

CORNELL UNIVERSITY OFFICIAL PUBLICATION

Volume XVIII

Number 19

Announcement of Winter Courses

New York State
College of Agriculture

1927-28

Ithaca, New York
Published by the University
June 15, 1927

CALENDAR, 1927-28

Nov. 9	Wednesday,	Registration in winter courses, beginning at 9 a. m., at the office of the Secretary, Roberts Hall.
Nov. 10	Thursday,	Instruction begins in winter courses.
Nov. 21	Monday,	Fee cards issued at office of the Secretary.
Nov. 26	Saturday,	Last day for payment of fees at office of the University Treasurer, Morrill Hall.
Nov. 24-26		Thanksgiving recess.
Dec. 17	Saturday, 1 p. m.	Instruction ends.
Jan. 2	Monday, 8 a. m.	Instruction resumed.
Feb. 13-18		Twenty-first Annual Farmers' Week.
Feb. 17	Friday,	Instruction ends in winter courses.

} Christmas
recess.

NEW YORK STATE COLLEGE OF AGRICULTURE

STAFF OF INSTRUCTION, RESEARCH, AND EXTENSION

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Albert Russell Mann, B.S.A., A.M., Dean of the College of Agriculture.
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Olin Whitney Smith, B.S., Secretary.
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George Wilson Parker, Managing Clerk.

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John Henry Comstock, B.S., Professor of Entomology and General Invertebrate Zoology, Emeritus.

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Thomas Lyttleton Lyon, Ph.D., Professor of Soil Technology.
James Edward Rice, B.S.A., Professor of Poultry Husbandry.
George Walter Cavanaugh, B.S., Professor of Agricultural Chemistry.
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Herbert Hice Whetzel, M.A., D.Sc., Professor of Plant Pathology.
George Frederick Warren, Ph.D., Professor of Agricultural Economics and Farm Management.

Ralph Sheldon Hosmer, B.A.S., M.F., Professor of Forestry.
James George Needham, Ph.D., Litt.D., Professor of Entomology and Limnology.
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Harry Houser Love, Ph.D., Professor of Plant Breeding.
Donald Reddick, Ph.D., Professor of Plant Pathology.
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Martha Van Rensselaer, A.B., Professor of Home Economics.
James Adrian Bizzell, Ph.D., Professor of Soil Technology.
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Howard Wait Riley, M.E., Professor of Rural Engineering.
Harold Ellis Ross, M.S.A., Professor of Dairy Industry.
Hugh Charles Troy, B.S.A., Professor of Dairy Industry.
Samuel Newton Spring, B.A., M.F., Professor of Silviculture.
Karl McKay Wiegand, Ph.D., Professor of Botany.
Arthur Bernard Recknagel, B.A., M.F., Professor of Forest Management and Utilization.

Merritt Wesley Harper, M.S., Professor of Animal Husbandry.
Cyrus Richard Crosby, A.B., Extension Professor of Entomology.
Elmer Seth Savage, Ph.D., Professor of Animal Husbandry.
Edward Albert White, B.Sc., Professor of Floriculture and Ornamental Horticulture.

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Mortier Franklin Barrus, Ph.D., Extension Professor of Plant Pathology.
Oskar Augustus Johannsen, Ph.D., Professor of Entomology.
Clyde Hadley Myers, Ph.D., Professor of Plant Breeding.
Bristow Adams, B.A., Professor in Extension Service, Editor, and Chief of Publications.

- Asa Carlton King, B.S.A., Professor of Farm Practice and Farm Superintendence.
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 Lewis Knudson, Ph.D., Professor of Botany.
 E. Gorton Davis, B.S., Professor of Landscape Architecture.
 Ralph Wright Curtis, M.S.A., Professor of Ornamental Horticulture.
 Harry Oliver Buckman, Ph.D., Professor of Soil Technology.
 Ralph Hicks Wheeler, B.S., Professor in Extension Service.
 Paul Work, Ph.D., Professor of Vegetable Gardening.
 John Bentley, jr., B.S., M.F., Professor of Forest Engineering.
 Paul J. Kruse, Ph.D., Professor of Rural Education.
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 James Ernest Boyle, Ph.D., Professor of Rural Economy.
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 Homer Columbus Thompson, Ph.D., Professor of Vegetable Gardening.
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 James Kenneth Wilson, Ph.D., Professor of Soil Technology.
 Edmund Louis Worthen, M.S.A., Extension Professor of Soil Technology.
 Julian Edward Butterworth, Ph.D., Professor of Rural Education.
 James Chester Bradley, Ph.D., Professor of Entomology and Curator of Inverte-
 brate Zoology.
 George Charles Embury, Ph.D., Professor of Aquiculture.
 Arthur Johnson Eames, Ph.D., Professor of Botany.
 John Hall Barron, B.S.A., Extension Professor of Field Crops.
 Gad Parker Scoville, B.S. in Agr., M.A., Professor of Farm Management.
 Leonard Amby Maynard, Ph.D., Professor of Animal Husbandry.
 Montgomery Robinson, Litt.B., B.S., Professor in Extension Service.
 Arthur John Heinicke, Ph.D., Professor of Pomology.
 Edward Gardner Misner, Ph.D., Professor of Farm Management.
 William Irving Myers, Ph.D., Professor of Farm Finance.
 Theodore Hildreth Eaton, Ph.D., Professor of Rural Education.
 Walter Warner Fisk, M.S. in Agr., Professor of Dairy Industry.
 James Duncan Brew, M.S., Extension Professor of Dairy Industry.
 Doak Bain Carrick, Ph.D., Professor of Pomology.
 Lester Whyland Sharp, Ph.D., Professor of Botany.
 Joseph Oskamp, B.S. in Agr., Extension Professor of Pomology.
 Hugh Daniel Reed, Ph.D., Professor of Zoology.
 Harry Morton Fitzpatrick, Ph.D., Professor of Plant Pathology.
 Otis Freeman Curtis, Ph.D., Professor of Botany.
 Louis Melville Massey, Ph.D., Professor of Plant Pathology.
 Axel Ferdinand Gustafson, Ph.D., Extension Professor of Soil Technology.
 E. Laurence Palmer, Ph.D., Professor of Rural Education.
 Philip Henry Wessels, M.S., Research Professor of Vegetable Gardening.
 Frank Ashmore Pearson, Ph.D., Professor of Marketing.
 Robert Matheson, Ph.D., Professor of Economic Entomology.
 John Clarence McCurdy, B.S., C.E., Professor of Rural Engineering.
 Gustave Frederick Heuser, Ph.D., Professor of Poultry Husbandry.
 Laurence Howland MacDaniels, Ph.D., Professor of Pomology.
 Gilbert Warren Peck, M.S.A., Extension Professor of Pomology.
 Emery N. Ferriss, Ph.D., Professor of Rural Education.
 Frederick Gardner Behrends, B.S., Extension Professor of Rural Engineering.*
 Bruce Lee Melvin, M.S., Ph.D., Acting Professor of Rural Social Organization.
 Ralph Almon Felton, Ph.B., M.A., Extension Professor of Rural Social Organiza-
 tion.
 James Morgan Sherman, M.S., Ph.D., Professor of Dairy Industry.
 Frank Pores Bussell, Ph.D., Professor of Plant Breeding.
 Richard Alan Mordoff, Ph.D., Professor of Meteorology.

