

OFFICIAL PUBLICATIONS OF CORNELL UNIVERSITY

VOLUME III

NUMBER 15

NEW YORK STATE COLLEGE OF AGRICULTURE ANNOUNCEMENT OF WINTER COURSES 1912-13

SEPTEMBER 1, 1912
PUBLISHED BY CORNELL UNIVERSITY
ITHACA, NEW YORK

CALENDAR, 1912-13

Nov. 19,	Tuesday,	Registration in all Winter Courses.
Nov. 20,	Wednesday,	Instruction begins in Winter Courses.
Nov. 28,	Thursday,	Thanksgiving Day. Holiday.
Dec. 24-26,	Tuesday-Thursday,	Christmas Recess.
Feb. 10-15,	(week of Lincoln's birthday), Sixth Annual Farmers' Week.	
Feb. 14,	Friday,	Instruction ends in all Winter Courses.
Mar. 6-12,	Special one-week course for managers of factories and creameries.	

NEW YORK STATE COLLEGE OF AGRICULTURE

FACULTY

- Jacob Gould Schurman, A.M., D.Sc., LL.D., President of the University.
Liberty Hyde Bailey, M.S., LL.D., Director of the College of Agriculture and Dean of the Faculty.
Isaac Phillips Roberts, M.Agr., Professor of Agriculture, Emeritus.
John Henry Comstock, B.S., Professor of Entomology and General Invertebrate Zoology.
Henry Hiram Wing, M.S. in Agr., Professor of Animal Husbandry.
John Craig, M.S. in Agr., Professor of Horticulture.
Thomas Lyttleton Lyon, Ph.D., Professor of Soil Technology.
Herbert John Webber, M.A., Ph.D., Professor of Plant Breeding.
John Lemuel Stone, B.Agr., Professor of Farm Practice and Farm Crops.
James Edward Rice, B.S.A., Professor of Poultry Husbandry.
George Walter Cavanaugh, B.S., Professor of Chemistry in its Relations with Agriculture.
George Nieman Lauman, B.S.A., Professor of Rural Economy.
Herbert Hice Whetzel, A.B., M.A., Professor of Plant Pathology.
Elmer O. Fippin, B.S.A., Professor of Soil Technology.
George Frederick Warren, Ph.D., Professor of Farm Management.
William Alonzo Stocking, jr., M.S.A., Professor of Dairy Industry.
Charles Scoon Wilson, A.B., M.S.A., Professor of Pomology.
Charles Henry Tuck, A.B., Professor of Extension Teaching.
Albert Russell Mann, B.S.A., Secretary to the College of Agriculture, Registrar, and Professor of Agricultural Editing.
Wilford Murray Wilson, M.D., Professor of Meteorology.
Walter Mulford, B.S.A., F.E., Professor of Forestry.
James George Needham, Ph.D., Professor of General Biology, Limnology, and Nature Study.
Bryant Fleming, B.S.A., Professor of Landscape Art.
Harry Houser Love, Ph.D., Professor of Plant-Breeding Investigations.
Arthur Witter Gilbert, Ph.D., Professor of Plant Breeding.
Donald Reddick, Ph.D., Professor of Plant Pathology.
Edward Gerrard Montgomery, M.A., Professor of Farm Crops.
———, Professor of Rural Education.
Flora Rose, B.S., M.A., Professor of Home Economics.
Martha Van Rensselaer, A.B., Professor of Home Economics.
William Albert Riley, Ph.D., Professor of Insect Morphology and Parasitology.
James Adrian Bizzell, Ph.D., Professor of Soil Technology.
Glenn Washington Herrick, B.S.A., Professor of Economic Entomology.
Howard Wait Riley, M.E., Professor of Farm Mechanics.
Harold Ellis Ross, M.S.A., Professor of Dairy Industry.
Hugh Charles Troy, B.S.A., Professor of Dairy Industry.
———, Professor of Pomology.
Samuel Newman Spring, B.A., M.F., Professor of Forestry.
Merritt Wesley Harper, M.S., Assistant Professor of Animal Husbandry.
William Charles Baker, B.S.A., Assistant Professor of Drawing.
Clarence Arthur Rogers, M.S.A., Assistant Professor of Poultry Husbandry.

COLLEGE OF AGRICULTURE

- Cyrus Richard Crosby, A.B., Assistant Professor of Entomological Investigations.
Elmer Seth Savage, M.S.A., Ph.D., Assistant Professor of Animal Husbandry.
Lewis Knudson, B.S.A., Ph.D., Assistant Professor of Plant Physiology.
Kenneth Carter Livermore, B.S. in Agr., Assistant Professor of Farm Management.
Alvin Casey Beal, Ph.D., Assistant Professor of Floriculture.
Mortier Franklin Barrus, A.B., Ph.D., Assistant Professor of Plant Pathology.
James Chester Bradley, Ph.D., Assistant Professor of Systematic Entomology.
E. Gorton Davis, B.S., Assistant Professor of Landscape Art.
Edward Russell Minns, B.S. in Agr., Assistant Professor in Extension Work in Farm Crops.
John Bentley, jr., B.S., M.F., Assistant Professor of Forestry.
———, Assistant Professor of Forestry.
Lewis Josephus Cross, B.A., Ph.D., Assistant Professor of Agricultural Chemistry.
Robert Matheson, M.S. in Agr., Ph.D., Assistant Professor of Biology.
George C. Embury, Ph.D., Assistant Professor of Aquiculture.
Clyde Hadley Myers, M.S., Ph.D., Assistant Professor of Plant Breeding.
Harry O. Buckman, M.S.A., Ph.D., Assistant Professor of Soil Technology.
Mrs. Helen Binkerd Young, B.Arch., Assistant Professor of Home Economics.
Alice Gertrude McCloskey, A.B., Associate in Rural Education.
Charles Cleveland Hedges, A.B., Ph.D., Instructor in Agricultural Chemistry.
George Walter Tailby, jr., B.S.A., Instructor in Animal Husbandry and Superintendent of Live Stock.
Edward Sewall Guthrie, M.S. in Agr., Instructor and Investigator in Dairy Industry.
Paul Work, B.S., A.B., Instructor and Investigator in Olericulture.
Ralph Hicks Wheeler, Instructor in Extension Teaching.
Roy David Anthony, B.S. in Agr., Instructor in Pomology.
Lee Briggs Cook, M.S. in Agr., Instructor in Dairy Industry.
Harry M. Fitzpatrick, A.B., Instructor in Plant Pathology.
Arthur Lee Thompson, M.S. in Agr., Instructor and Investigator in Farm Management.
Byron Burnett Robb, B.S. in Agr., Instructor in Farm Mechanics.
Ray Eugene Deuel, B.S. in Agr., Instructor in Animal Husbandry.
Earl Whitney Benjamin, M.S. in Agr., Instructor in Poultry Husbandry.
Harvey Lyon Ayres, Extension Instructor in Dairy Industry.
———, Instructor in Plant Physiology.
Charles Truman Gregory, B.S. in Agr., Instructor in Plant Pathology.
Walter Warner Fisk, M.S. in Agr., Instructor in Dairy Industry.
Thomas Joseph McInerney, B.S. in Agr., Instructor in Dairy Industry.
Horace Mann Pickerill, B.S. in Agr., Instructor in Dairy Industry.
Edward Mowbray Tuttle, B.S.A., Instructor in Rural Education.
Rhett Youmans Winters, M.S., Ph.D., Instructor in Plant Breeding.
Royal Gilkey, B.S.A., Instructor in Extension Teaching, and Supervisor of Mailing Division and Reading Courses.
Juan Estevan Reyna, E.E., Instructor in Drawing.
Martin John Prucha, Ph.B., M.S., Instructor in Plant Physiology.
Charles Piper Smith, B.S., A.M., Instructor in Plant Pathology.
William Howard Rankin, A.B., Instructor in Plant Pathology.

