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NEW YORK STATE COLLEGE OF AGRICULTURE ANNOUNCEMENT OF WINTER COURSES 1918-1919

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CALENDAR 1918-1919

Nov. 6,	Wednesday,	Registration in winter courses, beginning at 9 a. m. at the office of the Secretary, Roberts Hall, room 192.
Nov. 7,	Thursday,	Instruction begins in winter courses.
Nov. 18,	Monday,	Fee cards issued at office of the Secretary.
Nov. 23,	Saturday,	Last day for payment of fees at office of the University Treasurer, Morrill Hall.
Nov. 28,	Thursday,	Thanksgiving Day. Holiday.
Dec. 21,	Saturday, 1 p. m.	Instruction ends. Christmas recess.
Dec. 30,	Monday, 1 p. m.	Instruction resumed.
Feb. 10-15,		Twelfth Annual Farmers' Week.
Feb. 14,	Friday,	Instruction ends in winter courses.
Feb. 17,	Monday,	Registration for winter course in game breeding.
Feb. 18,	Tuesday,	Instruction begins in winter course in game breeding.
May 9,	Friday,	Instruction ends in winter course in game breeding.
May 12,	Monday,	Practice begins on game farm.
Aug. 31,	Saturday,	Practice ends on game farm.

NEW YORK STATE COLLEGE OF AGRICULTURE

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 Frank Latta Fairbanks, M.E., Instructor in Farm Mechanics.
 John Hallock Bromley, B.S., Soil Surveyor.
 Roy A. Olney, B.S., Critic Teacher in Rural Education.
 Joseph Brackin Kirkland, B.S., Instructor in Farm Practice.
 John Churchill Maddy, B.S., Instructor in Animal Husbandry.
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 Erford Lynn Banner, B.S., Instructor in Poultry Husbandry.
 Wayland Patterson Frost, B.S., Extension Instructor in Animal Husbandry.
 Harold Eugene Botsford, B.S., Extension Instructor in Poultry Husbandry.
 Mary Godiva Ingersoll, Supervisor of Shop Work in Home Economics.
 Louis Michael Roehl, Supervisor of Farm Shop Work.
 Emmons William Leland, B.S.A., Superintendent of Field Experiments in Soil Technology.
 Charles Edward Hunn, Assistant in Plant Propagation.
 William Thomas Craig, Assistant in Plant Breeding Investigations.
 Ernest Gustaf Anderson, B.Sc., Assistant in Plant Breeding.
 Mrs. Edith Fleming Bradford, B.S., Assistant in Home Economics.
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 Ivan Wright, A.B., M.S., Assistant in Rural Economy.
 Mrs. Alice Van Scoy Crandall, B.S., Assistant in Home Economics.
 Helen Seaman, A.B., Assistant in Botany.
 Raymond Arnold Perry, B.S., Assistant in Dairy Industry.
 Alexander Morris Gershoy, B.S., Assistant in Botany.
 William Henry Eyster, A.B., A.M., Assistant in Plant Breeding.
 John D. Detweiler, B.A., M.A., Assistant in Entomology.
 Ellen Edmonson, A.B., Assistant in Entomology.
 Emily Eveleth, B.S., Assistant in Entomology.
 Jay R. Traver, A.B., Assistant in Entomology.
 Katharine Glover, Special Extension Assistant in Home Economics.
 Dane Lewis Baldwin, A.B., M.A., Secretary to Dean and Director.
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 Clara Frances Sykes, A.B., B.S., Secretary of the Department of Home Economics.
 Willard Waldo Ellis, A.B., LL.B., Librarian.
 George Wilson Parker, Executive Assistant.

THE WINTER COURSES

The winter courses have been part of the regular work of the College of Agriculture since 1893, when the course in general agriculture was established. The winter courses are now eight in number.

1. Agriculture
2. Dairy Industry
3. Poultry Husbandry
4. Fruit Growing
5. Home Economics
6. Flower Growing
7. Vegetable Gardening
8. Game Breeding

The course in agriculture is entirely elective, the student choosing his own schedule of subjects under the guidance of a faculty supervisor. The course is intended primarily for persons who are engaged in general farming or who expect to take up farming. The other seven courses, or groups, are more or less fixed professional courses, intended for persons who desire to specialize in the respective fields.

All the winter courses, except that in game breeding, will begin on November 6, 1918, and will close on February 14, 1919. Instruction will begin at 8 a. m. on November 7. No work will be given on November 28; and none will be given from December 21, at 1 p. m., to December 30, at 1 p. m., these days being allowed for Christmas recess.

The winter course in game breeding will begin on February 17, 1919, and will close on May 9, 1919. The practice period on the game farm is from May 12, 1919, to August 31, 1919.

Correspondence concerning these courses and other instruction in the College of Agriculture may be addressed to The Secretary, College of Agriculture, Cornell University, Ithaca, New York.

Two-Year Courses

It is advised that students plan to spend at least two winters at the College, in the first winter taking general courses in agriculture, and in the second winter specializing in the subjects in which they are particularly interested. The large number of elective subjects in the course in agriculture makes it possible for students to register in that course for a second year without duplication of specific subjects of study.

Expenses

Tuition is free to those who are and have been residents of New York State for one year previous to registration. Nonresidents pay a tuition fee of \$25. This fee is refunded if the student withdraws within five days for reasons satisfactory to the Comptroller and Registrar of the University. One-half of the fee is returned if the student withdraws within two weeks from registration day.

There are a few small fees and incidental expenses, which are detailed under the description of each course, but practically the only expense is the cost of living in Ithaca and the railroad fare to and from Ithaca. Satisfactory table board can be procured in Ithaca, within from five to fifteen minutes walk of the campus, for about \$6 a week. Comfortable rooms near the place of boarding may be engaged at from \$1.50 to \$2 a week for each person when two persons occupy the room, and from \$2.50 to \$3.50 when one person occupies the room. The cost of books need not be more than \$5, but it has been the experience of winter-course students in the past that they wish to buy a number of books to take home, and it would be well, if possible, to allow at least \$10 for this item. The expenses of students, in the winter courses of past years, as stated by them, have been from \$100 to \$150, the average now being probably near the higher figure. By careful management this may be reduced somewhat; but it is best not to stint too much, since too great economy is likely to lessen the value of the course.

The laboratory fees are mentioned in the descriptions of the courses in the announcement; students are also liable for breakage due to carelessness on their part.

Infirmary fee. Every student registered at Ithaca is charged an infirmary fee of \$3 a term, payable at the beginning of each term. Students in the winter courses are required to pay the infirmary fee for one term. In return for the infirmary fee, any sick student is, on his physician's certificate, admitted to the infirmary, and is given without further charge a bed in a ward, board, and ordinary nursing, for a period not exceeding two weeks in any one academic year. Extra charges are made for private rooms, special food, and special nurses. If a sick student who has not received two weeks service in the year is refused admittance to the infirmary by reason of lack of accommodation, he is entitled to a refund of the fee.

Fee cards. All winter-course students must call at the office of the Secretary of the College of Agriculture on November 18, at

which time fee cards will be issued with tuition, infirmary fee, and laboratory fees charged. The cards must be presented at the Treasurer's office in Morrill Hall and payment made not later than 1 p. m., Saturday, November 23.

Fee cards for students in game breeding will be issued at the time of registration, and payment must be made not later than 1 p. m., Saturday, February 22.

Self-support. In the past, a few students have been obliged to earn money during the course and have worked at odd jobs about the University or on neighboring farms. This is never advisable unless absolutely necessary. It is much better to borrow the necessary money or to postpone the course of study until another year, than to be thus handicapped during the limited time spent at the University. All the energies should be concentrated on the work of the course.

Scholarships

Grange scholarship. At its thirty-first annual meeting, held at Cortland, February 4, 1904, the New York State Grange resolved to appropriate funds annually, to be given to members of the order in the form of scholarships in any of the winter courses in agriculture at Cornell University. The scholarships, now twelve in number, are each \$50 in cash, to be awarded to men and women who attain the highest standing on competitive examination. Awards are made each summer. Candidates should apply before June 1 to the Master of the Pomona Grange in their home counties, or to the Deputy in counties that have no Pomona.

The Jewish Agricultural and Industrial Aid Society of New York instituted in 1908 a system of free scholarships to enable the children of Jewish farmers to attend the short winter courses offered by the agricultural colleges in the States in which they reside. The scholarships are awarded by competition, which consists in the writing of a brief essay on an agricultural topic. Children of Jewish farmers living and working on the farms of their parents are eligible to compete for these scholarships. The number of scholarships is unlimited, and the stipend is sufficient to pay all the expenses of the holder for the course, such expenses usually amounting to from \$100 to \$150. For the New York State College of Agriculture at Cornell University, a number of these scholarships have been awarded each year since their establishment. Applications for these scholarships should be made to The Jewish Agricultural and Industrial Aid Society, 174 Second Avenue, New York City.