*Absent on leave.

Everett Franklin Phillips, A.B., Ph.D., Professor of Apiculture.
 Paul Francis Sharp, Ph.D., Professor of Dairy Chemistry.
 Arthur Augustus Allen, Ph.D., Professor of Ornithology.
 Alpheus Mansfield Goodman, B.S.A., Extension Professor of Rural Engineering.
 Albert Hazen Wright, Ph.D., Professor of Zoology.
 Loren Clifford Petry, Ph.D., Professor of Botany.
 Clyde B. Moore, Ph.D., Professor of Rural Education.
 Harold Eugene Botsford, B.S., Extension Professor of Poultry Husbandry.
 Emma Conley, A.B., Acting Professor of Rural Education.
 Peter Walter Claassen, Ph.D., Professor of Biology.
 Leland Spencer, Ph.D., Professor of Marketing.
 Harry Albert Ross, Ph.D., Professor of Marketing.
 Milton Lyle Holmes, B.A., M.B.A., Professor of Business Management.
 Earle Volcart Hardenburg, Ph.D., Professor of Vegetable Gardening.
 Otto Rahn, Ph.D., Professor of Bacteriology.
 Charles Chupp, Ph.D., Extension Professor of Plant Pathology.
 Walter H. Burkholder, Ph.D., Professor of Plant Pathology.
 Van Breed Hart, Ph.D., Extension Professor of Farm Management.
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 Charles Arthur Taylor, Assistant County Agent Leader.
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 Earl Alvah Flansburgh, B.S., Assistant County Agent Leader.
 Forest Milo Blodgett, Ph.D., Assistant Professor of Plant Pathology.
 Thomas Joseph McInerney, M.S. in Agr., Assistant Professor of Dairy Industry.
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 Henry William Schneck, B.S., M.S.A., Assistant Professor of Vegetable Gardening.
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 Roy Glenn Wiggans, Ph.D., Assistant Professor of Plant Breeding.
 Benjamin Dunbar Wilson, Ph.D., Assistant Professor of Soil Technology.
 Robert Morrill Adams, B.S., M.A., Extension Assistant Professor of Vegetable Gardening.
 Frank Latta Fairbanks, M.E., Assistant Professor of Rural Engineering.
 Louis Michael Roehl, B.S., Assistant Professor of Farm Shop.
 Cedric Hay Guise, B.S., M.F., Assistant Professor of Forest Management.
 Robert Byron Hinman, M.S., Assistant Professor of Animal Husbandry.
 Benjamin Percy Young, Ph.D., Assistant Professor of Zoology.
 Harvey Earl Thomas, Ph.D., Assistant Professor of Plant Pathology.
 William Truman Crandall, B.S.A., M.S., Extension Assistant Professor of Animal Husbandry.
 Herbert Press Cooper, M.S., Ph.D., Assistant Professor of Field Crops.
 Herbert John Metzger, D.V.M., Extension Assistant Professor of Animal Husbandry.
 Leland Eugene Weaver, B.S., Extension Assistant Professor of Poultry Husbandry.
 Francis Omar Underwood, B.S., Extension Assistant Professor of Vegetable Gardening.
 Frank Harrison Randolph, B.A., M.E., Assistant Professor of Institution Engineering.
 Clara Louise Garrett, B.S., Assistant Professor of Drawing.
 Walter Conrad Muenscher, Ph.D., Assistant Professor of Economic Botany.
 Joseph Pullman Porter, B.S., M.S.A., M.L.D., Extension Assistant Professor of Ornamental Horticulture.
 Charles Loring Allen, Ph.D., Assistant Professor of Animal Husbandry.
 Myers Peter Rasmussen, Ph.D., Assistant Professor of Marketing.
 John Nelson Spaeth, M.F., Research Assistant Professor of Forestry.
 Joshua Alban Cope, M.F., Extension Assistant Professor of Forestry.
 Leo Chandler Norris, Ph.D., Assistant Professor of Poultry Husbandry.
 Walter Van Price, Ph.D., Assistant Professor of Dairy Industry.
 Donald Stuart Welch, Ph.D., Assistant Professor of Plant Pathology.
 Karl Hermann Fernow, Ph.D., Extension Assistant Professor of Plant Pathology.

