

CORNELL UNIVERSITY OFFICIAL PUBLICATION

Volume XV

Number 15

Announcement of the New York State College of Agriculture 1924-25

Ithaca, New York
Published by the University
July 1, 1924

THE CALENDAR FOR 1924-25

FIRST TERM

| | | | |
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| | 1924 | | |
| Sept. | 15 | Monday | University entrance examinations begin. |
| Sept. | 24 | Wednesday | Academic year begins. Registration of new students. All special students in the College of Agriculture must first present themselves at the office of the Secretary, Roberts Hall, unless permission to register has previously been sent to them by the Registrar. |
| Sept. | 25 | Thursday | Registration of new students. |
| Sept. | 26 | Friday | Registration of old students. |
| Sept. | 29 | Monday | Instruction begins. |
| Oct. | 17 | Friday | Last day for payment of tuition. |
| Nov. | 5 | Wednesday | Registration of winter-course students. |
| Nov. | — | Thursday | Thanksgiving recess. |
| Dec. | 20 | Sat. 1 p. m. | Instruction ends in regular and winter courses. |
| Jan. | 5 | Mon. 8 a. m. | Instruction resumed in regular and winter courses. |
| Jan. | 11 | Sunday | Birthday of Ezra Cornell. Founder's Day. |
| Jan. | 26 | Monday | Term examinations begin. |

} Christ-
mas re-
cess.

SECOND TERM

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|------|------|---------------|--|
| Feb. | 6 | Friday | } Registration of all students. |
| Feb. | 7 | Saturday | |
| Feb. | 9 | Mon. 8 a. m. | Instruction begins in regular courses. |
| Feb. | 9-14 | | Farmers' Week. |
| Feb. | 13 | Friday | Instruction ends in winter courses. |
| Mar. | 1 | Monday | Last day for payment of second-term tuition. |
| Apr. | 4 | Sat. 1. p. m. | Instruction ends. |
| Apr. | 13 | Mon. 8 a. m. | Instruction resumed. |
| June | 1 | Monday | Term examinations begin. |
| June | 15 | Monday | Fifty-seventh Annual Commencement. |

} Spring recess.

NEW YORK STATE COLLEGE OF AGRICULTURE

STAFF OF INSTRUCTION, RESEARCH, AND EXTENSION

Livingston Farrand, A.B., M.D., L.H.D., LL.D., President of the University.
Albert Russell Mann, B.S.A., A.M., Dean of the College of Agriculture.*
Cornelius Betten, Ph.D., D.Sc., Director of Resident Instruction and Acting Dean.
Roscoe Wilfred Thatcher, B.S., M.A., D.Agr., Director of Experiment Stations.
Carl Edwin Ladd, Ph.D., Director of Extension.
Robert Pelton Sibley, M.A., L.H.D., Professor and Secretary.
Olin Whitney Smith, B.S., Assistant Secretary.
Willard Waldo Ellis, A.B., LL.B., Librarian.
George Wilson Parker, Managing Clerk.

Isaac Phillips Roberts, M.Agr., Professor of Agriculture, Emeritus.
John Henry Comstock, B.S., Professor of Entomology and General Invertebrate Zoology, Emeritus.
John Lemuel Stone, B.Agr., Professor of Farm Practice, Emeritus.
Liberty Hyde Bailey, M.S., LL.D., Litt.D., Ex-Dean, Professor, Emeritus.
Whitman Howard Jordan, LL.D., Professor of Animal Nutrition, Emeritus.
Mrs. Anna Botsford Comstock, B.S., Professor of Nature Study, Emeritus.
Henry Hiram Wing, M.S. in Agr., Professor of Animal Husbandry.
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 Chemistry in its Relations to Agriculture.
George Nieman Lauman, B.S.A., Professor of Rural Economy.
Herbert Hice Whetzel, M.A., Professor of Plant Pathology.
George Frederick Warren, Ph.D., Professor of Agricultural Economics and Farm Management.
William Alonzo Stocking, M.S.A., Professor of Dairy Industry.
Wilford Murry Wilson, M.D., Professor of Meteorology.
Ralph Sheldon Hosmer, B.S.A., M.F., Professor of Forestry.
James George Needham, Ph.D., Litt.D., Professor of Entomology and Limnology.
Rollin Adams Emerson, D.Sc., Professor of Plant Breeding.
Harry Houser Love, Ph.D., Professor of Plant Breeding.
Donald Reddick, Ph.D., Professor of Plant Pathology.
George Alan Works, B.Ph., M.S. in Agr., Professor of Rural Education.
Flora Rose, B.S., M.A., Professor of Home Economics.
Martha Van Rensselaer, A.B., Professor of Home Economics.
James Adrian Bizzell, Ph.D., Professor of Soil Technology.
Glenn Washington Herrick, B.S.A., Professor of Economic Entomology.
Howard Wait Riley, M.E., Professor of 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.
Alvin Casey Beal, Ph.D., Professor of Floriculture.
Herbert Andrew Hopper, B.S.A., M.S., Extension Professor of Animal Husbandry.
Edward Sewall Guthrie, Ph.D., Professor of Dairy Industry.
William Charles Baker, B.S.A., Professor of Drawing.

*Absent on leave.

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.
 Dick J. Crosby, M.S., Professor in Extension Service.
 Asa Carlton King, B.S.A., Professor of Farm Practice and Farm Superintendence.
 George Abram Everett, A.B., LL.B., Professor of Extension Teaching.
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 E. Gorton Davis, B.S., Professor of Landscape Architecture.
 Ralph Wright Curtis, M.S.A., Professor of Ornamental Horticulture.
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 Harry Oliver Buckman, Ph.D., Professor of Soil Technology.
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 Paul Work, Ph.D., Professor of Vegetable Gardening.
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 James Ernest Boyle, Ph.D., Professor of Rural Economy.
 Ezra Dwight Sanderson, Ph.D., Professor of Rural Social Organization.
 Homer Columbus Thompson, M.S., Professor of Vegetable Gardening.
 William Joseph Wright, M.S., Extension Professor of Rural Education and State Leader of Junior Extension.
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 Byron Burnett Robb, M.S. in Agr., Professor of Rural Engineering.
 Annette J. Warner, Professor of Home Economics.
 James Kenneth Wilson, Ph.D., Professor of Soil Technology.
 Edmund Louis Worthen, M.S., 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 Invertebrate Zoology.
 George Charles Embody, Ph.D., Professor of Aquiculture.
 Arthur Johnson Eames, Ph.D., Professor of Botany.
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 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.
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 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 Wayland Sharp, Ph.D., Professor of Botany.
 Joseph Oskamp, B.S. in Agr., Extension Professor of Pomology.
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 Harry Morton Fitzpatrick, Ph.D., Professor of Plant Pathology.
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 Robert Matheson, Ph.D., Professor of Economic Entomology.
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 Beulah Blackmore, B.S., Professor of Home Economics.
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 Laurence Howland MacDaniels, Ph.D., Professor of Pomology.

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 Ralph Almon Felton, Ph.B., M.A., Extension Professor of Rural Social Organization.
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 Arno Herbert Nehrling, Professor of Floriculture.
 Richard Alan Mordoff, Ph.D., Professor of Meteorology.
 Howard Bagnall Meek, S.B., M.A., Professor of Institution Management.
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 Earl Alvah Flansburgh, B.S., Assistant County Agent Leader.
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 Louis Michael Roehl, B.S., Assistant Professor of Farm Shop.
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Lois Ann Farmer, B.S., Assistant Professor of Home Economics and Manager of the Cafeteria.
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Jennie Catherine Jones, Extension Instructor in Home Economics.
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Anson Wright Gibson, B.S., Instructor in Farm Practice.

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Walter Van Price, M.S., Instructor in Dairy Industry.
Mrs. Carolyn Brundage Mellroy, Instructor in Home Economics and Shop Director.
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Russell Cooper Miller, B.S.A., Analyst in Animal Husbandry.
Charles Edward Hunn, Instructor in Plant Propagation.
Mary Jones Fisher, A.M., Ph.D., Instructor in Zoology.
Amy Grace Mekeel, A.M., Instructor in Zoology.
Eleanor Clara McMullen, A.B., Instructor in Zoology.
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Mildred Nellie Gardner, B.S., Extension Instructor in Home Economics.
Miles David Pirnie, B.S., Instructor in Ornithology.
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Cynthia Westcott, A.B., Instructor in Plant Pathology.
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Mary Eva Duthie, B.S., Extension Instructor in Rural Social Organization.
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Randall Whitaker, B.S., Instructor in Dairy Industry.
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Irving Joslyn Call, B.S., Instructor in Farm Management.
Wayne Eyer Manning, A.B., Instructor in Botany.
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Elva Theodora Campbell, Instructor in Home Economics.
David Seaver Cook, B.S., Instructor in Extension Service.
May Margaret Mattson, B.S., Instructor in Rural Education.
John Edward Flynn, M.S., Instructor in Plant Pathology.
Burton Aaron Leffingwell, B.S., Extension Instructor in Animal Husbandry.
William Thomas Craig, Assistant in Cereal Investigations.
Walton Isaac Fisher, Assistant in Plant Breeding Investigations.
Stewart Henry Burnham, B.S., Assistant in Botany.
Cecil D. Schutt, Assistant in Animal Husbandry.
Fred Harrison Dennis, Assistant in Plant Breeding Investigations.
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Roland Willey Bartlett, B.S., Assistant in Marketing.
Leah English, B.S., Analyst in Agronomy.
Fred Lee Anderson, B.S., Assistant in Botany.
Lourens Jacobus Henning, B.S.A., M.Sc.A., Assistant in Agronomy.
Samuel Eugene Alan McCallan, B.S.A., Assistant in Plant Pathology.
Fayette Elsworth Stephens, A.B., Assistant in Agronomy.
Virgil N. Argo, B.S., Assistant in Biology.
John Wendell Bailey, A.B., B.Sc., Assistant in Biology.
Norman L. Cutler, B.A., Assistant in Biology.
Grace Sandhouse, M.A., Assistant in Entomology.
James Whaples Sinden, A.B., Assistant in Plant Pathology.
Henry C. Harris, A.B., Assistant in Agronomy.
Coleman John Harris, A.M., M.S., Assistant in Botany.
David Graaff Haylett, M.S., Assistant in Botany.
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Dewey Stewart, M.S., Assistant in Plant Pathology.
John Orval Ellsworth, M.S., Assistant in Rural Economy.
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Samuel Elmer Davis, jr., B.S., Assistant in Forestry.
Frederick Selden Eaton, B.Ph., Assistant in Botany.
Leslie Rushton Hawthorn, B.S., Assistant in Botany.
Chester Arthur Arnold, B.S., Assistant in Botany.
Robert Goldin, B.S., Assistant in Botany.
James Elwood Davis, B.S., Assistant in Forestry.
Irving Henry Rodwell, B.S., Assistant in Marketing (second term).
George Reinhardt Kreisel, B.S., Assistant in Farm Management (second term).
Mervyn Charles Mossop, B.S., Assistant in Entomology.
Paul Rufus Burkholder, A.B., Assistant in Botany.

GENERAL INFORMATION

FOUNDATION AND MAINTENANCE

Cornell University is composed of seven colleges and the Graduate School. One of these colleges is the College of Agriculture.

