

CORNELL UNIVERSITY  
OFFICIAL PUBLICATION

Volume XX

Number 19

Announcement of  
Winter Courses  
for 1929-30

New York State  
College of Agriculture

Ithaca, New York  
Published by the University  
June 15, 1929

## CALENDAR, 1929-30

Nov. 6	Wednesday	Registration in winter courses, beginning at 9 a. m., at the office of the Secretary, Roberts Hall.
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. (Before 1 p. m.)
Nov. 28-30		Thanksgiving recess. (Except for students in Dairy Industry.)
Dec. 21	Saturday, 1 p. m.	Instruction ends. } Christmas
Jan. 6	Monday, 8 a. m.	Instruction resumed. } recess.
Feb. 10-15		Twenty-third Annual Farm and Home Week.
Feb. 14	Friday	Instruction ends in winter courses.

### SPECIAL UNIT COURSES

Oct. 21-Nov. 2	Short course for supervisors of dairy-herd-improvement associations.
Jan. 20-Feb. 1	Short course for supervisors of dairy-herd-improvement associations.
Jan. 27-Feb. 1	Short course in beekeeping.
Apr. 1-6	Special school for egg inspectors.

Dates for several other special short courses will be fixed later, such as those for the short course for operators of incubators and the short course for milk inspectors.

## WINTER COURSE STAFF

Livingston Farrand, A.B., M.D., L.H.D., LL.D., President of the University.  
Albert Russell Mann, B.S.A., A.M., D.Sc., D. Agr., Dean of the College of Agriculture and Director of Experiment Stations.  
Cornelius Betten, Ph.D., D.Sc., Director of Resident Instruction.  
Carl Edwin Ladd, Ph.D., Director of Extension.  
Olin Whitney Smith, B. S., Secretary.  
Charles Arthur Taylor, B.S., Specialist in Extension Service, in charge of Winter Courses.  
Anson Wright Gibson, B.S., Associate Secretary, Former Student Relations.  
Willard Waldo Ellis, A.B., LL.B., Librarian.  
George Wilson Parker, Bursar.

Charles Loring Allen, Ph.D., Extension Assistant Professor of Animal Husbandry.  
Floyd Edward Andrews, Foreman in Poultry Husbandry.  
Winfred Enos Ayres, Assistant Professor of Dairy Industry.  
Harold Eugene Botsford, B.S., Extension Professor of Poultry Husbandry.  
James Duncan Brew, M.S., Extension Professor of Dairy Industry.  
Earl Louis Brunett, D. V. M., Assistant Professor of Poultry Diseases (Veterinary).  
Harry Oliver Buckman, Ph.D., Professor of Soil Technology.  
Frank Pores Bussell, Ph.D., Professor of Plant Breeding.  
Herbert Press Cooper, Ph.D., Assistant Professor of Field Crops.  
Ralph Wright Curtis, M.S.A., Professor of Ornamental Horticulture.  
Karl Hermann Fernow, Ph.D., Extension Assistant Professor of Plant Pathology.  
Adrian Gordon Gould, M.D., Ph.B., Assistant Professor of Hygiene and Assistant Medical Adviser.  
Edward Sewall Guthrie, Ph.D., Professor of Dairy Industry.  
Goldan Orlando Hall, Ph.D., Assistant Professor of Poultry Husbandry.  
Merritt Wesley Harper, M.S., Professor of Animal Husbandry.  
John Frederick Harriott, Ph.D., Assistant Professor of Farm Management.  
Edwin Shepherd Harrison, B.S., Instructor in Animal Husbandry.  
Charles Ernest Hayden, A.B., D.V.M., Assistant Professor of Veterinary Physiology (Veterinary).  
Arthur John Heinicke, Ph.D., Professor of Pomology.  
Glenn Washington Herrick, B.S.A., Professor of Economic Entomology.  
Gustave Frederick Heuser, Ph.D., Professor of Poultry Husbandry.  
Robert Byron Hinman, Ph.D., Assistant Professor of Animal Husbandry.  
John Carl Huttar, Ph.D., Instructor in Poultry Husbandry.  
Josiah Randall Livermore, Ph.D., Research Instructor in Plant Breeding.  
Laurence Howland MacDaniels, Ph.D., Professor of Pomology.  
Dean Richmond Marble, M.S., Instructor in Poultry Husbandry.  
Lua Alice Minns, M.S.A., Instructor in Floriculture.  
Richard Alan Mordoff, Ph.D., Professor of Meteorology.  
George Eric Peabody, M.S., Assistant Professor of Extension Teaching.  
Everett Franklin Phillips, A.B., Ph.D., D.Sc., Professor of Apiculture.

Joseph Pullman Porter, B.S., M.S.A., M.L.D., Acting Professor of Ornamental Horticulture.

Albert Oliver Rhoad, M.S., Instructor in Animal Husbandry.

James Edward Rice, B.S.A., Professor of Poultry Husbandry.

Francis Irving Righter, M.F., Acting Assistant Professor of Forest Management.

Byron Burnett Robb, M.S.A., Professor of Rural Engineering.

Louis Michael Roehl, B.S., Assistant Professor of Farm Shop.

Harold Ellis Ross, M.S.A., Professor of Dairy Industry.

Elmer Seth Savage, Ph.D., Professor of Animal Husbandry.

Leland Spencer, Ph.D., Professor of Marketing.

Hugh Charles Troy, B.S.A., Professor of Dairy Industry.

Edward Albert White, B.Sc., Professor of Floriculture and Ornamental Horticulture.

John Peter Willman, M.S., Instructor in Animal Husbandry.

Paul Work, Ph.D., Professor of Vegetable Gardening.

Edmund Louis Worthen, M.S.A., Extension Professor of Soil Technology.

Harold Newell Young, B.S., Extension Instructor in Farm Management.

# NEW YORK STATE COLLEGE OF AGRICULTURE

## THE WINTER COURSES

The winter courses will begin on November 6, 1929, and will close on February 14, 1930. Instruction will begin at 8 a. m. on November 7. The Thanksgiving Day recess includes November 28 to 30, except in the course in Dairy Industry, and the Christmas vacation extends from December 21, at 1 p. m., to January 6, at 8 a. m.

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.

The winter courses have been part of the regular work of the College of Agriculture since 1893, when a general course was established. Certain lines of work soon became grouped into more or less fixed professional courses for persons desiring to specialize in these fields. As a result, there are now six courses listed:

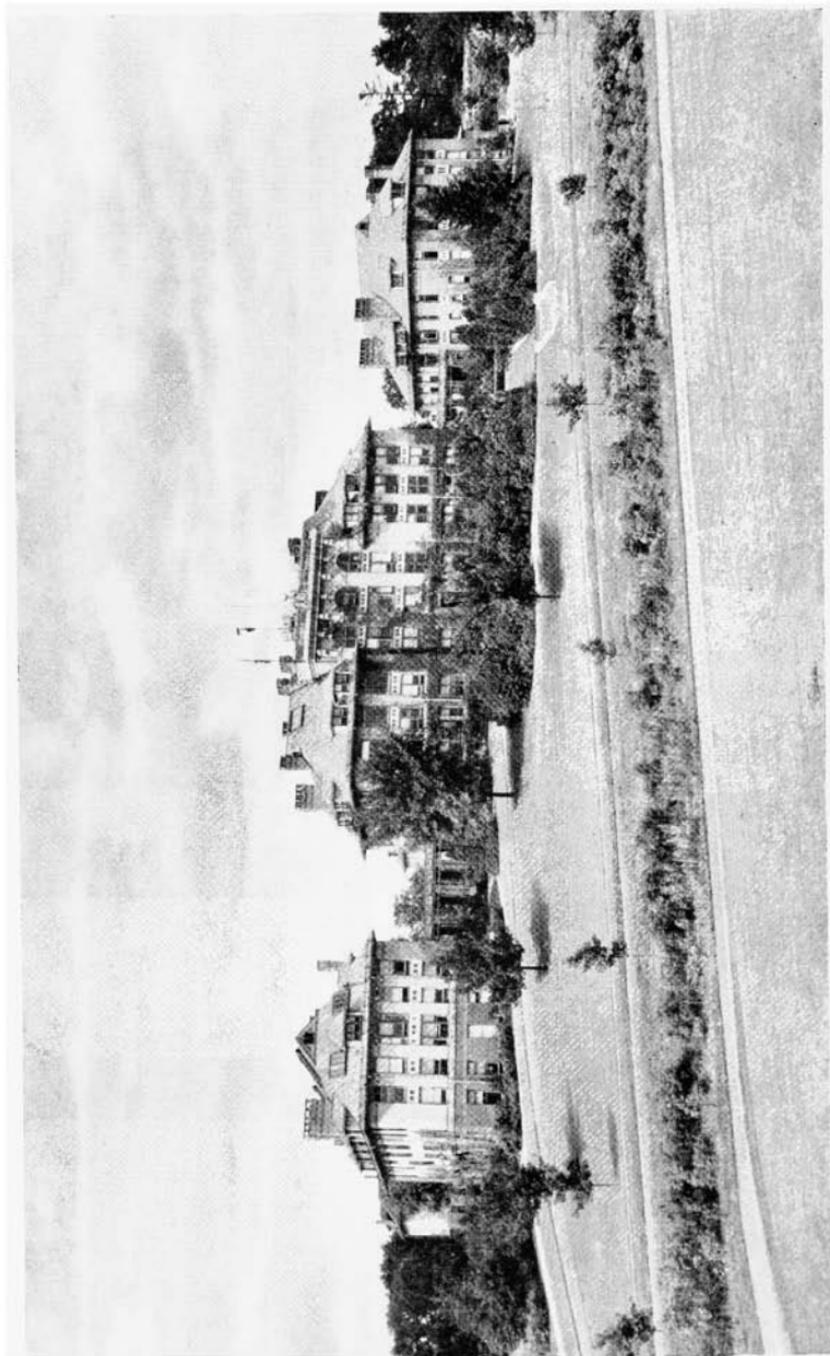
1. General Agriculture.
2. Dairy Industry.
3. Poultry Husbandry.
4. Fruit Growing.
- [5. Flower Growing.] Not given in 1929-30.
6. Vegetable Crops.