Edwin Fraser Hopkins, Ph.D., Assistant Professor of Botany.
 Myron Slade Kendrick, Ph.D., Assistant Professor of Rural Economy.
 Robert Donald Lewis, Ph.D., Extension Assistant Professor of Plant Breeding.
 Chester Jermain Hunn, B.S.A., Assistant Professor of Ornamental Horticulture.
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 Charles Kelley Powell, Ph.D., Assistant Professor of Poultry Husbandry.*
 Isaac Fufts Hall, Ph.D., Extension Assistant Professor of Farm Management.
 Goldan Orlando Hall, Ph.D., Assistant Professor of Poultry Husbandry.
 John Frederick Harriott, Ph.D., Assistant Professor of Farm Management.
 George Harold Rea, Extension Assistant Professor of Apiculture.
 Thomas Livingston Bayne, jr., Ph.D., Assistant Professor of Rural Education.
 Herbert Bertsch Hartwig, M.S., Extension Assistant Professor of Agronomy.
 Clive McCay, Ph.D., Assistant Professor of Animal Husbandry.
 Robert Wallace Nafe, M.A., Assistant Professor of Rural Social Organization.
 Winfred Enos Ayres, Extension Assistant Professor of Dairy Industry.
 George Eric Peabody, M.S., Assistant Professor of Extension Teaching.
 Emmons William Leland, B.S.A., Experimentalist in Soil Technology.
 Frank Bonar Howe, M.S., Soil Surveyor.
 Daniel Parrish Witter, Adviser in Institute Extension.
 Erl Bates, M.D., Adviser in Indian Extension.
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 Peter Paul Baby, Ph.D., Assistant Curator of Invertebrate Zoology.
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 George Walter Tailby, jr., B.S.A., Extension Instructor in Animal Husbandry.
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 Lewis Merwin Hurd, Extension Instructor in Poultry Husbandry.
 Walter Gernet Krum, Extension Instructor in Poultry Husbandry.
 Lawrence Paul Wehrle, Ph.D., Research Instructor in Entomology.
 Robert Carroll Ogle, Extension Instructor in Poultry Husbandry.
 Ernest Dorsey, Ph.D., Instructor in Plant Breeding.
 Harold Strycker Mills, B.S., M.S.A., Instructor in Vegetable Gardening.
 Edwin Earl Honey, B.S., Extension Instructor in Plant Pathology.
 Anson Wright Gibson, B.S., Instructor in Farm Practice.
 William Theodore Grams, B.S. in Agr., Extension Instructor in Animal Husbandry.
 Josiah Randall Livermore, B.S., Extension Instructor in Plant Breeding.
 William Trowbridge Merrifield Forbes, Ph.D., Instructor in Entomology.
 Edwin Raymond Hoskins, M.S.A., Instructor in Rural Education.
 Mather Francis Thurston, A.B., Instructor in Marketing.
 Grace Hall Griswold, Ph.D., Instructor in Entomology.
 Forrest Blythe Wright, M.S., Instructor in Rural Engineering.
 Amy Grace Mekeel, A.M., Instructor in Zoology.
 Eleanor Clara McMullen, A.M., Instructor in Zoology.
 Miles David Pirnie, B.S., Instructor in Ornithology.
 Paul Jones Chapman, B.S., Extension Instructor in Entomology.
 Mary Eva Duthie, B.S., Extension Instructor in Rural Social Organization.
 Randall Whitaker, Ph.D., Instructor in Dairy Industry.
 Wayne Eyer Manning, Ph.D., Instructor in Botany.
 Lawrence Moore Vaughan, B.S., Instructor in Farm Management.
 Whiton Powell, A.B., M.S., Instructor in Marketing.
 John Edward Flynn, M.S., Instructor in Plant Pathology.
 John Carl Hultar, B.S., Instructor in Poultry Husbandry.
 Clifford Nicks Stark, M.A., Instructor in Bacteriology.
 Charles Ketchum Tucker, M.S.A., Instructor in Marketing.
 James Whaples Sinden, A.B., Instructor in Plant Pathology.
 Paul Robert Needham, M.S., Instructor in Linnology.
 John Peter Willman, M.S., Extension Instructor in Animal Husbandry.
 Lillian Aline Phelps, M.A., Instructor in Zoology.
 Robert Grove Maxwell, B.S., Instructor in Animal Husbandry.

*Absent on leave.

Erwin Graue, B.S., Instructor in Rural Economy.
Alfred M. S. Pridham, B.S.A., Instructor in Floriculture.
George Samuel Butts, B. S., Supervisor of Study Courses.
Isabelle Frisbie Bull, B.S., Instructor in Rural Education.
Russell Palmer Hunter, A.M., Instructor in Zoology.
Nathaniel Chadwick, B.S., Instructor in Rural Engineering.
Roland Franklin Bucknam, B.S., Extension Instructor in Farm Management.
Robert Page Myers, M.S., Instructor in Dairy Industry.
George Abdallah Knaysi, M.S., Instructor in Bacteriology.
Maurice Chester Bond, B.S.A., Instructor in Marketing.
John Leslie Tennant, M.S.A., Instructor in Farm Management.
John Marshall, jr., B.S., Extension Instructor in Farm Management.
Mrs. Pauline Whitson Stark, B.S., Instructor in Bacteriology.
Paul Rufus Burkholder, A.B., Instructor in Botany.
Mabel Agnes Hastie, B.S., Instructor in Rural Education.
Howard James Stover, B.S., Instructor in Marketing.
Harold Newell Young, B.S., Extension Instructor in Farm Management.
Albert Oliver Rhoad, B.S., Instructor in Animal Husbandry.
Dewey Stewart, M.S., Instructor in Plant Pathology.
Raymond Clayton Bender, M.S., Instructor in Animal Husbandry.
Elmer Hiram Mereness, B.S., Extension Instructor in Farm Management.
William Guy Meal, B.S., Instructor in Marketing.
Homer Seymour Pringle, B.S., Extension Instructor in Rural Engineering.
Leland Peter Ham, B.S., Instructor in Extension Service.
Leah English, B.S., Analyst in Agronomy.
Wilfred Douglas Mills, M.S., Extension Instructor in Plant Pathology.
Edwin Shepherd Harrison, B.S., Instructor in Animal Husbandry.
Eldon Wittwer, B.S., Instructor in Rural Economy.
Howard Barton Boyd, B.S., Instructor in Marketing.
Lincoln Evans Cruikshank, B.S., Instructor in Farm Management.
Barbara McClintock, Ph.D., Instructor in Botany.
Dean Richmond Marble, B.S., Instructor in Poultry Husbandry.
Herbert Dimmick Brokaw, B.S., Instructor in Farm Shop.
Thomas Eldredge LaMont, B.S., Instructor in Farm Management.
Louis Edward Wolf, M.S., Instructor in Entomology.
Charles H. Hudson, jr., B.S., Instructor in Floriculture.
Richard Bayles Farnham, B.S., Instructor in Floriculture.
William Thomas Craig, Assistant in Cereal Investigations.
Walton Isaac Fisher, Assistant in Plant Breeding Investigations.
Stewart Henry Burnham, B.S., Assistant Curator in Botany.
Arden T. Lyon, Assistant in Plant Breeding Investigations.
Cecil D. Schutt, Assistant in Animal Husbandry.
Samuel Eugene Alan McCallan, B.S.A., Assistant in Plant Pathology.
Chester Arthur Arnold, B.S., Assistant in Botany.
Cyrus Benjamin Butler, Assistant in Aquiculture.
John Lupton Mecartney, B.S., Assistant in Pomology.
Harold Barrows Riley, M.S., Assistant in Agronomy.
Everett Oertel, B.S., Assistant in Apiculture.
Gemma Jackson, M.A., Assistant in Botany.
John Richard Greeley, A.B., Assistant in Zoology.
Richard August Laubengayer, B.S., Assistant in Botany.
Robert Daniel Harwood, A.B., Assistant in Biology.
James Gordon Horsfall, B.S., Assistant in Plant Pathology.
Mary Lillian Mekeel, Assistant in Zoology.
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Alan Stone, B.S., Assistant in Parasitology.
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Raymond Earl Wakeley, M.S., Assistant in Rural Social Organization.
Austin Horatio Wilkins, B.S., Extension Assistant in Forestry.
Grace Agnes Petersen, B.S., Assistant in Plant Pathology.