Cornell University was chartered by the Legislature in 1865, being founded on the Land-Grant Act of 1862. By the terms of the Land-Grant Act, teaching in agriculture has been from the first a regular part of the university enterprise. As in other States, the State Government has made large supplementary appropriations for the work in agriculture. In 1904 the Legislature of the State of New York made an appropriation of \$250,000 for the erection of buildings for the College of Agriculture in Cornell University, with an additional appropriation for maintenance and operation, and established the College as a state institution under the title, "The New York State College of Agriculture at Cornell University." Before this time the State had established at Cornell University "The New York State Veterinary College." In 1906 the Legislature passed an Administration Act, defining the purpose and activities of the College of Agriculture thus: "The object of the said college of agriculture shall be to improve the agricultural methods of the state; to develop the agricultural resources of the state in the production of crops of all kinds, in the rearing and breeding of livestock, in the manufacture of dairy and other products, in determining better methods of handling and marketing such products, and in other ways; and to increase intelligence and elevate the standards of living in the rural districts. For the attainment of these objects the college is authorized to give instruction in the sciences, arts, and practices relating thereto, in such courses and in such manner as shall best serve the interests of the state; to conduct extension work in disseminating agricultural knowledge throughout the state by means of experiments and demonstrations on farms and gardens, investigations of the economics and social status of agriculture, lectures, publication of bulletins and reports, and in such other ways as may be deemed advisable in the furtherance of the aforesaid objects; to make researches in the physical, chemical, biological, and other problems of agriculture, the application of such investigations to the agriculture of New York, and the publication of the results thereof." Since 1906 the State has provided many additional buildings and has made increasingly large appropriations for maintenance and operation. The College has been designated by the State as the recipient of the funds appropriated to the State by the Federal Government under the Morrill and Smith-Lever Acts. It shares with the New York Agricultural Experiment Station at Geneva the funds derived from the Hatch and Adams Acts, and with other institutions, those devoted to teacher training under the Smith-Hughes Act.

THE BUILDINGS

The buildings erected under the enactment of 1904 were first occupied in June, 1907. The central group then erected consisted of a main administrative and classroom building, connected by covered loggias with the Dairy Building, now East Roberts, on the east and with Stone Hall, now used by the Department of Botany and the College Library, on the west. Subsequently, the Legislature provided for the erection of two large barns, a greenhouse, a home economics building, a forestry building, a poultry husbandry building, a soils building, an auditorium, a classroom building and a stock-judging building for animal husbandry, an extension of the greenhouse range, several small poultry buildings, a sheep barn, a swine barn, a farm shop and tool shed, an addition to the cafeteria in the home economics building, an insectary, and a heating plant. There are, in addition, the frame buildings occupied by the Departments of Rural Engineering and Floriculture and Ornamental Horticulture, a fish-breeding house in Cascadilla Creek, a seed-storage house, a cold-storage and packing house, and other small buildings on the farms. In 1920, the State authorized the College to plan a further development of its building program involving an expenditure of \$3,000,000. Under this building plan \$500,000 was appropriated in 1920 for a new dairy building, and in 1922 provision was made for its equipment. The building came into use in the fall of 1923. A further appropriation of \$500,000 was made in 1923, and this will be used for beginning the plant industry building and the library and museum.

THE FARMS

The College of Agriculture has 1183 acres of land and rents 150 additional acres, making a total of 1333 acres under college management. These farms are run not for commercial but for educational purposes, and the practices are therefore modified to meet the varied demands of the institution.

Land in the vicinity of the College is very broken, abounding in hills and dales, brooks and gorges. In consequence, little more than one-half of the total area is now available for tillage. Of the 1333 acres, 792 are classified as arable, 272 as pasture, 222 as wood and waste, and 47 are devoted to buildings, lots, and gardens.

Part of the tillable area has been assigned to departments, as follows: Agronomy, 32 acres; Animal Husbandry, 16 acres; Floriculture and Ornamental Horticulture, 20 acres; Plant Breeding, 56 acres; Pomology, 64 acres; Poultry Husbandry, 72 acres; Vegetable Gardening, 25 acres; and there are left to the Office of Farm Practice and Farm Superintendence 507 acres on which to conduct the regular farm operations. Of the other areas, the Department of Animal Husbandry has the use of all the pasture land; the Department of Forestry controls about 80 acres of the land classified as wood and waste; and the Department of Entomology uses about 5 acres of waste land for a fish hatchery.

The soil of the college farms is heavy, nearly all of it being Dunkirk clay loam. A few fields at the extreme southeastern corner are Volusia stony loam. The Dunkirk clay loam is entirely unsuited to potatoes and is not well adapted to corn, but will grow fair crops of corn if heavily manured. It is well adapted to wheat, oats, timothy, and clover. The Volusia stony loam, when well drained and freed from stones, is well adapted to corn and potatoes. The recently acquired areas lack both these improvements.

THE COLLEGE LIBRARIES

The library facilities of the College of Agriculture include: a large collection of books and periodicals on agriculture, animal husbandry, botany, horticulture, forestry, entomology, and other kindred subjects, contained in the University Library and numbering about thirty thousand volumes; the Agricultural College Library in Stone Hall with a working and reference collection of approximately forty thousand bound volumes and a large number of bulletins, reports and other pamphlets in unbound form; and various small departmental collections for laboratory and office use. In addition to these, the Agricultural College possesses the Craig horticultural library, gift of the widow of the late Professor John Craig, consisting of about three hundred volumes and considered to be one of the best private collections in the United States. The Department of Animal Husbandry has a large and rapidly increasing collection of herd books, registers, and the like, for the use of its instructing staff and its students. Altogether, about eighty thousand volumes are available for the instructing staff and the students of the College of Agriculture. Wherever housed, the books are regularly cataloged at the University Library.

All these libraries are likewise provided with the principal periodicals relating to agriculture and kindred subjects. In the University Library are to be found the files and current numbers of the leading foreign periodicals, especially those of a purely scientific character and those used chiefly for research. The Agricultural Library carries on its shelves over five hundred periodicals of various kinds for the use of students; these include the principal agricultural, horticultural, and stock-raising journals of the United States and Canada, together with many from foreign countries. The Entomological Library is supplied with the leading periodicals relating to general and economic entomology. In addition to these, many of the departments receive periodicals for the use of instructors and students, and the Departments of Agricultural Economics and Farm Management, Animal Husbandry, Dairy Industry, Plant Pathology, and Poultry Husbandry maintain small reading rooms of their own.

All the books of the Agricultural College Library are in reserve for reference purposes only; students are allowed to draw them for home use only when the library is closed over night and over Sunday. In order to afford the greatest possible opportunity for using the books,

the Agricultural College Library is open from eight in the morning until ten o'clock at night every day of the week during the college year except Saturday, when it is closed at six o'clock in the afternoon.

PAYMENTS TO THE UNIVERSITY

TUITION

Tuition is free to the following classes of students:

(1) Students pursuing full, special, or short courses (except the course in Hotel Administration) in the New York State College of Agriculture or the New York State Veterinary College, and such students in the Graduate School as are taking their major work in these state colleges, who at the beginning of the college year are, and for at least twelve months prior thereto have been, bona-fide residents of the State of New York, are exempt from the payment of tuition fees; provided, however, that no student shall be allowed to transfer from any such course to another course wherein tuition is charged without first paying the regular tuition fees for the hours for which he may receive credit in the latter course.

(2) Students who hold the State Scholarships in Cornell University provided for by Section 1037 of the New York State Education Law of 1910.

Students in Agriculture who are not exempt under any of the above provisions are required to pay tuition as follows: For the regular year, \$200, except in the Graduate School, where the tuition is \$75; in the Summer Session, \$40; in the Summer School in Agriculture, \$40; in the Winter Courses in Agriculture, \$25. Beginning July 1, 1924, the regular tuition fee of \$200 will be charged to all students of the course in Hotel Administration, except that for students enrolled in this course before July 1, 1924, and entitled to free tuition in the College of Agriculture as residents of New York State, the tuition charge will become effective July 1, 1925.

The tuition fee of \$200 is payable in installments of \$110 at the beginning of the first term and \$90 at the beginning of the second term, but a student registered only for the second term of the academic year is required to pay at the rate of the first term.

Tuition and other fees become due when the student registers. The University allows twenty days of grace after the last registration day of each term of the regular session. The last day of grace is generally printed on the registration coupon which the student is required to present at the Treasurer's office. Any student who fails to pay his tuition charges, other fees, and other indebtedness to the University, or who, if entitled to free tuition, fails to claim it at the Treasurer's office and to pay his fees and other indebtedness, within the prescribed period of grace, is thereby dropped from the University unless the Treasurer has granted him an extension of time to complete payment. The Treasurer is permitted to grant such an extension when, in his judgment, the circumstances of a particular case warrant

his doing so. For any such extension the student is assessed a fee of \$5 for the first week and \$2 additional for each subsequent week in which the whole or any part of the debt remains unpaid but the assessment in any case is not more than \$15. The assessment may be waived in any instance for reasons satisfactory to the Comptroller and the Registrar, when such reasons are set forth in a written statement.

The rules governing the rate of tuition in cases of withdrawal during the term or of registration late in the term are stated in the General Circular of Information.

Any tuition or other fee may be changed by the Board of Trustees to take effect at any time without previous notice.

OTHER FEES

A *matriculation fee* of \$10 is required of every student upon entrance into the University. This fee must be paid at the time of registration. A new undergraduate student who has made the required deposit of \$25 with the Treasurer does not make an additional payment of the matriculation fee, because the Treasurer draws on the deposit for this fee.

An *infirmary fee* of \$5 a term is required, at the beginning of each term, of every student. For a statement of the privileges given in return for this fee, see the General Circular of Information.

A *locker fee* of \$2 a term is required, at the beginning of each term, of every male undergraduate student. Payment of this fee entitles the student to the use of the gymnasium and the university playgrounds, and to the use of a locker, together with the use of bathing facilities and towels, in the gymnasium, or in the New York State Drill Hall, or in the Schoellkopf Memorial Building.

A *graduation fee* is required, at least ten days before the degree is to be conferred, of every candidate for a degree. For a first, or baccalaureate, degree the fee is \$10; for an advanced degree it is \$20. The fee will be returned if the degree is not conferred.

Laboratory Fees. In courses of study that require work in laboratory, shop, or drafting room, or field work, a fee is charged to cover the cost of material used by the student.

Deposits. In some courses, particularly in Chemistry, the student is required to make in advance, at the office of the Treasurer of the University, a deposit of money to cover the cost of material to be used and supplies to be consumed by him in the course of the term; accounts are kept and charges are entered against the deposit; at the end of the term any balance remaining of the deposit is returned to the student.

Payment of the Fee or of the Deposit. Every person taking work in a laboratory or in a course wherein a laboratory fee is charged or wherein a deposit is required must pay to the Treasurer of the University the laboratory fee or the deposit as directed by the laboratory card which he will receive.

An allowance of \$30 a year will probably cover laboratory fees for most students. Books, stationery, and apparatus may use as much more. The average cost of board and lodging in Ithaca is rather above than below \$12 a week; \$10 is perhaps the lowest practicable allowance.

RULES GOVERNING MINOR DELINQUENCIES

Every student is held personally responsible for any injury done by him to any of the University's property.

Assessments, charged to the student's account and payable at the Treasurer's office, are levied upon the student in certain circumstances, under the following rules of the University:

A student desiring to be reinstated after being dropped from the University for delinquency in scholarship or in conduct shall first pay a fee of \$25.

A matriculated student desiring to register after the close of registration day shall first pay a fee of \$5.

A student desiring to file his registration of studies after the date set by his college for filing the same shall first pay a fee of \$2.

A student desiring to take an examination or other test for the removal of a term condition (including the making up of a mark of "absent" or "incomplete") shall first pay a fee of \$2 for each examination or other test.

A student desiring to make an appointment for the required medical examination or conference after twenty days from the last registration day of the term shall first pay a fee of \$2.

For reasons satisfactory to the proper authority, any of the above-mentioned assessments (except that levied for examination or other test to remove a condition) may be waived in any individual case if the student's failure to comply with the regulation was due to ill health or to any other reason beyond his control.