Admission

The winter courses are business and occupational courses, not academic; hence there are no examinations for admission. However, in order that the student may be able to make the best use of the instruction it is necessary that he should have a good common school education. Winter-course students sometimes are seriously handicapped in their work by being deficient in arithmetic and in English. Persons who are planning to take a winter course are advised to review these subjects before coming to Ithaca.

Applicants for admission to the winter courses should, by way of preparation, read carefully some of the best books, bulletins, and other literature on the subject to which their attention will be chiefly directed while at Cornell University. On application to the Secretary appropriate books for such reading will be suggested.

Women who desire to pursue one of the winter courses should correspond with Professor Martha Van Rensselaer, Ithaca, New York, in regard to rooms and accommodations. All women students registered in any of the winter courses are under the supervision of Professor Van Rensselaer during the period of the courses. Not a few women have taken the work in agriculture with results satisfactory to themselves and to their instructors.

Age. All the courses are open to both men and women of at least eighteen years of age. There is no limit to the age above eighteen; some of the best winter-course students have been mature men and women, owners of farms or managers of dairy or poultry plants. In view of the fact that no maximum age limit is stated, each applicant is required to give satisfactory evidence of his capability to do the work required.

Application. This circular contains an application blank for admission to the winter courses and a schedule sheet for courses to be taken. Both of these should be made out in full and forwarded to the Secretary at once by any person who is planning, as yet even indefinitely, to attend any one of the winter courses. The filing of an application for admission does not constitute an obligation to attend, and applications may be withdrawn at any time.

Any one who has graduated from the common schools of the State, or who has an eighth grade certificate, should be able to do the winter-course work satisfactorily. When making application, candidates for admission should give a description of their school training and if possible should send a certificate or a statement from the teacher of the school last attended.

Applicants for the professional course in poultry husbandry must have had at least six months active and consecutive work on an approved farm or poultry plant. A statement signed by the employer stating the kind, amount, and quality of work done must accompany the application for admission.

Arrival at Ithaca. Students who desire advice concerning rooming and boarding places are invited to come directly to the College of Agriculture on their arrival at Ithaca. It is desirable that all housing arrangements should be completed before registration day.

Registration

On Wednesday, November 6, beginning at 9 a. m., all students must report for registration at the office of the Secretary of the College of Agriculture, Roberts Hall, room 192. After registering here, students will go at once to the headquarters of their particular winter course or to their faculty supervisor, as assigned. The headquarters of the several professional winter courses are as follows: course in dairy industry, Dairy Building, room 132 (first floor); course in poultry husbandry, Poultry Building, room 325 (third floor); course in fruit growing, Roberts Hall, room 202 (second floor); course in flower growing, Roberts Hall, room 212 (second floor); course in vegetable gardening, Poultry Building, room 253 (second floor). Students in the course in agriculture will be assigned to their faculty supervisors at the time of their registration.

Students in game breeding register on February 17, beginning at 9 a. m.; they then report to the headquarters of their course in the Poultry Building, room 325.

Study cards. After the student has filled out and returned to the Secretary his study card showing the subjects for which he wishes to register, he may not change his registration in any respect except on the recommendation of the head of the winter course concerned, or of his faculty supervisor, and with the approval of the Secretary. The schedule sheet, which the applicant fills out in advance, may subsequently be changed at the request of the applicant, and is not to be confused with the study card, which is made out after the student has come to register.

Methods of Instruction

Instruction in the winter courses is given by lectures, by such practical work (laboratory practice) in the various agricultural

operations as can be conducted at the time of the year, and sometimes by trips or excursions to points of special interest.

The lectures are given in large part by the regular staff of the College of Agriculture. The lectures are plain and practical, in the style of farmers' institute talks. As far as possible, collected material is used for illustrating the subjects. When this is impossible, lantern views are often used. Free discussion by the student of the subject under consideration is encouraged. Further opportunity for general discussions is afforded in the meetings of the winter-course clubs.

Special lectures for winter-course students are given in Roberts Hall 131 at 9 a. m. on Friday of each week, and all students are required to attend. These lectures will be given by members of the university faculty and by men of successful experience in agriculture.

The winter-course students are welcomed at the various addresses given by eminent men before the University in general.

Practical work is made a special feature in the winter courses. The student is expected to perform all the various operations as carefully as if he were working at home as a practical farmer. In the courses in dairy industry, poultry husbandry, game breeding, and home economics, the instruction is in large part practical, and the students have an opportunity of becoming familiar with all the essential operations in these enterprises. In the courses in agriculture, fruit growing, flower growing, and vegetable gardening, there is necessarily a smaller amount of practical work; advantage is taken, however, of the greenhouses, barns, and laboratories, in demonstrating to the students some of the operations that would naturally be conducted in the summer season. Whenever possible, the aim is to make the practical work take up as large a part of the student's time as do the lectures.

Excursions to neighboring points of special interest have been made a feature of the course in poultry husbandry. Such excursions are conducted in other courses also whenever practicable.

The word *hour* in the following schedules means one lecture of one hour each week for twelve weeks, or one period of two and one-half hours of laboratory or practice each week for twelve weeks.

The City and the University

Ithaca is situated in Tompkins County at the head of Cayuga Lake. It is a city of about seventeen thousand inhabitants. It is reached by the Lehigh Valley, the Delaware, Lackawanna, and Western Railroad, and the Auburn Short Line. The University

stands on a plateau about four hundred feet above the lake. The officers of instruction and administration at Cornell University number nearly seven hundred. The campus and farms cover 1128 acres. The New York State Game Farm, recently established under control of the University, lies adjacent to the university farm and comprises one hundred and seventy acres.

The main buildings of the University are over thirty-five in number, providing quarters for the several colleges of the University. These are the Graduate School, and the Colleges of Arts and Sciences, Law, Medicine, Agriculture, Veterinary Medicine, Architecture, Civil Engineering, and Mechanical Engineering.

The New York State College of Agriculture at Cornell University occupies new buildings erected by the State. These buildings are large and well equipped, and afford an attractive and comfortable home for the College.

Social and Religious Advantages

Every year the students in each of the several winter courses have formed clubs. These societies meet once a week and debate subjects of special interest, discuss various problems, sing college songs, and indulge in other forms of social enjoyment. Every winter-course student is urged to attend these meetings.

The winter-course students are welcomed at the meetings of the Agricultural Association, the Lazy Club, the Poultry Association, the Dairy Club, the Round-Up Club, and the other organizations of students in the College. The meetings of these societies are devoted to discussions of live agricultural subjects and to the promotion of friendship among the students. Usually on the first Thursday evening of each month the Dean of the College meets the faculty and the students of the College in the Agricultural Assembly. At this meeting the Dean gives a talk on matters of special importance to those interested in agriculture and country life, or a reading, followed by singing and social entertainment.

Every winter the students in the various winter courses compete for the Morrison Winter Course Trophy Cup. Last year the contest was a series of debates, as a result of which the cup was awarded for one year to the students in the winter course in general agriculture.

Religious services, provided for by the Dean Sage Preachership Endowment, are conducted in Sage Chapel throughout the college year, by eminent clergymen selected from the various religious denominations. These services are supplemented by the Cornell University Christian Association, a voluntary organization of

students and professors formed for their own religious culture and the promotion of Christian living in the University. The Christian Association has its home in Barnes Hall. It has a permanent secretary. It has also a carefully selected Biblical library and comfortable reading and recreation rooms. Courses in Bible study are conducted throughout the year, and special courses are provided for students in the winter courses.

In addition to the Young Men's Christian Association there is a flourishing Young Women's Christian Association, with quarters in Barnes Hall.

The students of the University are welcomed by the numerous churches in the city of Ithaca at all their services.

Positions

The College does not promise to find positions for students registered in any of its courses, but it has opportunity to recommend students for a large number of positions. Thus far it has been difficult to find students for all the places which the College has been asked to fill. Some students who have completed a winter course have obtained an increase in salary in the following season sufficient to pay the entire cost of the course. Such results, while of course not guaranteed, show that there are excellent opportunities for trained men.

A student desiring a recommendation from the College must fulfill the following conditions: (1) he must be of good character; (2) his previous record must be good; (3) his work in the winter course must be satisfactory.

In the case of the course in dairy industry, previous experience in a well-conducted dairy plant is strongly advised for those who expect the College to recommend them for positions.