What is listed as the course in general agriculture is intended primarily for those who are engaged in general farming or who expect to take up farming. It is not a fixed curriculum; it is a large offering of elective units of work (pages 16-24) out of which the student may choose the combination most suited to his needs, with due regard to making a workable time schedule. The professional courses (numbers 2-6) are combinations arranged for those specializing in certain fairly well-defined lines of agriculture. The student is asked to submit his choice of studies before the courses open, and after his arrival he may discuss any remaining problems with his faculty adviser.

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 several years without duplication of specified subjects of study. Even those planning to take the professional courses will do well to take preliminary work in general agriculture, and suggestions toward this end will be found in connection with the description of some of the professional courses.

### SPECIAL UNIT COURSES

In addition to these twelve-weeks courses, the College of Agriculture conducts each year special unit courses, schools, and conferences for the training of special groups. Description of these short



ROBERTS HALL, THE ADMINISTRATION BUILDING OF THE COLLEGE OF AGRICULTURE  
Roberts Hall is the headquarters for the Winter Courses

unit courses will be found on page 36. Inquiries regarding the special unit courses may be addressed to the Secretary, New York State College of Agriculture, Ithaca, New York.

#### 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. In case of withdrawal for reasons satisfactory to the Comptroller and the Registrar of the University, which reasons should be stated in writing, a student may have a refund of a portion of any tuition paid by him; in such case he is charged ten per cent of the term's tuition for each week or fraction thereof between the first registration day and the date of his certificate of withdrawal as issued by the College. This rate applies also to students registering for a part of the term only, as for the second period of the professional course in dairy industry.

There are a number of fees and incidental expenses, which are detailed under the description of each course, but practically the only large 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 from \$7 to \$9 a week. Comfortable rooms near the place of boarding may be engaged at about \$3.50 a week for each person when two persons occupy the same room, and from \$4 to \$5 when one person occupies the room. The cost of books need not be more than \$10, 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 \$15 for this item. Statements made by students in previous years show that \$225 or \$250 is a reasonable amount to allow for total expense exclusive of clothes and travel. 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 and the expenses of observation trips 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.** Students in the winter courses are required to pay an infirmary fee of \$3. 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. Extra charges are made for private rooms, special food, and special nurses. If a sick student who has not received two weeks service during the course is unable to gain admittance to the infirmary, by reason of lack of accommodation, he is entitled to a refund of the fee. The infirmary has no medical staff; students employ their own physicians among practitioners in Ithaca or elsewhere.

A WILLARD STRAIGHT HALL MEMBERSHIP FEE of \$3 is required, at the beginning of the term, of every winter-course student. Its payment entitles the student to a share in the common privileges afforded by the operation of Willard Straight Hall, subject to regulations approved by the Board of Managers of the Hall.

This requirement does not apply to students who attend the special winter courses for periods not exceeding six weeks.

**FEE CARDS.** All the winter-course students must call at the office of the Secretary of the College of Agriculture on November 18, at which time the fee cards will be issued with tuition fee, 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.

**SELF-SUPPORT.** In the past, a few students have been obliged to earn money during the course. 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 energy should be concentrated on the work of the course.

#### SCHOLARSHIPS AND PRIZES

**BEATTY AGRICULTURAL SCHOLARSHIPS.** By the will of the late Harrison L. Beatty of Bainbridge, New York, the income of about \$5900 is devoted to three equal scholarships in the winter courses to be known as the Beatty Agricultural Scholarships. For the session of 1929-30 four scholarships of \$100 each are available. These scholarships are to be awarded to residents of Chenango County, one of whom shall be a resident of the town of Bainbridge. In making the award, equal consideration will be given to education and practical experience. Competitive examinations are held annually in Norwich and Bainbridge, New York, in the last week of September; the exact dates are to be announced to those applying for the examinations. The applications must be sent to the Secretary of the College of Agriculture, Ithaca, New York, by September 1.

**THE JEWISH AGRICULTURAL 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 not limited. For the New York State College of Agriculture at Cornell University, a number of these scholarships have been awarded each year since their establishment. Application should be made to the Jewish Agricultural Society, 174 Second Avenue, New York City.

THE DOCTOR LEWIS R. MORRIS SCHOLARSHIPS are offered by Doctor Lewis R. Morris, of Otsego County, to the most outstanding 4-H Club members in the towns of Butternuts, Laurens, New Lisbon, Morris, Edmeston, Pittsfield, or Otego, in Otsego County. These two scholarships are for \$200 and \$100, the award to be made at the Morris Fair, at Morris, New York. The recipient must have done two years of Club work, and the awards will be based on the records of Club work and stories about the recipient's work. Applications for these scholarships should be made to Mr. F. H. Isbell, District Superintendent of Schools, Morris, New York.

THE OTSEGO COUNTY FAIR ASSOCIATION SCHOLARSHIP of \$100 is offered by the Otsego County Fair Association to a 4-H Club member residing in the towns of Cherry Valley, Springfield, Roseboom, Middlefield, Maryland, Worcester, Westford, Decatur, Hartwick, Richfield, Otsego, Exeter, Millford, Unadilla, Oneonta, Burlington, or Plainfield, in Otsego County. The recipient must have been a graduate from a high school, in 1929. The award will be made at the Otsego County Fair. Applications should be made to the secretary of that association.

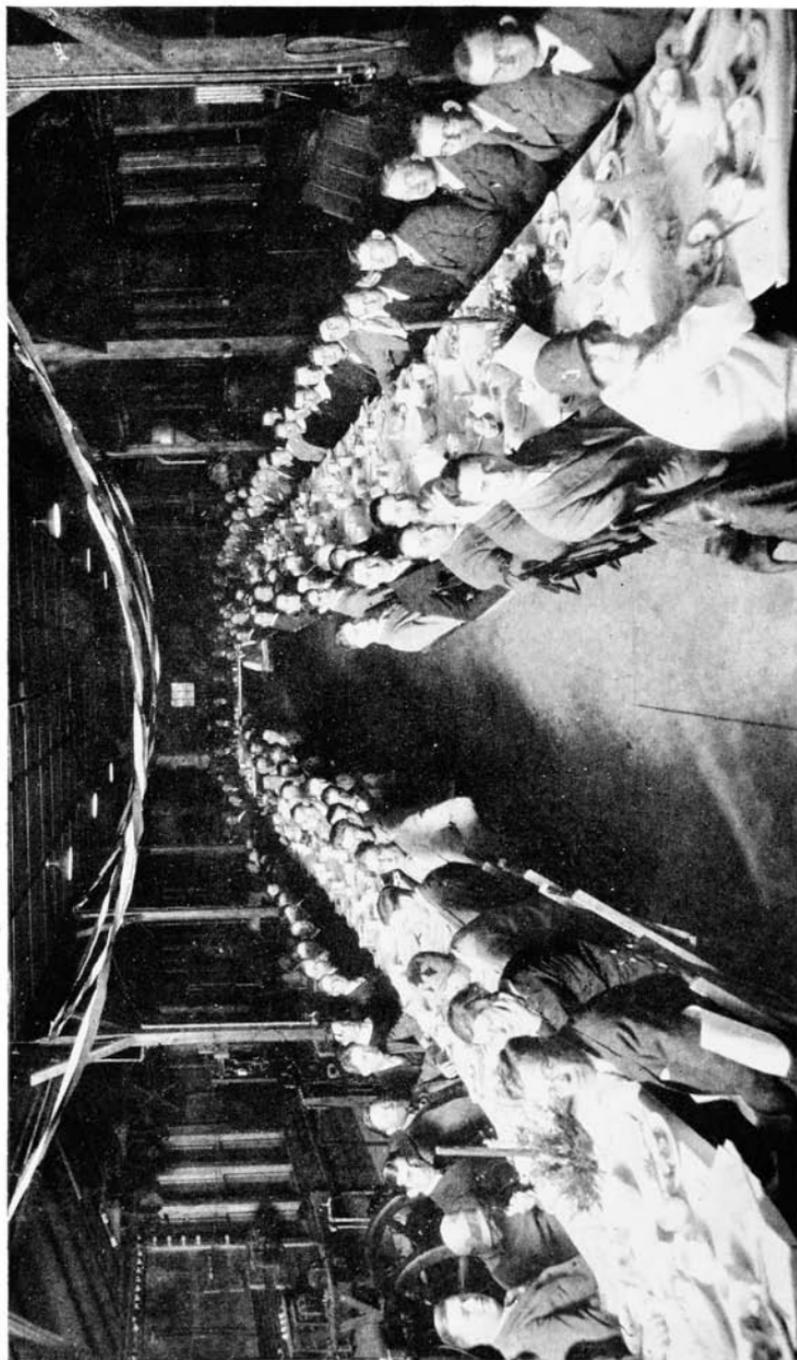
THE GRANGE LEAGUE FEDERATION EXCHANGE SCHOLARSHIPS are two in number, and are for \$50 each. These scholarships are available to members of the 1929 4-H Dairy Clubs. Application for these scholarships must be made to Mr. W. J. Wright, State Club Leader, at the New York State College of Agriculture, Ithaca, New York, on or before September 19. Awards will be made by the Grange League Federation Exchange on the advice of a committee consisting of the State Club Leader, a representative of the Department of Animal Husbandry of the New York State College of Agriculture, and a representative of the Grange League Federation Exchange.