RESIDENTIAL HALLS

The University has six residential halls for men students, situated on the campus and furnishing accommodations for about four hundred and seventy men. For particulars, address the University Comptroller, Ithaca, New York. There are, also, many private boarding and lodging houses near the university campus. In these the cost of board and furnished room, with heat and light, varies from \$10 to \$15 a week. By the formation of clubs, students are sometimes able to reduce their expenses for room and board. Cafeterias are maintained by the University in Cascadilla Hall and Baker Court, and by the College of Agriculture in the Home Economics Building, where meals may be obtained at reasonable prices.

Before engaging rooms, students should carefully examine sanitary conditions and should particularly insist on satisfactory and sufficient fire escapes. The University publishes and distributes a list of approved lodging houses. This list is ready for distribution on August

15. New students are advised to come to Ithaca a few days in advance of the beginning of their university duties, in order that they may have ample time to procure room and board before the opening of the academic year. The Freshman Advisory Committee offers its assistance to new students in the selection of lodging and boarding houses.

The residential halls for women students are Sage Hall and Prudence Risley Hall. In these buildings the total cost of board, laundry, and rent of furnished rooms, with heat and light, is \$480. The halls are heated by steam and lighted by electricity. The University Dean of Women has jurisdiction over all women students in the University, and women students are not permitted to board and lodge outside of the halls for women except in houses approved by the Dean and subject to her direction. Prospective women students should write to the Dean of Women for information concerning any matters in which they may need assistance. Dormitory facilities for women are inadequate, and prospective students desiring such accommodation are urged to make early application. Inquiries in regard to board and rooms in the women's halls should be addressed to the Manager of Residential Halls, Sage College, Ithaca.

SCHOLARSHIPS

THE STATE UNIVERSITY SCHOLARSHIPS

Under Chapter 292 of the Laws of 1913, as amended by Chapter 502, Laws of 1920, and Chapter 714, Laws of 1923, the State of New York maintains scholarships five of which are awarded each county annually for each assembly district therein. Each of these scholarships entitles the holder to \$100 for each year while he is in attendance upon an approved college in this State during a period of four years. These are called the State University Scholarships. At Cornell they are commonly known as the State cash scholarships, to distinguish them from the State free-tuition scholarships in this University. They are awarded by the State Commissioner of Education at Albany, to whom application should be made for any information about the conditions of award, or for any information about the rules of administration.

THE UNIVERSITY UNDERGRADUATE SCHOLARSHIPS

Eighteen University Undergraduate Scholarships, each continuing for two years and having an annual value of \$200, are offered each year to members of the incoming freshman class. The award is made on the basis of a special competitive examination held in Ithaca in September, between the period of the entrance examinations and the opening of the University. Every candidate for a University Undergraduate Scholarship must have satisfied in full the entrance requirements of that college of the University which he proposes to enter. See the General Circular of Information for the rules under which these scholarships are awarded.

THE ROBERTS SCHOLARSHIPS

The Roberts Scholarship Fund, a gift of the late Dr. Charles H. Roberts of Oakes, Ulster County, New York, provides five scholarships, each retainable for one year. As expressed by the founder, the purpose of these scholarships is to furnish financial assistance to students in the College of Agriculture who are of good moral character, who show native ability, tact, and application, and who are in need of such assistance, especially students who come from rural districts. The award is made after the close of the first term of each year. Application blanks and copies of the regulations may be obtained at the office of the Secretary of the College of Agriculture. All applications must be on the official blanks, which, with all other information, must be filed with the Secretary of the College before February 1. The value of each scholarship is \$320.

SCHOLARSHIPS FOR NON-RESIDENTS

There are available ordinarily ten scholarships carrying free tuition to non-residents of New York who are especially worthy of aid.

OTHER SCHOLARSHIPS

A description of other scholarships open under certain conditions to undergraduates in the College of Agriculture will be found in the General Circular of Information.

PRIZES

THE EASTMAN PRIZES FOR PUBLIC SPEAKING

With the object of developing qualities of personal leadership in rural affairs, Mr. A. R. Eastman, of Waterville, New York, established annual prizes, the first of \$100 and the second of \$20, for public speaking on country-life subjects in the College of Agriculture. These prizes are designated the Eastman Prizes for Public Speaking. Competition is open to any regular or special student. The contest takes place in February.

THE RING MEMORIAL PRIZES

By bequest of Mr. Charles A. Ring, of Niagara County, New York, a first prize of approximately \$30 and a second prize of approximately \$20 have been established, to be awarded to undergraduate students in agriculture who, in essays giving reviews of the literature on problems in floriculture, vegetable gardening, or pomology, show the greatest ability to evaluate scientific evidence. The essays must be submitted to the Secretary of the Faculty of Agriculture by noon on May 1.

THE STEWART PRIZE FOR THE PRODUCTION OF CLEAN MILK

With the object of increasing the interest in the production of clean milk, Mr. S. L. Stewart, of Brookside Farm, Newburgh, New

York, has offered for the coming year a prize of \$50 to be divided among students participating in a clean-milk contest. This money is to be apportioned by the Department of Dairy Industry, and the regulations governing the contest are to be fixed by the department. Definite announcement concerning the contest will be made to students taking course 10, in dairy industry, soon after the course opens in February.

THE CHARLES LATHROP PACK PRIZE

The Charles Lathrop Pack Prize, the income on a gift of \$1000, is awarded annually by the staff of the Forestry Department to that member of the senior class of professional forestry students who has maintained the best all-around record during his college course. In selecting the recipient, the staff is guided not only by scholastic standing, but as well by the general attitude displayed in classroom and laboratory and in the field and in matters that have to do in general with furthering the welfare of the Department of Forestry.

THE CHARLES LATHROP PACK FOUNDATION FORESTRY PRIZE

The Charles Lathrop Pack Foundation Forestry Prize consists of the income on a fund of \$1000, and is awarded annually in April for the best essay on forestry submitted by a professional forestry student. The purpose of the prize, as expressed by the donor, is "to aid in training foresters to write articles which will arouse in the public an interest in forestry and an appreciation of what forestry means to the country." The award is made by a committee appointed by the President of the University. The detailed regulations will be furnished by the Forestry Department or at the Secretary's Office. The essay must be deposited at the office of the head of the Department of Forestry by noon of April 15.

ALUMNI PRIZE

The Alumni Association of the College of Agriculture contributes an annual prize of \$25 to be awarded at the close of the junior year to the student who has maintained the best scholastic record during his three years in the University, the award to be made by the Faculty of the College.

For information concerning other prizes offered in the University and open to competition of students in the College of Agriculture, see the special pamphlet on prizes, which may be obtained upon application to the Secretary of the University.

THE HONOR CODE IN EXAMINATIONS

Under a constitution proposed and adopted by the students, and approved by the University Faculty on March 9, 1921, all students of Cornell University are put upon their honor with respect to their conduct in examinations and in other tests of work by which they are

earning academic credit. The students have made themselves responsible for maintaining the code. For the trial of charges of breach of honor they elect committees of their own—a central committee for the University, and a committee in each of the colleges. Every student is expected to do his share in upholding the code, not only by honorable conduct on his own part, but also by refusal to conceal or condone fraud on another's part. A fraud observed in any college should be reported to a member of the student honor committee of that college.

INFORMATION CONCERNING COURSES

The regular instruction in the College of Agriculture constitutes a course of four years, or eight terms, leading to the degree of bachelor of science. The requirements for graduation that are stated below apply to all students in this course and they are of such a nature as to give opportunity for following specialized interests under the guidance of faculty advisers.

From 70 to 80 per cent of the men graduates of the College go into agricultural pursuits. Besides farming, which is the most common occupation followed, there is a great range of related professional or technical vocations for which the agricultural course offers training. Manufacturing dairy products, teaching agriculture, agricultural extension, work in agricultural experiment stations, and administrative work in farmers' organizations dealing in agricultural products and machinery may be cited as examples of these vocations. No special curricula are laid out for these specializations, but the student, with the help of a faculty adviser, can map out such a course within the general requirements for graduation.

The School of Home Economics offers similar opportunity for specialized lines of training, and will, on request, send suggested outlines of courses for such groups as dietitians, clothing specialists, extension workers, and teachers of home economics.

In connection with the School of Home Economics and in cooperation with the American Hotel Association, a course for executives in hotels and in other institutions having housing and feeding problems has been organized. A special announcement of this course may be obtained by addressing the Secretary of the College.

In Forestry there are provided such courses as are needed by farmers for the proper management of farm woodlots, and a professional course is outlined on pages 47-48.

Aside from the four-years course, there is a twelve-weeks winter course not giving credit toward a degree; a six-weeks summer school designed especially for teachers, school principals, and superintendents; and a special school of biology held in connection with the summer school. Circulars describing these various courses may be obtained on application to the Secretary.

Inquiries regarding graduate work in Agriculture should be addressed to the Dean of the Graduate School.

THE REGULAR FOUR-YEARS COURSE

Men who are candidates for admission to the regular, or four-years, course must be at least sixteen years of age; women must be at least seventeen years of age. They must have certificates of good moral character; and students from other colleges or universities are required to furnish from those institutions certificates of honorable

dismissal. Students are admitted on examination, or on presenting acceptable credentials of the University of the State of New York, or on acceptable school certificates.

Prospective students who have neither lived on farms nor had considerable practical experience in agriculture are urged to spend at least one year on a well-managed farm in order to familiarize themselves with common farm affairs and operations before entering the College. This experience is necessary in order to meet the farm-practice requirement (pages 22 and 43).

THE APPLICATION FOR ADMISSION

Any prospective undergraduate student intending to register in the University at Ithaca for the first term of the academic year must apply for registration not later than August 1 of that year, and the application must be accompanied by a deposit of twenty-five dollars. Checks should be made payable to Cornell University and sent to the Treasurer. An application received after August 1 may be accepted if, in the judgment of the Faculty concerned, there is adequate provision for the student's instruction. If a student completes his registration for the first term, the deposit will be credited to his account. If a prospective student whose application and deposit have been accepted fails to complete his entrance requirements, he is entitled to a refund of the deposit in excess of accrued charges. If, for any other reason, an applicant fails to enter the University at the beginning of the term, any balance above charges accrued may, at the discretion of the Comptroller and the Registrar, be refunded to him. Such a refund will generally be made if the vacancy caused by the student's withdrawal is filled.

Candidates for admission must file their credentials and obtain permits for any necessary entrance examinations at the University Registrar's office, Morrill 18. The results of examination may be ascertained from the Registrar.