Alexis Lawrence Romanoff, M.S.A., Assistant in Poultry Husbandry.
Louis Charles Schultz, B.S., Assistant in Botany.
Philip Holcomb Stephens, M.S., Assistant in Marketing.
Jesse Allison De France, M.S., Assistant in Botany.
Thomas Bregger, B.Sc., Assistant in Plant Breeding.
Leland Norcross Allen, B.S., Assistant in Botany.
Herbert Sedgwick Wilgus, jr., B.S., Assistant in Poultry Husbandry.
William John Hamilton, jr., B.S., Assistant in Biology.
Carl S. Pearson, B.S., Assistant in Agronomy.
Max J. Plice, M.S., Assistant in Agronomy.
Ellsworth Haines Wheeler, B.Sc., Assistant in Entomology.
Francis Irving Richter, B.S., Assistant in Forestry.
Julian Howell Miller, M.S., Assistant in Plant Pathology.
Raymond Tyson Moyer, A.B., M.S.A., Assistant in Agronomy.
Austin Rand, B.S., Assistant in Ornithology.
Wendell Moran, B.S., Assistant in Forestry.
Ernest Laurence Kolbe, B.S., Assistant in Forestry.
Alfred Mullikin Boyce, M.S., Assistant in Entomology.
George Frederick Sprague, M.S., Assistant in Plant Breeding Investigations.
Martin Paul Catherwood, M.S. Assistant in Farm Management.

NEW YORK STATE COLLEGE OF AGRICULTURE

THE WINTER COURSES

All the winter courses will begin on November 9, 1927, and will close on February 17, 1928. Instruction will begin at 8 a. m. on November 10. The Thanksgiving Day recess includes November 24 to 26 and the Christmas vacation extends from December 17, at 1 p. m., to January 2, 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.

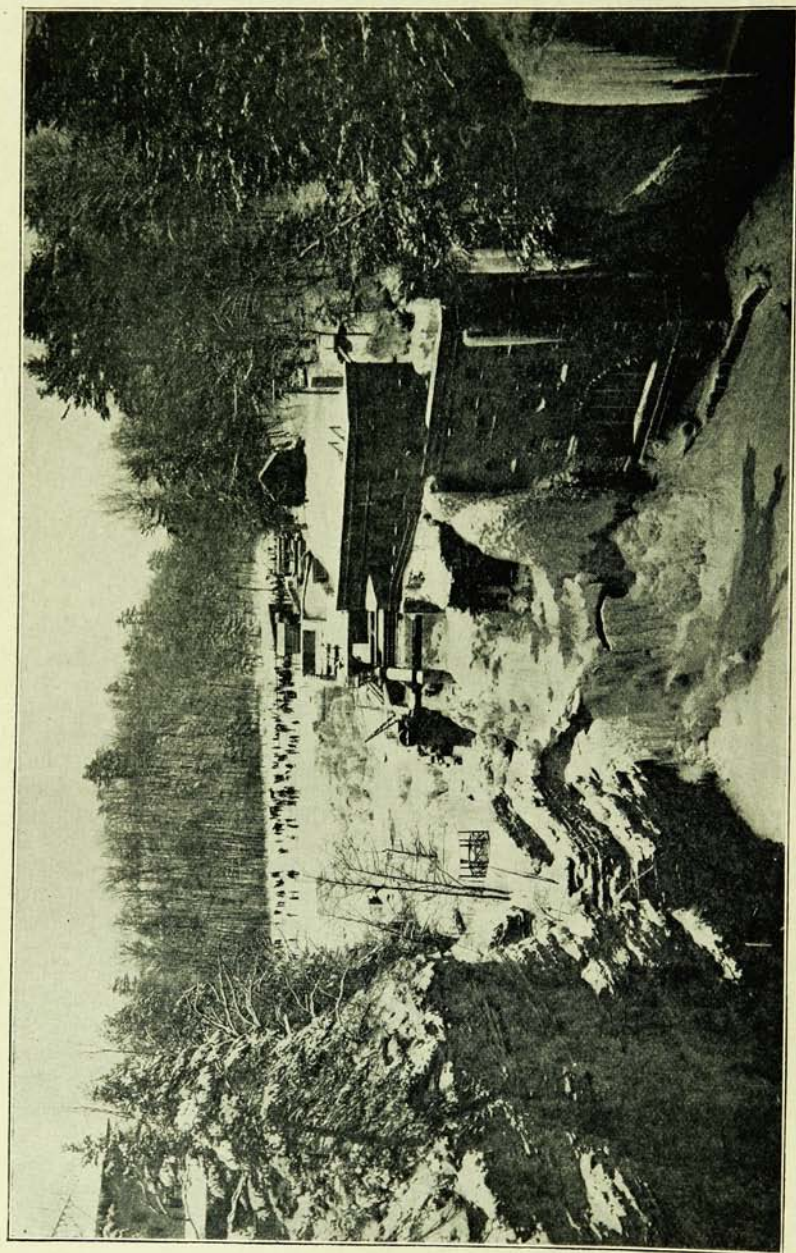
The winter courses have been part of the regular work of the College of Agriculture since 1893, when a general course was established. Certain lines of work soon became grouped into more or less fixed professional courses for persons desiring to specialize in these fields. As a result, there are now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

1. General Agriculture.
2. Dairy Industry.
3. Poultry Husbandry
4. Fruit Growing
5. Flower Growing
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 17-21) 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 special courses.

The College of Agriculture conducts each year various schools and conferences for the training of special groups. Attention is called to such a course for cow-testing-association supervisors given January 16-28. Inquiries regarding the course may be addressed



THE UNIVERSITY HYDRAULIC LABORATORY, TRIPHAMMER FALLS, AND BEEBE LAKE

to G. W. Tailby, jr., Department of Animal Husbandry, 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.

FEE CARDS. All the winter-course students must call at the office of the Secretary of the College of Agriculture on November 21, at which time the fee cards will be issued with tuition fee, infirmity 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 26.

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 1927-28 three 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.

INDIAN SCHOLARSHIPS. A limited number of scholarships are offered to Iroquois Indians. For particulars, apply to the Indian Agricultural Society of your reservation, or to the Indian Extension Staff, College of Agriculture, Ithaca, New York.

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.

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 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 eight-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 9, 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.

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.

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 AGRICULTURE

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

Whether or not the student plans to take one of the professional courses outlined hereinafter (pages 21-33), he is advised to attend more than one winter course and should definitely plan the work ahead for two years. Since a large number of winter-course students desire to prepare themselves to operate dairy farms, the following two-years program is suggested for them, though the second year may be modified in the light of the student's experience.