Carl Edwin Ladd, B.S. in Agr., Instructor in Farm Management, in cooperation with the United States Department of Agriculture.
Clara Browning, B.S., Instructor in Home Economics.
Asa Carlton King, B.S.A., Instructor in Extension Teaching.
Halsey B. Knapp, B.S., Instructor in Pomology.
Anna Clegg Stryke, A.B., Artist and Instructor in Entomology.

Other Officers of Instruction and Administration

Anna Botsford Comstock, B.S., Lecturer in Nature Study.
Mrs. Ida Schwedler Harrington, Extension Lecturer in Home Economics.
John Walton Spencer, Agent in Extension Work.
G. Clayton Dutton, Assistant in Cheese Making.
Charles Herbert Van Auken, Assistant in Animal Husbandry.
Ada Eljiva Georgia, Assistant in Nature Study.
Emmons William Leland, B.S.A., Assistant in Soil Technology.
John Thomas Lloyd, A.B., Assistant in Limnology.
Walter Stanley Lyon, Assistant in Poultry Husbandry.
Lewis Merwin Hurd, Assistant in Poultry Husbandry.
Robert Palmer Trask, Assistant in Poultry Husbandry.
Frank Elmore Rice, A.B., Assistant in Agricultural Chemistry.
David Ely Fink, B.S.A., Assistant in Economic Entomology.
Carl Ilg, Curator in Entomology.
Jacobus Christian Faure, B.S., Assistant in Entomology.
Otis F. Curtis, M.S., Assistant in The Farm Course.
David A. Crawford, M.S., Assistant in Biology.
Mary A. Lyon, B.A., Assistant in Biology.
Blanche E. Stafford, M.S., Assistant in Biology.
Willis Robert Fischer, Laboratory Assistant in Plant Pathology.
Irvin Torrance Francis, Assistant in Plant Pathology.
Charles Chupp, Assistant in Plant Pathology.
Clyde Evert Leighty, A.B., Ph.D., Assistant in Plant Breeding.
Tryggve Emil Schreiner, Assistant in Poultry Husbandry.
Eugene Davis Montillon, Assistant in Landscape Art.
William J. Robbins, A.B., Assistant in Plant Physiology.
James Kenneth Wilson, B.S., Assistant in Plant Physiology.
Ralph Simpson Nanz, B.S., Assistant in Plant Physiology.
Delmont Westervelt, Mechanic to Department of Farm Mechanics.
Lucy Harriet Ashton, Assistant Registrar.
Louis H. Moulton, Superintendent of the Farms.
Thomas Wolcott, Foreman of Pomology Grounds.
George Walter Tailby, Foreman of the Farms.
Charles Edward Hunn, Foreman of Grounds.
Arthur Bradford Cornelius, Assistant Gardener.
Walter Gernet Krum, Superintendent of Poultry Plant.
Andrew Jackson Lamoureux, Librarian.
Herbert W. Teeter, Superintendent of Plant-Breeding Garden.
Edwin S. DeLany, Clerk.
Laura McLallen Van Auken, Clerk in Department of Dairy Industry.
Gilbert Arthur Renney, Superintendent of Mailing Rooms.

THE WINTER COURSES

The WINTER COURSES are five in number.

1. General Agriculture (first given in 1893).
2. Dairy Industry (first given in 1894).
3. Poultry Husbandry (first given in 1905).
4. Horticulture (first given in 1906).
5. Home Economics (first given in 1906).

All of these courses will begin November 19, 1912, and will close February 14, 1913. Instruction will begin at 8 a. m., November 20. No work will be given on November 28, and December 24, 25, and 26.

Correspondence concerning these courses and other instruction in the College of Agriculture may be addressed to the Secretary; or, when pertaining specially to one of the Winter Courses, to the person in charge of the course, as announced below.

Two-year Courses

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

Expenses

Tuition is free to residents of New York State. Nonresidents pay a tuition fee of \$25. 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 five to fifteen minutes walk of the campus, for about \$4 to \$4.50 a week. Comfortable rooms near the place of boarding may be had at \$1.50 to \$2 a week for each person when two persons occupy the room, and at \$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 purchase 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 the students in the Winter Courses of past years, as stated by them, have been from \$85 to \$125, the average now being probably about \$95. By careful management, this may be reduced somewhat, but it is best not to stint too much, as too great economy is likely to lessen the value of the course.

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 thus to be handicapped during the limited time spent at the University. All the energies should be concentrated on the work of the course.

All the fees mentioned under each course must be paid to the Treasurer of the University (Morrill Hall) within five days after registration.

Students are liable for breakage due to carelessness on their part.

Infirmary fee. Every registered student 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, or, in the case of those contagious diseases which under present rules cannot be there cared for, to the Ithaca City Hospital, if receivable under its rules, 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 foods, and special nurses. If a sick student who has not received two weeks service in the year is refused admittance to either the Infirmary or the City Hospital by reason of lack of accommodation, he is entitled to a refund of the fee.

Scholarships for Winter Course Students. At its 31st 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 in 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 to the Master of the Pomona Grange in their home counties, or to the Deputy in counties that have no Pomona.

Mr. H. L. Beatty has offered for the year 1912-13, a similar scholarship of a value of \$75, "open to any farmer who resides in Bainbridge, N. Y., or to any boy over sixteen who shall have attended the Bainbridge High School for one full term".

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 are sometimes seriously handicapped in their work by being deficient in arithmetic and in English. Those who are planning to take a Winter Course are advised to review these subjects before coming to Ithaca. 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 statement from the teacher of the school last attended.

All the courses are open to both men and women of at least eighteen years of age. (Attention is called to the fact that the age requirement is eighteen years, instead of seventeen years as formerly.) Not a few women have taken the work with results satisfactory to themselves and to their instructors. The average age of the students in the Course in General Agriculture has been about twenty-one years. The dairy students have on the average been somewhat older. There is no limit to the age above eighteen; some of the best Winter Course students have been mature men, owners of farms, or managers of dairy concerns and of poultry plants.

This circular contains application blanks for admission to the Winter Courses. These should be filled out and forwarded 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 any one of the courses, and applications may be withdrawn at any time.

On account of the limited accommodations in the dairy course and in the poultry course, all candidates for admission must, on acceptance of their applications, deposit an advance fee of five dollars.