ENTRANCE REQUIREMENTS FOR THE FOUR-YEARS COURSE

The subjects that may be offered for admission to Agriculture are named in the following list; the figure in parenthesis following each subject indicates its value in entrance units and shows the maximum and the minimum amount of credit allowed in the subject. A unit represents five recitations a week for one year in a study.

| | | | |
|-----------------------------|------|------------------------------|-----|
| 1a. English No. 1..... | (1½) | 4a. First Year German..... | (1) |
| 1b. English No. 2..... | (1½) | 4b. Second Year German..... | (1) |
| 1c. English (elective)..... | (1) | 4c. Third Year German..... | (1) |
| 2a. First Year Greek..... | (1) | 4d. Fourth Year German..... | (1) |
| 2b. Second Year Greek..... | (1) | 5a. First Year French..... | (1) |
| 2c. Third Year Greek..... | (1) | 5b. Second Year French..... | (1) |
| 3a. First Year Latin..... | (1) | 5c. Third Year French..... | (1) |
| 3b. Second Year Latin..... | (1) | 5d. Fourth Year French..... | (1) |
| 3c. Third Year Latin..... | (1) | 6a. First Year Spanish..... | (1) |
| 3d. Fourth Year Latin..... | (1) | 6b. Second Year Spanish..... | (1) |

| | | | |
|----------------------------------|---------------------|-------------------------------------|---------------------|
| 6c. Third Year Spanish..... | (1) | 9g. Spherical Trigonometry... | ($\frac{1}{2}$) |
| 6d. Fourth Year Spanish..... | (1) | 10. Physics..... | (1) |
| 7a. First Year Italian..... | (1) | 11. Chemistry..... | (1) |
| 7b. Second Year Italian..... | (1) | 12. Physical Geography..... | ($\frac{1}{2}$ -1) |
| 7c. Third Year Italian..... | (1) | 13. Biology*..... | (1) |
| 8a. Ancient History..... | ($\frac{1}{2}$ -1) | 14. Botany*..... | ($\frac{1}{2}$ -1) |
| 8b. Modern History..... | ($\frac{1}{2}$ -1) | 14a. Zoology*..... | ($\frac{1}{2}$ -1) |
| 8c. American History, Civics ... | ($\frac{1}{2}$ -1) | 15. Bookkeeping†..... | ($\frac{1}{2}$ -1) |
| 8d. English History..... | ($\frac{1}{2}$ -1) | 16. Agriculture including Home Eco- | |
| 9a. Elementary Algebra..... | (1) | nomics†..... | ($\frac{1}{2}$ -1) |
| 9b. Intermediate Algebra..... | ($\frac{1}{2}$) | 17. Drawing..... | ($\frac{1}{2}$ -1) |
| 9c. Advanced Algebra | ($\frac{1}{2}$) | 18. Manual Training..... | ($\frac{1}{2}$ -1) |
| 9d. Plane Geometry..... | (1) | 19. Any high-school subject or sub- | |
| 9e. Solid Geometry..... | ($\frac{1}{2}$) | jects not already used.. | ($\frac{1}{2}$ -1) |
| 9f. Plane Trigonometry..... | ($\frac{1}{2}$) | | |

For admission to the New York State College of Agriculture, an applicant must offer either A or B, as follows:

A. Fifteen units, arranged as follows: English (3), history (1), elementary algebra (1), plane geometry (1), foreign language (3 units in one language or 2 units in each of two), elective (6 or 5). Solid geometry and plane trigonometry are recommended among the elective units for students entering the course in forestry:

B. Of diplomas authorized by the Board of Regents prior to 1921, either (1) The Arts College Entrance Diploma, (2) the Science College Entrance Diploma, or (3) the Academic Diploma in Agriculture or in Homemaking issued by the Board of Regents of the University of the State of New York, or evidence of equivalent training.

If an applicant holding one of these last-named diplomas does not present three units of foreign language, he must elect an equivalent amount of work in the University in one or more of the following subjects: foreign language, English, mathematics, philosophy, psychology, history, economics, political and social science.

REQUIREMENTS FOR ADMISSION OF SPECIAL STUDENTS

Opportunities are provided for persons who desire to pursue special studies. In order to be eligible for admission to special work, applicants must offer two full years of recent farm experience and must also either have fifteen units of entrance credits or be twenty-one years of age. In addition, an applicant for admission on the age requirement must satisfy the faculty of his ability to perform the work; and every applicant must satisfy the faculty of his bona-fide desire for special study. He will be required to present an honorable dismissal from the school last attended, certificates of good moral character, and other such certificates and letters as may be desired. The special work is designed to meet the needs of young men and young women from farms, who have not time for a four-years course, and of mature persons who desire to spend a brief period in specialized

*If an applicant has counted Biology (1), he may not also offer Botany ($\frac{1}{2}$) or Zoology ($\frac{1}{2}$).

†An applicant may offer not to exceed four units in vocational subjects under numbers 16, 18, and 19 combined. Bookkeeping may not be offered together with more than one of the subjects listed under 16, 17, and 18.

study. The work is not a definite "course," in the sense of having a program or a prescribed set of studies. The student chooses any of the agricultural "electives" that he is fitted to pursue. Admission as a special student does not admit to classes. The student is admitted to the various classes by the heads of the departments concerned, but only after admission to the College.

Special students must leave a record of their farm experience with the Department of Farm Practice during registration week.

OTHER DETAILS OF ADMISSION

Other details as to subjects and methods of admission can be found in the General Circular of Information, which may be obtained on application to the Secretary of the University.

For admission to the freshman class and to advanced standing from other colleges and universities, all communications should be addressed to the Registrar of the University. Details can be found in the General Circular of Information.

For admission as a special student, communications should be addressed to the Secretary of the College of Agriculture.

For admission to graduate work and candidacy for advanced degrees, communications should be addressed to the Dean of the Graduate School.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE

The requirements for the degree of bachelor of science are residence for eight terms, and, in addition to the prescribed work in the Departments of Physical Training and Military Science and Tactics, and in Hygiene and Preventive Medicine, the completion of one hundred and twenty hours of required and elective work, as outlined on pages 24-26.

All men students must satisfy the farm-practice requirement before the beginning of the senior year. This requirement is the equivalent of a year or more of actual farm work. In order to meet it, students should have a good working knowledge of horses, cattle, sheep, swine, poultry, crops, and machinery, and of the ordinary farm operations as they are practiced on a general farm. Exemption from this requirement is allowed only to students specializing in the Departments of Botany, Home Economics, Forestry, or Entomology. Application for such exemption must be made at the office of the Secretary of the College. Students should complete the requirement as early in their course as possible as it is a prerequisite for admission to courses in farm management, pomology, and rural education.

All women students specializing in home economics must satisfy the practice requirement in home economics before the beginning of the senior year. This requirement is equivalent to six weeks of actual independent housekeeping experience. In order to meet this the student must have a good working knowledge of the care and management of the house and of food preparation.

Freshmen are required to attend, during their first term, a course of lectures, designed to orient students in the life of the University and specifically to acquaint them with the scope and purpose of the course of instruction in the College. The course requires attendance two hours a week and carries one hour of credit.

Credit toward a degree for work done in a preparatory school on subjects that may be offered for entrance to the University will be given to those students only who, in addition to satisfying all entrance requirements, pass separate examinations in the subjects for which they seek college credit. These examinations will cover substantially the same ground as the university courses in the subjects. An applicant desiring a college-credit examination of this kind must apply to the Registrar as early as possible, and at least twenty-four hours before the first examination, specifying which fifteen units he intends to offer in satisfaction of the entrance requirements, and on what other entrance subjects he wishes to be examined for credit. In case he fails to satisfy the entrance requirements in any one or more of the units on which he proposes to enter, but passes the credit examination in any other subject or subjects, he may use the latter toward satisfying entrance requirements, but in that case he cannot also receive college credit for it. The college-credit examinations will be held September 15 to 20, 1924, on the dates set for the entrance examinations in the same subjects.

A student who receives at entrance twelve or more hours of credit in addition to the requirements for admission may be regarded as having satisfied one term of residence. Under no circumstances shall surplus entrance credit be accepted as the equivalent of more than one term.

A student who has satisfied the entrance requirements of this College and has afterwards completed in two or more summer sessions in Cornell University at least twelve hours of work in courses approved by the departments concerned, may be regarded as having thus satisfied one term of residence. Under no circumstances shall work done in summer sessions be accepted as the equivalent of more than two terms of residence. The maximum amount of credit toward the degree of bachelor of science which is allowed for the work of any one summer session is eight hours.

A student admitted to the College of Agriculture from another college in Cornell University, or from any other institution of collegiate rank, will be regarded as having completed the number of terms and hours to which his records entitle him, and will receive all the privileges of students who have completed the same number of terms and hours by residence in the College. In order, however, to obtain the degree of bachelor of science, he must have completed the prescribed subjects in the four-years course and the requisite number of elective hours in agricultural subjects. He must also have been in residence in the College of Agriculture for his last two terms and have

completed not less than fifteen hours a term, of which two-thirds, at least, must be subjects taught by the staff of the College of Agriculture.

A student must register for at least twelve hours each term, and no new student may register for more than eighteen hours.

Regular students may take, at their discretion, during their four years, not to exceed twenty hours of elective subjects in courses offered in other colleges than Agriculture; but such elective subjects shall not interfere with required or back work. Special students must take at least two-thirds of the entire work of each year from the agricultural subjects described on the following pages.

THE COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE REQUIRED COURSES: 45 HOURS

(Those required courses which are given in other colleges than Agriculture are described on pages 75-77.)

| | Hours |
|---|-------|
| Freshman Orientation Course..... | 1 |
| English..... | 6 |
| Botany, Biology, or Zoology..... | 6 |
| Chemistry or Physics..... | 6 |
| Physiology, one of the following..... | 3 |
| Physiology of Domestic Animals | |
| Human Physiology | |
| Plant Physiology | |
| Political Science..... | 5 |
| Botany, Zoology, Bacteriology, Chemistry, Physics, Geology, Physical Geography, Mathematics, Drawing, Biology, Psychol- ogy, Economics 51, 55a, 55b, 56b, 58a, 58b, 76a, 86, 88, Govern- ment 1, 10..... | 18 |

SPECIFIC REQUIREMENTS

Students who do not present chemistry for entrance are required to take chemistry.

Students who do not present physics for entrance are required to take physics.

Students other than those specializing in home economics who do not present geology or physical geography for entrance are required to take one of these subjects.

Professional students in forestry who do not offer solid geometry and plane trigonometry for entrance are required to take these subjects in their freshman year.

Not less than twenty-four hours of the required work is to be taken in the freshman year, including English, botany, biology or zoology, and physics or chemistry.

In the eighteen hours of optional science work listed above, applied science courses may not be counted. Thus photography and dairy bacteriology may not be included as physics and bacteriology for this requirement.

PREREQUISITES

Where an option of required courses is offered, consideration should be given to the prerequisites demanded by the elective courses to be taken subsequently.

Agronomy 1 is prerequisite for Floriculture and Ornamental Horticulture 4, Rural Engineering 21, and Vegetable Gardening 1 and 2.

Bacteriology is prerequisite for Agronomy 7 and Dairy Industry 4.

Biochemistry 14 is prerequisite for Home Economics 22.

Botany 1 is prerequisite for further work in botany; for professional courses in forestry; for courses in plant breeding, plant pathology, and pomology; and for some of the courses in agronomy, floriculture, and vegetable gardening.

Botany 4 is prerequisite for forestry 7.

Botany 20 is prerequisite for professional courses in forestry, and for courses in floriculture and ornamental horticulture, plant breeding, pomology, and vegetable gardening.

Chemistry 101 is prerequisite for courses in agronomy, dairy industry, home economics, pomology, and vegetable gardening.

Chemistry 210 and 225 are prerequisite for Agronomy 5, 6, and 7, and recommended for Bacteriology 6 and Dairy Industry 2.

Chemistry 375 is prerequisite for Home Economics 3 and 22.

Drawing is prerequisite for Rural Engineering 1 and 2.

Drawing 52 is prerequisite for Home Economics 115.

Economics 51 is prerequisite for Agricultural Economics 10, 29, and 30, Forestry 5, and Home Economics 120.

Economics 55a is prerequisite for Rural Social Organization 5 and 8; Economics 55b, for Rural Social Organization 5.

Economics 58 is prerequisite for Home Economics 156, 160, and 161.

Geology 1 is prerequisite for Agronomy 1.

ELECTIVE COURSES: 75 HOURS

The remainder of the work—seventy-five hours—is made up of electives to be taken under the following restrictions:

A student may take, at his discretion, during his four years, not to exceed twenty hours of elective subjects in courses offered in other colleges than Agriculture; but such elective subjects shall not interfere with required or back work. The remainder of his elective work must be chosen from the agricultural subjects described on the following pages.

In selecting his course, the student must obtain the approval of a faculty adviser, preferably in the department in which he expects to specialize, who shall be chosen by the student at the beginning of the sophomore year. All students who are preparing for teaching are advised to consult the Professor of Rural Education as well as their faculty adviser before filing their term schedules.