FIRST YEAR

	<i>Hours</i>
Agricultural Economics and Farm Management 1 (page 17)	2
Agricultural Economics and Farm Management 2 (page 17)	3
Agronomy 2 (page 18)	3
Agronomy 4 (page 18)	4
Animal Husbandry 1 (page 18)	3
Animal Husbandry 2 (page 18)	3

SECOND YEAR

	<i>Hours</i>
Agricultural Economics 10 (page 18)	3
Dairy Industry 8 (page 19)	4
Rural Engineering 1 (page 21)	3
Meteorology 1 (page 20)	2
Veterinary Medicine 1 (page 21)	1
Optional (chosen in line with the student's major interest)	7

Similar combinations may be made by the student himself, and the one determined upon may be submitted in his application. No student may take less than twelve or more than eighteen hours without special permission, and sixteen hours is as much as the average student can carry satisfactorily.

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. VAUGHAN.

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, T Th 8. Roberts 292. Laboratory, T 3-5. East Roberts 232. Professor SPENCER.

Margins and costs involved in marketing milk, apples, potatoes, cabbage, and other products; reasons for differences in costs of individual dealers and of co-operative associations; when to sell potatoes, cabbage, and other products; how to economize in buying farm supplies; status of cooperative marketing in New York State; cooperative laws; financing associations engaged in different types of business; business policies of the more important associations.

144. **Marketing.** Without credit. Lectures and discussions, F 9, 11. Farm Management Building 102. Course in charge of Professor SPENCER.

Lectures on marketing by nonresident persons including the executives of both private and cooperative business organizations.

AGRONOMY

2. **Soil Fertility.** Three hours a week. Lectures, M W F 2. One demonstration period a week, T or F 11-1. Caldwell 100. Professors BUCKMAN and 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 11-1. 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 B. Practice, T 11-1. 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 11-1. Assistant Professor C. L. ALLEN and Mr. MAXWELL.

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. Practice, W 2-4.30. Animal Husbandry Pavilion. Assistant Professor HINMAN and assistants.

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. Practice, W 2-4.30. Animal Husbandry Pavilion. Assistant Professor HINMAN and assistants.

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.

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

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.

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).....
Name of school..... Place..... Period of attendance.....
.....
.....
.....
Have you received any degree or certificate?..... What?..... Where and when?.....

OVER

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

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

Occupation 1923 Place State

Occupation 1924 Place State

Occupation 1925 Place State

Occupation 1926 Place State

Occupation 1927 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 asked 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 | 3. Poultry Husbandry | 5. Flower Growing |
| 2. Dairy Industry | 4. Fruit Growing | 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 15.

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

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

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

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

DAIRY INDUSTRY

Students wishing to specialize in the manufacture of dairy products should enroll in the professional dairy course outlined on pages 21-25.

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 8-1. Dairy Building 209 and 133. Professor GUTHRIE and Assistant Professor MCINERNEY.

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, 8-1 and 2-5. Professor EVERETT and 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.

Special training will be given to competitors for the winter-course prize-speaking contest and debate. Competition is open to all winter-course students.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

3. **Planning and Planting Rural Properties.** Four hours a week. Lectures and practice, M W F 2-5. Caldwell. Assistant Professor PORTER.

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

The course will consist 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.

4. **Woody Plant Materials.** Two hours a week. Lecture, T 9. Practice, T 10-1. East Roberts 7. 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. Lectures, M 8, W Th 9. New Greenhouses. Miss MINNS.

A course designed to study the methods of propagation and growing of outdoor annuals and herbaceous perennials. Studies will be made, so far as possible, of individual garden problems. The culture of outdoor roses, asters, peonies, phlox, iris, and bulbous plants will be considered.

FORESTRY

1. The Farm Woodlot. One hour a week. Lecture, M 10. Fernow 210. On three Saturday afternoons there will be field trips or laboratory periods. Extension Assistant Professor COPE.

This course is designed to present certain phases of forestry that are of value in farm work. The course covers the methods of identifying the principal trees of this region; the care of the woodlot, including tree planting for timber and wind-breaks; thinning; cutting mature timber; methods of measuring the amount of standing and felled timber; protection from fire and other enemies; preservative treatment of posts; the making of maple sugar.

METEOROLOGY

1. Elementary Meteorology. Two hours a week. Lecture, M 9. Laboratory, W 9-11. 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 will be 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 9-12. Fernow 212. Professor BUSSELL and Extension Assistant Professor LEWIS.

The better-known facts of variation and heredity will be considered. Methods of practical plant breeding, including selection and hybridization will be discussed. A portion of the time will be devoted to practicums. Greenhouse material will be 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: Section A, T 11-1, Th 10-1; Section B, W 11-1, F 10-1. Bailey West Basement. Extension Assistant Professor FERNOW.

Diseases of important crops will be studied carefully with special emphasis on control. Laboratory assistance will be available during the scheduled practice periods, but the laboratory will be open for students at all times during the day. Laboratory fee, \$1.50; breakage deposit, \$3.

POMOLOGY

2. General Fruit Growing. Four hours a week. Lectures, M T W Th 9. Roberts 292. Professor CARRICK.

This lecture course is designed for students who desire a general knowledge of fruit growing. It covers practically the same topics as course 1 in fruit growing (page 29), but includes no laboratory work.

POULTRY HUSBANDRY

11. Farm Poultry. Four hours a week. Lectures, M W F 5-6. Poultry Building 375. Laboratory practice, T 10.30-1. Poultry Building 300. Professors RICE, HEUSER, and BOTSFORD, Assistant Professors WEAVER and HALL, and Messrs. KRUM, HUTTAR, and 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 10-1. Farm Mechanics Laboratory. Professor ROBB and Mr. CHADWICK.

A course dealing with knots and splices of ropes; shafts, pulleys, belts, 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 10-1. Farm Mechanics Laboratory. Mr. BROKAW.

Practice in carpentry, saw filing, tool sharpening, fitting handles, soldering, and cold-metal work. Study will be 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

2. **General Vegetable Growing.** Three hours a week. Lectures, T Th 4. Poultry Building 174. Laboratory, S 8-10.30. Vegetable Greenhouses. Assistant Professor SCHNECK.

This course is designed for students who desire a general knowledge of vegetable growing, and for those interested in the production of vegetables in home gardens. The lectures deal with planning and management of the vegetable garden, vegetable soils and fertilizers, growing early plants, special requirements of the important vegetable crops, and control of pests. The laboratory work consists chiefly of practice in plant growing in the greenhouses. 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. Doctor HAYDEN.