PRIZES. The various winter-course clubs compete every year for the Morrison Trophy Cup, the contest ordinarily being a series of debates. There is also a silver cup offered by Mrs. Florence M. Nevin as a prize for proficiency in public speaking.

#### ADMISSION

A satisfactory certificate of vaccination is required of all students and is considered satisfactory only if it certifies to a successful vaccination within five years or certifies that at least three unsuccessful attempts have been made within the same period. This requirement does not apply to students who attend the special unit courses for periods not exceeding six weeks.

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 had a good common-school education. Winter-course students are sometimes seriously



WINTER COURSE DINNER, FEBRUARY, 1929  
Dinners and other functions give the students excellent opportunity to become acquainted with the members of the staff of the College and the Experiment Station

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.

Women who expect to attend one of the winter courses should correspond with the office of the Dean of Women, Ithaca, New York, in regard to rooms and accommodations. All women students registered in any of the winter courses are under the supervision of the Dean of Women during the period of the courses.

**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.

**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 considering, even though indefinitely, attending 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 lodgings and boarding places are invited to come directly to the College of Agriculture on their arrival in 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. 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, department office; course in poultry husbandry, Poultry Building, room 325 (third floor); course in fruit growing, East Roberts, room 109 (first floor); course in flower growing, Roberts Hall, room 222 (second floor); course in vegetable crops, 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.

**STUDY CARDS.** After the student has registered he may not change his schedule of courses 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 when the student registers.

#### 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 that 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. So far as possible, collected material is used for illustrating the subjects; when this is impossible, lantern views are often used. Free discussion by the students of the subject under consideration is encouraged. Further opportunity for general discussions is afforded in the meetings of the winter-course clubs.

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 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, the barns, and the 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 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, or one period of two and one-half hours of laboratory or practice each week during the term.

## CERTIFICATES

Students who complete a schedule of at least fifteen hours with grades of D or better will be given certificates of record. Students desiring such certificates must notify the Secretary's office before the close of the course.

## GENERAL ASSEMBLY

A general assembly of all winter-course students in all departments is held on Tuesday evening of each week. This is a regular part of the winter course, and all students are expected to attend. The first general-assembly meeting will be held in Roberts Assembly, Roberts Hall, Tuesday evening, November 12, at 7.30 p. m. The combined educational and social programs of the general assemblies afford the students an excellent opportunity to become acquainted with members of the staff of the College and the Experiment Station.

## 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 and the Delaware, Lackawanna and Western Railroads. There are, in addition, auto bus lines between Ithaca and Syracuse, Auburn, Elmira, and other neighboring cities. The University stands on a plateau about four hundred feet above the lake. The officers of instruction and administration at Cornell University number nearly eight hundred. The campus and farms cover 1436 acres.

The buildings of the University are more than thirty-five in number, providing quarters for the several colleges of the University. These are Agriculture, Architecture, Arts and Sciences, Engineering, Graduate School, Law, Medicine, Veterinary Medicine, and Home Economics.

The New York State College of Agriculture at Cornell University occupies buildings erected by the State subsequent to 1904. These buildings are large and well equipped, and afford an attractive home for the College.

## SOCIAL AND RELIGIOUS ADVANTAGES

Every year the students in each of the several winter courses have formed clubs. The 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 Dairy 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 friendship among the students.



A CLASS IN ANIMAL HUSBANDRY JUDGING BULLS

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. Several church denominations are represented at Cornell by special pastors who also serve as secretaries of the Christian Association and have offices at Barnes Hall. These, with the executive secretary and the hostess, constitute the staff of the Christian Association. The Association has 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. 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 this course. 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.

## DESCRIPTION OF THE WINTER COURSES

## 1. COURSES IN GENERAL AGRICULTURE

Those persons who expect to engage in general farming or hope to obtain positions as superintendents of farms on which diversified agriculture is practiced, usually choose the courses in general agriculture. Persons who plan to specialize in dairy industry, poultry husbandry, fruit growing, flower growing, or vegetable crops, will register in one of the professional courses (pages 24 to 35).

In order to aid the student in selecting a schedule from among the large number of subjects offered in general agriculture, the following groups are listed. The groups (A, B, C, D, and E) should all be carefully examined before a choice is made. These groups may be modified in the light of the student's interest and experience, or other combinations may be made by the student himself. The schedule determined upon should be submitted in the student's application. No student may take less than twelve nor more than eighteen hours without special permission, and sixteen hours is as much as the average student can carry satisfactorily.

GROUP A	<i>Hours</i>
Apiculture 1 (Beekeeping), page 19, . . . . .	2
Extension Teaching 1 (Oral Expression), page 21, . . . . .	2
Dairy Industry 8 (Farm Dairying), page 21, . . . . .	4
Extension Teaching 2 (The Organization of New York State Agriculture), page 21, . . . . .	2
Rural Engineering 5 (Farm Shop Work), page 24, . . . . .	2
Forestry 1 (The Farm Woodlot), page 23, . . . . .	1
Meteorology 1 (Elementary Meteorology), page 23, . . . . .	2
Veterinary Medicine 1 (Diseases of Dairy Cattle, and Veterinary Hygiene), page 24, . . . . .	1

In the place of some of the subjects named above, the student may readily substitute any one of the following:

	<i>Hours</i>
Agricultural Economics and Farm Management 10 (Marketing), page 18, . . . . .	3
Agricultural Economics and Farm Management 1 (Farm Records and Accounts), page 18, . . . . .	2
Agronomy 4 (Field Crop Production), page 18, . . . . .	4
Animal Husbandry 1 (Feeds and Feeding), page 18, . . . . .	3
Entomology 1 (Injurious Insects), page 21, . . . . .	2
Plant Breeding 1 (Plant Breeding), page 23, . . . . .	3
Plant Pathology 1 (Plant Diseases), page 23, . . . . .	3
Pomology 2 (General Fruit Growing), page 23, . . . . .	4
Poultry Husbandry 11 (Farm Poultry), page 23, . . . . .	4
Vegetable Crops 1 (Commercial Vegetable Crops), page 24, . . . . .	4

## GROUP B

Persons who wish to study primarily the animal interests in farming may select the following schedule:

	<i>Hours</i>
Animal Husbandry 1 (Feeds and Feeding), page 18, . . . . .	3
Animal Husbandry 2 (Principles of Breeding Dairy Cattle), page 18, . . . . .	3
Animal Husbandry 5 (Beef Cattle), page 19, . . . . .	1½
Animal Husbandry 6 (Horses), page 19, . . . . .	1½
Dairy Industry 8 (Farm Dairying), page 21, . . . . .	4
Poultry Husbandry 11 (Farm Poultry), page 23, . . . . .	4
Veterinary Medicine 1 (Diseases of Dairy Cattle, and Veterinary Hygiene), page 24, . . . . .	1

Agronomy 4 (Field Crop Production) may be substituted for any four hours of work in Group B.

GROUP C

Persons who wish to study primarily the crop growing interests in farming may select the following schedule:

	<i>Hours</i>
Agronomy 2 (Soil Fertility), page 18, . . . . .	3
Agronomy 4 (Field Crop Production), page 18, . . . . .	4
Plant Breeding 1 (Plant Breeding), page 23, . . . . .	3
Plant Pathology 1 (Plant Diseases), page 23, . . . . .	3
Entomology 1 (Injurious Insects), page 21, . . . . .	2
Meteorology 1 (Elementary Meteorology), page 23, . . . . .	2

Extension Teaching 1 (Oral Expression) or Extension Teaching 2 (The Organization of New York State Agriculture) may be substituted in this course for Meteorology 1; and Agricultural Economics and Farm Management 2 (Farm Management) or Vegetable Crops 1 (Commerical Vegetable Crops) may be substituted for any three hours in the above schedule.

GROUP D

Whether the student plans to take the courses in general agriculture or one of the professional courses outlined hereinafter (pages 24 to 35), he is advised to attend more than one winter course and should definitely plan the work ahead for two years.

The following two-years program is suggested for students who desire to prepare themselves to operate general-crop and dairy farms.