The following courses are open to freshmen, subject to the requirements stated above, provided, also, that prerequisites are satisfied and that acceptable equivalents have not been credited toward entrance:

| | |
|--|--|
| Animal Husbandry 1, 2, 5, 10, 11, 12, 13. | German 1, 1a, 3, 3a, 4, 5, 8. |
| Aquiculture 51. | Greek 1, 2. |
| Bacteriology 1, 2, 3, 4. | History 1, 31. |
| Bibliography 1, 2. | Home Economics 1, 90. |
| Biology 1. | Italian 1, 4. |
| Botany 1, 2. | Latin A, B, 1, 2. |
| Chemistry 101, 205, 210, 225, 875. | Mathematics 1, 2, 3, 4a, 5a, 5b, 7, 15. |
| Dairy Industry 1, 2, 3, 4. | Meteorology 1. |
| Drawing 1, 11. | Music 1, by examination. |
| English 1. | Physics 1, 2. |
| Entomology 2, 4, 5. | Physiology 3, 6. |
| Floriculture and Ornamen- tal Horticulture 1, 2, 20. | Poultry Husbandry 1. |
| Forestry 1, 2, 3, 4, 6. | Rural Education 60a, 60b. |
| French 1, 3, 4a, 4b, 5a, 5b, 16. | Rural Engineering 3, 20, 24, 30. |
| Geology 1, 1a, 2, 11, 21. | Spanish 1, 3, 4a, 4b, 5a, 5b. |
| | Zoology 1, 5, 6, 12. |

GRADUATED CREDIT

The passing grades are designated A, B, C, D, and P. In courses taken in the College of Agriculture, students meriting grade C receive normal credit toward graduation; grade B, 10 per cent additional credit; grade A, 20 per cent additional credit; grade D, credit reduced 10 per cent; and grade P, credit reduced 20 per cent. No student may be graduated in less than eight terms unless his work in the College of Agriculture averages 10 per cent excess credit.

COMBINED COURSE IN AGRICULTURE AND VETERINARY MEDICINE

Inasmuch as the requirements for graduation of the College of Agriculture and of the College of Veterinary Medicine are to some degree the same, it is possible, by a judicious use of elective hours, to complete the requirements in both colleges in seven or in six and a half years.

DEPARTMENTS OF INSTRUCTION

WITH OUTLINES OF COURSES THAT MAY BE CHOSEN BY REGULAR OR SPECIAL STUDENTS AS AGRICUL- TURAL ELECTIVES

SPECIAL NOTICES

The first term begins with the opening of the college year, in September. The second term begins in February. (See calendar, page 2.)

Unless otherwise noted, all courses are given in the buildings of the College of Agriculture. Courses enclosed in brackets will not be given in 1924-25.

The main divisions of subject matter under which the courses are arranged are, for the most part, separate administrative units. The exceptions are bacteriology, which is administratively joined with dairy industry; zoology, which goes with entomology and limnology; drawing, part of which goes with floriculture and ornamental horticulture and part with rural engineering; and the course in Wild Life Conservation and Game Farming, which is given cooperatively.

AGRICULTURAL CHEMISTRY

Courses in agricultural chemistry are listed in the announcement of the College of Arts and Sciences.

AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

FARM MANAGEMENT

(See also Courses 50, 51, under Marketing.)

1. **Farm Records and Accounts.** First term. Credit three hours. Open to juniors and seniors who have passed the farm-practice requirement and to graduate students. Should precede course 2. Lectures, T Th 10. Poultry Building 375. One laboratory period a week: graduate students T 2-4.30; undergraduate students report to the department on registration day for assignment to laboratory sections. In addition to the regular laboratory period, outside work will occasionally be assigned instead of lectures. Assistant Professor NOBLE.

Farm inventories, cash accounts, income-tax reports, single-enterprise cost accounts, complete farm cost accounts, and other farm records. Special emphasis is given to the interpretation of results and their application in the organization and management of farms. Two half-day field trips will be taken, one about October 1 and the other about December 1. On these days the laboratory period will be from one o'clock to seven o'clock. Laboratory fee, \$3.

2. **Farm Management.** Second term. Credit four hours. Open to juniors and seniors who have passed the farm-practice requirement and to graduate students. This course is designed for students who have had considerable farm experience. It should be taken near the end of the student's college course, and should be preceded or accompanied by course 1, economics, and as many as possible of the subjects dealing with the production of crops and animals. Lectures, M W F 10. Farm Management Building 102. One laboratory period a week: graduate students F 2-4.30; undergraduate students report to the department on registration day for assignment to laboratory sections. On days when farms are visited, laboratory work may last longer than two and one-half hours. Professor MYERS and Mr.——.

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

One or two out-of-town trips during April and May will necessitate leaving on noon trains and returning on evening trains. Laboratory fee, \$3.

3. **Business Organization and Management of Successful New York Farms.** First term. Credit three hours. Open to seniors and to graduate students. Prerequisite, permission to register, and an unusually good record in courses 1 and 2. F 2-5, S 8-1. Two or three two-day trips will be taken in October or early November, on the regular class days. On days when out-of-town trips are taken, the class will usually leave before 2 o'clock and will not return until evening. Expenses for trips are estimated to be about \$25. Professor SCOVILLE.

4. **Advanced Farm Management.** First term. Credit two hours. For graduate students. Lectures, M W 11-1. Farm Management Building 102. Professors WARREN, MYERS, MISNER, SCOVILLE, and PEARSON.

5. **Advanced Farm Management.** Second term. Credit two hours. Lectures, M W 11-1.

A continuation of course 4.

15. **Agricultural Statistics.** Second term. Credit two hours. Prerequisite, permission to register. Lecture, M 8. Farm Management Building 102. Laboratory, M 2-4.30. Professor PEARSON.

A study of the principles involved in the collection, tabulation, and interpretation of agricultural statistics. This course is designed for students who expect to do research work. Laboratory fee, \$3.

[16. **Agricultural Statistics.** First term. Credit two hours. Prerequisite, course 15. Professor PEARSON. Not given in 1924-25.]

19. **Seminary.** First and second terms. Credit one hour. Open only to graduate students. M 4.45-6. Farm Management Building 102. Professors WARREN, BOYLE, MYERS, MISNER, SCOVILLE, LADD, and PEARSON, and Assistant Professors NOBLE, HART, and SPENCER.

MARKETING

The work in this division is being reorganized and augmented. A special announcement will be available before the opening of the college year 1924-25.

(See also courses 15, 16, 19 under Farm Management.)

20. **Accounting.** First term. Credit three hours. Not open to freshmen. Lectures, T Th 9. Farm Management Building 102. Laboratory, one afternoon a week by assignment. Acting Assistant Professor HOLMES and Mr. W. POWELL.

Accounting systems for marketing and other business organizations. Special attention will be given to the interpretation of results, and their use in the organization and management of the business. Laboratory fee, \$2.

21. **Accounting.** Second term. Credit three hours. Not open to freshmen. Lectures, T Th 9. Farm Management Building 102. Laboratory, one afternoon a week by assignment.

A continuation of course 20. Laboratory fee, \$2.

24. **Agricultural Cooperation.** First term. Credit two hours. Open to juniors, seniors, and graduate students. Lectures, M W 9. Farm Management Building 102. Mr. BOOTH.

Agricultural cooperation in the United States and other countries.

25. **Agricultural Cooperation.** Second term. Credit three hours. Open to juniors, seniors, and graduate students. Lectures, M W 9. Farm Management Building 102. Laboratory, one afternoon a week by assignment. Mr. McBRIDE.

Principles of cooperative organization. Corporation and cooperative law. Financing the cooperative association. Relations to membership. Business policies. Laboratory fee, \$2.

[28. **Collective Bargaining.** Second term. Credit two hours. Open only to graduate students. Professor BOYLE. Not given in 1924-25.]

Collective bargaining and its use by labor, capital, and agriculture. The policy of collective bargaining. A study in price determination.

30. **Marketing.** First term. Credit four hours. Prerequisite, Economics 51. Open to juniors, seniors, and graduate students. Lectures, M W F 8. Farm Management Building 102. One laboratory period a week. Students must report to the Department for assignment to laboratory sections. Professor BOYLE.

A study of the present organization, functions, and operations of the market structure, with particular reference to agriculture. Cooperative marketing is included. Laboratory fee, \$1.

31. **Marketing.** Second term. Credit three hours. Open to juniors, seniors, and graduate students. Lectures, T Th 10. Farm Management 102. One laboratory period a week by assignment. Assistant Professor RASMUSSEN and Mr. CORBETT.

The marketing of apples, potatoes, cabbages, and other products. Laboratory fee, \$2.

32. **Marketing.** First term. Credit three hours. Open to juniors, seniors, and graduate students. Lectures, W F 10. Farm Management Building 102. One laboratory period a week by assignment. Assistant Professor ROSS.

The marketing of milk and dairy products and dairy feeds. Laboratory fee, \$2.

35. **Marketing.** First term. Credit one hour. Open to all students. Lecture, F 9. Farm Management Building 102. Lectures on marketing and closely related topics by non-resident lecturers. In charge of Assistant Professor SPENCER.

A discussion period, F 11-1, is open to graduate students and to advanced undergraduate students who obtain permission to register. Two hours credit for those who take this period.

38. **The Organized Exchanges and Speculation.** First term. Credit two hours. Open to graduate students and seniors with adequate preparation. Recitations, T Th 8. Farm Management Building 102. Professor BOYLE.

40. **Business Management.** Second term. Credit three hours. Lectures, T Th 11. Farm Management Building 102. Professor ———.

50. **Agricultural Prices.** First term. Credit two hours. Open to juniors, seniors, and graduate students who have had work in political science, farm management, and agricultural economics. Lecture, M 10. East Roberts 232. Laboratory, M 2-4.30. Professor PEARSON. Laboratory fee, \$3.

51. **Agricultural Prices, Advanced Course.** Second term. Credit two hours. Open to students who have had course 50. Lecture, T 8. Laboratory, T 2-4.30. East Roberts 232. Professor PEARSON.

54. **Transportation.** First term. Credit two hours. Open to juniors, seniors, and graduate students. Lectures, T Th 11. Farm Management Building 102. Mr. GABRIEL.

Problems in the use of railroads, waterways, and trucks for marketing.

RURAL ECONOMY

[60. **Rural Economy, General Course.** Second term. Credit four hours. Prerequisite, Economics 51. Open to juniors, seniors, and graduate students. Professor BOYLE. Not given in 1924-25.]

61. **Rural Economy, Elementary Course.** First term. Credit three hours. Prerequisite, Economics 51. Open to graduate students, and to seniors by special permission. Lectures, M W F 9, and individual conferences. Fernow Hall 210. Professor LAUMAN and Mr. BARKAS.

A study of the factors underlying the present conditions in rural communities at home and abroad, and of forces at work in shaping the agriculture of the world, chiefly along economic lines.

62. **Rural Economy, Advanced Course.** Second term. Credit four hours. Prerequisite, course 61 or its equivalent. Lectures, M W F 9. Fernow Hall 210. Professor LAUMAN.

A more extended study, primarily theoretical, of the general economic problems of agriculture.

69. **Rural Economy Seminary.** First and second terms. Primarily for graduate students, and for seniors by invitation. T 2.30. Fernow Hall 126. Professor LAUMAN.

The earlier part of the year will be devoted to a history of the present status of the agricultural-credit question in the United States; in the latter part of the year the work of advanced students will be presented.

HISTORY OF AGRICULTURE

80. **History of Agriculture.** First term. Credit three hours. Open only to seniors and graduate students. Lectures, M W F 11. Fernow Hall 210. Professor LAUMAN and Mr. BARKAS.