In the case of the course in poultry husbandry it is recommended that persons inexperienced in the handling of poultry spend at least a year in acquiring practical knowledge of the business before entering the winter course in poultry husbandry. Students who have not previously had a considerable amount of farm or poultry experience cannot, as a rule, be recommended to positions of responsibility until they have spent a season on an approved poultry farm. This is particularly true for the better positions, in which managers or superintendents are wanted to take charge of poultry farms. The salaries obtained by students after completing the course in poultry husbandry range from \$25 to \$75 a month with board and room, the average being about \$35 to \$40.

DESCRIPTION OF THE WINTER COURSES

I. COURSE IN AGRICULTURE

Most of the young men who come for a winter course expect to engage in general farming or hope to obtain positions as superintendents of farms on which diversified agriculture is practiced. It is for these that the general course in agriculture is especially designed. Persons who plan to specialize will register in one of the professional courses or groups.

On the other hand, the course in agriculture can be taken with advantage also by those who plan to do special work in agriculture later. It gives an opportunity for laying a broad foundation of general knowledge as a basis for subsequent specialization. This course gives a general survey of agriculture in practically all its phases. It is strongly advised that persons desiring to pursue one of the special winter courses should first take the course in agriculture and postpone their special work to the following winter.

Choice of subjects. Students may choose from the following courses such subjects as they desire to take and are able to schedule without conflict. No student may take less than twelve or more than a total of eighteen hours without special permission, and sixteen hours is as much as the average student can carry satisfactorily. [For definition of *hour*, see page 13.]

So far as students in general agriculture are concerned, the courses in agricultural chemistry, farm crops, and soils form a unit, and these courses cannot be elected separately unless one or more of them have been passed in a previous winter course.

Agricultural Chemistry

1. **Agricultural Chemistry.** November 7 to December 21. Two hours a week. Lecture, daily except M, 8. Caldwell Hall 100. Laboratory, one period a week in conjunction with Soils 200, M, T, W, Th, F, or S, 11-1. Caldwell Hall 49. Professor CROSS and Mr. ———.

An elementary course treating of the relations of chemistry to agriculture, and dealing with the composition and chemical properties of plants, soils, fertilizers, feeding stuffs, insecticides, and fungicides.

Animal Husbandry

1. **Feeds and Feeding.** Two hours a week. Lecture, W, 9. Dairy Building 222. Practice: Section A, Th, 8-10 (for dairy students only), Dairy Building

222; Section B, F, 11-1, Section C, S, 11-1, Animal Husbandry Building A. Professor SAVAGE and assistants.

The principles and practice of compounding rations and of feeding farm animals.

2. Breeds and Breeding. Three hours a week. Lectures, M F, 4. Animal Husbandry Building A. Practice: Section A, M, 11-12.30; Section B, W, 11-12.30. Animal Husbandry Pavilion. Professor WING and Mr. MEADE.

The principles of breeding farm animals; the history of breeds; the adaptation of different breeds for certain purposes; the care of farm animals.

Dairy Industry

8. Farm Butter Making. Three hours a week. Must be preceded or accompanied by course 10. Lecture, W, 2. Dairy Building 222. Practice: Section A, M, 2-6; Section B, W, 9-1. Limited to twelve in a section. Dairy Building. Professor GUTHRIE and Mr. JACKSON.

This course will include cream separation, starter propagation, cream ripening and churning, washing, salting, and packing butter. Hand churns and small power churns will be used. A small amount of testing by the Babcock method will be included. Laboratory deposit, \$3 (part returnable), will be required, to cover breakage and for rental and laundering of white suits.

9. Market Milk and Milk Inspection. Two hours a week. Must be preceded or accompanied by course 10. Lecture, F, 3. Dairy Building 222. Laboratory, T or W, 2-4.30. Dairy Building. Professor ROSS and Mr. BREMER.

This course will take up standardizing of milk and cream; effect of bacterial action on the keeping quality of milk; cooling, handling, and general care of milk on the farm; judging milk; scoring dairy barns. Laboratory deposit, \$2 (part returnable), to cover breakage and for rental and laundering of white suits.

10. Milk Composition and Tests. For students in general agriculture only. Two hours a week. Lecture, Th, 2. Dairy Building 222. Laboratory, M, 8-10.30. Dairy Building 232. Professor TROY, Assistant Professor MCINERNEY, and Messrs. BUTTON and ———.

The course includes the composition and secretion of milk, the Babcock test for fat in milk and its products, acid tests, salt tests, moisture tests, use of the lactometer, and some of the simple tests for preservatives and adulterations. Laboratory deposit, \$2 (part returnable), to cover breakage and for rental of laboratory apron.

Entomology

1. Injurious Insects. Two hours a week. Lectures, T Th, 3. Agronomy Building 192. Professor HERRICK.

The common insect pests of farm, garden, and orchard will be discussed, and measures of control will be carefully considered. Specimens of the insects discussed, together with examples of their work, will be shown to members of the class whenever possible. Opportunity will be given for questions and discussions, with the hope of bringing out obscure points and clearing up all phases of the problems. The lectures and discussions will be illustrated by lantern slides and by charts.

Extension Teaching

1. **Extension Work.** One hour a week. Lecture and discussion, W or F, 4. Roberts Hall 131. Criticism by appointment, daily, 8-1. Professor EVERETT, Assistant Professor GILKEY, and Messrs. ——— and ———.

A study of the problems of university extension in agriculture. Practice in the oral and written presentation of topics in agriculture, with criticism and individual conferences on the technic of public speech. The course is designed to acquaint students with parliamentary practice, to encourage interest in public affairs, and to train for effective self-expression in public. Open to all students in the winter courses.

Special training will be given to competitors for the winter-course prize for public speaking. This prize of ten dollars is given by the Department of Extension Teaching, with the object of developing an interest in rural affairs. Competition is open to all winter-course students. The contest will take place in Farmers' Week, in February.

Farm Crops

1. **Farm Crops.** Four hours a week. Lecture, daily except M, 8. Roberts Hall 131. Laboratory: Section A, W, 11-1; Section B, Th, 11-1; Section C, F, 11-1. Poultry Building 350. Mr. DYNES and assistants. Laboratory continues throughout the winter course, beginning on November 7. Lectures will begin after the close of Agricultural Chemistry 1, on December 30, and continue for the remainder of the course.

A study of field crop production with special emphasis on the culture, uses, and distribution of the principal farm crops.

Students taking this course must also take Agricultural Chemistry 1, two hours, and Soils 200, two hours. It is recommended that they take also Animal Husbandry 1, two hours, Farm Management 1, two hours, and electives to total sixteen or eighteen hours. Laboratory fee, \$1.

Farm Management

1. **Farm Cost Accounting.** Two hours a week. Lecture, W, 3. Dairy Building 222. Laboratory, M W, 10-12.30. Farm Management Building 102. Professor LIVERMORE and Mr. NOBLE.

Farm inventories, single enterprise accounts, complete farm accounts, and other farm records. Special emphasis will be placed on the interpretation of results and their application in the organization and management of the farm. Laboratory fee, \$1.

2. **Farm Management.** Three hours a week. Lectures, M F, 3. Caldwell Hall 100. Laboratory, T, Th, or S, 10-12.30. Farm Management Building 102. Mr. MYERS.

Lectures, recitations, and laboratory practice. Farming as a business; types of farming; balance of business; size of business; rates of production; farm layout; building arrangement; labor management; machinery; marketing; ways of starting farming; forms of tenure and leases; choosing and buying a farm; use of capital and credit; planning organization and management of specific farms. Laboratory fee, \$1.

Floriculture

3. **Amateur Floriculture.** Three hours a week. Lectures, T Th, 3. Floriculture Building. Practice, T, 10-12.30. Greenhouses. Miss MINNS.

This course is designed primarily for persons interested in growing plants in the house. Plants best suited for house culture will be considered, also plants for indoor and outdoor window boxes and veranda boxes. Methods of preparation of soil, propagation, potting, and seed sowing will be studied. Laboratory fee, \$1.50.

4. **Gardening and Garden Flowers.** Three hours a week. Lectures, M W Th, 9. Greenhouses. Mr. THAYER.

A course designed to study the methods of propagation and growing of outdoor annuals and herbaceous perennials. Studies will be made, as far as possible, of individual garden problems. The culture of outdoor roses, asters, peonies, phlox, iris, and bulbous plants, will be considered. Occasional laboratory periods, which are optional for the student, will be held. Laboratory fee, \$1.

Forestry

1. **The Farm Woodlot.** One hour a week. Lectures, M, 8. Forestry Building 122. On three Saturday afternoons there will be field trips, if the weather permits. Assistant Professor COLLINGWOOD.

This course is designed to present certain sides of forestry that are of value in farm work. The student is given briefly the characteristics by which to identify the common trees usually found in farm woodlots. The course embraces the care of the woodlot, including tree planting for timber and windbreaks; thinning, and cutting mature timber; methods of measuring the amount of standing and felled timber; protection from fire and other enemies; preservative treatment of posts; and the making of maple sugar.

