number with the letter *b* attached, thus; 4b, are given the second semester only. Those designated merely by a number are continuous courses and are given both semesters.]

AGRICULTURAL CHEMISTRY.

Professor Schweitzer; Assistant Professor Bird; Mr. Liepsner.

1a. **Introduction**; functions of the plant, including production, conversion, transportation, deposition of organic matter; structure of cell, respiration, membranous diffusion, assimilation; ash constituents.

2b. **Soil**—its formation, composition, alteration by mechanical, chemical, biological agencies; its properties, manures, theory of rotation of crops; farm sanitation; air, water, food; preservation of food, and adulterations.

3. **Graduate work.** Arranged as conditions and aims of students render it feasible.

AGRONOMY.

Professor MILLER; MR. GRANTHAM.

1b. **Grain Crops.** A study of the characteristics of standard varieties of cereal crops, the germination of grains and the identification of weeds.

2a. **Soil Physics.** A study of the relation of soils to heat, air, and moisture, with special reference and the application of these principles to the matters of plowing, cultivation, and the preparation of seed beds.

2b. **Field Crops.** The production, care, and handling of cereals, forage crops, and grasses. Systematic observations of the crops grown on the Experiment Station fields will be a feature of this course.

3b. **Soil Fertility.** A study of the chemical relations and plant food requirements of soils, the relation of soil fertility to crop production and general farm practice.

4a. **Farm Architecture.** A study of plans of farm buildings and methods of construction, the construction of fences and farm conveniences, the laying out of farms, and the arrangement of buildings and lots.

5b. **Farm Engineering.** Farm drainage, road building, farm power, farm machinery, and the principles of draft as applied to farm wagons and implements.

6a. **Soil Investigation.** A study of special soil problems, both in soil fertility and in Soil Physics.

7b. **Special Field Crops.** A study of Experiment Station methods as applied to field crops. Special attention will be given to the matter of crop improvement by breeding and the application of these methods to practical Agriculture.

8a. **Grain Judging.** The judging of cereals and a study of market classification of grains.

9b. **Soil Mapping.** This course is designed to make the student familiar with soil survey work as carried out by the Experiment Stations of the United States. Practice will be given in the mapping of definite areas near Columbia, attention being directed to Geological, Biological and Soil conditions.

10. **Seminar.** Readings and discussions of recent investigations in Agronomy.

14. **Research Work in Agronomy.** The work of this course will be designed to suit the requirements of students who wish to do either special or graduate work in Agronomy.

ANIMAL HUSBANDRY.

Professor MUMFORD; Dean WATERS; Assistant Professor FORBES; Mr. HECHLER.

1a. **Live Stock Judging.** A study of animal form and character, especial attention being given to the market classes and grades of live stock and also to the indications of feeding quality, constitutional vigor, sexuality, capacity for the production of meat, milk, wool, work, and speed.

2b. **Principles of Feeding.** The laws of animal nutrition; composition of the animal body; fodders; the sources of nutrients; digestion, resorption, assimilation, circulation, respiration and excretion; formation of muscle and fat; composition, digestibility, value, preparation, and use of feeding stuff; feeding for fat, milk, wool, work, and growth.

3a. **Animal Breeding.** A treatment of the principles and practices of stock breeding, much attention being given to such subjects as variation, heredity, selection, atavism, in-breeding, cross-breeding, grading, the process of fertilization, the evolution and significance of sex, and other kindred topics.

4a. **Breeds of Live Stock.** History, development, and characteristics of the leading breeds of live stock; pedigrees and performances of superior individuals among horses, cattle, sheep, and swins. Elective.

5b. **Beef Production.** A discussion of practical methods of beef production, including a consideration of successful practices in feeding for market, fitting for show, and general care and management of beef cattle.

6b. **Sheep Production.** Best systems of sheep husbandry; rearing for mutton and wool; production of spring lambs; fattening sheep, and lambs for the market; general care and management of the breeding flock.

7b. **Pork Production.** The feeding of hogs for market; the management of the breeding herd, and a study of foodstuffs, with reference to their adaptability to pork production.

8b. **Stock Farm Management.** Successful methods of operating farms devoted chiefly to live stock production.

9a. **Advanced Live Stock Judging.** A continuation of the work of Animal Husbandry 1a, principally by the method of comparative judging.

10b. **Experimental Feeding.** Original investigation of important problems in feeding cattle, sheep, and swine.

11. **Seminar.** Special Investigation and study bearing on selected lines of work in Animal Husbandry.

BOTANY.

Professor Duggar; Dr. Shantz; Mr. Brooks, Mr. Grossenbacher.

1a. **General Botany.** Elementary Plant Physiology and Morphology of lower cryptogams. Lectures and laboratory work.

2b. **General Botany.** Continuation of 1a., Embryology and Anatomy of higher cryptogams and angiosperms. Lectures, laboratory, and field work.

3a. **The Ecology and Distribution of Plants.** The plant societies in the vicinity of Columbia and their relation to environment as exhibited in habits and form. Lectures, laboratory, and field work.

4a. **General Morphology.** The form and structure of the higher plants in general. Lectures and laboratory work.

6. **Mycology.** Studies of representative groups of fungi and their relation to Plant Pathology. Lectures and laboratory work.