The important phases of the development of agriculture are considered historically. Special stress is laid on the rise of the agricultural classes, on agrarian problems, as well as on the beginnings of rational agriculture.

81. **History of Agriculture in the United States.** Second term. Credit three hours. Open only to seniors in all colleges and to graduate students. Lectures, M W F 11. Fernow Hall 210. Professor LAUMAN and Mr. BARKAS.

This course deals with the land, its settlement, and its settlers in their economic, social, and political aspects; the technical development of agriculture; the beginnings of permanent agriculture; the rise and course of marketing problems and of the agrarian movements.

88. **Agricultural History Seminary.** First and second terms. Primarily for graduate students and for seniors by invitation. Th 2.30. Fernow Hall 126. Professor LAUMAN.

The year will be devoted to a study of A. D. Thaer's *Grundsätze der rationellen Landwirthschaft*.

89. **Research in Rural Economy or History.** First and second terms. Credit two or three hours a term. For seniors who have done superior work in course 80 or 61, and for graduate students. Fernow Hall 126. Professor LAUMAN.

AGRONOMY

All of the courses in soils offered in the College and a general introductory course in the study of field crops are given in the Department of Agronomy. Advanced study in taxonomy and breeding of field crops may be obtained in the Department of Plant Breeding.

1. **The Nature and Properties of Soils.** First or second term. Credit five hours. Prerequisite, Chemistry 101 and Geology 1. Assignment to laboratory and recitation sections must be made at the time of registration. Lectures, M W F 9. Caldwell Hall 100. One laboratory period, Caldwell Hall 49. Two recitations, Caldwell Hall 31. Professor BUCKMAN.

A comprehensive course dealing with the composition, properties, and plant relations of soils, with particular reference to the practical use of lime, fertilizers, and other means of maintaining soil fertility. Laboratory fee, \$2.

2. **Cereals, Forage, and Miscellaneous Crops.** First or second term. Credit four hours. Prerequisite, Botany 1. Lectures, M W 10. Recitation, F 10. Caldwell Hall 100. Laboratory, M or T 2-4.30. Assignment to laboratory sections must be made at time of registration. Caldwell Hall 250. Assistant Professor COOPER.

The history, culture, use, and distribution of the principal farm crops. Laboratory study of the principal types and varieties. Laboratory fee, \$2.

[3. **Practical Soil Management.** First term. Credit three hours. Given in alternate years. Prerequisite, course 1. Professor WORTHEN. Not given in 1924-25.]

A course dealing with methods of soil utilization, including the use of lime, commercial fertilizers, stable manure, and green-manure crops, in agricultural practice. It includes a study of the influence of crop rotations and fertilizers on the productivity of soils, as shown by field experiments. Particular stress is placed upon factors essential for the practical utilization of New York soils.

5. **Mechanical Analysis of Soils.** First term. Credit one hour. Given in alternate years. Prerequisite, course 1 and Chemistry 210 and 225. One laboratory period by appointment. Caldwell Hall 201. Professor BIZZELL.

A theoretical and practical study of the methods used in the mechanical analysis of soils. Intended for students specializing in soils. Laboratory deposit, \$2.

6. **Soils, Advanced Course.** First term. Credit three hours. Prerequisite, course 1 and Chemistry 210 and 225. Students must consult Professor BIZZELL

before registering for this course. Lectures, T Th S 8. Caldwell Hall 143. Professor BIZZELL.

An advanced course designed particularly for students specializing in soil technology. The lectures deal with the important properties of soils from the theoretical and technical standpoints. Review of the literature and preparation of papers are important parts of the work.

7. **Soil Bacteriology.** Second term. Credit three hours. Prerequisite, course 1, Bacteriology 1, and Chemistry 210 and 225. Lecture, W, 8. Caldwell Hall 143. Laboratory, W and F 2-4.30. Caldwell Hall 201. Professor J. K. WILSON.

A course in biological soil processes designed primarily for students specializing in soil technology. The laboratory work will be supplemented by reports and by abstracts of important papers on the subject. Laboratory fee, \$5.

11. **Research.** Throughout the year. For graduate students only. Hours by appointment. Caldwell Hall 350. Professors LYON, BIZZELL, BUCKMAN, and J. K. WILSON, and Assistant Professors B. D. WILSON and COOPER.

14. **Seminary.** Throughout the year, without credit. Open to seniors who have taken course 6, and required of graduate students taking work in the department. S 11-12.30. Caldwell Hall 143.

ANIMAL HUSBANDRY

Students intending to specialize in animal husbandry are advised to register for courses 1 and 2 before taking the more advanced courses.

1. **Principles and Practice of Feeding Animals.** First term. Credit three hours. Lectures, T Th 10. Animal Husbandry Building A. One practice period, T W Th or F 2-4.30, by appointment. Animal Husbandry Building. Professor SAVAGE and Mr. KRAUSS.

The general principles of animal nutrition, including the study of feeding standards, the common grain and commercial feeds, the formulation of rations, and the like.

2. **Principles of Animal Breeding.** Second term. Credit three hours. Lectures, T Th, 9. Practice, F 2-4.30. Animal Husbandry Building A, and Judging Pavilion. Professor WING, Assistant Professor C. L. ALLEN, and Mr. BLAKELY.

A general outline of the principles of heredity as applied to the breeding of animals, with a study of animal forms, origin, and formation of breeds, crossing, and grading; an outline of the methods of registration; the study of records and pedigrees. Demonstrations, essays, and reports will be required as supplementary to the lectures.

5. **The Horse.** Second term. Credit three hours. Lectures, T Th 11. Animal Husbandry Building A. Practice, W 2-5. Judging Pavilion. Professor HARPER and Mr. VIAL.

A general course treating of the horse and the mule. Judging, scoring, care and management, economy in feeding, breeding, stable management, including harnessing, hitching, and the like. Origin, history, and development of the breeds of horses.

6. **Horse Training, Practical Course.** First term. Credit two hours. Prerequisite, course 5 and permission to register. Lecture, F 9. Animal Husbandry Building. Practice, in sections by appointment. Animal Husbandry Building and barns. Professor HARPER.

A practical course in the feeding, training, and stable management of horses.

9. **Breed Study.** Second term. Credit one hour for each breed. Prerequisite, course 10. M 2-4.30. Animal Husbandry Building. Professor WING and Assistant Professor C. L. ALLEN.

An intimate study of the history and the development of family lines and individual records of the leading dairy breeds. Students may register for one or more breeds simultaneously, as follows:

- 9a. Ayrshire.
- 9b. Guernsey.
- 9c. Holstein-Friesian.
- 9d. Jersey.

10. **Dairy Cattle.** First term. Credit four hours. Lectures, M W 9. Practice, M T W Th or F 2-6, by appointment; Animal Husbandry Building A, Judging Pavilion, barns, and stables. Professor WING, Assistant Professor C. L. ALLEN, and Mr. BLAKELY.

Origin, history, and development of the breeds of dairy cattle; production of milk; economy of feeding, care, management, and sanitation of the dairy herd; maintenance of the herd; raising calves. Practice in judging, scoring, milking, feeding, stable management, and keeping records.

11. **Swine.** Second term. Credit three hours. Lectures, T Th 10. Animal Husbandry Building A. Practice, T or Th 2-4.30. Judging Pavilion. Professor HARPER and Mr. VIAL.

Origin, history, and development of the breeds of swine; herd management; practice in judging swine; and reports on assigned topics. This course will consist of lectures, recitations, discussions, tracing of pedigrees, and field trips that will give the student a thorough knowledge of the management, production, and marketing of swine. Estimated cost of trips, \$15.

12. **Beef Cattle and Sheep.** First term. Credit five hours. Lectures, M W F 10. Animal Husbandry Building A. Practice, T Th 2-4.30. Judging Pavilion. Professor HARPER and Messrs. VIAL and GRAMS.

Origin, history, and development of the breeds of beef cattle and sheep; herd and flock management. Practice in judging. This course will consist of lectures, recitations, discussions, reports, tracing of pedigrees, and field trips that will give the student a thorough knowledge of the management, production, and marketing of beef cattle and sheep, both grade and purebred. Estimated cost of trips, \$20.

13. **Meat and Meat Products.** First or second term. Credit three hours. Registration limited to forty. Laboratory assignment must be made at the time of registration. Lecture, M 8. Two laboratory periods a week, M T W F 2-4.30, and W S 8-10.30. Animal Husbandry Building B and Meat Laboratory. One required inspection trip to Buffalo and vicinity. Mr. SCHUTT.

A practical course in the slaughtering of farm animals, the cutting of carcasses, and the preparation and curing of corned, dried, and salted meats.

15. **Principles of Animal Nutrition, Advanced Course.** Second term. Credit three hours. Prerequisite, course 1 and Veterinary Physiology 10. For advanced and graduate students. Lectures, M W F 11. Animal Husbandry Building. Professor MAYNARD.

16. **Problems in Animal Genetics, Advanced Course.** First term. Credit two hours. Prerequisite, course 2. Lecture, F 11. Recitation period by appointment. Animal Husbandry Building. Professor HARPER and assistants.

Lectures, conferences, and reports, including statistical methods as applied to breeding animals. The work will consist largely of practice in making reports on statistical problems.

17. **Advanced Judging, Dairy Cattle.** Second term. Credit one hour. Saturdays after Easter recess. Hours by appointment. Successful students may also register for one hour in the succeeding fall term. Professor WING, Assistant Professor C. L. ALLEN, and Mr. BLAKELY.

Excursions to neighboring herds and preparation for stock-judging competitions. Attendance at the State Fair will be required.

18. **Seminary.** First and second terms. Required of all graduate students taking either a major or a minor subject in the department. Advanced undergraduates will be admitted by permission, and if a satisfactory thesis on an approved subject is presented, may receive not to exceed two hours credit. M 9. Departmental staff.

30. **Health and Disease of Animals.** First term. Credit three hours. Not open to freshmen or to those who have had no courses in animal husbandry. Lectures, M W F 11. Veterinary College. Professor BIRCH.

The course is designed to give the student a clear conception of the causes and nature of the diseases of animals, with suggestions for their prevention. Special attention is given to the methods for preventing the spread of the infectious and epizootic diseases. Such information as is practicable is given for the treatment of slight injuries and for first aid in emergencies.

31. **Horseshoeing.** Second term. Credit one hour. Limited to thirty seniors. W 2-4, or Th 10-12. Farriery, Veterinary College. Professor ASMUS.

BACTERIOLOGY

1. **General Bacteriology.** First term. Credit four hours. Lectures, recitations, and laboratory practice, M W F 2-5. Dairy Building 119 and 301. Professor HALL and Mr. PRICKETT.

An introductory course, giving a general survey of the field of bacteriology together with the fundamentals essential to further work in the subject. Laboratory fee, \$5.

2. **Household Bacteriology.** Second term. Credit three hours. Lectures, M W 12. Home Economics Building 245. Laboratory, T Th 8-10 or 2-4. Dairy Building 301. Professor HALL and Mr. PRICKETT.

A general elementary course adapted to the needs of students in Home Economics. Laboratory fee, \$5.

3. **Agricultural Bacteriology, Elementary Course.** Second term. Credit two hours. Not accepted as a prerequisite for advanced courses. Lectures, recitations, and demonstrations, M W 12. Dairy Building 218. Professor SHERMAN.

The elements of bacteriology, with a survey of the relation of microorganisms to agriculture.

4. **Food and Sanitary Bacteriology, Elementary Course.** Second term. Credit two hours. Not accepted as prerequisite for advanced courses. Lectures, recitations, and demonstrations, M W 9. Dairy Building 218. Professor SHERMAN.

A course designed for students in Institution Management. The elements of bacteriology, with especial consideration of microorganisms in their relation to food and sanitary problems.