Home Economics

Any of the following subjects from the course in home economics may be taken by students registered in the course in agriculture, as far as laboratory accommodations permit:

1. **Foods and Nutrition.** See page 31.
2. **Household Sanitation.** See page 31.
3. **Household Management.** See page 31.
4. **Clothing.** See page 31.
5. **Art in the Home.** See page 32.
6. **Supervised Study.** See page 32.
7. **Women in the Community.** See page 32.

Landscape Art

6. **Rural Improvement.** A course of six or more lectures beginning after the Christmas recess, without credit. These lectures are outlined primarily for winter-course students. Time to be announced. Professor CURTIS.

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

APPLICATION FOR ADMISSION TO WINTER COURSES

Name of applicant IN FULL.....
Last name First name Middle name

Permanent home address (number and street, or R. F. D.).....

Place.....County.....State.....

Date of birth, month.....day.....year.....

Nationality.....Married.....Date of this application.....

Name of parent or guardian, or person to be notified in case of serious illness or accident.....

Address of parent or guardian.....

Name of school or college last attended.....

Place.....State.....When?.....How long?.....

Have you ever before registered in this or any other college?.....

When?.....Where?.....In what course?.....

Have you received any degree or certificate?.....What?.....Where and when?.....

OVER

What has been your practical experience in farm work and in the special work covered by the winter course in which you are registering?

What has been your residence and occupation during the past five years?

Occupation 1914.....Place.....State

Occupation 1915.....Place.....State

Occupation 1916.....Place.....State

Occupation 1917.....Place.....State

Occupation 1918.....Place.....State

What church do you attend?.....

REFERENCES.*—I am personally acquainted with the above applicant and know.....to be of good moral character, industrious, studious, and physically and otherwise capable.

Name.....Name.....

Position.....Position.....

AddressAddress

*Two endorsements are necessary, and should be preferably by your teacher and your pastor or a public official. These persons should sign the application themselves.

NOTE.—The applicant must answer ALL the questions asked on both sides of this application blank. When the blank has been answered in full, mail it to Cornelius Betten, Secretary, College of Agriculture, Cornell University, Ithaca, New York.

Name
Last name First name Middle name

SCHEDULE OF SUBJECTS

IMPORTANT: Before filling out the blanks on this page, study carefully the guide given on the reverse side.

Indicate by a check mark (✓) the one of the following eight courses in which you desire to register. Do not check more than one course.

1. Agriculture

2. Dairy Industry

3. Poultry Husbandry
4. Fruit Growing

5. Home Economics
6. Flower Growing

7. Vegetable Gardening

8. Game Breeding

If you desire to specialize in either the professional Course in Dairy Industry or the professional Course in Poultry Husbandry, it is not necessary for you to fill out the remainder of the blanks on this page.

If you are registering in any one of the other six courses, write here the number and the name of each subject that you desire to take, using the numbers given in the catalogue. Example: No. 2. Subject Farm Management. Without special permission, no student is allowed to take less than twelve or more than eighteen "hours" of work For definition of "hour," see page 13.

No.

Subject

Lecture, required of all students.....

No.

Subject.....

No.

Subject.....

No.

Subject.....

No.

Subject.....

No.

Subject.....

No.

Subject.....

No.

Subject.....

No.

Subject.....

After filling out this schedule completely according to directions, mail it, with your application for admission, to Cornelius Betten, Secretary.

GUIDE FOR THE APPLICANT

In filling out the Schedule of Subjects on reverse side of this sheet

We shall assume, for example, that you desire to register in the Course in Agriculture, and to take the following subjects, totaling eighteen hours:

1. Agricultural Chemistry. Two hours. T W Th F S, 8. Nov. 7 to Dec. 21.
1. Feeds and Feeding. Two hours. W, 9; practice, two choices.
1. Farm Crops. Four hours. Lectures, Dec. 30 to Feb. 14, T W Th F S, 8; practice, Nov. 7 to Feb. 14, three choices.
2. Farm Management. Three hours. M F, 3; practice, T, Th, or S, 10-12.30.
1. Farm Management, Cost Accounting. Two hours. W, 3; practice, M W, 10-12.30.
2. General Fruit Growing. Three hours. M W F, 2.
200. Soils. Two hours. T Th, 4; practice, six choices.

Required lecture, F, 9.

You would then fill out the Schedule of Subjects on the reverse side of this sheet as follows:

- | | | |
|---------------------------------------|---|------------------------|
| 1. Agriculture ✓ | 4. Fruit Growing | 6. Flower Growing |
| 2. Dairy Industry | 5. Home Economics | 7. Vegetable Gardening |
| 3. Poultry Husbandry | No. 1. Subject Farm Management, Cost Accounting | 8. Game Breeding |
| No. 1. Subject Agricultural Chemistry | No. 2. Subject General Fruit Growing | |
| No. 1. Subject Feeds and Feeding | No. 200. Subject Soils. | |
| No. 1. Subject Farm Crops | No. -. Subject Required Lecture. | |
| No. 2. Subject Farm Management | | |

By means of the following schedule form, we can see that the subjects do not conflict in the times at which they are given; Agricultural Chemistry and the lectures in Farm Crops come at the same hours, but the lectures in Farm Crops do not begin until after Agricultural Chemistry is completed on December 21.

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8		Agricultural Chemistry Farm Crops 1	Agricultural Chemistry Farm Crops 1	Agricultural Chemistry Farm Crops 1	Agricultural Chemistry Farm Crops 1	Agricultural Chemistry Farm Crops 1
9			Feeds and Feeding 1		Required Lecture	
10	Farm Management 1			Farm Management 2		
11	Laboratory	Soils and Agricultural Chemistry		Laboratory	Farm Crops 1	Feeds and Feeding 1
12		Laboratory			Laboratory	Laboratory
2	Fruit Growing 2		Fruit Growing 2		Fruit Growing 2	
3	Farm Management 2		Farm Management 1		Farm Management 2	
4		Soils 200		Soils 200		

If you desired to take course 1, **Farm Mechanics**, you could not take course 2, **General Fruit Growing**, as they both come M F, 2. If you desired to take course 10, **Milk Composition and Tests**, you could not take Forestry 1, as this conflicts with the practice period. In like manner you can work out your schedule for any other subjects that you desire to take. You can make a schedule form similar to the above for your own use in scheduling the subjects that you desire to take. Be sure there are no conflicts in time, in either lecture or practice (laboratory) periods, before you fill out your schedule on the reverse side. The times given in the announcement are fixed and cannot be changed; therefore it is impossible for a student to take two subjects that come at the same hours.

Brief outlines and discussions of the ways and means of bettering out-of-door conditions. The course deals with questions of rural improvement in such a manner as to enable the student from the farm or the village to appreciate his landscape problems and opportunities, and to gain a point of view in landscape methods. Specific suggestions are offered for the solution of some of the simpler home problems.

Plant Breeding

1. **Plant Breeding.** Two hours a week. Lectures and discussions, T Th, 9. Forestry Building 212. Mr. FRASER.

A discussion of plant improvement, with special reference to farm and horticultural crops. Methods of selection and hybridization as means of improvement will be considered. Fee, 50 cents.

Plant Pathology

1. **Plant Diseases.** Three hours a week. Lecture, S, 9. Caldwell Hall 100. Practice: Section A, for students in fruit growing, T, 11-1, Th, 10-1; Section B, for students in general agriculture, T, 9-11, F, 10-1. Bailey Hall, West Basement. Dr. CHUPP and Mr. ———.

Some time will be spent in studying the structure and development of the normal plant in order that the diseased condition may be appreciated. The more important diseases of various commercial crops will then be carefully studied in regard to their symptoms, cause, and control. Laboratory fee, \$1.50; breakage deposit, \$3.

Pomology

2. **General Fruit Growing.** Three hours a week. Lectures, M W F, 2. Roberts Hall 292. Professor REES and Assistant Professor HEINICKE.

This lecture course is designed for students who desire a general knowledge of fruit growing. It covers practically the same topics as course 1 in fruit growing (page 30), but in less detail.

Poultry Husbandry

11. **Farm Poultry.** Three hours a week. Must be accompanied by course 12. Lectures, M W F, 4.45-5.45. Poultry Building 375. Professor RICE, Assistant Professors BENJAMIN and KENT, and Messrs. HEUSER, ANDREWS, and others.

A discussion of the domestic breeds of poultry; hatching and rearing; the principles of breeding, feeding, and management; marketing; diseases of poultry; the building of poultry houses; and related matters.