FIRST YEAR

	<i>Hours</i>
Agricultural Economics and Farm Management 1 (Farm Records and Accounts), page 18, . . . . .	2
Agricultural Economics and Farm Management 2 (Farm Management), page 18, . . . . .	3
Agronomy 2 (Soil Fertility), page 18, . . . . .	3
Agronomy 4 (Field Crop Production), page 18, . . . . .	4
Animal Husbandry 1 (Feeds and Feeding), page 18, . . . . .	3
Animal Husbandry 2 (Principles of Breeding Dairy Cattle), page 18, . . . . .	3

SECOND YEAR

	<i>Hours</i>
Agricultural Economics and Farm Management 10 (Marketing), page 18, . . . . .	3
Dairy Industry 8 (Farm Dairying), page 21, . . . . .	4
Meteorology 1 (Elementary Meteorology), page 23, . . . . .	2
Rural Engineering 1 (Farm Mechanics), page 24, . . . . .	3
Veterinary Medicine 1 (Diseases of Dairy Cattle, and Veterinary Hygiene), page 24, . . . . .	1
Optional (chosen in line with the student's major interest) . . . . .	5

GROUP E

Persons who wish to study primarily the problems of marketing and farm management may select the following schedule:

	<i>Hours</i>
Agricultural Economics and Farm Management 1 (Farm Records and Accounts), page 18, . . . . .	2
Agricultural Economics and Farm Management 2 (Farm Management), page 18, . . . . .	3
Agricultural Economics and Farm Management 10 (Marketing), page 18, . . . . .	3
Agricultural Economics and Farm Management 144 (Agricultural Business), page 18, . . . . .	2
Extension Teaching 1 (Oral Expression), page 21, . . . . .	2
Extension Teaching 2 (The Organization of New York State Agriculture), page 21, . . . . .	2
Elective . . . . .	2 or 4

## AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

1. **Farm Records and Accounts.** Two hours a week. Lecture, W 3. Roberts 292. Laboratory, M 10-12.30. East Roberts 232. Assistant Professor HARRIOTT. Farm inventories; cash accounts; income-tax reports; single-enterprise cost accounts; complete farm cost accounts; other farm records. Special emphasis is given to the interpretation of results and their application in the organization and management of farms. Laboratory fee, \$2.

2. **Farm Management.** Three hours a week. Lectures, M F 3. Roberts 292. Laboratory, S 10-12.30. Farm Management Building 102. Mr. YOUNG.

Farming as a business; types of farming; balance and size of business; rates of production; farm layout; building arrangement; ways of starting farming; choosing and buying a farm; use of capital and credit; planning, organization, and management of specific farms. Laboratory fee, \$2.

10. **Marketing.** Three hours a week. Lectures and recitations, T W Th 8. Marketing Building. Professor SPENCER.

Practical problems in selling farm products and purchasing farm supplies; methods and costs of marketing certain products, such as milk, apples, cabbage, and potatoes, from producer to consumer. Cooperative marketing, including a study of several prominent associations in New York State.

144. **Agricultural Business.** (By nonresident lecturers.) Lecture and discussion, F 11-12.50. Farm Management Building 102. Professor SPENCER in charge.

Most of the lectures are given by executives of private or cooperative business organizations engaged in the distribution of farm products or farm supplies.

A discussion period at 12 o'clock affords an opportunity for informal discussion of questions related to the subject of the preceding lecture.

## AGRONOMY

2. **Soil Fertility.** Three hours a week. Lectures, M W Th F 2. Caldwell 100. Professor BUCKMAN and Extension Professor WORTHEN.

An elementary course dealing with those physical, chemical, and biological properties of the soil that have special practical applications. The use of lime, manures, and fertilizers will be an important phase of the work.

4. **Field Crop Production.** Four hours a week. Lectures, M W F 8. Caldwell 143. Laboratory, Th 11-12.50. Caldwell 250. Assistant Professor COOPER.

A course dealing with the principal field crops grown in New York State. Cultural methods, crop rotations, fertilizer practices, soil and climatic adaptation, and the better varieties of the important crops are considered. Laboratory fee, \$1.

## ANIMAL HUSBANDRY

1. **Feeds and Feeding.** Three hours a week. Lectures, M W 9. Animal Husbandry Building C. Practice, T 11-12.50. Professor SAVAGE and Mr. HARRISON. The principles and practices of compounding rations and of feeding farm animals.

2. **Principles of Breeding Dairy Cattle.** Three hours a week. Lectures, T Th 9. Animal Husbandry Building A. Practice, W 11-12.50. Professor SAVAGE and Mr. HARRISON.

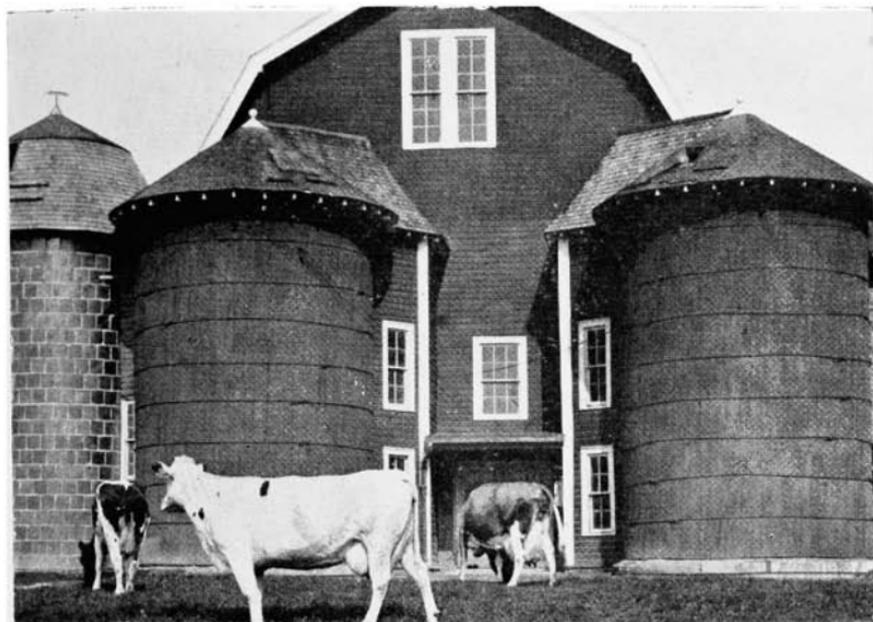
Origin and development of the dairy breeds of cattle; care and management of the dairy herd; milk production; practice in judging and scoring.

3. **Swine.** Credit, one and one-half hours. Lectures, second six weeks of the winter course, T Th 11. Animal Husbandry Building B. Practice, W 2-4. Animal Husbandry Pavilion. Mr. WILLMAN.

Types of swine, with their adaptations and breeds; the care and management of the farm herd; fattening for market; housing; range and forage crops; practice in judging, with carcass work.

4. **Sheep.** Credit, one and one-half hours. Lectures, first six weeks of the winter course, T Th 11. Animal Husbandry Building B. Practice, W 2-4. Animal Husbandry Pavilion. Mr. WILLMAN.

Selection, breeding, feeding, and management of the farm flock throughout the year; the breeds, with their special features; fattening lambs and wethers; simple features of sanitation and building; wool grading.



A MODERN COW BARN HOUSES THE COLLEGE HERD

The herd has been carefully bred and selected for nearly half a century

5. **Beef Cattle.** Credit, one and one-half hours. Lectures, second six weeks of the winter course, T Th 10. Animal Husbandry Building C. Practice, F 1-3. Animal Husbandry Pavilion. Assistant Professor HINMAN and Mr. RHOAD.

Breeds of beef cattle, with adaptations of each; the place of beef cattle in mixed farming; the management of a breeding herd throughout the year; selection, buying, feeding, and marketing of feeders; judging animals on foot and as carcasses.

6. **Horses.** Credit, one and one-half hours. Lectures, first six weeks of the winter course, T Th 10. Animal Husbandry Building C. Practice, F 1-3. Animal Husbandry Pavilion. Professor HARPER and Mr. RHOAD.

Breeding, feeding, and care of farm work horses; breeds of draft horses, their characteristics and adaptations; judging; common unsoundnesses.

#### APICULTURE

1. **Beekeeping.** Elective by students in all courses. Two hours a week. Lectures, discussions, and demonstrations, T 2, Th 2, 3. Dairy Building 120. Professor PHILLIPS.

This course includes a general discussion of the work of handling bees during each of the seasons and the necessary seasonal operations, such as preparing bees for wintering, wintering methods, building up colonies in the spring, swarm control, supering, and disease control. It also includes a discussion of the chief characteristics of honey as a food.



STUDENTS TESTING MILK IN A CLASS IN DAIRY INDUSTRY

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY  
APPLICATION FOR ADMISSION TO WINTER COURSES

Remove this application without separating the pages  
Print name clearly, using pen and ink or typewriter

Name of applicant *IN FULL*..... Last name First name Second 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 and address of parent or guardian, or person to be notified in case of serious illness or accident.....  
.....  
School or college attended (*Indicate clearly the type of school or course*).....Period of attendance  
Name of school.....  
.....  
.....  
Have you received any degree or certificate?.....What?.....Where and when?.....

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 1925.....Place.....State.....

Occupation 1926.....Place.....State.....

Occupation 1927.....Place.....State.....

Occupation 1928.....Place.....State.....

Occupation 1929.....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

Address.....Address

\*Two endorsements are necessary, and should be preferably by your teacher and your pastor or a public official, not a member of your own family. These persons should sign the application themselves.

NOTE.—The applicant must answer ALL the questions on both sides of this application blank. When the blank has been answered in full, mail it to Olin W. Smith, 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, make out a form such as is given on the reverse side.

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

- 1. General Agriculture
- 2. Dairy Industry
- 3. Poultry Husbandry
- 4. Fruit Growing
- 5. Flower Growing] Not given in 1929-30.
- 6. Vegetable Crops

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 of the other four courses, write here the number and the name of each subject that you desire to take, using the number given in the catalogue. Example: No. 2, Subject Agricultural Economics and 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 12.

No..... Subject.....