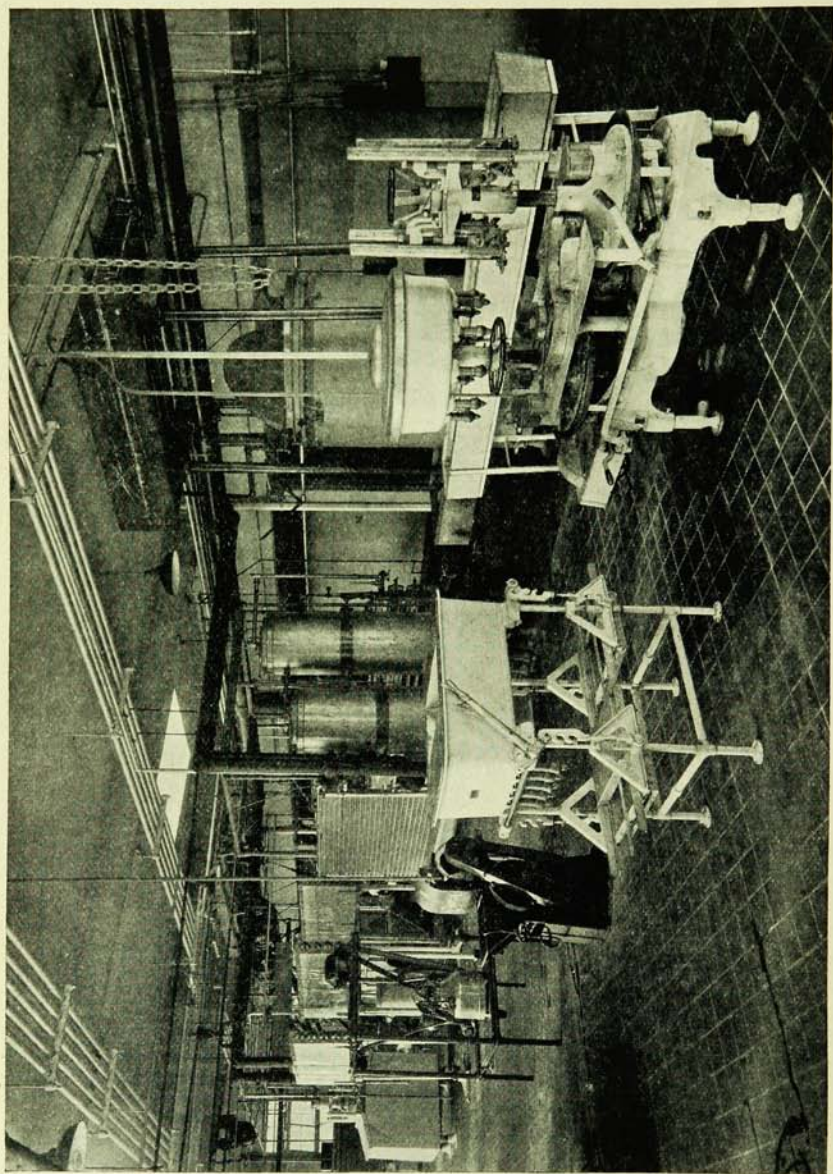
This course includes a discussion of the commonest diseases of dairy cattle, the prevention and cure of these diseases, ventilation of stables, and general questions of animal hygiene.

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. Those wishing to study the manufacturing side of dairy farm work should register in the farm dairy course outlined on page 19. Neither is this course intended for persons preparing to occupy positions as herds-men, or as testers in advanced registry work. Students wishing to qualify themselves for such work should take dairy industry course 8, animal husbandry courses 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 three o'clock on the afternoon of registration day, November 9, in the Dairy Building, room 119.

In addition to the general expenses listed on page 11, students in dairy industry must meet the following charges:



THE MARKET-MILK LABORATORY

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, about.....	15.00
One suit of blue overalls, about.....	3.00
Three white suits, with caps, about.....	10.00
One rubber apron, about.....	1.00

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 9 to December 17, 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 and Assistant Professor McINERNEY.

This course includes the composition and secretion of milk; the Babcock test for fat in milk and its products, acid tests, salt tests, moisture tests; use of the lactometer; calculating milk solids; some of the simple tests for preservatives and adulterations. A thorough drill will be 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 will also be 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 will be 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. Mr. BATEMAN.

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 and Mr. ———.

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 11 and 23.

SECOND PERIOD

The following elective courses will be given during the last half of the term:

January 2-14 inclusive

205. Market Milk. Credit three hours. Professor ROSS and Mr. ———.

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 16-28 inclusive

206. Condensed and Powdered Milk. Credit three hours. Assistant Professor PRICE and Mr. ———.

This course considers the principles and practices of making condensed and powdered milk. Students will 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. Professor FISK.

Instruction will be 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 will be discussed. The making and use of starters, the judging of cheese, and the construction and equipment of cheese factories will also be considered.

The students will 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.

January 30-February 11 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.

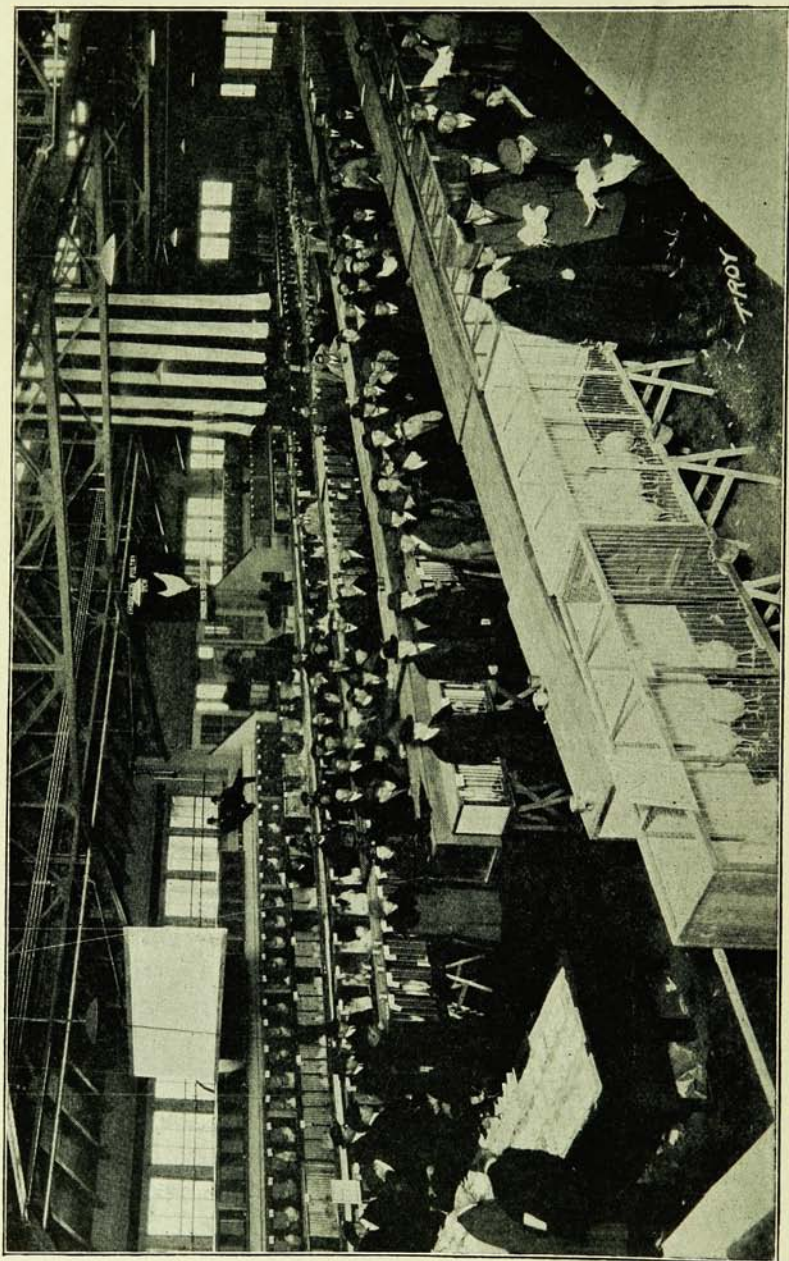
209. Ice Cream. Credit three hours. Professor FISK and Mr. ———.