12. **Farm Poultry Laboratory.** One hour a week. Must be accompanied by course 11. Practice T, 10.30-1. Poultry Building 300. Assistant Professor BENJAMIN, and Messrs. BOTSFORD and ———.

Laboratory fee, \$2.

Rural Engineering

1. **Farm Mechanics.** Three hours a week. Lectures, M F, 2. Caldwell Hall 100. Practice, Th or F, 10-1. Rural Engineering Building. Assistant Professor HAZEN and assistants.

A study of the principles of operation, details of construction, and practical operation and care of: (a) machinery, including gasoline engines, devices for transmitting power, hydraulic rams, pumps, spray nozzles, spraying outfits, water supply outfits; (b) implements, including plows, mowers, grain binders, and binder attachments, with a discussion of the special mechanical features of some of these implements now on the market. Laboratory fee, \$2.

3. **Farm Structures.** Two hours a week. Lectures, T Th, 9. Caldwell Hall 282. Mr. STRAHAN.

A study of building materials used on the farm, and of the principles of construction for barns, stables, and other farm buildings, together with their application in practice.

Soil Technology

200. **Soils.** Two hours a week. Lectures, T Th, 4. Caldwell Hall 100. Laboratory, one period a week in cooperation with Agricultural Chemistry, M, T, W, Th, F, or S, 11-1. Caldwell Hall 49. Professor BUCKMAN.

A course dealing with the physical, chemical, and biological properties of the soil in as far as they relate to soil management and plant production.

Vegetable Gardening

1. **Principles of Vegetable Gardening.** See page 34.
2. **Vegetable Forcing.** See page 34.

Veterinary Medicine

1. **Diseases of Dairy Cattle, and Veterinary Hygiene.** One hour a week. Lecture, S, 9. Dairy Building 222. Doctor HAYDEN.

This course includes a discussion of the commonest diseases of dairy cattle, the prevention and cure of these diseases, ventilation of stables, and general questions of animal hygiene.

II. COURSE IN DAIRY INDUSTRY

The course in dairy industry is intended especially for persons who plan to operate commercial plants manufacturing butter or cheese, or handling milk for the market; and persons expecting to enter this field professionally should register in this course. The work of the course requires the student's entire time. This course is *not* intended for persons who plan to follow dairy farming. Those students who wish to study the manufacturing side of dairy farm work should register in the farm dairy courses outlined on page 18.

If there are more applicants for the course than laboratory space will allow, students will be accepted according to their previous dairy experience and the order in which the applications are received.

There will be a meeting of dairy-course students and teachers in lecture room 222 of the Dairy Building at five o'clock on the afternoon of registration day, November 6. All students registered in the winter course in dairy industry are required to attend this meeting.

Special Expenses

Laboratory fee (to pay in part for materials used)	\$15.00
Laboratory deposit (part returnable) to cover rental of suits, laundry, and breakage	8.00
Books, about	5.00
One suit of blue overalls, about	1.00

Books, notebooks, and blue overall suits can be procured at reasonable prices in Ithaca. The white suits and rubber aprons for use in the creamery and the laboratory are furnished by the Department and rented to students as stated above.

Methods of Instruction

Instruction, although partly by lectures and recitations, is largely by actual practice in the different kinds of dairy work. The class assembles daily at 8 a. m., and the class work continues for two hours. The students are then assigned, in sections, to different kinds of practice for the remainder of the day. These assignments are so made that in the course of the term each student has a due amount of work in each of the various divisions.

The lectures and recitations are given in one-hour periods. Frequently they are replaced by examinations; often, also, a part of the hour is occupied by informal discussions of former lectures or of topics previously assigned for study. The lectures are supplemented by references to dairy literature, books, current periodicals, and experiment station publications.

The Courses

The subjects of the required lecture and practice courses are as follows:

200. **Milk Composition and Tests.** One hour a week. Lecture, M, 9. Roberts Hall 392. Professor TROY, Assistant Professor MCINERNEY, and Mr. BUTTON.

This course includes the composition and secretion of milk, the Babcock test for fat in milk and its products, acid tests, salt tests, moisture tests, use of the lactometer, and some of the simple tests for preservatives and adulterations.

200a. **Milk Composition and Tests, Laboratory Course.** Two hours a week. By appointment. Dairy Building 232. Professor TROY, Assistant Professor MCINERNEY, and Mr. BUTTON.

The testing laboratory is furnished with equipment necessary to teach the practical tests of dairy products, including tests for fat, solids, acidity, water, and salt, and some of the simpler tests for preservatives and other adulterations. A thorough drill will be given in making all the above determinations.

201. **Butter.** Two hours a week. Lectures, M W, 8. Roberts Hall 292. Mr. AYRES.

This course deals with the principles and practice of butter making, from the receiving of the milk and cream to the judging and marketing of the finished product; construction and arrangement of creameries; accounts and business methods.

201a. **Butter, Laboratory Course.** Four hours a week. Practice, by appointment daily, 10.15-5. Dairy Building 151. Messrs. AYRES and ———.

The creamery is furnished with apparatus such as is found in a well-equipped commercial plant. The milk is received, weighed, sampled, and separated, and the entire process of ripening cream and of churning is carried through in the most thorough manner. Special attention is given to the use of starters. Every step of the work is performed by students under the close supervision of the instructor.

202. **Cheese.*** Two hours a week. Lectures and recitations, T, 9, F, 8. Dairy Building 222. Assistant Professor FISK and Mr. DUTTON.

The work includes the principles and methods of making cheddar, or American, cheese. Attention is given to the making and use of starters, the judging and marketing of cheese, factory accounts, the construction and equipment of cheese factories.

202a. **Cheese, Laboratory Course.** Four hours a week. Practice, by appointment daily, 10.15-5. Dairy Building 152. Assistant Professor FISK and Mr. DUTTON.

The cheese room is equipped with all necessary apparatus, such as is used in large factories for making cheddar cheese. All the work is performed by students, and every step is carefully observed and reported by them on blank forms provided for the purpose. Special attention is given to judging the quality of milk for making cheese, and to judging the cheese when it is ready for market.

203. **Dairy Bacteriology.** One hour a week, first six weeks of term. Lecture, hour to be arranged. Dairy Building 222. Practice, by appointment. Dairy Building 122. Professor STOCKING, and Messrs. SUPPLEE and ———.

This course considers the nature of bacteria and their relation to dairy work, including their sources, action on milk, butter, and cheese, and methods of controlling their growth; plating of milk, lactic acid, and gas-producing bacteria.

204. **Market Milk.** One hour a week, last six weeks of term. Lecture, hour to be arranged. Dairy Building 222. Practice, by appointment. Dairy Building 121. Professor ROSS and Mr. BREMER.

This course includes the sanitary construction of dairy barns; score cards for dairy barns and market milk; food value of milk; standardizing milk and cream;

*For fancy cheeses, see page 25.

legal standards for milk and cream; dairy utensils; and the general production and handling of clean milk.

205. **Dairy Mechanics.** Two hours a week. Lecture, S, 8. Dairy Building 222. Practice, by appointment daily, 1.15-5. Dairy Mechanics Laboratories. Messrs. AYRES and ———.

The care of the boiler and engine, construction of separators, installation of shafts and pulleys, pipe fitting, belt lacing, soldering, and care of dairy machinery, are considered.

206. **Dairy Chemistry.** One hour a week. Lecture, T, 8. Dairy Building 222. Professor TROY and Mr. WHITE.

The elementary principles of chemistry are explained in order that the student may better understand the composition of dairy products and the chemical changes connected with and influencing dairy operations.

207. **Dairy Arithmetic and Bookkeeping.** One hour a week. Practice, by appointment daily, 10.15-12.30. Dairy Building 119. Professor ROSS and Mr. BREMER.

A thorough drill is provided in problems such as are constantly arising in all kinds of dairy work and in the keeping of factory accounts.

1. **Feeds and Feeding.** See page 17.

1. **Diseases of Dairy Cattle, and Veterinary Hygiene.** See page 22.

SPECIAL ONE-MONTH COURSE IN FANCY CHEESE AND ICE CREAM

Beginning Monday morning, February 24, 1919, and ending Saturday noon, March 22, 1919

208. **Fancy Cheese and Ice Cream.** An elective one-month course following the winter course in dairy industry, and open only to those who have successfully completed that course or have had equivalent training. Because of restricted laboratory space the number of students must be limited. Admission to the course will be based on quality of work done in the preceding winter course in dairy industry and on previous dairy experience, and will in all cases be determined by the Department. Lectures and practice, by appointment. Dairy Building 122 and 132. Assistant Professor FISK and Mr. DUTTON.