After filling out this schedule completely according to directions, mail it, with your application for admission, to Olin W. Smith, Secretary. (OVER)

## TIME SCHEDULE

Before filling out the previous page the applicant should make sure, by means of a form similar to the one shown below, that the subjects he desires do not conflict in time. Most of the courses offer options in laboratory periods, so that, with the exercise of care, one can generally arrange to include the subjects desired.

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8-9						
9-10						
10-11						
11-12						
12-1						
1-2						
2-3						
3-4						
4-5						
5-6						

## DAIRY INDUSTRY

*Students wishing to specialize in the manufacture of dairy products should enroll in the professional dairy course outlined on pages 24 to 29.*

**8. Farm Dairying.** For students in general agriculture only. Four hours a week. Lecture and recitation, F 3-5. Dairy Building 120. Laboratory practice, S 8-12.50. Dairy Building 209 and 133. Professor GUTHRIE.

Composition and secretion of milk; the Babcock test for fat in milk and its products; the care and handling of milk; the manufacture of farm dairy products, including the operation of cream separators, the making of butter, starters, some of the farm cheeses, and ice cream; dairy arithmetic; ice harvesting; judging dairy products; scoring dairy barns. Laboratory fee, \$5.

## ENTOMOLOGY

**1. Injurious Insects.** Two hours a week. Lectures, T Th 3. Roberts 292. Professor HERRICK.

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

## EXTENSION TEACHING

**1. Oral Expression.** Two hours a week. Lectures and discussions, M W 4. Roberts 131. Criticism by appointment, daily, 8-12.50 and 2-4. Assistant Professor PEABODY.

Practice in 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.

**2. The Organization of New York State Agriculture.** Two hours a week. Lectures and discussions, T Th 9. Roberts 292. Mr. TAYLOR.

This course is designed to acquaint the student with the agricultural conditions and agricultural pursuits in the several farming regions of New York State. It includes a study of the form of organization and method of operation of the principal farm organizations and institutions. A review of the major agricultural developments and changes that have taken place during the history of the State, together with their underlying causes, are discussed. Attention is also given to the types of soil and climate and their relation to types of farming.

## [FLORICULTURE AND ORNAMENTAL HORTICULTURE]

Not given in 1929-30

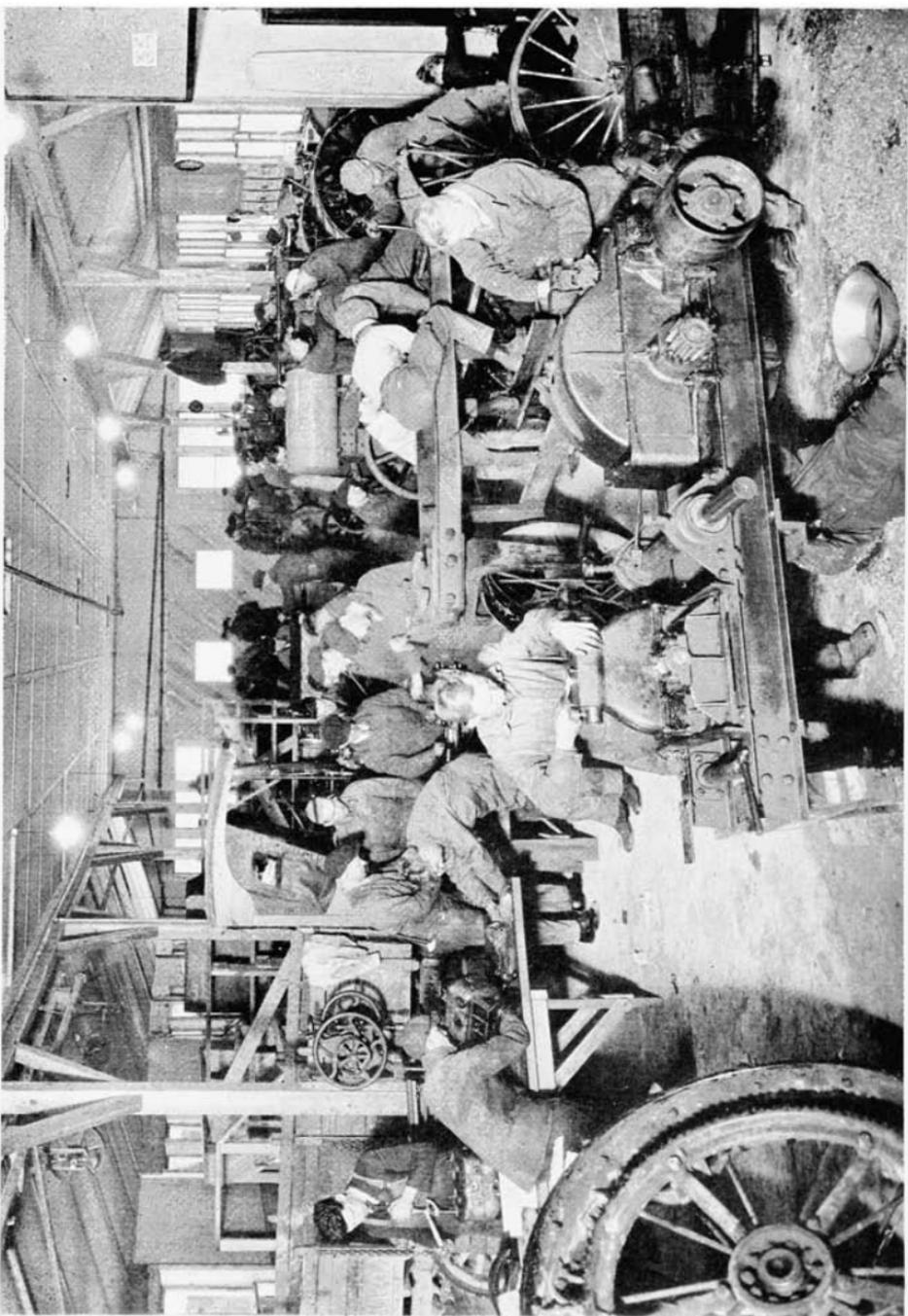
**3. Planning and Planting Rural Properties.** Four hours a week. Acting Professor PORTER.

A discussion of the principles underlying simple arrangements and planting in home grounds, school grounds, and village-improvement work.

The course consists of lectures to illustrate fundamental principles, and of practice and field trips to observe land conditions; making small surveys; preparing simple plans; learning the common plants, and utilizing them in planting practice. Laboratory fee, \$1.50.

**4. Woody Plant Materials.** Two hours a week. Professor R. W. CURTIS.  
A brief study of the characteristics and requirements of trees, shrubs, and vines for landscape planting.

**6. Gardening and Garden Flowers.** Three hours a week. Miss MINNS.  
A course designed to study the methods of propagation and growing of outdoor annuals and herbaceous perennials. Studies are made, so far as possible, of individual garden problems. The culture of outdoor roses, asters, peonies, phlox, iris, and bulbous plants are considered.



RURAL ENGINEERING LABORATORY  
Students have an opportunity to learn to repair and adjust farm machinery in the shops of the Department of Rural Engineering

## FORESTRY

1. **The Farm Woodlot.** One hour a week. Lecture, M 10. Fernow 210. Three field trips or laboratory periods will be arranged. Acting Assistant Professor RIGTER.

A course to present the most important phases of woodlot forestry; characteristics of the principal trees of New York State woodlots; the methods of measuring standing timber; the care and improvement of the woodlot; forest planting; the preservative treatment of farm timbers.

## HYGIENE AND PREVENTIVE MEDICINE

1. **Rural Health.** One hour a week. Lecture, F 11. Histology lecture room, Stimson. Dr. GOULD.

This course aims to acquaint the student with certain of the factors influencing the personal and community health of rural dwellers; also the possible effects of ill health of a dairyman or other food producer on the consumer of his products.

Rural sanitation; the hygienic production of milk, meat, and their products; the county health unit; and home nursing are among the subjects discussed.

## METEOROLOGY

1. **Elementary Meteorology.** Two hours a week. Lecture, M 11. Laboratory, Th 11-12.50. East Roberts 341. Professor MORDOFF.

This course is designed to present the more essential phases of meteorology and climatology and their relations to agriculture. Some time is spent in studying the principles and methods of practical weather forecasting from weather maps and local observations.

## PLANT BREEDING

1. **Plant Breeding.** Three hours a week. Lectures and discussions, M 9-11 and F 9. Fernow 212. Professor BUSSELL and Dr. LIVERMORE.

The better-known facts of variation and heredity are considered. Methods of practical plant breeding, including selection and hybridization are discussed. A portion of the time is devoted to practicums. Greenhouse material is used in acquainting the student with methods and results of breeding work.

## PLANT PATHOLOGY

1. **Plant Diseases.** Three hours a week. Lecture, S 9. Roberts 292. Practice, T or W 11-12.50 and Th or F 10-12.50. Bailey West Basement. Extension Assistant Professor FERNOW.

A course designed to give the student a better understanding of the nature and cause of plant diseases and how these are related to intelligent control. Certain typical diseases of economic importance are studied in detail and the student is then given the opportunity of applying what he has learned to the study of diseases in which he is especially interested. Laboratory fee, \$1.50; breakage deposit, \$3.

## POMOLOGY

2. **General Fruit Growing.** Four hours a week. Lectures, M W F 9, S 8. East Roberts 108. Professor MACDANIELS or Professor HEINICKE.

This lecture course is designed for students who desire a general knowledge of fruit growing, and who cannot schedule the laboratory work. Whenever possible the student is urged to register for course 1.