The subject matter covered in the lectures consists of the successive steps in the making of ice cream; it will include, 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 two types of power freezers, one using ice for freezing and hardening, and one 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 farmers. The course is intended also to assist in supplying the large and growing demand for trained poultrymen to take charge of poultry plants owned by others. Although it is manifestly impossible 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



THE NEW YORK POULTRY PRODUCTION SHOW IS HELD DURING THE WINTER COURSE SESSION

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, though it may in some instances be well to substitute vegetable gardening in place of pomology:

Agronomy 2 (page 18)	3
Agricultural Economics and Farm Management 1 (page 17)	2
Agricultural Economics and Farm Management 2 (page 17)	3
Pomology 2 (page 20)	4
Poultry Husbandry 11 (page 20)	4

A meeting of all winter-course students in poultry husbandry with the staff of the department will be held at five o'clock on the afternoon of registration day, November 3, in Poultry Building 375.

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 11. 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.

REQUIRED SUBJECTS

1. **Poultry Husbandry.** Six hours a week. Open only to students in the professional course. Lectures, M T W Th S 9, F 8.15, and by appointment. Poultry Building 375. Examination, W 2-4. Poultry Building 300. Professors RICE, HEUSER, and BOTSFORD, Assistant Professors WEAVER and HALL, and Messrs. HUTTAR and MARBLE.

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

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

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. Open to students in the professional course or to those who have taken or are taking course 11 (page 20). Practice periods and extra time arranged by appointment. Practice, reporting three times daily (including Sunday) for four weeks 7.45-8.15, 12.30-1, 4-4.30. Poultry Plant. Mr. ANDREWS.

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

6. Poultry Mechanics and Appliances. One hour a week. Open only to students in the professional course. Hours to be arranged. Poultry Building 125. Mr. KRUM.

Study of tools and making of shipping coops, catching hooks, and other poultry appliances. Practice in constructing buildings is usually given.

7. Incubator Practice. One hour a week. Open to students in the professional course or to those who have taken or are taking course 11 (page 20). Practice, reporting three times daily (including Sunday) for four weeks, 7.45-8.15, 12.30-1, 4-4.30. Poultry Building Basement. Mr. KRUM.

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

8. Brooder Practice. One hour a week. Open to students in the professional course or to those who have taken or are taking course 11 (page 20). Practice, reporting three times daily (including Sunday) for four weeks, 7.45-8.15, 12.30-1, 4-4.30. Poultry Plant. Mr. KRUM.

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. Professor BOTSFORD.

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-day 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 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.

1. **Commercial Fruit Growing.** Six hours a week. Lectures, M T W Th 9. Roberts 292. Practice, M W 10-1. East Roberts 108. Professor CARRICK. 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 20).....	3
Entomology 1 (page 19).....	2
Agronomy 2 (page 18).....	3
Agricultural Economics and Farm Management 2 (page 17).....	3

Students who can possibly do so should supplement these courses with the following courses in general agriculture in a preliminary or in a succeeding session:

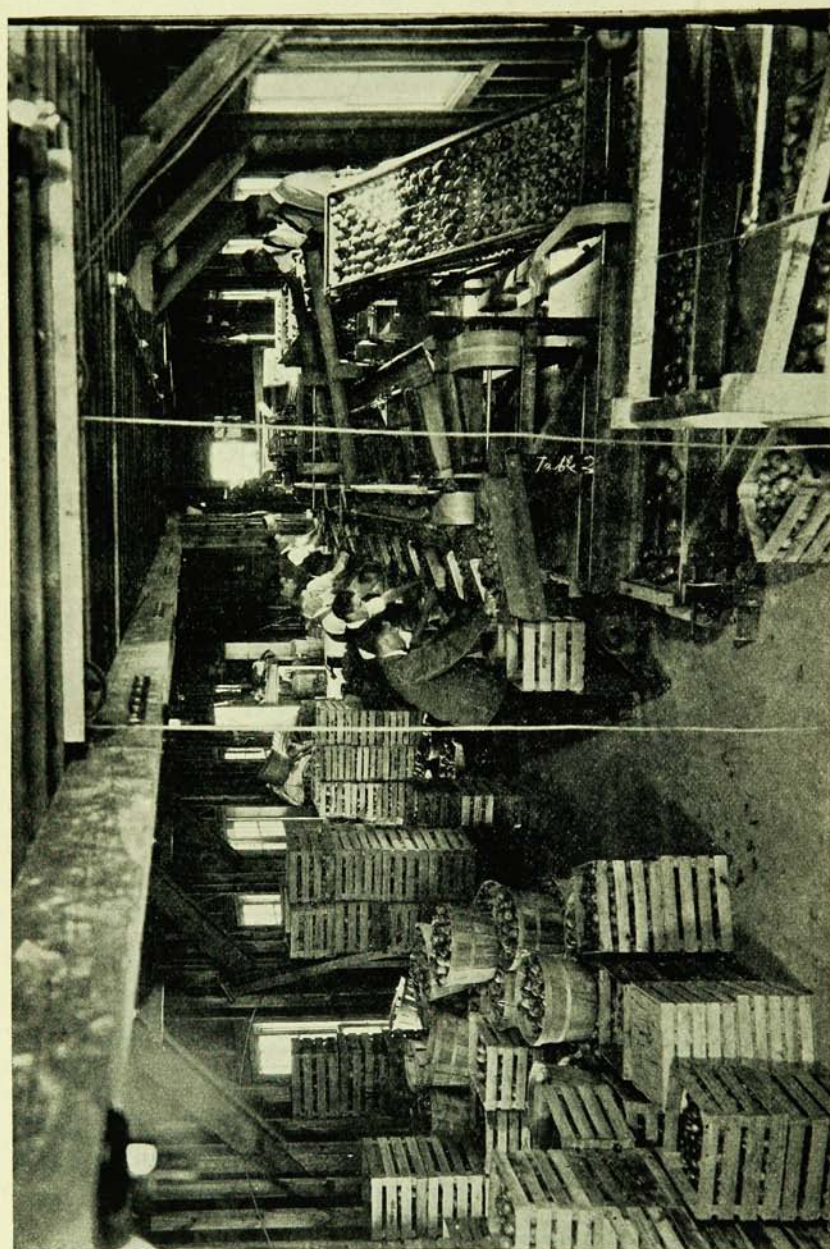
	<i>Hours</i>
Agricultural Economics and Farm Management 1 (page 17).....	2
Rural Engineering 1 (page 21).....	3
Vegetable Crops 2 (page 21).....	3
Poultry Husbandry 11 (page 20).....	4
Meteorology 1 (page 20).....	2
Rural Engineering 5 (page 21).....	2