Practice will be given in the manufacture of several varieties of fancy cheese, such as cottage, bakers' cream, neufchatel, pimento, and club, and in making ice creams, sherbets, and ices. Both hand-and power-driven freezers will be used, the latter comprising types of freezers using ice and salt as a freezing medium and those making use of mechanical refrigeration. The practice given will be supplemented by lectures discussing the principles governing the work. Laboratory fee, \$5.

Certificate of Proficiency

A student who has completed all the work of the winter course in dairy industry and has passed all the required examinations, may become a candidate for a certificate of proficiency in the kind of dairy work in which he is engaged. The candidate must complete

one year of satisfactory work in a responsible dairy position approved by the Department of Dairy Industry.

The candidate must report regularly, on blanks furnished by the Department for the purpose, such information in regard to his work as may be required, and each month must send a sample of his dairy product (milk, cream, butter, or cheese) to the Department of Dairy Industry to be judged. He must have his work in readiness for inspection by a representative of the Department at any time, and report of such inspection must be satisfactory to the Department.

A certificate will not be granted on a year's work if a part of the year is spent in making one product and a part in making another product. For example, six months in a cheese factory and six months in a butter factory will not entitle a man to a certificate; but two seasons of six months each in any one line of work will be accepted as one full year, if the factory does not run for a longer time.

If the candidate is regularly employed in the manufacture of more than one kind of dairy product (for example, if he is making both butter and cheese), he may become eligible to work for a certificate of proficiency in each of these lines by complying with the requirements stated above.

Briefly, the requirements are as follows:

(1) Satisfactory completion of all the subjects given in the winter course in dairy industry;

(2) Satisfactory monthly reports of the work during at least one year;

(3) The sending each month of a sample of the candidate's product to the Department of Dairy Industry, to be judged;

(4) Satisfactory inspection by a representative of the Department of Dairy Industry.

On satisfactory completion of these requirements, a certificate will be granted. Under certain conditions a longer period than one year of work may be required.

III. COURSE IN POULTRY HUSBANDRY

The winter course in poultry husbandry is one of the means by which the College of Agriculture attempts to meet the needs of farmers. The course is intended also to assist in supplying the large and growing demand for trained poultrymen to take charge of poultry plants owned by others. Although it is manifestly impossible to give in twelve weeks full preparation for so exacting a business as

poultry keeping, this course will start the student in the right direction, enable him to avoid many mistakes, and offer him facts and principles of value gleaned from the lifelong experience, study, and observation of others. Persons expecting to take up poultry raising professionally should register in the course in poultry husbandry, not in the course in agriculture.

A meeting of all winter-course students in poultry husbandry with the staff of the Department will be held at five o'clock on the afternoon of registration day, November 6, in Poultry Building 375.

Special Expenses

Laboratory fee (to pay in part for material used)	\$12.00
General supplies	12.00
Excursions	15.00

Besides these expenses, about \$5 worth of books are usually bought and retained by the student. For cost of board and other expenses, see page 9. If the prospective student owns a set of drawing instruments, he should bring them and thereby save some of the expense for general supplies.

Required Subjects

1. **Poultry Husbandry.** Six hours a week. Open only to students in the professional course. Lectures, M T W Th S, 9, F, 8.15, and by appointment. Poultry Building 375. Examination, W, 10-12.30. Poultry Building 300. Professor RICE, Assistant Professors BENJAMIN and KENT, and Messrs. HEUSER, ANDREWS, and ———.

The lectures include discussions of subjects of special interest to poultrymen; opportunities in poultry husbandry; advantages and disadvantages of various types of poultry keeping; laying out and estimating the cost of poultry plants; poultry-farm management; history and characteristics of breeds; feeding for egg production and for flesh; feeding young chickens; incubating and brooding; principles of poultry-house construction; capons and caponizing; diseases; preparing eggs and poultry for market; marketing poultry products. Assignments for reading will be announced.

2. **Special Lectures.** Two hours a week. Open only to students in the professional course. T Th, 4.45-5.45, F, 9. Poultry Building 375 and Roberts Hall 131.

A course of lectures, not limited to the subject of poultry husbandry, given by members of the staff of many of the departments of the College of Agriculture and of the Cornell Medical College, and by men of experience outside of the University.

3. **Laboratory Practice.** Four hours a week. Open only to students in the professional course. T W Th F, 2-4; F, 10-12.30. Poultry Building 300. Assistant Professors BENJAMIN and KENT, and Messrs. HEUSER, ANDREWS, and ———.

This course includes designing and drawing plans for poultry buildings and colony houses; laying out poultry plants; selecting fowls for mating; killing, dressing, picking, and marketing poultry; testing, grading, and packing eggs; study of the formation and structure of the egg; anatomy of poultry; caponizing; study of poultry feeds; mixing rations; balancing rations; fitting fowls for exhibition; judging and scoring for fancy points and for utility; sanitation.

5. Flock Management. One hour a week. Open to students in the professional course or to those who have taken or are taking courses 11 and 12 (page 21). Practice periods and extra time arranged by appointment. Practice, reporting three times daily (including Sunday) for four weeks, 7.45-8.15, 12.30-1, 4-4.30. Poultry Plant. Messrs. ANDREWS and ———.

Practice in record keeping, and management of fowls for egg production and for fattening, including preparation for market. A series of observations and tests will be carried on by the class.

6. Poultry Mechanics and Appliances. One hour a week. Open only to students in the professional course. Practice, S, 10-12.30. Poultry Building 125. Messrs. ——— and ———.

Demonstration in the use of gasoline engines, power bone-cutters, a feed mill, power saw, feed mixer, and other equipment; making shipping coops, catching hooks, and other poultry appliances.

7. Incubator Practice. One hour a week. Open to students in the professional course or to those who have taken or are taking courses 11 and 12 (page 21). Practice periods and extra time arranged by appointment. Practice, reporting three times daily (including Sunday) for four weeks, 7.45-8.15, 12.30-1, 4-4.30. Poultry Building 1. Messrs. ——— and ———.

Practice in operating incubators; testing eggs, keeping records, and comparison of results. A series of interesting tests will be carried on by members of the class.

8. Brooder Practice. One hour a week. Open to students in the professional course or to those who have taken or are taking courses 11 and 12 (page 21). Practice periods and extra time arranged by appointment. Practice, reporting three times daily (including Sunday) for four weeks, 7.45-8.15, 12.30-1, 4-4.30. Poultry Plant. Messrs. ——— and ———.

Practice in the management of a brooder and a flock of chickens; the keeping of temperature, food, and growth records.

9. Poultry Accounts. One hour a week. Open only to students in the professional course. Th, 10-12.30. Poultry Building 300. Assistant Professor BENJAMIN, and Messrs. BOTSFORD and ———.

Comparison of various methods of poultry farm accounting, and practice in recording a set of transactions. A study will be made of the summarized results to determine the profit or loss in the various poultry farm operations.

Excursions. One or more excursions will be made to neighboring poultry farms, and one three-day trip will be taken, during the three days following the Christmas vacation, to visit successful New York State farms. These excursions are required, and every student must take them in order to receive full credit for the course. The total expense of these excursions is about \$15.

Certificate of Proficiency

On the completion of the required course, eighteen hours, a student in poultry husbandry may become an applicant for a certificate signed by the Dean of the College and the Professor of Poultry Husbandry, under the following terms and conditions:

A person who has completed one full term in attendance in the course in poultry husbandry and has satisfactorily passed all the examinations required, may become a candidate for a certificate in poultry husbandry.

A candidate must spend one full year in successful work at an approved poultry plant. He must present regularly, on blank forms furnished for the purpose, such information in regard to the work as may be required, and he must hold his plant in readiness for inspection at any time.

On satisfactory completion of these requirements a certificate will be granted. Under certain conditions a longer period than one year of practical work may be required. No student who has failed to complete the full twelve weeks of attendance in the winter course in poultry husbandry is eligible for a certificate.

IV. COURSE IN FRUIT GROWING

The course in fruit growing is intended to meet the requirements of persons engaged in commercial fruit growing. Lectures will cover the relation of the fundamental sciences to the various orchard operations and a digest of experimental work bearing on fruit growing. Special emphasis will be placed on the interpretation of experimental work with reference to New York conditions. In the laboratory exercises each student will be given opportunity to perform all the orchard operations which the season will permit. The course should be of value to men who are preparing to become managers or foremen of fruit farms. Unless the student has had considerable previous experience, the course will not necessarily equip him for such a position.

Required Subjects

All students in this course who have not already satisfactorily completed the winter course in agriculture are required to take the subjects that follow. Those who have completed the winter course in agriculture may elect their subjects, but should consult with their faculty adviser before making the election.

1. **Commercial Fruit Growing.** Six hours a week. Lectures, M T W Th, 9. Roberts Hall 292. Practice, M W, 10-1. Roberts Hall 202. Professor REES and Assistant Professor HEINICKE.