6. **Dairy Bacteriology.** Second term. Credit four hours. Prerequisite, course 1; should be preceded by Chemistry 210 and 225. Lectures, recitations, and laboratory practice, M Th 2-5; S 9-12. Dairy Building 119 and 323. Professor STOCKING.

An advanced course for students in bacteriology or dairy industry. The relation of microorganisms to milk and milk products. The subject is treated from the standpoint of economic dairy bacteriology and also from the point of view of milk hygiene and sanitary control. Laboratory fee, \$5.

7. **Soil Bacteriology** (Same as Agronomy 7). Second term. Credit three hours. Prerequisite, course 1, Agronomy 1, and Chemistry 210 and 225. Lecture, W 8. Caldwell Hall 143. Laboratory, W F 2-4.30. Caldwell Hall 201. Professor J. K. WILSON.

An advanced course in biological soil processes designed for students specializing in bacteriology or soil technology. The laboratory work will be supplemented by reports and by abstracts of important papers on the subject. Laboratory fee, \$5.

Pathogenic Bacteriology. (See the Announcement of the New York State Veterinary College.)

8. **Research.** First or second term. Credit one or more hours, by arrangement. For advanced students.

Special problems in any phase of bacteriology may be elected. Laboratory fee, \$2 for each credit hour.

BOTANY

Students wishing instruction in special groups of plants or in special subjects should consult the department.

1. **General Botany.** First and second terms. Credit three hours a term; not ordinarily given for one term only. Lectures, T Th 9 or 11. East Roberts 222. Laboratory, one period of two and one-half hours. Stone Hall. Assignment to sections must be made at the time of registration. Professor SCHRAMM, Dr. GRANT, and MESSRS. MANNING, EATON, HAWTHORN, HARRIS ANDERSON and P. R. BURKHOLDER.

This course is designed to furnish a general knowledge of the fundamental facts and principles of plant life. A careful study is made of form, structure, and reproduction of representatives of the principal groups, with a view to orient the student in the plant kingdom and to acquaint him with the principal evolutionary tendencies exhibited. Considerable attention will be given to life processes, particularly in the higher plants. Laboratory fee, \$2.50 a term; deposit, \$3, for first term only.

2. **Trees and Shrubs.** First term. Credit three hours. Prerequisite, course 1 or its equivalent. Lecture, T 8. Stone Hall 192. Laboratory or field work, M W or T Th 2-4.30. One all-day field trip is required. Stone Hall, Botanical Laboratory. Assignment to laboratory sections must be made in the Botany office at the time of registration. Mr. MANNING.

A course dealing with the identification of trees and shrubs, both in summer and in winter condition. The laboratory work covering identification will be done largely in the field. The work of the latter part of the term will be a study of the taxonomy of woody plants. This course is adapted to the needs of all students wishing a detailed knowledge of trees and shrubs. Laboratory fee, \$3; deposit, \$3.

3. **Veterinary Botany.** Second term. Credit five hours. Lecture, M W 9. Laboratory, M F 2-4.30. Recitation, T 11. Stone Hall, Botanical Laboratory. Assistant Professor MUENSCHER and Mr. GOLDIN.

A course designed to acquaint the student with those facts about plants of special value to the veterinarian. Special emphasis will be placed on poisonous plants, fodder plants, weeds, and plants used in medicine. Laboratory fee, \$5.

4. **Microscopic Wood Technology.** First term. Credit one hour. Prerequisite, courses 1 and 2 or an equivalent. Laboratory, M 2-4.30. A few lectures will be given during the laboratory periods. Stone Hall, Botanical Laboratory. Professor EAMES and Mr. ARNOLD.

This course is planned for students in wood technology and in general forestry. The object is to familiarize the student with the microscopic anatomy of wood. It includes the identification of commercially important woods; a study of types of wood structure as related to uses, such as wood pulp; the structure of wood as affecting its impregnation with preservatives and other chemicals; and tests of paper to determine source of material. Laboratory fee, \$2.

6. **Taxonomy of the Higher Plants.** First and second terms. Credit three hours a term. Prerequisite, course 1 or its equivalent. Lecture, first term, Th 12; second term, F 8. Laboratory, M W 2-5. Stone Hall, Botanical Laboratory. Professor WIEGAND and Dr. GRANT.

A study of the kinds of seed plants and ferns, their classifications into genera, families, and orders, and field work on the local flora. Emphasis will be placed on wild plants, but the more common cultivated plants will receive some attention. The course is planned to follow course 1 and to furnish an introduction to the knowledge of the field botany and classification of the higher plants, in preparation for special work in various departments and as an aid in teaching. Instruction will be given in the preparation of an herbarium and of keys. Laboratory fee, \$2 a term; deposit second term, \$3.

Students completing this course may arrange, under course 33, to pursue advanced work in taxonomy.

7. **Weeds and Weed Seeds.** First term. Credit three hours. Prerequisite, course 1 or its equivalent. Lecture, Th 8. Laboratory, T Th 2-4.30. Stone Hall 205. Assistant Professor MUENSCHER.

This course is designed to meet the needs of students of agriculture and others who wish to obtain a working knowledge of weeds and weed seeds. It will also aid persons intending to teach agriculture or nature study. Laboratory fee, \$2; deposit, \$3.

9. **Histology.** First term. Credit four hours. Prerequisite, course 1 or its equivalent. Professor EAMES and ———. Not given in 1924-25.]

This course is designed to give a working acquaintance with the internal morphology of vascular plants, and emphasis is placed on practice in interpre-

tation and determination of material. It is planned primarily for students in applied fields of botany, such as pathology, pomology, or genetics. Students desiring a general training in this subject should take course 14a. Laboratory fee, \$5.

10. **Cytology.** Second term. Credit four hours. Prerequisite, course 1 or Zoology 1, and preferably course 14b. Conferences, M W 9. Laboratory, M W 10-12.30. Stone Hall 203. Professor SHARP.

This course deals with the subject matter, literature, and problems of cytology. The survey of the field is sufficiently inclusive to make the course of value to advanced students in the various branches of biology, while emphasis on certain features gives it a special significance for the geneticist. The conference hour is devoted to a discussion of topics suggested by the laboratory observations and assigned reading, and during the latter part of the term, to the review of new literature. Laboratory fee, \$5.

[11. **Methods in Histology and Cytology.** Second term. Credit one to three hours, depending on the amount of work done. Given in alternate years. Prerequisite, course 1 or its equivalent and permission to register. Professor SHARP. Not given in 1924-25.]

A course designed to acquaint the student with methods employed in preparing material for histological and cytological investigation. Laboratory fee, \$5.

[12. **Comparative Morphology of Algae.** Second term. Credit four hours. Prerequisite, course 1 or its equivalent. Professor SCHRAMM. Not given in 1924-25.]

An advanced course embracing a study, principally from the standpoint of comparative morphology and relationships, of selected types of algae. Laboratory fee, \$5.

14a. **Morphology of Bryophytes and Vascular Plants, Part I.** First term. Credit four hours. Prerequisite, course 1 or its equivalent. Lectures, T Th 9, Laboratory, T Th 10-12.30. Stone Hall 203. Professor EAMES and Mr. ARNOLD.

Course 14 is designed for students who desire a single advanced course in the structure and development of plants above the Thallophytes. Part I deals chiefly with anatomical and histological features, the inclusion of fossil forms affording a broader basis for discussions of phylogeny. In Part II, emphasis is placed on the morphology and cytology of reproduction in the various groups. Credit is given for either part separately, but for completeness both parts should be taken, with part I first, if possible. Laboratory fee, \$5 for each part.

14b. **Morphology of Bryophytes and Vascular Plants, Part II.** Second term. Credit four hours. Prerequisite, course 1 or its equivalent. Lectures, T Th 9. Laboratory, T Th 10-12.30. Stone Hall 203. Professor SHARP and Mr. ARNOLD.

See statement under course 14a.

Comparative Morphology of Fungi. Given in the Department of Plant Pathology.

20. **Plant Physiology.** First or second term. Credit four hours. Prerequisite, all freshman work or its equivalent, and course 1. Lectures and recitations, T Th 10. Stone Hall 192. Laboratory, T Th 2-4.30 or W F 2-4.30. Stone Hall 21. Assignment to laboratory sections must be made at the time of registration. Professor KNUDSON (first term), Professor O. F. CURTIS (second term), and Messrs. KNOTT and HAYLETT.

This course is designed to acquaint the student with the general principles of plant physiology. Topics, such as water relations, photosynthesis, translocation, digestion, respiration, mineral nutrition, growth, and reproduction, are studied in some detail, and particular emphasis is placed, in both laboratory and recitations, on discussions of the principles taught and their applications. Laboratory fee, \$4; deposit, \$2.

21. **Plant Physiology, Advanced Lecture Course.** First and second terms. Credit three hours a term. Prerequisite, training in botany and chemistry, to be determined in each case by the department. Recommended for seniors and graduate students. Lectures, M W F 10. Stone Hall 192. Professor KNUDSON (1924-25) and Professor O. F. CURTIS (1925-26).

22. **Plant Physiology, Advanced Laboratory Course.** First and second terms. Credit three hours a term. Must be preceded or accompanied by course 21. Laboratory, M 2-5, S 8-12.30. Stone Hall 21. Professor KNUDSON or Professor O. F. CURTIS and _____.

Laboratory fee, \$5; breakage deposit, \$2.

30. **History of Botany.** Second term, without credit. F 4.30. Stone Hall 203.

A course of lectures given by various members of the staff with the purpose of acquainting advanced students of botany with the historical development of their science.

33. **Special Problems in General Botany, Taxonomy, Histology, Cytology, and Algae.** Throughout the year. Credit not less than two hours a term. By appointment. Professors WIEGAND, EAMES, and SHARP, and Assistant Professor MUENSCHER.

Students engaged in special problems or making special studies may register in this course. They must satisfy the instructor under whom the work is taken that their preparation warrants their choice of problem. The laboratory fee depends on the nature of the work and on the number of credit hours.

35. **General Department Seminary.** Throughout the year. Required of graduate students in these subjects. M 4.30. Organized by Professor SHARP, assisted by other members of the department.

Broad problems pertaining to botany will be discussed, literature will be reviewed, and reports of research will be given.

36. **Seminary in the Taxonomy of Vascular Plants.** Throughout the year. Hours to be arranged. Professor WIEGAND.

A special seminary in topics of particular interest to the taxonomist. Current literature and current problems will constitute a part of the program.

37. **Seminary in Morphology.** Throughout the year. Hours to be arranged. Professors EAMES and SHARP.

38. **Seminary in Plant Physiology.** Throughout the year. Required of graduate students taking work in the department. Conference, F 11. Stone Hall 192. Professors KNUDSON and O. F. CURTIS.

In the first term, topics for discussion will be chosen from current work in plant physiology; in the second term, special outlines will be followed and reports on research studies presented.

DAIRY INDUSTRY

Students intending to specialize in Dairy Industry are urged to elect Chemistry 210, 225, and 375, and Bacteriology 1, in order that these courses may be completed by the end of the first term of the junior year.

1. **Testing and Composition of Dairy Products.** First or second term. Credit three hours. First term: lecture, T Th 11; Dairy Building 218; practice, M or T 2-5 or S 8-11, Dairy Building 209. Second term: lecture, T Th 11; Dairy Building 218; practice, M or W 2-5, or S 8-11, Dairy Building 209. Professor TROY and Assistant Professor MCINERNEY.

The topics considered are secretion and composition of milk, the lactometer, the Babcock test for fat, acid tests, moisture tests, salt tests, preservative tests, and adulterations. Laboratory deposit, \$5, part returnable.

2. **Analysis and Control of Dairy Products.** Second term. Credit three hours. Prerequisite, course 1 and Chemistry 101; should be preceded by Chemistry 210 and 225. Lecture, T 2, Dairy Building 218; practice, T 3-6 and F 2-5, Dairy Building 209. Professor TROY and Assistant Professor MCINERNEY.