This deposit is returnable on request at any time before November 1. In these courses, applicants for admission who are residents of New York State are given precedence.

Applicants for admission to the Winter Courses should, by way of preparation, read carefully some of the best books, bulletins, etc., on the subject to which their attention will be chiefly directed while at Cornell. The Supervisors of the Reading Courses will, on request, suggest appropriate books for this reading.

Women who desire to pursue one of the Winter Courses should correspond with Miss Martha Van Rensselaer, Ithaca, N. Y., in regard to rooms and accommodations.

Arrival at Ithaca. Students who desire to secure rooming and boarding places are invited to come directly to the College of Agriculture on their arrival in Ithaca. Instructors will be on duty at the headquarters of the several Winter Courses to assist all applicants in finding comfortable accommodations. It is desirable that all such arrangements should be completed before registration day.

Registration. On Tuesday, November 19, beginning at 8 a. m., all students must report for registration at the office of the Secretary to the College of Agriculture, Main Building, Room 122. After registering here and receiving study cards, the students will go at once to the headquarters of their particular Winter Course, as follows: Course in General Agriculture, Main Building, Students' Room (basement); Course in Dairy Industry, Dairy Building, Room 102 (first floor); Course in Poultry Husbandry, Poultry Building, Room 325 (third floor); Course in Horticulture, Main Building, Room 202 (second floor); Course in Home Economics, Home Economics Building.

After the student has filled out and returned his study card showing the subject 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 and with the approval of the Secretary.

Methods of Instruction

Instruction in the Winter Courses is given by lectures, by such practical work in the various agricultural operations as can be conducted at this time of the year (laboratory practice), and sometimes by trips or excursions to points of special interest.

The lectures are given in large part by the regular professors and instructors in the College of Agriculture. These lectures are plain and practical, in the style of farmers' institute talks. As far as possible, collected material is used to illustrate the subjects. When this is impossible, lantern views are often used. A free discussion by the students of the subject under consideration is encouraged. Further opportunity for these general discussions is afforded in the meetings of the Winter Course clubs.

Other lectures are given to the students by successful practical men, in large part from New York State, who are directly engaged in agriculture as a business. They present to the students the results of their experience and observation.

There may also be special lectures by various members of the University Faculty, not members of the Faculty of 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 and Poultry Husbandry, the instruction is in large part practical, and the students have an opportunity of becoming familiar with all of the essential operations in these enterprises. In the Courses in General Agriculture and Horticulture, there is necessarily a smaller amount of practical work; advantage, however, is taken of the greenhouses, barns, and laboratories to demonstrate to the students some of the operations which would normally 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. They are also conducted in other courses whenever practicable.

"Hour" in the following schedules means one lecture of one hour each week for twelve weeks, or one period (of two hours and one half) of laboratory or practice a week for twelve weeks.

Certificates

Certificates are granted to those who, in any one of the Winter Courses, complete at least fifteen (in poultry course eighteen) hours,

including all the required work, and who subsequently complete one year of satisfactory practical work on a farm, or in a creamery, poultry establishment, or other agricultural enterprise.

The City and the University

Ithaca is situated in Tompkins County at the head of Cayuga Lake. It is a city of about fifteen thousand inhabitants. It is reached by the Lehigh Valley Railroad and by the Delaware, Lackawanna, and Western Railroad, also by steamer on the lake in summer. The University stands on a plateau about four hundred feet above the lake. The officers of instruction and administration of Cornell University number 675. The campus and grounds cover 1095 acres.

The main buildings of the University are over thirty 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 amusement. Every Winter Course student is urged to attend these meetings.

The Winter Course students are welcomed at the meetings of the Agricultural Association, the Horticulturists' Lazy Club, the Poultry Association, 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 a fraternal feeling among the students. On the first Thursday evening of each month the Director of the College meets the agricultural faculty and students in the "Agricultural Assembly". At this meet-

ing the Director gives a talk on matters of special importance to those interested in agriculture and country life, or a reading, which is followed by singing and social entertainment.

Each 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 Dairy Industry.

The Farmers' Week will be held this year in the week of Lincoln's birthday, Feb. 10 to 15, inclusive. At this convention, discussions are held on all the leading agricultural topics. All farmers of the State are invited to attend.

The Agricultural Experimenters' League meets at the University during Farmers' Week. It is designed to develop the spirit of investigation and to promote a closer friendship among the farmers of the State. All students in the Winter Courses are eligible to membership in this League, and should attend the meeting. During this week there is held the annual meeting of the Students' Association of the New York State College of Agriculture, an organization of present and former students for social purposes and to promote the interests of the College and of country-life affairs at large. Winter Course students have equal privileges with others in this Association.

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 and a carefully selected biblical library, also comfortable reading and recreation rooms. Courses in Bible study are conducted throughout the year and special courses are provided for the students in the Winter Courses.

There is in addition to the Young Men's Christian Association, a flourishing Young Women's 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.

DESCRIPTION OF THE WINTER COURSES

I. GENERAL AGRICULTURE

Most of the young men who come for a Winter Course expect to engage in general farming or hope to secure positions as superintendents of farms on which diversified agriculture is practised. It is for these that the Course in General Agriculture is especially designed. The other courses meet the needs of those who plan to specialize.

On the other hand, the Course in General Agriculture can be taken with advantage also by those who plan to do special work in agriculture later. It thus gives an opportunity of 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 those who desire to pursue one of the special Winter Courses should first take the Course in General Agriculture and postpone to the following winter their special work.

Students register at 8.30 a. m., November 19, in the students' room in the basement of the Main Building, after registering with the Secretary (page 9).

Special Expenses

General fee	\$5.00
Work suit, about	1.50
Those who elect plant diseases add.....	2.50
Those who elect farm dairying, add laboratory deposit (part returnable)	5.00
Those who elect farm mechanics add.....	2.00
Those who elect plant breeding add.....	.50

For laboratory and other fees in the different courses, see the descriptions of those courses on the following pages.

Required Subjects

All students in the Course in General Agriculture are required to take four of the following five subjects:

1. Fertility of the Land. Two hours a week. Lectures, M W, 8. Morse Hall, Lecture Room 1. Professor CAVANAUGH.

A study of soils from the chemical and physical points of view, with discussions of fertilizers, manures, and the principles of plant growth.

2. Agronomy. Four hours a week. Lectures, M W F, 8. Auditorium. Practice: sect. A, M, 11-1; sect. B, W, 11-1; sect. C, F, 11-1; sect. D, S, 10.30-12.30. Agronomy Building 202. Professor STONE and Assistant Professor MINNS.

A study of field crops and farm management. As much time as possible is devoted to the principles of soil management and the culture of particular crops, as corn, potatoes, wheat, and oats, and to pastures and forage.

3. Feeds and Feeding. Two hours a week. Lectures, F, 9. Practice: sect. A, F, 11-1; sect. B, S, 11-1. Auditorium. Assistant Professor SAVAGE and assistants.

The principles and practice of compounding rations and of feeding farm animals. Students are required to take either course 3 (Feeds and Feeding) or course 4 (Breeds and Breeding); but those who take course 4 may not take course 5 (Horticulture).