This course includes a study of methods of propagation; principles of budding and grafting; soils, varieties, and planting plans for the orchard; cultivation; cover crops, fertilization, and pruning, as practiced in orchard management; picking, grading, packing, storing, and marketing of fruit. The course considers apple, pear, quince, cherry, plum, peach, grape, raspberry, blackberry, currant, gooseberry, and strawberry. Laboratory fee, \$2.

1. **Plant Diseases.** See page 21.

1. **Injurious Insects.** See page 18.

1. **Agricultural Chemistry.** See page 17.

200. **Soils.** See page 22.

Certificate of Proficiency

When the student has completed the course outlined above, he may become an applicant for a certificate of proficiency in orchard practice. Before this certificate is granted, however, the candidate must have spent a year in work on a fruit farm that has been approved by the Department. The applicant must present reports of his experiences on the farm and a statement from the proprietor or manager that he has done a satisfactory year's work and has had experience in all the phases of orchard work, particularly pruning, spraying, harvesting, and packing.

V. COURSE IN HOME ECONOMICS

The main object of the winter course in home economics is to provide scientific training in subjects pertaining to the home. Special attention is given to household sanitation, selection and preparation of foods, problems of nutrition, house construction and decoration, household management, and clothing and sewing. The instruction is of interest to both men and women in so far as both are concerned with the problems of the right maintenance of the home. The aims of the course are to increase efficiency in household administration; to give the breadth of view and the interest that come with intelligent labor; to teach not only methods of doing work but the underlying principles that determine right ways of doing it.

The equipment for instruction in this course is the same as that for the longer courses in home economics. Well-equipped laboratories are provided for practical instruction in food and sewing. Library privileges are afforded.

For several years past, some of the students in the course have been women who found it possible to accompany another member of the family attending one of the other winter courses. Some have combined with the course in home economics instruction in another of the winter courses.

In order to keep a proper social balance in a community, farm girls should be given social and educational opportunities equal to those given to boys. Household problems, as well as the problems of the farm, rest on science; hence there is need for a course of training to prepare women for their tasks in life.

The Courses

1. **Foods and Nutrition.** Six hours a week. Lectures, M W F, 12. Home Economics 100. Practice, T Th S, 9-12. Total laboratory registration limited to twenty students. Those who are majoring in home economics will be given the preference. Miss SMITH.

The course includes the study of food composition, food values, methods of selection, preparation, and preservation of food materials, principles of nutrition, dietaries, and the care and feeding of children. Laboratory work will be given for application of the principles studied, and will include practice in the preparation of food and in serving. Laboratory fee, \$15. Those electing course 1 must register for course 3, except by special permission.

2. **Household Sanitation.** Two hours a week. Lectures, W F, 8. Home Economics Building 245. Miss KELLEY.

The lectures in this course include a discussion of the sanitary condition of the house and the site; conditions for health and for care of the sick; the relation of bacteriology to the household.

3. **Household Management.** Two hours a week. Lectures, T Th, 12. Home Economics Building 100. Professor VAN RENSSELAER, Mrs. BRADFORD, and Miss KELLEY.

This course includes a study of the family income, cost of living, household accounts, problems of domestic service, methods of housekeeping, equipment, and marketing. During the term each student will be required to live for two weeks at the Home Economics Lodge. The purpose of this is to make a study of the problem of managing a small household. Those who elect course 3 must register for course 1, except by special permission. Laboratory fee, \$12.

4. **Clothing.** Four hours a week. Lecture, T, 8. Practice, M W, 9-12, and F, 10-12. Home Economics Building 300. Registration limited to twenty students. Miss GLEASON and Miss HILLHOUSE.

This course includes the fundamental principles of dressmaking, cutting, fitting, and making an undergarment, a semi-tailored waist, and a dress; remodeling of garments. One practice period each week will be given to millinery work.

‡ The lectures include the study of textiles and design in relation to the garments made. Students furnish all material subject to the approval of the instructor. Estimated expense, \$10 to \$15. Laboratory fee, \$3.

5. **Art in the Home.** Two hours a week. Lecture, Th, 8. Home Economics Building 245. Practice, F, 2-5. Home Economics Building 415. Assistant Professors YOUNG and WARNER.

A course that considers the development of artistic home surroundings; the building site, the garden, accessory buildings; the furnishing and decoration of the house; the selection of books and pictures. Laboratory fee, \$1.

6. **Supervised Study.** Two hours a week. Lecture, T, 2. Home Economics Building 100. Conference period for individual help and suggestion by arrangement. Assistant Professor HAZARD.

Designed to help students with other courses by teaching them methods of collecting material for recitations and written work, and in organizing notes taken in lectures and laboratories.

7. **Women in the Community.** Two hours a week. T Th, 3. Home Economics Building 100. Assistant Professor HAZARD.

A course designed to help women as voting citizens in their communities to understand and promote movements to improve the general welfare. A study of social and industrial conditions combined with a study of those political organizations and groups in state and nation that are directly concerned with legislation and administration to improve living conditions.

Elective Subjects

In addition to the courses outlined in home economics, opportunities are open to women to receive instruction in dairying, poultry husbandry, gardening, and extension work. Practical instruction may thus be obtained relating to milk and its products; feeding, care, and marketing of eggs and fowls; diseases of fowls; commercial fruit growing, vegetable culture, and flower growing; public speaking.

VI. COURSE IN FLOWER GROWING

New York is distinctly a flower-growing State. The financial interests of the industry are greater in this State than in any other State in the Union. There is coming to be a keener competition among flower growers, and the most progressive young men realize that they must equip themselves with all the information possible if they are to make a success of the business. Two courses are offered for those especially interested in commercial floriculture. These, with other required subjects, should give the student a broad knowledge of the subject and better equip him for his life work.

Interest in flower growing, however, is not confined to men engaged in the commercial industry. There is an increasing demand by amateurs for information regarding the culture of plants to be used about the home or the school grounds. Courses have been arranged

with the object in view of meeting this demand. These courses are outlined on page 20. Those following are planned especially for persons who intend to engage in commercial floriculture. Course 2 is equally well suited for those interested in vegetable forcing under glass.

Required Subjects

1. **Commercial Floriculture and Greenhouse Practice.** Six hours a week. Lectures, M T W Th, 2. Floriculture Building. Practice, F, 10-12.30. Greenhouses. Professor WHITE and Mr. THAYER.

A study of the methods of growing standard florist crops, such as roses, carnations, violets, sweet peas, orchids, and plants for bedding. So far as possible, laboratory practice in growing these crops will be given. The course is designed to familiarize the student with the ordinary work of the greenhouse and the garden. Laboratory fee, \$3.

2. **Commercial Greenhouse and Conservatory Construction and Heating.** Three hours a week. Lecture, F, 2. Floriculture Building. Practice, T Th, 10.30-1. Floriculture Building. Mr. THAYER.

This course considers details of the construction and heating of glasshouses for growing plants and vegetables; choice of location; water, soil, and light; glazing; and all the conditions found in well-appointed modern ranges. The construction and care of hotbeds and coldframes are also studied. Laboratory work consists of drawings of construction details, the making of plans and specifications, preparation of estimates, and any practical work in construction that may be available. Laboratory fee, \$1.50.

Elective Subjects

1. **Agricultural Chemistry.** See page 17.

200. **Soils.** See page 22.

1. **Plant Breeding.** See page 21.

1. **Plant Diseases.** See page 21.

1. **Injurious Insects.** See page 18.

1. **Extension Work.** See page 19.

6. **Rural Improvement.** See page 20.

Certificate of Proficiency

Certificates are available to students who satisfactorily complete the required courses as outlined, and who subsequently spend one full season in floricultural work. A statement of the work for the season, approved by the proprietor of the establishment in which the student has been employed and satisfactory to the Professor of Floriculture, is required.

VII. COURSE IN VEGETABLE GARDENING

With the rapid growth of cities and with vegetable food occupying a place of constantly increasing importance in the dietary, the demand for vegetables has undergone a great development within the past few years. An ever-increasing number of farmers are looking to the growing of vegetables as a source of all or part of their income, both on highly specialized vegetable farms and in connection with other less intensive types of agriculture.

In view of the wide and growing interest in the subject of vegetable culture, the Division of Vegetable Gardening has arranged a series of courses to meet the needs of those who wish to specialize to a greater or less extent in this field. Particular pains are taken to so shape the work that it will be of service to men who have already gained field experience. The principles advanced are illustrated by reference to the practices of widely diverse growing centers of the United States, and the discussions are becoming more interesting from year to year as the proportion of actual vegetable growers in the class increases. To students who are in a position to consider spending two winter-course periods at the University, it is recommended that the first be devoted to general agriculture, thus establishing a sound basis for the more highly specialized vegetable work of the second year.