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 —) 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

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. 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 or the school grounds. Courses have been arranged with a view to meeting this demand. These courses are outlined on page 19. Those following are planned especially for persons who intend to engage in commercial floriculture. Course 2 is equally well suited for those interested in vegetable forcing under glass.



LABORATORY WORK IN THE FRUIT PACKING HOUSE

REQUIRED SUBJECTS

1. **Commercial Floriculture and Greenhouse Practice.** Five hours a week. Lectures, M 12, W 8, Th 2, F 8. Marketing Building. Practice, S 10-12.30. New Greenhouses. Professors WHITE and Mr. HUDSON.

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.

2. **Commercial Greenhouse and Conservatory Construction and Heating.** Two hours a week. Lecture, T 2. Roberts 292. Practice, Th 11-1. New Greenhouses. Professor _____.

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

REQUIRED SUBJECTS

	<i>Hours</i>
Agronomy 2 (page 18)	3
Plant Pathology 1 (page 20)	3
Entomology 1 (page 19)	2

ELECTIVE SUBJECTS

	<i>Hours</i>
Floriculture and Ornamental Horticulture 3 (page 19)	4
Floriculture and Ornamental Horticulture 4 (page 19)	2
Floriculture and Ornamental Horticulture 6 (page 19)	3
Plant Breeding 1 (page 20)	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, particularly 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. This course is intended to meet the needs of persons who desire to obtain, in a short time, a fundamental knowledge of the principles and practices of commercial vegetable growing. The principles underlying successful vegetable production, storage, and marketing are discussed. Methods of applying these principles to different phases of vegetable gardening are described.

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 fruit growing or poultry husbandry.



CLASS WORK IN A VEGETABLE GREENHOUSE

Students without experience, but desiring some knowledge of either home or commercial vegetable gardening, will find the course described on page 21 suited to their needs.

REQUIRED SUBJECTS

1. Commercial Vegetable Growing. Four hours a week. Lectures, M W F 4. Poultry Building 174. Laboratory, S 10.30-1. Vegetable Greenhouses. Assistant Professor SCHNECK.

A comprehensive survey is given of the vegetable industry as conducted 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 considered. Lectures are given on the principles of production and handling of vegetables under New York State conditions.

The laboratory work includes exercises in seed testing, plant growing, vegetable-variety studies, hotbed and coldframe construction and management, greenhouse fumigation, and soil sterilization. Plants are grown under glass as would be done for outdoor setting. 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.

Unless taken in a previous winter course, the following subjects should be included in the student's schedule:

	<i>Hours</i>
Agronomy 2 (page 18)	3
Entomology 1 (page 19)	2
Plant Pathology 1 (page 20)	3
At least one of the following courses should also be taken:	
Agricultural Economics and Farm Management 1 (page 17)	2
Plant Breeding 1 (page 20)	3
Rural Engineering 1 (page 21)	3
Meteorology 1 (page 20)	2

Those who expect to combine fruit growing with vegetable crops should take the four required courses listed above and should add Pomology 1 (page 31). Similarly, those interested in poultry should add Poultry Husbandry 5, 7, 8, and 11 (pages 20 and 28).

A two-years program in vegetable crops and fruit growing may be arranged as follows:

FIRST YEAR

	<i>Hours</i>
Agronomy 2 (page 18)	3
Agricultural Economics and Farm Management 1 (page 17)	2
Pomology 2 (page 20)	4
Vegetable Crops 2 (page 21)	3
Rural Engineering 1 (page 21)	3

SECOND YEAR

Vegetable Crops 1 (page 32)	4
Plant Pathology 1 (page 20)	3
Fruit Growing 1 (page 29)	6
Entomology 1 (page 19)	2

The three lines of work, vegetable crops, fruit growing, and poultry husbandry, may also be brought together in a two-years program, as follows:

FIRST YEAR

	<i>Hours</i>
Agronomy 2 (page 18)	3
Vegetable Crops 2 (page 21)	3
Poultry Husbandry 11 (page 20)	4
Poultry Husbandry 5, 7, 8 (page 28)	3
Pomology 2 (page 20)	4

SECOND YEAR

<i>Either</i>	<i>Hours</i>
Vegetable Crops 1 (page 32)	4
Pomology 1 (page 31)	6
Plant Pathology 1 (page 20)	3
Entomology 1 (page 19)	2

Or

Poultry Husbandry 1, 2, 3, 6, 9 (pages 27 and 28)	14
with one of the following:	
Rural Engineering 1 (page 21)	3
Agricultural Economics and Farm Management 2 (page 17)	3

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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 Circular of Information

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 New York State Veterinary College.

Announcement of the University Division of Education.

Announcement of the Department of Chemistry.

Announcement of the Graduate School.

Announcement of the Summer Session.

Announcement of the Summer Session of the Law School.

Announcement of the Summer School of Biology.

Program of the Annual Farmers' 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.

Guide to the Campus. Illustrated. Price, 50 cents.

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