## POULTRY HUSBANDRY

11. **Farm Poultry.** Four hours a week. Lectures, M T Th 4-5. Poultry Building 375. Laboratory practice, M 10.30-12.50. Poultry Building 300. Professors RICE and HEUSER, Extension Professor BOTSFORD, Assistant Professor HALL, Dr. HUTTAR, and Mr. MARBLE.

A discussion of the domestic breeds of poultry; hatching and rearing; the principles of breeding, feeding, and management; marketing; diseases of poultry; poultry houses; related matters. Laboratory fee, \$3.

## RURAL ENGINEERING

1. **Farm Mechanics.** Three hours a week. Lectures, T Th 2. Dairy Building 218. Practice, Th or S 10-12.50. Rural Engineering Laboratory. Professor ROBB and Mr. CHADWICK.

A course dealing with knots and splices of ropes; shafts, pulleys, belts, pulley speeds and belt lacing; gasoline engines; pumps and water systems; care and adjustment of farm machinery. Laboratory fee, \$2.

5. **Farm Shop Work.** Two hours a week. Lectures, demonstrations, and practice, T F 10-12.50. Rural Engineering Laboratory. Assistant Professor ROEHL and Mr. \_\_\_\_\_.

Practice in carpentry, saw filing, tool sharpening, fitting handles, soldering, and cold-metal work. Study is made of the plan and interior arrangement of the farm shop and of the selection, care, and use of the tools necessary for farm construction and general repair work. Laboratory fee, \$2.

## VEGETABLE CROPS

1. **Commercial Vegetable Crops.** Four hours a week. Lectures, M W F 4. Poultry Building 325. Laboratory, S 10.30-12.50. Vegetable Greenhouses. Professor WORK.

A comprehensive survey is given of the vegetable industry of New York State. The problems of the market gardener, the vegetable forcer, the truck grower, the muck-land farmer, and the producer of canning crops, are taken up. Climatic adaptation, soils and soil management, varieties, seed, plant growing, cultivation, irrigation, grading, handling, and packing, are all considered in general, and with reference to the special crops.

The laboratory work includes exercises in plant growing, vegetable-variety studies, hotbed and coldframe construction and management, and the grading and handling of important vegetable crops. Members of the class who desire may participate in a one-day excursion to Rochester, in January, to visit vegetable greenhouses and packing houses; cost, about \$9. Laboratory fee, \$1.50.

## VETERINARY MEDICINE

1. **Diseases of Dairy Cattle, and Veterinary Hygiene.** One hour a week. Lecture, F 9. Veterinary College, Small Lecture Room. Dr. 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.

## 2. COURSE IN DAIRY INDUSTRY

The course in dairy industry is intended especially for persons who plan to operate commercial dairy plants, and students 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. Neither is it intended for persons preparing to occupy positions as herdsman, or as testers in advanced registry work. Students wishing to qualify themselves for such work should enroll in general agriculture taking Dairy Industry 8 (page 21), and Animal Husbandry 1 and 2 (page 18), and such other subjects as may be recommended by the faculty adviser.

A meeting of all winter-course students in dairy industry will be held at four o'clock on the afternoon of registration day, November 6, in the Dairy Building, room 119.

Instruction in Dairy Industry begins at 8 a. m., Thursday, November 7, 1929. At Thanksgiving time, there will be one day only of recess. Instruction will continue as usual during Farm and Home Week, until February 14.

In addition to the general expenses listed on page 7, students in dairy industry must meet the following charges:

#### SPECIAL EXPENSES

Laboratory fee, to pay in part for materials used and to cover laundry and breakage. . . . .	\$35.00
(Less than the full term: First period only, \$20; second period only, \$7.50 for each manufacturing subject taken.)	
Books . . . . .	\$15.00-\$25.00
One suit of overalls, about . . . . .	\$3.00
One rubber apron, about . . . . .	\$1.00

In addition, at least two white suits, with caps, will be needed for the work following the Christmas vacation. White shirts with short sleeves and soft collars, white trousers, and black belts, are preferred, though students already having white suits of a different type may wear them.

Waterproof footwear is necessary for work in the dairy laboratories. Books, notebooks, and the special clothing listed above can be purchased in Ithaca.

#### METHODS OF INSTRUCTION

Instruction is given largely by means of actual practice in the different kinds of dairy work. This is supplemented by lectures, recitations, and reading assignments in dairy literature. Brief written examinations, and informal discussions of topics previously assigned for study, are frequently introduced.

The term is divided into two periods, the first occupying the six weeks preceding the Christmas recess, and the second including the time from the reopening of College after the Christmas recess until the close of the term. The first period is devoted to acquiring a knowledge of those subjects fundamental to a study of any dairy manufacturing process. On this foundation the student, during the latter half of the course, develops his understanding of the various factors involved in the actual making or processing of dairy products.

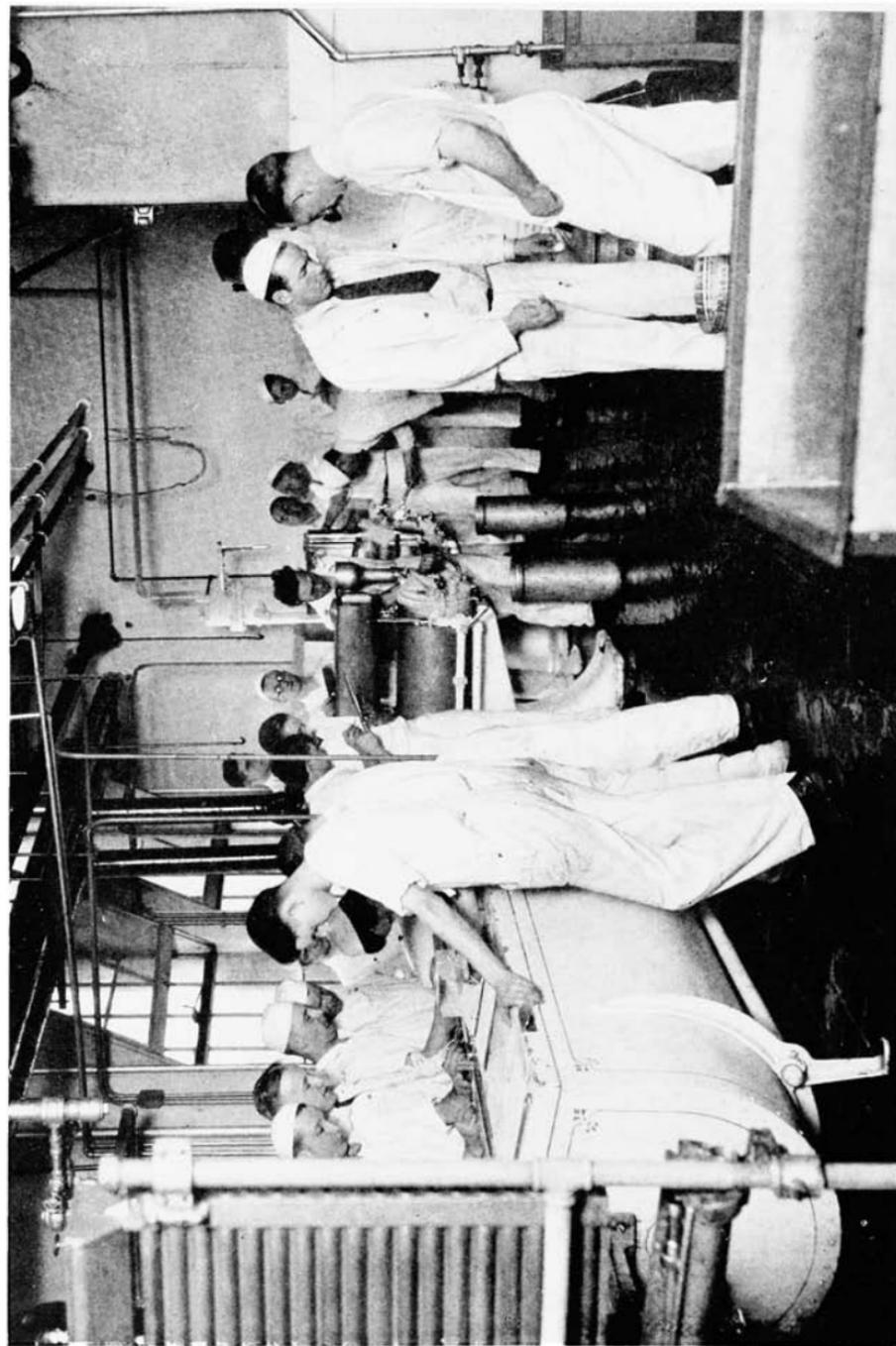
#### FIRST PERIOD

November 6 to December 21, inclusive

The following lecture and practice courses are required during the first half of the term:

200. **Testing and Composition of Dairy Products.** Credit three hours. Professor TROY.

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



ICE CREAM LABORATORY, DAIRY BUILDING

Students in Dairy Industry are given thorough training in handling milk and dairy-plant machinery

lactometer; calculating milk solids; some of the simple tests for preservatives and adulterations. A thorough drill is given in making all these determinations. The testing laboratory is furnished with all necessary equipment.

A limited amount of laboratory practice in the analysis of dairy products by the Mojonnier method is also given. Special attention will be paid to the use of chemical balances and other laboratory apparatus.

**201. Dairy Bacteriology.** Credit two hours. Professor BREW and Mr. ———.

The course considers the relation of bacteria to dairy work, their action on milk and its products, and methods of controlling their growth.