4. Breeds and Breeding. Three hours a week. Lectures, T Th, 10. Animal Husbandry Building 112. Practice: sect. A, M, 9-10.30; sect. B, M, 11-12.30; sect. C, W, 11-12.30; sect. D, F, 11-12.30; sect. E, S, 9-10.30. Animal Husbandry Pavilion. Professor WING and Assistant Professor HARPER.

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

5. Horticulture. Three hours a week. Lectures, T Th S, 10. Poultry Building 375. Professors CRAIG and WILSON, Assistant Professor BEAL, and Messrs. WORK and TENNY.

The principles of fruit growing, floriculture, and vegetable gardening.

The propagation of fruits, budding, and grafting; orchard tillage, fertilizers, pruning, and spraying; the harvesting, marketing, and storing of fruit. November 20 to January 10. Mr. TENNY.

The planning and planting of the flower garden; flower crops for the farmer; fertilizers, culture, and protection from pests; the marketing and handling of flowers. January 10 to January 24. Assistant Professor BEAL.

The planning and planting of the vegetable garden; fertilizers, tillage, and control of pests and diseases. January 24 to February 8. Mr. WORK.

Required of all students in General Agriculture except those electing course 4, Breeds and Breeding.

A series of special lectures will be given by various members of the University Faculty, and by prominent men from elsewhere who are authorities in agriculture and horticulture. Students in the Course in General Agriculture are required to attend these lectures.

In the Course in General Agriculture there are thus eleven hours a week of required work. Seven hours of elective work may be chosen from the subjects described below. No student may take more than eighteen hours of work, except by special permission, and sixteen hours is as much as the average student can carry satisfactorily.

Elective Subjects

3 and 4. Animal Husbandry. The student who desires as much work as possible in animal husbandry may take both 3 and 4 in that subject, as described on p. 14.

6. Rural Improvement. Hours to be announced. Professor FLEMING.

A course of six lectures, commencing after the Christmas recess, dealing with questions of rural improvement and intended to give the farm boy a general view of landscape art together with specific hints for working out some of his home problems.

7. Farm Mechanics. Three hours a week. Lectures, T Th, 11. Animal Husbandry Building 112. Practice: sect. A, Th, 2-4.30; sect. B, F, 2-4.30. Farm Mechanics Building. Professor H. W. RILEY and Messrs. ROBB, KEPHART, WESTERVELT, and ———.

A study of grain binders, gasoline and steam engines, power transmission and shafting, pumps, hydraulic rams, water supply systems, piping, and soldering. Laboratory fee, \$2.

8. Farm Dairying. Three hours a week. Lectures, M, 10. Dairy Building 222. Practice: sect. A, M, 2-6, Dairy Building E 122, and T, 8-10, Dairy Building 232; sect. B, W, 2-6, Dairy Building E 122, and Th, 8-10, Dairy Building 232; sect. C, Th, 2-6, Dairy Building E 122, and T or Th, 8-10, Dairy Building 232. Messrs. GUTHRIE and SUPPLEE.

The care of milk, cream separation, butter making, and milk testing. Those who elect this course will deposit an additional laboratory fee of \$5 to cover breakage, and rental and laundering of white suits. Part of the fee is returnable.

9. Farm Poultry. Lectures and practice, two hours a week. Th F, 4.45-5.45. Poultry Building 375. Professor RICE, Assistant Professor ROGERS, and Messrs. BENJAMIN, KRUM, and others.

A discussion of the domestic breeds of poultry; hatching and rearing; the principles of feeding and management; the building of poultry structures, etc.

10. Injurious Insects. Two hours a week. Lectures, W F, 10. Main Building 392. Professor HERRICK.

The common insect pests of the 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, whenever possible, be shown to members of the class. Opportunity will be given for questions and for discussion, 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 charts.

11. Plant Diseases. Three hours a week. Lectures, T, 12. Main Building 392. Practice: sect. A, M, 10-12 and 2-5; sect. B, T, 2-5, and W, 11-1. Agronomy Building 302. Assistant Professor BARRUS and Mr. SMITH.

This course is devoted to the consideration of some of the common bacterial and fungous diseases of plants. It includes a study of the causal organisms, their relation to the host plants, and their control. Laboratory fee, \$2.50.

12. Diseases of Dairy Cattle, and Veterinary Hygiene. One hour a week. Lectures, S, 8. Dairy Building 222. Dr. UDALL and others.

For description of this course see p. 24.

13. Farm Structures. Lectures, demonstrations, and practice in preparing working plans. Two hours a week. Lectures, W, 10. Animal Husbandry Building 112. Practice, W, 2-4.30. Assistant Professor MINNS.

A discussion of the principles involved in erecting farm buildings and fences; the use of various building materials, including concrete. Practice in making plans for farm buildings. Visits to near-by barns, stables, etc., for inspection purposes.

14. Extension Work. Lectures and discussions. One hour a week. W or S, 12. Auditorium. Professor TUCK and Mr. WHEELER.

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 technique of public speech. 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 Extension Department with the object of developing an interest in rural affairs. Competition is open to all Winter Course students. The contest will take place during Farmers' Week in February.

15. Plant Breeding. Lectures and discussions. One hour a week. Th, 12. Dairy Building 222. Assistant Professor MYERS.

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

16. Farm Forestry. One hour a week. Lectures, S, 8. Main Building 292. On three Saturday afternoons, there will be field trips if the weather permits. Assistant Professor BENTLEY.

The care of the wood lot, including forest planting and sowing, thinning, the cutting of ripe timber, measurement of the timber crop, and protection from fire and other enemies.

17. Farm Management. Two hours a week. Lectures, T Th, 9. Dairy Building 202. Professor WARREN, Assistant Professor LIVERMORE, and Mr. ———.

Lectures on selection and purchase of a farm, types of farming, cropping systems, farm layout, and other problems of farm management.

18. Farm Management. Cost accounting. One hour a week. Practice, Th or F, 2-4.30. Main Building 292. Professor WARREN, Assistant Professor LIVERMORE, and Mr. ———.

Farm inventories and cost accounts, with special emphasis on the interpretation of results and their application in the organization and management of the farm.

27. Farm Engineering. One hour a week. Lectures, time and place to be announced. Mr. ROBB.

A brief lecture course on running levels, laying out simple drainage systems, digging ditches, laying tile, and on concrete construction. Estimates of cost and types of drain tiles will be discussed.

For further information regarding instruction in General Agriculture address J. L. STONE, Professor of Farm Practice.

II. DAIRY INDUSTRY

This course is intended especially for persons who make a business of manufacturing butter or cheese or of handling milk for the market. The work of the course requires the student's entire time. Any one wishing instruction in farm dairying should consult the description of that course in the announcement of the Winter Course in General Agriculture, No. 8 above.

Students will be received in this course between 8.30 a. m. and 12 m., or between 2 and 5 p. m., Tuesday, November 19, in Room 102, first floor of the Dairy Building. They should report at once after registering with the Secretary (p. 9). At 5 p. m. on November 19, there will be a meeting of students and teachers in the lecture room of the Dairy Building.