It is suggested that the following courses be combined with the work in vegetable gardening: Agricultural Chemistry 1, Soils 200, Entomology 1, Plant Breeding 1, Floriculture 4.

Required Subjects

1. **Principles of Vegetable Gardening.** Four hours a week. Lectures, M T F, 2. Poultry Building 325. Laboratory, T, 10-12.30. Poultry Building 350 and vegetable greenhouses. Assistant Professor SCHNECK.

A study of the principles underlying successful vegetable production; choice of location, equipment, management of soil and crops, seed and seed growing, plant growing, pests and their control, and marketing. Each crop is considered individually as regards importance and adaptation, fertilizers, culture, special requirements, varieties, enemies, harvesting, and marketing. The laboratory work includes planning, seed and seedling studies, seed testing, and descriptive work. Plants are grown under glass as for outdoor setting. Laboratory fee, \$1.50.

2. **Vegetable Forcing.** Three hours a week. Open only to those who are taking course 1. Lectures, M F, 4. Poultry Building 325. Laboratory, S, 10.30-1. Poultry Building 350 and vegetable greenhouses. Assistant Professor SCHNECK.

Vegetable production under glass; management of greenhouses; individual crops and their requirements. In connection with the laboratory, each student will be assigned space in the greenhouses for the growing of crops. The class will participate in a one-day excursion to Rochester in December to visit vegetable greenhouses; cost, about \$6. Laboratory fee, \$1.50.

VIII. COURSE IN GAME BREEDING

This twelve-weeks course beginning February 17 is intended to supply the growing demand for the training of practical gamekeepers and wardens and those who wish to take up the propagation and care of wild fowl as a commercial pursuit. Although it is manifestly impossible to give in twelve weeks full preparation for such work, this course will start the student in the right direction, enable him to avoid many mistakes, and offer him facts and principles of value gleaned from the lifelong experience, study, and observation of others. In this course the work in poultry husbandry is used to a considerable extent as a basis, not only because of its intrinsic value but also because in this closely related field both practical and educational methods are already well established.

This course in game breeding is administered like the other short courses given in the College of Agriculture earlier in the year.

Methods of instruction. The required work listed below includes lectures at 9 o'clock five days a week, and many others will be announced for 10 o'clock. The special public lectures, which short course students are required to attend, will usually come at 4.45, though some will be evening lectures. There will be laboratory work from 2 to 4 on five days a week and at other hours by appointment. The practice will include such topics as game birds and waterfowl, feeds and feeding, varieties and breeding, parasites and predatory enemies, need of shelter and covering, rearing pens and cages, capturing and shipping, crops for cover and for food, game farm plans, water supply, and accounts. One or more trips will be made for inspection of a few well-managed game farms and estates.

Description of the Courses

1. **Poultry and Game Farming.** Fourteen hours a week. Lectures, daily except Saturday, 9, and 10 when announced. Place to be announced. Professors RICE and NEEDHAM, Assistant Professors ALLEN, BENJAMIN, and EMBODY, and others. Practice, daily except Saturday, 2-4. Places to be announced. Messrs. QUARLES, KRUM, and others.

2. **Practice in Flock Management.** One hour a week. Practice periods and extra time arranged by appointment. Practice, three times daily (including Sunday) for four weeks, 7.45-8.15, 12.30-1, 4.30-5. Poultry Plant. Messrs. ANDREWS and ———.

Practice in record keeping, and management of fowls for egg production and for fattening, including preparation for market. A series of observations and tests will be carried on by the class.

3. **Practice in Incubation.** One hour a week. Practice periods and extra time arranged by appointment. Practice, three times daily (including Sunday) for four weeks, 7.45-8.15, 12.30-1, 4.30-5. Poultry Building 1. Messrs. ——— and ———.

Practice in operating incubators; testing eggs, keeping records, and comparisons of results. A series of interesting tests will be carried on by members of the class.

4. **Practice in Brooding and Rearing.** One hour a week. Practice periods and extra time arranged by appointment. Practice, three times daily (including Sunday) for four weeks, 7.45-8.15, 12.30-1, 4.30-5. Poultry Plant. Messrs. ——— and ———.

Practice in the management of a brooder and a flock of chickens; the keeping of temperature, food, and growth records.

5. **Mechanical Appliances for Poultry and Game Farming.** One hour a week. Practice by appointment, two and one-half hours a week. Poultry Building 125. Messrs. ——— and ———.

Demonstration in the use of gasoline engines, power bone-cutters, a feed mill, a power saw, a feed mixer, and other equipment; making coops, catching hooks, traps, and other appliances.

Practice on the Game Farm. Beginning May 12 a limited number of students will be given practical work on the state game farm at Cornell University, and this will continue to August 31. At the conclusion of the course on May 9 those who wish to do so may obtain employment on any approved game farm or game preserve and gain their practical experience there instead of on the Cornell farm.

Special Public Lectures on Wild Life Conservation and Game Farming

Due to the generosity of Frederic C. Walcott, of New York City, who contributed the sum of \$500 to defray the expenses of the project, and to the hearty cooperative spirit shown by the lecturers named below, the College was enabled to offer in 1917-18 the following public lectures on various problems related to wild life conservation:

Clinton G. Abbott. Still life photography of birds.

Ernest Harold Baynes. Lecturing on birds. Bird club organization.

John B. Burnham. Practical deer farming.

Warwick S. Carpenter. The organization of the forces of a State for wild life conservation.

Lee S. Crandall. The care and breeding of aviary birds, with special reference to pheasants and waterfowl.

- Dr. A. K. Fisher. The raptorial birds.
- Edward Howe Forbush. The economic value of birds.
The rat and the cat problem.
- Louis Agassiz Fuertes. The painting of birds.
- Herbert K. Job. Moving picture photography of wild life.
The breeding of the diving ducks.
- Llewellyn Legge. The part played by the warden force in protecting and
increasing the wild life of a State.
- Norman McClintock. The telephoto lens in moving picture photography.
- W. L. McAtee. Plant life that is attractive to wild ducks.
- Donald MacVicar. Ruffed grouse breeding.
- T. Gilbert Pearson. The national movement for wild life conservation, with
special reference to sanctuary work and implanting a
knowledge of bird life in the juvenile mind.
- Emmet Augustus Quarles. Wild life conservation and its relation to game
breeding.
The pheasants.
First steps in pheasant breeding.
Miscellaneous problems of pheasant breeding—
vermin, disease, and the like.
Establishing and holding pheasants on preserves.
State game farms, and pheasants in their relation
to agriculture and the food supply.
Quail breeding.
Mallard duck breeding.
Wood duck breeding.
- Harry T. Rogers. The preparation of pheasant rations and methods of
combating vermin.
The care and rationing of young pheasants.
- Bradford A. Scudder. Professional conservation work on estates.
- Clyde B. Terrell. The sowing and planting of foods that attract wild ducks.
- John W. Titcomb. Modern methods in stocking waters with food and game
fishes.

Correspondence concerning the publication of Cornell University should be addressed to the Secretary of Cornell University, Ithaca, New York.

This publication is issued at Ithaca, New York, monthly from July to November inclusive, and semi-monthly from December to June inclusive.

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The Annual Register (for the year 1917-18, published January 1, 1918), price 50 cents.

Book of Views, price 25 cents.

Directory of Faculty and Students, Second Term, 1917-18, price 10 cents, and the following informational publications, any one of which will be sent gratis and post-free on request. The date of the last edition of each is given after the title.

General Circular of Information for Prospective Students, December 15, 1917.

Announcement of the College of Arts and Sciences, April 15, 1918.

Announcement of Sibley College of Mechanical Engineering and the Mechanic Arts, February 1, 1918.

Announcement of the College of Civil Engineering, April 1, 1918.

Announcement of the College of Law, May 1, 1918.

Announcement of the College of Architecture, July 1, 1917.

Announcement of the New York State College of Agriculture, June 1, 1918.

Announcement of the Winter Courses in the College of Agriculture, June 15, 1918.

Announcement of the Summer Term in Agriculture, March 15, 1918.

Announcement of Instruction in Wild Life Conservation and Game Breeding, January 15, 1918.

Announcement of the New York State Veterinary College, May 15, 1918.

Announcement of the Graduate School, February 15, 1917.

Announcement of the Summer Session, March 1, 1918.

Annual Report of the President, September 1, 1917.

Pamphlet on prizes, August 1, 1917.

Samples of entrance and scholarship examination papers, December 1, 1917.

Announcement of the Medical College may be procured by writing to the Cornell University Medical College, Ithaca, New York.