Studies are made of the various bacteria commonly found in milk. Exercises are given in plating samples, counting organisms, and making microscopic examinations. Practical application of cultural methods is made through the preparation and development of starters such as are used in butter- and cheese-making, in the preparation of cultured milk drinks, and the like.

This work is intended to acquaint the student with the important part played by bacteria in dairy products, rather than to train him in scientific procedure.

**202. Dairy Chemistry.** Credit one hour. 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.

**203. Dairy Arithmetic.** Credit one hour. Professor GUTHRIE.

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

**204. Dairy Mechanics.** Credit three hours. Assistant Professor AYRES, Professor ROSS, and Mr. CARD.

Students receive practice in the firing, care, and operation of boilers, and in the care and operation of steam engines, cream separators, refrigeration machinery, and other dairy equipment. Practical work is also given in the installation of shafts and pulleys, pipe fitting, belt lacing, and soldering.

#### ELIGIBILITY FOR THE SECOND PERIOD

During the last half of the term, laboratory courses in the manufacture of various dairy products will be conducted as listed subsequently.

Any student whose work in the first period has been of satisfactory grade, may enroll in any of the courses offered which do not conflict as to time.

These courses are open also to former students who have satisfactorily completed the work of the first half, and who wish to return and obtain additional training in dairy manufacturing lines.

This privilege is extended also to persons who may already have received training elsewhere equivalent to the work of the first half of this course. Such persons will be expected to pass an entrance examination covering the subjects listed in the first half, as evidence of their fitness for admission; and a complete understanding between the candidate and the dairy department should be accomplished by correspondence before any move is made toward coming to Ithaca.

Fees covering enrollment of those not registered for the first half of the term are stated on pages 7 and 25.

## SECOND PERIOD

The following elective courses are offered, subject to the requirement that at least five students register for any desired course.

No student may take more than three subjects, as the work of any one course will occupy his entire time during the period scheduled.

## January 6 to 18 inclusive

205. **Market Milk.** Credit three hours. Professor Ross and Assistant Professor AYRES.

This course covers the sanitary construction of dairy barns; score cards for dairy barns and market milk; food value of milk; standardizing milk and cream; legal standards for milk and cream; dairy utensils; the general production and handling of clean milk.

The laboratory work includes bottling; milk pasteurization; different methods of cooling milk; clarification; standardization of milk and cream; judging milk and cream for sanitary quality; the use of the sanitary score card in judging dairy barns and dairy plants.

## January 20 to February 1 inclusive

206. **Condensed and Powdered Milk.** Credit three hours. Assistant Professor AYRES and Mr. \_\_\_\_\_.

This course considers the principles and practices of making condensed and powdered milk. Students make sweetened condensed, evaporated, and superheated milk; and powdered whole milk, skimmilk, and buttermilk.

The laboratory is equipped with two types of condensing pans, sweetened-condensed-milk coolers, copper- and glass-lined jacketed hot wells, homogenizer, filler, sterilizer, and shaker; and the necessary equipment for laboratory work connected with condensing.

207. **Cheese.** Credit three hours. Assistant Professor AYRES and Mr. \_\_\_\_\_.

Instruction is given in the principles underlying the making of the common types of both hard and soft cheeses; the commercial possibilities of these products and the marketing methods are discussed. The making and use of starters, the judging of cheese, and the construction and equipment of cheese factories are also considered.

The students make a variety of these cheeses, including Cheddar, cream, bakers', cottage, club, and the like.

The cheese room is equipped with all necessary apparatus, and all work is performed by students under direction of the instructor. Every detail of the methods employed is carefully observed and recorded by them on blank forms provided for the purpose.

## February 3 to 14 inclusive

208. **Butter.** Credit three hours. Assistant Professor AYRES and Mr. \_\_\_\_\_.

This course deals with the principles involved in butter-making processes, and the practices followed in modern creameries.

Training is given in judging and grading cream; standardizing acidity of cream; pasteurization; and the manufacture of butter from both sweet and ripened cream. This involves also the making and use of starters, and a study of cream-ripening methods.

Practice in scoring and grading butter is included, and consideration is given to the marketing of the finished product.

209. **Ice Cream.** Credit three hours. Assistant Professor AYRES and Mr. \_\_\_\_\_.

The subject matter covered in the lectures consists of the successive steps in the making of ice cream; it includes, also, allied subjects, such as types of machines; refrigeration; quality of materials used; marketing; business management; factory construction and equipment.

The laboratory is equipped with both hand and power freezers. There are three types of power freezers, one using ice for freezing and hardening, and two using mechanical refrigeration. Various kinds of ice cream are made, including custards and puddings. In the laboratory the student becomes familiar with the actual commercial business.

### 3. 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 persons engaged in the poultry enterprise. The course is intended also to assist in supplying trained poultrymen to take charge of poultry plants owned by others. Although it is manifestly impossible in twelve weeks to give 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. Applicants must furnish satisfactory evidence of having had at least six-months experience in working on an approved farm or poultry plant.

Prospective students who have not had experience may well plan to take a preliminary year in general agriculture, spending the intervening period in work on a poultry farm. The following is suggested as a program for the preliminary year.

Agronomy 2 (page 18).....	3
Extension Teaching 2 (page 21).....	2
Agricultural Economics and Farm Management 2 (page 18).....	3
Pomology 2 (page 23).....	4
Poultry Husbandry 11 (page 23).....	4

A meeting of all winter-course students in poultry husbandry will be held at four o'clock on the afternoon of registration day, November 6, in Poultry Building 325.

#### SPECIAL EXPENSES

Laboratory fee (to pay in part for material used).....	\$12.00
General supplies.....	12.00
Excursions.....	50.00

Besides these expenses, about \$5 worth of books are usually bought and retained by the student. For the cost of board and other expenses, see page 7. If the prospective student owns a set of drawing instruments, drawing board, triangles, and rulers, he should bring them and thereby save part of the expense for general supplies.



STUDENTS IN POULTRY HUSBANDRY STUDYING MARKET EGGS

## REQUIRED SUBJECTS

Instruction in these courses is given by Professors RICE and HEUSER, Extension Professor BOTSFORD, Assistant Professors BRUNETT and HALL, Dr. HUTTAR, and Messrs. MARBLE and ANDREWS.

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 2-4.

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, and M W F 4.45-5.45 for a period of approximately two weeks. Poultry Building 375, and elsewhere by appointment.

A course of lectures relating to poultry husbandry and closely allied subjects given by members of the Poultry Department staff and several other departments of the College of Agriculture and of the Cornell Medical College.

3. **Laboratory Practice.** Four hours a week. Open only to students in the professional course. T W Th F S 10-12.30; M F 2-4. Poultry Building 300.

This course includes the designing and drawing of 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; judging and scoring for fancy points and for production; sanitation.

5. **Flock Management.** One hour a week. 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.

Practice in record keeping and management of fowls for egg production and for fattening.

6. **Study of Poultry Literature.** One hour a week. Hours to be arranged. Library and outside reading. Reports by students and round-table discussions.

7. **Incubator Practice.** One hour a week. Practice, reporting three times daily (including Sunday) for four weeks, 7.45-8.15, 12.30-1, 4-4.30.

Practice in operating incubators, testing eggs, keeping records of incubation, and comparison of results.

8. **Brooder Practice.** One hour a week. Practice, reporting three times daily (including Sunday) for four weeks, 7.45-8.15, 12.30-1, 4-4.30.

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

9. **Poultry Accounts.** One hour a week. Open only to students in the professional course. M, 10-12.30. Poultry Building 300.

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 three-days trip will be taken, during the days immediately following the Christmas vacation, to visit successful New York State farms and the New York City markets. This trip is required, and every student must take it in order to receive full credit for the course. The total expense is approximately \$50.

## 4. COURSE IN FRUIT GROWING

The course 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 equip him for such a position.

Not more than twenty-five students can be admitted to this course unless some of the applicants have previously had the work in plant pathology.

## REQUIRED SUBJECTS

Students planning to attend but one winter session are required to take the subjects that follow. Those without experience in fruit growing had best plan a two-years program.



WINTER COURSE STUDENTS LEARN TO PRUNE TREES CORRECTLY

1. **Commercial Fruit Growing.** Six hours a week. Lectures, M W F 9, S 8. East Roberts 108. Practice, W F 10-12.50. East Roberts 108. Professor MACDANIELS or Professor HEINICKE.

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

	<i>Hours</i>
Plant Pathology 1 (page 23) . . . . .	3
Entomology 1 (page 21) . . . . .	2
Agronomy 2 (page 18) . . . . .	3
Agricultural Economics and Farm Management 2 (page 18) . . . . .	3

Students who can possibly do so should supplement the above courses with courses in general agriculture in a preliminary or in a succeeding session. The following are suggested:

	<i>Hours</i>
Agricultural Economics and Farm Management 1 (page 18) . . . . .	2
Rural Engineering 1 (page 24) . . . . .	3
Vegetable Crops 1 (page 24) . . . . .	3 or 4
Poultry Husbandry 11 (page 23) . . . . .	4
Meteorology 1 (page 23) . . . . .	2
Rural Engineering 5 (page 24) . . . . .	2

Those who have had little or no experience in fruit growing are advised to take this work in a preliminary winter course, substituting Pomology 2 (page 23) in their schedules for one of the subjects here listed. By so doing, they will get a needed introduction to the subject and be better able to judge whether they desire the laboratory course.