Instruction begins at 8 a. m., Wednesday, November 20. Instruction ends Friday afternoon, February 14, 1912.

General fee (to pay in part for materials used).....	\$15.00
Laboratory deposit (part returnable) to cover rental of suits, laundry, and breakage.....	6.00
Books, about	5.00
One suit blue overalls, about.....	1.00

Five dollars of the general fee must be paid as soon as the application is accepted; see p. 8. Names of students will be entered in the order of these payments.

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

Methods of Instruction

Instruction, though partly by lectures and recitations, is in large part by actual practice in the different kinds of dairy work. The class assembles daily at 8 a. m., and the class work continues two hours. The students are then assigned by sections or squads 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 the different departments.

The Courses

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

20. Milk Composition and Tests. Lectures, hours as arranged. Dairy Building 222. Professor TROY.

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

20a. Milk Composition and Tests. Laboratory, hours as arranged. Dairy Building 232. Professor TROY.

Practice is given in testing the composition of milk and its products. Under this practice work is included the Babcock test for fat, acid test, use of the lactometer, moisture test, salt test, and some of the simpler tests for preservatives and adulterations.

21. Butter. Lectures, hours as arranged. Dairy Building 222. 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.

21a. Butter. Laboratory, hours as arranged. Mr. AYRES.

The creamery has most of the apparatus found in a well-equipped commercial plant. The milk is received, weighed, sampled, and separated, and the entire process of ripening cream and churning 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.

22. Cheese.* Lectures and textbook, hours to be arranged. Dairy Building 222. Messrs. FISK and 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.

22a. Cheese. Laboratory, hours as arranged. Messrs. FISK and 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 ready for market.

23. Dairy Bacteriology. Hours as arranged. Dairy Building 222. Professor STOCKING and Mr. COOK.

*For fancy cheeses see page 24.

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

I. WINTER COURSE IN GENERAL AGRICULTURE

APPLICATION FOR ADMISSION

Name of applicant.....Date of birth.....
P. O.....County.....State.....
Name and address of parent or guardian, or person to be notified in case of serious illness or accident.....
.....

PREVIOUS SCHOOL TRAINING

Name of school last attended.....Number of terms in attendance.....

AMOUNT OF WORK DONE IN THE COMMON BRANCHES

.....
.....

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.....
Address.....	Address.....

*References: two are necessary and should be preferably by your teacher, pastor, or a public official.
This blank must not be used for enrollment in the READING COURSE. A card for that purpose will be sent on application.

This application should be mailed to Professor J. L. Stone, Cornell University, Ithaca, New York

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

II. WINTER COURSE IN DAIRY INDUSTRY

APPLICATION FOR ADMISSION

Name of applicant.....Date of birth.....
P. O.....County.....State.....
Name and address of parent or guardian, or person to be notified in case of serious illness or accident.....
.....

PREVIOUS SCHOOL TRAINING

Name of school last attended.....Number of terms in attendance.....

AMOUNT OF WORK DONE IN THE COMMON BRANCHES

.....
Give experience, if any, in dairy work.....

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.....
Address	Address

*References: two are necessary and should be preferably by your teacher, pastor, or a public official.
This blank must not be used for enrollment in the READING COURSE. A card for that purpose will be sent on application.

This application should be mailed to Professor W. A. Stocking, jr., Cornell University, Ithaca, New York

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

III. WINTER COURSE IN POULTRY HUSBANDRY

APPLICATION FOR ADMISSION

Name of applicant.....Date of birth.....

P. O.....County.....State.....

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

PREVIOUS SCHOOL TRAINING

Name of school last attended.....Number of terms in attendance.....

AMOUNT OF WORK DONE IN THE COMMON BRANCHES

.....

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.....

Address.....Address.....

*References: two are necessary and should be preferably by your teacher, pastor, or a public official.

This blank must not be used for enrollment in the READING COURSE. A card for that purpose will be sent on application

This application should be mailed to Professor James E. Rice, Cornell University, Ithaca, New York

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

IV. WINTER COURSE IN HORTICULTURE

APPLICATION FOR ADMISSION

Name of applicant.....*Date of birth*.....

P. O......*County*.....*State*.....

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

PREVIOUS SCHOOL TRAINING

Name of school last attended.....*Number of terms in attendance*.....

AMOUNT OF WORK DONE IN THE COMMON BRANCHES

.....
.....
*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*.....

Address.....*Address*.....

*References: two are necessary and should be preferably by your teacher, pastor, or a public official.

This blank must not be used for enrollment in the READING COURSE. A card for that purpose will be sent on application.

This application should be mailed to Professor John Craig, Cornell University, Ithaca, New York

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

V. WINTER COURSE IN HOME ECONOMICS

APPLICATION FOR ADMISSION

Name of applicant.....Date of birth.....
P. O.....County.....State.....
Name and address of parent or guardian, or person to be notified in case of serious illness or accident.....
.....

PREVIOUS SCHOOL TRAINING

Name of school last attended.....Number of terms in attendance.....

AMOUNT OF WORK DONE IN THE COMMON BRANCHES

.....
.....

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.....
Address	Address

*References: two are necessary and should be preferably by your teacher, pastor, or a public official.
This blank must not be used for enrollment in the READING COURSE. A card for that purpose will be sent on application.

This application should be mailed to Department of Home Economics, Cornell University, Ithaca, New York

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.

24. Market Milk. Hours as arranged. Dairy Building 222 and Market Milk Laboratories. Professor ROSS and Mr. MCINERNEY.

The course considers the sanitary construction of dairy buildings, score cards for dairy barns and market milk, food value of milk, standardizing milk and cream, legal standards for milk and cream, dairy utensils, and the general production and handling of clean milk.

3. Animal Husbandry, Feeds and Feeding. Two hours a week. Lectures, F, 9. Auditorium. Practice, W, 8-10. Dairy Building 222. Assistant Professor SAVAGE and assistants.

This course deals with the principles and practice of compounding and feeding the most economical rations.

25. Dairy Mechanics. Lectures, S, 9. Dairy Building 222. Practice as arranged. Dairy Mechanics Laboratories. Messrs. AYRES and CROSS.

The care of the boiler and engine, construction of separators, installation of shafts and pulleys, pipe fitting, belt lacing, soldering, etc.

26. Dairy Chemistry. Two hours a week, the first six weeks of the term. Lectures, T Th, 8. Dairy Building 222. Professor TROY.

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.

27. Arithmetic and Bookkeeping. Hours as assigned. Dairy Building 202. Professor ROSS and Mr. MCINERNEY.

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.

28. General Agriculture. Two hours a week, the last six weeks of the term. Lectures, T Th, 8. Dairy Building 222. Professors STONE, CAVANAUGH, WARREN, WEBBER, and others.

In this course lectures are given on subjects intimately related to dairy industry, such as farm manures, commercial fertilizers, and the improvement of the land by judicious cropping.

12. Diseases of Dairy Cattle, and Veterinary Hygiene. One hour a week. Lectures, S, 8. Dairy Building 222. Dr. UDALL, and special lectures by Director MOORE and Dr. WILLIAMS.