7b. **Embryology.** A study of the processes of reproduction of typical groups of green plants. Lectures and laboratory work.

8b. **Histology and Cytology.** Study of cell structure, tissue structure, and comparative anatomy. Lectures and laboratory work.

9b. **Advanced Physiology.** A study of nutrition and growth, the effects of toxic agents, and response to external stimuli exhibited by plants. Lectures and laboratory work.

10. **Special Problems.** A course introductory to graduate research. Conferences and laboratory work.

12. **Research.** Original investigation of some special line of work.

13. **Seminary.** Reading and reports upon recent work in Botany and upon research in progress in the laboratory.

DAIRY HUSBANDRY.

Professor Eckles; Assistant Professor Shaw; Mr. Wayman.

Elements of Dairying. This is the foundation course in Dairying. In it the student learns the composition of milk, butter, cheese, etc., the relation of bacteria to dairying and how to handle the several machines necessary to the manufacture of butter.

Cheese Making. This course teaches the principles and the practice of modern cheese making on a large scale and also on a scale adapted to farm conditions. In this course the student spends most of his class time in the work room.

Dairy Farming. This course takes up the subject from the standpoint of the producer and considers the breeding, selection, care, and feeding of cows for the dairy, the raising of feeds, and stable construction.

Dairy Bacteriology. This course teaches the nature of bacteria, their characteristics, and how to identify and isolate the many varieties and determine their usefulness. The flavor of butter and cheese is largely dependent upon the kind and number of bacteria growing in them.

ENTOMOLOGY.

Professor Stedman.

2a. **Economic Entomology.** Lectures three times per week on the habits and methods of fighting insects injurious to orchard, garden, livestock, and farm products. Preparation and use of insecticides, machines for spraying, and discussion of beneficial insects.

3. **Advanced Entomology.** Lectures and laboratory work on the life history, anatomy, distribution, and economy of injurious and beneficial insects, and the determination of species.

4. **Graduate Work in Entomology.** Original research, monographing a species or a group, whether beneficial or injurious or otherwise.

HORTICULTURE.

Professor Whitten; Assistant Professor Howard; Mr. Favor,
Mr. Chandler.

1a. **Plant Propagation.** Lectures and laboratory exercises. A consideration of the methods by which plants are propagated in nature, as well as under culture, from seeds and from buds. Nursery practices.

2b. **Small Fruits and Vegetable Gardening.** Lectures and assigned readings in connection with the planting, cultivating, harvesting, and marketing of berries and garden vegetables.

3a. **Orcharding.** Lectures and required readings upon the propagation, planting, cultivation, pruning, gathering, and marketing of orchard tree fruits.

4b. **The Evolution of Cultivated Plants.** Lectures and assigned readings. A study of organic evolution as applied to the modification of plants, particularly those in cultivation. Plant breeding.

5b. **Greenhouse Construction and Management.** Lectures and required readings upon the construction and management of forcing houses, hotbeds, and cold frames.

6a. **Forestry.** Forest influences on climate, soil, and the flow of streams; something of the forest geography of the country; the management of forests, and the uses to which forest products are put.

7b. **Landscape Gardening.** Lectures, readings, and out-of-door observations. Principles and practices pertaining to ornamentation of public and private grounds.

8. **Special Investigation.** Special topics for investigation are assigned to individual students.

METEOROLOGY.

Mr. Reeder.

The earth's atmosphere, its composition, temperature, pressure, and circulation—dew, frost, clouds, rainfall, cyclones, thunder storms and tornadoes, weather, and climate. One hour.

RURAL ECONOMICS.

Dr. WILDMAN.

2a. **Agricultural Economics.** Study of the Agricultural industry and the institutions and conditions, such as markets, banks, transportation systems, tariffs, and co-operation which affect the results from farm operations

VETERINARY SCIENCE.

Professor CONNAWAY; MR. TIFFANY.

1a. **The Anatomy, Physiology, and Hygiene of the Domestic Animals.** This course includes the complete dissection of a horse and some ruminant. Study is made of normal and diseased tissue and its process of repair.

2b. **Veterinary Medicine and Surgery.** This is a study of the common diseases as those affecting the alimentary tract, respiration, circulation, skin, etc. A large free clinic furnishes ample material for practical work.

3a. **Contagious, Infectious, and Parasitic Diseases.** This course includes a study of influenza, glanders, black-leg, tuberculosis, Texas fever, etc.

3b. Continuation of course 3a. Three hours.

5. **Experimental Study of Veterinary Remedies.** This course is for veterinary practitioners.

5. **Experimental Study of Contagious and Infectious Diseases.** Graduate.

6. Research work for graduates.

ZOOLOGY.

Professor LEFEVRE; Assistant Professor CURTIS.

1. **General Zoology.** The course is designed to lay the foundation of the general principles of Zoology, and at the same time, to prepare the student for subsequent work in Animal Husbandry, especially in Animal Breeding.

CONCLUSION.

For a general catalogue of the University or for a special announcement of any Department, address Merrill Otis, University Publisher, Columbia, Missouri. For further information regarding the College of Agriculture, address the Dean, H. J. Waters, Columbia, Missouri.

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