[5. COURSE IN FLOWER GROWING]

Not given in 1929-30

New York is distinctly a flower-growing State. The financial interests of the industry are greater in this than in any other State in the Union. There is keen competition among flower growers, and 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, one in the production and the other in methods of distribution of cut flowers and ornamental potted plants. These, with other required subjects, should give the student a broad knowledge of the subject and equip him well for his work.

Interest in flower growing, however, is not confined to men engaged in the commercial industry. There is an increasing demand from amateurs for information regarding the culture of plants to be used about the home, in the ornamentation of rural public buildings, and the school grounds. Courses have been arranged with a view to meeting this demand. These courses are outlined on page 21. Those following are planned especially for persons who intend to engage in commercial floriculture.

REQUIRED SUBJECTS

1. **Commercial Flower Production and Greenhouse Practice.** Five hours a week. Professor WHITE and Mr. \_\_\_\_\_.

A study of the methods of growing standard florists' 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. Laboratory fee, \$3.

## REQUIRED SUBJECTS

	<i>Hours</i>
Agronomy 2 (page 18) . . . . .	3
Plant Pathology 1 (page 23) . . . . .	3
Entomology 1 (page 21) . . . . .	2
Plant Breeding 1 (page 23) . . . . .	3

## ELECTIVE SUBJECTS

	<i>Hours</i>
Floriculture and Ornamental Horticulture 3 (page 21) . . . . .	4
Floriculture and Ornamental Horticulture 4 (page 21) . . . . .	2
Floriculture and Ornamental Horticulture 6 (page 21) . . . . .	3

**2. The Distribution of Cut Flowers and Potted Plants and the Management of Retail Flower Stores.** Four hours a week.

A course designed particularly for training young men and women to become expert store managers and assistants. All factors which concern flower store work, including business administration, purchasing of supplies, salesmanship, delivery, decorations, the artistic use of flowers, and similar topics are discussed. Frequent lectures are given by practical men from various parts of the United States who have made a pronounced success in their special lines. Laboratory fee, \$5.

## REQUIRED SUBJECTS

	<i>Hours</i>
Floriculture and Ornamental Horticulture 1 (page 33) . . . . .	5
Floriculture and Ornamental Horticulture 4 (page 21) . . . . .	2
Floriculture and Ornamental Horticulture 6 (page 21) . . . . .	3
Plant Breeding 1 (page 23) . . . . .	3

## 6. COURSE IN VEGETABLE CROPS

With the rapid growth of cities and with vegetable food occupying a place of constantly increasing importance, the demand for vegetables has increased greatly during the past few years. An ever-increasing number of persons are looking to the growing of vegetables as a source of their income, both on specialized vegetable farms and in connection with other types of agriculture.

In view of this growing interest in vegetables, the Department of Vegetable Gardening offers the following course intended to meet the needs of persons who desire to obtain, in a short time, a knowledge of the fundamental principles and practices of commercial vegetable growing, grading, handling, and storage. Application of these principles is made to different phases of vegetable production and handling.

This course is designed especially for students who have had some farm experience. It should be of value to owners, and to those who plan to become managers or superintendents of specialized vegetable farms as well as to those who plan to grow or handle vegetables in a commercial way in conjunction with some other phase of agriculture, such as general or dairy farming, fruit growing, or poultry farming.

Students are advised to consider the possibility of taking more than one winter's work in order to broaden their training and to learn more of contributing subjects. Opportunity would also be afforded to build combinations of courses embracing other fields as dairy, pomology, poultry, and others.

## REQUIRED SUBJECTS

1. **Commercial Vegetable Crops.** Four hours a week. Lectures, M W F 4. Poultry Building 325. Laboratory, S 10.30-12.50. Vegetable Greenhouses. Professor WORK.

A comprehensive survey is given of the vegetable industry in New York State. The problems of the market gardener, the vegetable forcer, the truck grower, the muck-land farmer, and the producer of canning crops, are taken up. Climatic adaptation, soils and soil management, varieties, seed, plant growing, cultivation, irrigation, grading, handling, and packing are all considered in general, and with reference to the special crops.



CLASS WORK IN A VEGETABLE GREENHOUSE

The laboratory work includes exercises in plant growing, vegetable-variety studies, hotbed and coldframe construction and management, and the grading and handling of important vegetable crops. Members of the class who desire may participate in a one-day excursion to Rochester, in January, to visit vegetable greenhouses and packing houses; cost, about \$9. Laboratory fee, \$1.50.

For a one-year course the following are recommended:

	<i>Hours</i>
Agronomy 2 (page 18)	3
Vegetable Crops I (page 24)	4
Entomology I (page 21)	2
Plant Pathology I (page 23)	3
Elective	3 to 5

For a second year's work, choice among the following should be made:

	<i>Hours</i>
Agricultural Economics and Farm Management 1, 2, or 10 (page 18)	2 to 3
Plant Breeding I (page 23)	3
Rural Engineering I (page 24)	3
Meteorology I (page 23)	2
Extension Teaching I (page 21)	2
Other electives, as Pomology, Poultry Husbandry, Field Crops, Animal Husbandry, Dairy Industry, and so forth.	2 to 5

## SPECIAL UNIT COURSES

Various groups of farmers, or others, frequently find themselves confronted by common problems that arise out of occupations related to agriculture. To these and to persons who wish to prepare for certain specific positions, the College offers special unit courses of intensive study over periods of one or two weeks. The instruction in these special unit courses is devoted solely to particular subjects with which the courses are concerned. These special unit courses or special schools and conferences vary from year to year according to the needs that arise in the several occupations related to agriculture in New York State. This winter, among others, there will be one-week or two-weeks courses for milk and dairy inspectors, beekeepers, operators of incubators, egg inspectors, and for young men who wish to become supervisors of dairy-herd-improvement associations.

Detailed information concerning the special unit courses may be obtained from the Secretary of the College of Agriculture, Ithaca, New York. The nature of these courses is given in the following paragraphs.

**Short Courses for Supervisors of Dairy Herd Improvement Associations.** Two courses of two weeks each. October 21 to November 2, 1929; January 20 to February 1, 1930.

Where it is possible to do so, it is recommended that candidates for positions as supervisors of dairy-herd-improvement associations prepare themselves by taking the regular winter short course of twelve weeks and enrolling in the following courses: Animal Husbandry 1 and 2, Dairy Industry 8, Agricultural Economics and Farm Management 1, Extension Teaching 1, and Rural Engineering 1.

The special unit courses of two weeks are offered to those young men who wish to qualify for positions as supervisors of dairy-herd-improvement associations, and who are unable to take the twelve-weeks course. These special courses are open to those who have previously had especially good preparation. Candidates for this work should have been farm reared and should preferably have studied vocational agriculture in high school. A small laboratory fee will be charged to cover the cost of materials used in this course.

**Short Course in Advanced Beekeeping.** January 27 to February 1, 1930. Any person who is interested in bees and beekeeping may attend this course, which is planned chiefly for those of some experience in beekeeping. It is customary to select a special subject for discussion throughout the week. The subject for discussion this year is "The characteristics of honey as a product of bee activity and as a food for man." Because of the nature of the problems to be discussed, it is desirable that those who attend be here promptly for the first session and plan to remain throughout the entire week.

**Incubation School.** One week. Date to be arranged. For hatchery operators and for poultrymen who hatch their own chicks. Lectures and round-table discussions will be devoted to such topics as the following: how to get eggs that will hatch, how the chick is formed in the egg, what are the effects of variations from the correct temperature, moisture, or ventilation during incubation, how to take blood samples for the B. W. D. test, how to keep records of orders and shipments of chicks, how to pedigree hatch.

Demonstrations and instructions will include the operation of the common types of incubators and the operation of mammoth incubators.

**Short Course for Egg Inspectors.** One week, April 1 to 6. Inspectors employed in the administration of the new egg-grading law in this State, egg producers, and egg merchants, are offered this opportunity to become more expert in the handling, candling, and grading of eggs. The course is intended to help overcome the difficulties that have been encountered in the establishment of the new egg grades and to help to realize the benefits intended to result from the new law.





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This series of pamphlets is designed to give prospective students and other persons information about Cornell University. No charge is made for the pamphlet unless a price is indicated after its name in the list below. Requests for pamphlets should be addressed to the Secretary of the University at Ithaca. *Money orders should be made payable to CORNELL UNIVERSITY.*

The prospective student should have a copy of the  
*General Information Number*

and a copy of one or more of the following Announcements:

*Announcement of the College of Arts and Sciences.*

*Announcement of the College of Engineering.*

*Announcement of the Law School.*

*Announcement of the College of Architecture.*

*Announcement of the New York State College of Agriculture.*

*Announcement of the Winter Courses in the College of Agriculture.*

*Announcement of the New York State College of Home Economics.*

*Announcement of the Course in Hotel Administration.*

*Announcement of the New York State Veterinary College.*

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*Announcement of the Summer Session of the Law School.*

*Announcement of the Summer School of Biology.*

*Announcement of the Farm Study Courses.*

*Program of the Annual Farm and Home Week.*

*Annual Report of the President.*

Special departmental announcements, a list of prizes, etc.

Other periodicals are these:

*The Register*, published annually in September, and containing, not announcements of courses, but a comprehensive record of the University's organization and work during the last year. Price, 50 cents.

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The *Announcement of the Medical College* may be obtained by addressing the Cornell University Medical College, Ithaca, New York.

Correspondence regarding the Cornell University Official Publication should be addressed to

THE SECRETARY, CORNELL UNIVERSITY,  
ITHACA, NEW YORK.