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

Special Work in Fancy Cheeses and Ice Cream

On the successful completion of the Winter Course a limited number of students who are interested in the making of fancy cheeses and ice cream may remain with the department for ten days and devote their entire time to this work. Work will be given with several varieties

of fancy cheeses, such as cottage, cream, neufchatel, and club, and with several kinds of ice cream.

Certificate of Proficiency

Upon the successful completion of the Course in Dairy Industry, a student may become an applicant for a Certificate of Proficiency under the following general terms and conditions:

A person who has been one full term in attendance upon the Course and has satisfactorily passed all of the examinations required, may become a candidate for a Certificate of Proficiency in the kind of work in which he is engaged.

Such a candidate must spend one full year or more as manager or first man, in work at an approved creamery, cheese factory, market-milk plant, or farm dairy. He must report regularly, upon blanks furnished for the purpose, such information about his work and products as may be required, and each month must send a sample of his dairy product (milk, cream, butter, or cheese) to the monthly judging of dairy products. He must have his work in readiness for inspection at any time.

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

Positions

The College does not promise to find positions for students registered in this course, 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 that the College has been asked to fill.

Previous experience in a well-conducted dairy plant is strongly advised for those who come to the College expecting to be recommended for positions. Many students who have taken the Course in Dairy Industry have secured an increase in their salary during the following season sufficient to pay the entire cost of the course. Such results, though not guaranteed, are not uncommon; they prove that there are excellent opportunities in dairy industry.

A SPECIAL ONE-WEEK COURSE FOR MANAGERS OF FACTORIES AND CREAMERIES

**Beginning Thursday morning, March 6, 1913, and closing
Wednesday night, March 12, 1913**

This course is intended for managers of creameries and factories who cannot be absent from their business for any considerable time, but who wish to come to the College to get the latest knowledge in their special work. All the regular branches of cheese making and butter making will be taught and special attention will be given to the use of the moisture and Babcock tests, creamery overrun, construction of factory and creamery buildings, drainage and water supply, commercial starters, relation of bacteria to dairy products, market milk, dairy inspection, judging dairy products, keeping factory accounts, etc.

Requirements for Admission; Expenses

The only requirement for admission to this one-week course is that the applicant shall have had at least one year of experience as manager of a factory or creamery.

The only fee is five dollars, payable at registration. This covers the use of white suits, apparatus, and materials required in the laboratory and practice work.

For cost of board and other expenses, see p. 6.

For further information regarding instruction in dairy industry, address W. A. STOCKING, JR., Professor of Dairy Industry.

III. POULTRY HUSBANDRY

The Winter Course in Poultry Husbandry is one of the means by which the College of Agriculture endeavors to meet the needs of the farmers of the State. It is intended also to supply 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 give the student a good start in the right direction, enable him to avoid many mistakes, give him facts and principles of value gleaned from the lifelong experience, study, and observation of others, and fill him with enthusiasm for his life work and a determination to make the best use of his natural abilities and opportunities.

After registering with the Secretary (p. 9), students should report at once at Poultry Building 325, where, commencing at 8.30 a. m. and at 2 p. m., Tuesday, November 19, 1912, they will receive their assignments. A meeting of all Winter Course students in poultry husbandry with the staff of the department will be held at 5 p. m., Tuesday, November 19, in Poultry Building 375. Instruction will begin at 8 a. m., Wednesday, November 20, and will end Friday night, February 14, 1913.

Special Expenses

Laboratory fee (to cover part of cost of materials used)	\$7.50
Laboratory deposit (part returnable).....	2.50
Two suits of work clothes (to be purchased in Ithaca)	2.00
One set drawing instruments.....	4.00

The estimated expenses, aside from those given above, are: board, about \$50; room (two rooming together), about \$18; excursions, about \$12; books (to be retained by the student), about \$5; stationery and other incidentals, \$5.

Required Subjects

37. Poultry Lectures. Lectures, textbook, and recitation, six hours a week. M T W Th F S, 11. Poultry Building 375. Professor RICE, Assistant Professor ROGERS, and Mr. BENJAMIN.

These lectures include discussions of subjects of special interest to poultrymen: opportunities in poultry husbandry; advantages and disadvantages of various kinds 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; incubating and brooding; feeding chickens; caponizing; mating and breeding; planning and building poultry houses; preparing eggs and poultry for market; marketing; poultry accounts.

37a. Special Lectures. Two hours a week. M T, 4.45-5.45. Poultry Building 375.

The Poultry Department is fortunate in being able, through the courtesy of the New York State Veterinary College, the Cornell Medical College, and a large number of departments in the College of Agriculture, to avail itself of the expert services of many eminent teachers. Their lectures, twenty-four in number, form one of the most valuable series of lectures given in the course.

37b. General Lectures. One hour a week. W, 4.45-5.45. Auditorium.

From time to time lectures are given to the Winter Course students by experienced farmers and poultrymen who have made a marked success in some special line of agriculture.

cate signed by the Director 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 on the Course in Poultry Husbandry and has satisfactorily passed all of the examinations required, may become a candidate for a Certificate in Poultry Husbandry.

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

Upon 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.

Positions

Although the College of Agriculture does not guarantee to secure positions for students who complete the Course in Poultry Husbandry, every effort is made to help capable and worthy students to secure places of responsibility best suited to their respective qualifications. Usually the demand for young men who have completed the course has been greater than the supply. This is particularly true of 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, range from \$25 to \$75 a month with board and room, the average being about \$35 to \$40. 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. It is recommended that persons inexperienced in the handling of poultry should spend a year in acquiring some practical knowledge of the business, before entering the Winter Course in Poultry Husbandry. They will then be better able to make use of the facilities for study that are offered.

For further information regarding the Course in Poultry Husbandry address JAMES E. RICE, Professor of Poultry Husbandry.

IV. HORTICULTURE

Each year since the establishment of the Winter Courses, the demand for special instruction in fruit growing and gardening has increased. The opportunities for profitable fruit raising and vegetable growing on the comparatively cheap lands of the East and within easy reach of the great markets, are attracting capital and energy. It is in response to this general demand and these opportune conditions that a Winter Course in Horticulture is offered. The studies included in this course are intended to help the fruit grower and gardener to manage his orchards and gardens better than in the past; to fit those who have had some experience for positions of responsibility; to give the beginner the salient principles and acquaint him as far as possible with the best practices of commercial and amateur fruit growers and gardeners the country over.

An effort is being made this year to meet the demand for special instruction in the different divisions of horticulture, as in fruit growing, vegetable growing, flower growing. To this end parallel courses have been arranged in each of these divisions. A student may specialize in fruit growing, or, if particularly interested in vegetable growing, may devote his time to the study of vegetable culture and related topics. There has come to be also a demand for special instruction in floriculture; and to meet this, provision has been made whereby a student may concentrate on the practical and commercial aspects of flower growing. These three branches will constitute the horticultural group in the Winter Courses.

Equipment

Practically the same facilities are available to the Winter Course student as to the student in the regular course. The well-selected library, and the equipment of the forcing houses, including plants, work rooms, spray pumps, and implements, are used in conducting the work of instruction.

The course is made up of lectures, recitations, and practice. Special stress is laid on the practice.

Registration

All students register in Room 202, second floor of Main Building, at 8.30 a. m., November 19, 1912. They should report at once after registering with the Secretary (page 9).

Special Expenses

General laboratory fee.....	\$7.50
Books, about.....	5.00

I. FRUIT GROWING

All students in this course, except those who have already satisfactorily completed the Winter Course in General Agriculture, are required to take the subjects that follow. Those who have completed the Winter Courses in General Agriculture will not be required to take again subjects in which they have already passed. They should consult the professor in charge concerning substitutes for any of the subjects.

Required Subjects

60. Commercial Fruit Growing. Seven hours a week. Lectures, M T W Th F, 9. Main Building 292. Practice, W Th, 2-4.30. New Greenhouses. Mr. TENNY and Mr. ANTHONY.

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

11. Plant Diseases. Three hours a week. Lectures, T, 12. Main Building 392. Practice: sect. A, M, 10-12 and 2-5; sect. B, T, 2-5, and W, 11-1. Agronomy Building 302. Assistant Professor BARRUS and Mr. SMITH.

For description of this course see p. 15.

10. Injurious Insects. Two hours a week. Lectures, W F, 10. Main Building 392. Professor HERRICK.

For description of this course see p. 15.

1. Fertility of the Land. Two hours a week. Lectures, M W, 8. Morse Hall Lecture Room 1. Professor CAVANAUGH.

For description of this course see p. 13.

62. Principles of Plant Culture. Two hours a week. Lectures, F, 12. Main Building 292. Practice, S, 10.30-1. New Greenhouses. Professor CRAIG and Mr. FROST.

This course is designed to give the student an elementary understanding of the structure and function of plants, with special reference to growth and reproduction.

II. VEGETABLE CULTURE

The purpose of this course is to qualify the student to engage in practical market gardening and trucking. He will devote most of his

time to a study of vegetable culture from the standpoint of the market gardener as well as of the producer of special crops, as cabbage, celery, and lettuce, at a considerable distance from the market. The opportunities in New York and through the East generally for developing trucking enterprises are very attractive. The muck lands of New York and adjoining states are being developed. Special crops adapted to these conditions are being studied, and it is in response to the demand for information in these fields that this special opportunity for instruction is provided in the Winter Courses.

Required Subjects

61. Vegetable Culture. Five hours a week. Lectures, M W F, 9. Dairy Building 202. Practice, M, 10-1, and Th, 2-5. New Greenhouses. Messrs. WORK and ———.

A study of the growing and marketing of vegetables for home use, and for the special and general market.

62. Principles of Plant Culture. See p. 32.

1. **Fertility of the Land.** See p. 13.

10. **Injurious Insects.** See p. 15.

11. **Plant Diseases.** See p. 15.

Elective Subjects

63. Horticultural Reading. With special reference to vegetable culture. Two hours a week. F, 2-4. Dairy Building 202. Mr. ———.

Assignment of topics for abstracts and reports in standard works, bulletins, and current periodicals.

64. Floriculture and Greenhouse Practice. Five hours a week. Lectures, T Th S, 11. Dairy Building 202. Practice, Th S, 8-11. New Greenhouses. Assistant Professor BEAL and Mr. ———.

For description of this course see p. 34.

14. Extension Work. Lectures and discussions. One hour a week. W or S, 12. Auditorium. Professor TUCK and Mr. WHEELER.

For description of this course see p. 16.

15. Plant Breeding. Lectures and discussions. One hour a week. Th, 12. Dairy Building 222. Assistant Professor MYERS.

For description of this course see p. 16.

16. Farm Forestry. One hour a week. Lectures, S, 8. Main Building 292. Assistant Professor BENTLEY.

For description of this course see p. 16.

6. Rural Improvement. Hours to be announced. Professor FLEMING.

For description of this course see p. 15.

III. FLOWER GROWING

The floricultural interests of New York are greater than those of any other state in the union. The demand for high-class floral products is increasing each year. The demand for information on the growing of these crops is naturally keeping pace with their development. The amateur and professional alike are seeking instruction in the latest and most approved methods. Floriculture at Cornell is being extended as rapidly as possible to meet these conditions. To that end special opportunities will be provided in the winter of 1912-13.

Required Subjects

64. Floriculture and Greenhouse Practice. Five hours a week. Lectures, T Th S, 11. Dairy Building 202. Practice, Th S, 8-11. New Greenhouses. Assistant Professor BEAL and Mr. ———.

A study of the growing and marketing of greenhouse crops. Designed to familiarize the student with the ordinary greenhouse operations.

- 1. **Fertility of the Land.** See p. 13.
- 10. **Injurious Insects.** See p. 15.
- 11. **Plant Diseases.** See p. 15.

Elective Subjects

63. Horticultural Reading. With special reference to flower culture. See p. 33.

5. **Horticulture.** See p. 14.

14. **Extension Work.** See p. 16.

15. **Plant Breeding.** See p. 16.

16. **Farm Forestry.** See p. 16.

6. **Rural Improvement.** Hours to be announced. Professor FLEMING.

A course of six lectures, commencing after the Christmas Recess, dealing with questions of rural improvement and intended to give the farm boy a general view of landscape art together with specific hints for working out some of his home problems.

Prizes

Attention is called to the fruit-judging contest at Rochester under the auspices of the Western New York Horticultural Society. The following prizes were offered last year by the society: first prize, ten dollars; second prize, five dollars. (See Report of the Western New York Horticultural Society.)

Certificates

These are available to students who satisfactorily complete the required courses, as previously outlined, and who subsequently spend one full summer season in active work on a fruit, flower, or vegetable farm. A statement of the season's work, approved by the proprietor of the establishment and satisfactory to the Professor of Horticulture, is required.

Positions

The Department of Horticulture does not promise to find positions for students in the Winter Course in Horticulture. The Department takes pleasure, however, in recommending its students for positions of responsibility on the following conditions: (1) the student must be of good moral character; (2) his previous record must be good; (3) his work in the Winter Course must be satisfactory; (4) his college courses must be supplemented by practical experience.

Those who desire additional information should apply to JOHN CRAIG, Professor of Horticulture.

V. HOME ECONOMICS

A Winter Course in Home Economics has been established in the New York State College of Agriculture, the main object of which is to furnish scientific training in the subjects pertaining to the home.

Special attention will be given to household sanitation, the selection and preparation of foods, problems of nutrition, house construction and decoration, household management, 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 aim of the course is to increase efficiency in household administration, to give the breadth of view and interest which come with intelligent labor, to teach not only how to do the work, but also why it should be done.

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 who had come to attend 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 the boys. Their household problems are as scientific as the outside problems of the farm. The farm home rises no higher than its women; hence, one of the Winter Courses offered at the College is intended to prepare women for their task in life. The equipment for instruction in this course is the same as that for the longer courses in home economics. A well-equipped laboratory is provided for practical instruction in foods. Library privileges are provided. The Winter Course of 1912-13 will be the first one to be conducted in the new Home Economics Building.

Persons over eighteen years of age are admitted to the Winter Course in Home Economics. No entrance examinations are required.

Registration is at 10 a. m., November 19, in the Home Economics Building. Students must first present themselves for registration at the office of the Secretary (page 9).

Special Expenses

A food laboratory fee of \$7.50 is required to cover the cost of materials used. Those taking the course in domestic art will be charged an additional fee of \$1. From \$3 to \$5 should be allowed for the purchase of books and of a thermometer.

Required Subjects

Instruction in this course is given in the Home Economics Building

1. Foods. Lectures, five hours a week, and two three-hour laboratory periods a week. Lectures, daily except S, 9. Practice, hours to be arranged. Professor ROSE, and Misses BROWNING and BETTS.

This course will include a study of food composition, food values, methods of selection, preparation, and preservation of food materials, principles of nutrition, dietaries, care and feeding of children. Laboratory work will be given for application of the principles and will include practice in preparation of food and in serving.

2. Household Sanitation. Three hours a week. Lectures, T Th F, 11. Professor VAN RENSSELAER.

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

3. Household Management. Three hours a week. Lectures, M T W, 10. Professor VAN RENSSELAER and others.

This course includes a study of the family income, cost of living, household accounts, problems of domestic service, methods of housekeeping, equipment, marketing.

4. Sewing and Drafting. Two hours, to be arranged.

This course includes instruction in sewing, cutting, and fitting garments.

5. Art in the Home. One hour a week. Lectures, M, II. Given by members of the staff and by others.

A course for the development of more artistic home surroundings: the building site, the garden, accessory buildings; the furnishing and decoration of the house; the selection of books and pictures; home entertainment and amusements.

6. Rural Progress. One hour a week. Lectures by appointment.

Study of rural conditions to show the relation of members of the family to community life; church, school, grange, etc. Study of social, ethical, and intellectual needs of the individual to make for useful citizenship.

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 had in milk and its products; feeding, care, and marketing of eggs and fowls; diseases of fowls; commercial fruit growing, vegetable culture, floriculture, and ornamental gardening; public speaking. Women enter the regular classes in these subjects; but if a sufficient number desires work in home dairying a special class or section may be organized.

Certificates

At the close of the Winter Course, certificates are granted to those students who have satisfactorily completed the required work.

Correspondence regarding the Course in Home Economics should be addressed to DEPARTMENT OF HOME ECONOMICS, Ithaca, N. Y.

OTHER WORK OF THE COLLEGE OF AGRICULTURE

In addition to offering the Winter Courses, the New York State College of Agriculture at Cornell University is endeavoring to serve the agricultural interests of the State by the following and by other means:

The Four-Year Course in Agriculture.—This course is of equal academic rank with other courses in Cornell University. It offers a thorough theoretical and practical training in agricultural and country-life subjects. The equivalent of a high school training is necessary for admission. A program will be sent on application to the Secretary, College of Agriculture.

Specialized Courses in Landscape Art, Forestry, and Home Economics, comprising the junior and senior years in the four-year course, and providing special professional instruction in these subjects. At the end of the fifth year, the course in forestry leads to the degree Master in Forestry and the course in landscape art to a special master's degree in landscape design.

Special Work in Agriculture.—Special students take, as far as they are qualified to pursue them, whatever studies will be most valuable in the various departments. This opportunity to pursue special work is provided especially for those who wish to fit themselves for practical farming but cannot take a four-year course, and for those who desire to spend a brief period in special study. About two years can be spent profitably in this work. In the admission of special students, each case is judged on its own merits. Persons desiring to enter as special students must offer, first, two full years of recent farm experience, and second, either fifteen units of entrance credits, or be twenty-one years of age. Persons admitted on the age requirement must satisfy the faculty of their ability to do the work. Every applicant must submit a full statement of school and other experience, together with references.

Summer School in Agriculture.—A six weeks course established primarily for the training of persons who desire to teach agriculture, including nature study, home economics, and entomology. The courses are open not only to teachers, but also to other qualified persons who may wish to avail themselves of the opportunities offered. Courses carrying university credit are offered for college and other advanced students. The instruction will also have immediate practical value for persons engaged in farming.

Reading Course for the Farm.—For those who are unable to leave their work but desire to learn. Practical bulletins on agricultural subjects are sent to the reader and correspondence is encouraged. Free to persons residing in New York. Address, Cornell Reading Course for the Farm, College of Agriculture.

Reading Course for the Farm Home.—Similar to the above, but the bulletins discuss household economy, cooking, home furnishing, etc. Address, Department of Home Economics, College of Agriculture.

Nature Study Agriculture.—Extension work for teachers and pupils, particularly in the rural schools. A publication is issued in the interest of this work: The Cornell Rural School Leaflet, for pupils, with a Supplement for teachers. Address, Cornell Rural School Leaflet, College of Agriculture.

The Agricultural Experiment Station issues bulletins on agricultural subjects which are sent free to residents of New York. Back numbers of some issues are available. Address, Superintendent of Mailing Rooms, College of Agriculture.

Cooperative Experiments in Agriculture.—The college cooperates with farmers in making demonstrations on their land that will be of direct practical value to them.

Announcer.—The Announcer is a monthly paper issued to acquaint the people of the State with the lines of work in progress at the State College of Agriculture. It is sent to residents of the State on request.

Correspondence and cooperation are solicited in connection with any of these various enterprises. For information, address L. H. BAILEY,

Director of the College of Agriculture,
Ithaca, N. Y.

OFFICIAL PUBLICATIONS OF CORNELL UNIVERSITY

Issued at Ithaca, N. Y., monthly from July to November inclusive, and semi-monthly from December to June inclusive.

[Entered as second class matter, August 31, 1910, at the post office at Ithaca, N. Y., under the Act of July 16, 1894.]

These publications include

Catalogue Number (containing lists of officers and students), price 25 cents.
Book of Views, price 25 cents.

Directory of Faculty and Students, First Term, 1911-12, 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 publication is given after the title.

General Circular of Information for prospective students, January 1, 1912.

Announcement of the College of Arts and Sciences, June 15, 1912.

Announcement of Sibley College of Mechanical Engineering and the
Mechanic Arts, Feb. 15, 1912.

Announcement of the College of Civil Engineering, March 1, 1912.

Announcement of the College of Law, May 15, 1912.

Announcement of the College of Architecture, March 15, 1912.

Announcement of the New York State College of Agriculture, August 1, 1912.

Announcement of the Winter Courses in the College of Agriculture, September 1, 1912.

Announcement of the Summer School in Agriculture, July 1, 1912.

Announcement of the New York State Veterinary College, April 15, 1912.

Announcement of the Graduate School, January 15, 1912.

Announcement of the Summer Session, April 1, 1912.

Annual Report of the President, December 1, 1911.

Pamphlets on prizes, samples of entrance and scholarship examination papers, special departmental announcements, etc.

Correspondence concerning the publications of the University should be addressed to

The Secretary of Cornell University,
Ithaca, N. Y.