The application of chemical methods to commercial dairy practice. Analysis by standard chemical and factory methods; standardization and composition control; tests for adulterants and preservatives. Laboratory deposit, \$5, part returnable.

3. **General Dairy Industry.** Second term. Credit three hours. Not accepted as prerequisite for advanced courses. Lecture, T 8, Dairy Building 218; practice, T or Th 1-6, Dairy Building 128. Professor ROSS and Mr. ALGER.

This course is intended to give a general survey of the field of dairy industry; the size and the importance of the dairy industry and its relations to other branches of agriculture; the composition of milk and of milk products. A limited amount of practice in testing and manufacture of dairy products is given. Laboratory fee, \$5, part returnable.

4. **Market Milk and Milk Inspection.** Second term. Credit four hours. Must be preceded or accompanied by course 1; should be preceded or accompanied by Bacteriology 1 or its equivalent. Lecture, T Th 12. Dairy Building 218; practice, W 1-6, or S 8-1. Dairy Building 146. Professor ROSS and Mr. CURRAN.

Attention is given to the production and control of market milk, with special reference to its improvement; milk as food; shipping stations; transportation and sale; pasteurizing; standardizing; clarification; certified milk; milk laws; commercial buttermilk; methods of cooling; harvesting and storage of ice; duties of milk inspectors; apparatus and buildings. The practice includes visits to dairies in the vicinity of Ithaca. A required two-day inspection trip in the neighboring counties may be arranged. Laboratory deposit, \$4, part returnable.

5. **Butter.** First term. Credit four hours. Must be preceded or accompanied by course 1. Lectures, recitations, and laboratory practice, Th 8-10 and 1-6. Dairy Building 120, 128, and 133. Professor GUTHRIE.

The principles and practice of butter-making and creamery management. Laboratory deposit, \$4, part returnable.

6. **Cheese, Introductory Course.** First term. Credit four hours. Must be preceded or accompanied by course 1. Lectures, M W 8. Dairy Building 119. Practice, Th or F 1-6. Dairy Building 157. Professor FISK and Mr. PRICE.

The quality of milk for cheese-making and the various tests used in determining quality. A study of curd-making, in which the changes in different kinds of curd are noted. In order to give the student an idea of some of the different varieties of cheese, several types will be made, including the unripened bakers', Neufchâtel and cream cheese, the soft ripened, such as Camembert and brick, and the hard cheeses, such as cheddar and Swiss. Some attention will be paid to the quality of the cheese and to cheese-judging. Laboratory fee, \$4, part returnable.

7. **Cheese, Advanced Course.** Second term. Credit two hours. Must be preceded by course 6. Practice, M 1-6, or by appointment. Assignment to laboratory sections must be made at time of registration. Dairy Building 157. Professor FISK.

In this course the manufacture of both hard and soft-ripened cheeses will be considered. A required inspection trip to cheese plants may be arranged. Laboratory fee, \$4, part returnable.

8. **Condensed Milk, Powdered Milk, and Ice Cream.** Second term. Credit four hours. Prerequisite, course 2. Lectures, recitations, and laboratory practice, F 1-6 and S 8-1. Dairy Building 120, 139, and 151. Mr. PRICE.

The principles and practice of making condensed and evaporated milks, milk powder, ice cream, casein, and other by-products. Laboratory deposit, \$5, part returnable.

9. **Research.** First or second term. Credit one or more hours, by arrangement. For advanced students. Dairy Building. Departmental staff.

Special problems in any line of dairy work may be elected. Laboratory fee, \$2 for each credit hour.

10. **Seminary.** Throughout the year. Without credit. Required of graduate students taking work in the department; open to undergraduate students taking advanced work. Every other Monday, 5.30-8. Dairy Building. Professor SHERMAN.

DRAWING

1. **Mechanical Drawing.** First or second term. Credit three hours. Lectures during laboratory periods. Laboratory: section 1, W F 2-4.30, or section 2, Th 2-4.30, and S 10.30-1. Two additional practice periods to be arranged to suit the schedule of the student. Dairy Building, Fourth Floor. Work will begin with the first laboratory period. Students must apply at the department office before that period regarding materials required. Assistant Professor REYNA.

A course dealing with the principles and practices involved in the art of conveying information by graphical methods. The work includes use of instruments; lettering; orthographic projection involving plans, elevations, and sections; isometric drawing or conventionalized perspective; and the practical applications of these principles to simple problems. This course may well be taken early in the course of any one interested in taking further work in any phase of rural engineering.

2. **Mechanical Drawing.** First term. Credit three hours. Open only to students specializing in the institution management course. Lectures during laboratory periods. Laboratory: section 1, M 2-4.30 and T 8-10.30; or section 2, T 2-4.30 and S 8-10.30. Additional practice periods to be arranged to suit the schedule of the student. Dairy Building, Fourth Floor. Work will begin with the first laboratory period. Students must apply at the department office before that period regarding materials required. Assistant Professor REYNA.

A course essentially the same as 1 but including a study of architects' plans and elevations of hotels and other institutions and the layouts of machinery in such buildings.

5. **Mechanical Perspective Drawing.** First or second term. Credit two hours. Lectures during laboratory periods. Laboratory, T Th 11-12 and two two-hour practice periods by arrangement. Dairy Building, Fourth Floor. Assistant Professor REYNA.

A course in perspective representation by mechanical methods, embracing all the fundamentals necessary for practical application to architectural or shop problems.

11. **Free-Hand Drawing.** First and second terms. Credit from two to four hours a term. Students must consult the professor in charge before registering for the course. Lectures during practice. Practice by appointment, daily except S, 9-1, and T W Th F 2-4.30. East Roberts 371. Professor BAKER and Assistant Professor GARRETT.

An elementary course for the development of graphic expression applicable to scientific studies. Of special value to those who expect to enter the field of teaching, nature study, or biological research. The course aims to develop also the student's appreciation of pictures.

Since there are no lectures nor required reading in this course, one hour of credit in free-hand drawing means three hours of actual practice. The drawing periods must be at least two actual hours in length.

12. **Pen and Ink Drawing.** First and second term. Credit from two to four hours. Prerequisite, four hours of course 21 or its equivalent. Students must consult the professor in charge before registering for the course. East Roberts 371. Professor BAKER and Assistant Professor GARRETT.

13. **Free-Hand Drawing, Advanced Course.** First and second terms. Credit from two to four hours. Prerequisite, four hours of course 21 or its equivalent. Students must consult the professor in charge before registering for the course. Lectures during practice. Practice by appointment, daily, except S, 9-1 and T W Th F 2-4.30. East Roberts 371. Professor BAKER and Assistant Professor GARRETT.

14. **Water Color.** First and second terms. Credit from two to four hours. Prerequisite, four hours of course 21 or its equivalent. Students must consult the professor in charge before registering for the course. East Roberts 371. Professor BAKER and Assistant Professor GARRETT.

15. **Perspective.** First or second term. Credit one hour. Prerequisite, course 11 or its equivalent. Students must consult the professor in charge before registering for the course. Drafting period, to be arranged. East Roberts 371. Professor BAKER.

A course in appearance representation from plan and elevation.

16. **Graphic Expression.** First or second term. Credit one hour. Open to all who are interested; given only if a sufficient number apply for it. T 12. East Roberts 371. Professor BAKER.

A weekly talk on the graphic arts, principles of photography, book illustration, methods of reproducing drawings, pictorial photography, and some of the elements of art. A small amount of outside reading and an essay or two on some phase of the course will be required.

ENTOMOLOGY AND LIMNOLOGY

BIOLOGY

1. **General Biology.** Throughout the year. Credit three hours a term. First term prerequisite to the second. Not open to students who have had college courses in zoology and botany. Lectures, M W 9 or 11. East Roberts 222. One practice period a week. T F 8-10.30, or daily except S, 2-4.30. Roberts Hall 302. Additional sections will be provided if necessary. Students must report to the biology office, Roberts Hall 322, for assignment to laboratory sections. Professor NEEDHAM, Assistant Professor CLAASSEN, Mr. COWLES, and assistants.

An elementary course designed to acquaint the general student with the main ideas of biology through selected practical studies of the phenomena on which biological principles are based.

The work of this course begins with a study of the interdependence of organisms. This is followed by a study of the structure, physiology, and general behavior of a series of plants and animals, ranging from the simple to the more highly developed forms. The study of the simpler plants is closely associated with that of the simpler animals to show common features in the development of plant and animal life. The plants which are next studied include the mosses, liverworts, ferns, and seed plants, and the animals include hydra, earthworm, grasshopper, and frog. This is followed by consideration of organization and phylogeny, heredity and variation, natural selection and adaptation, segregation and mutation, the life cycle, metamorphosis and regeneration, and the responsive life of organisms. Laboratory fee, \$2.50 a term.

7. **Biology of the Human Species.** First term. Credit one hour. Lectures and classroom exercises, T Th 11. Goldwin Smith A. Not open to freshmen. Should preferably follow Biology 1 or its equivalent. Professor NEEDHAM and Assistant Professor CLAASSEN.

A general and elementary account of the origin and development of man, of the evolution of the responsive life, of the main phenomena of human inheritance, of the effect upon population of the alteration of environment by the processes of civilization, of the evolution of the social organism, and of social control.

INTRODUCTORY ENTOMOLOGY

For advanced work in entomology, a reading knowledge of French and German is essential. Chemistry 101, 210, and 225, or their equivalents, are highly desirable.

1. See Biology, course 1.

2. **The Ecology of Insects.** First term. Credit three hours. Lecture, Th 9. Roberts Hall 392. Practical exercises, Th 2-4.30, and one other by appointment. Professor NEEDHAM and Mr. SIBLEY.

A general course in the study of the lives of insects in relation to their environment. Practical studies will be made of the activities of insects and of the rôle that they play in different natural associations. Observations will be made on the relations between their structures and instincts and the situations in which they live, and on many of the ways in which they find a living and establish homes. Laboratory fee, \$2.50.

3. **General Entomology.** First term. Credit three hours. Prerequisite, course 1, Zoology 1, or Botany 1. Lectures, W F 9. Roberts Hall 392. Professor HERRICK. Practical exercise, T W Th or F 2-4.30, or S 8-10.30. Roberts Hall 392. Professor HERRICK and Messrs. PACK and WEHRLE.

This course embraces lectures on the characteristics of orders, suborders, and the more important families, and on the habits of representative species. The

practical exercises include a study of the structure of insects and practice in their classification. The lectures only (two hours) may be taken by those who have had courses 4 and 5. Laboratory fee, \$2.50.

3a. General Economic Entomology. Second term. Credit three hours. Prerequisite, course 3. Lectures, W F 9. Roberts Hall 392. Professor HERRICK. Practical exercise, W Th or F 2-4.30, S 8-10.30. Roberts Hall 392. Professor HERRICK, Miss GRISWOLD, and Mr. PACK.

This course includes lectures on the life histories and habits of injurious insects, together with a consideration of the most approved methods of preventing their ravages. The practical exercises include a study of the more important insecticides and as many of the commoner pests as time will permit. Several excursions will be made to observe the insects in the field. Laboratory fee, \$1.50.

4. Elementary Morphology of Insects. First or second term. Credit three hours. Hours by appointment. Roberts Hall 391. Professor JOHANNSEN and Mr. MOSSOP.

This course deals with the external and internal anatomy of several common species of insects. (See note under course 5). Laboratory fee, \$2.

5. Elementary Systematic Entomology. First or second term. Credit two hours. Prerequisite, course 4. Hours by appointment. Roberts Hall 391. Professor BRADLEY and Miss SANDHOUSE.

The wing venation of insects. The determination of the family characters of a selected set of insects. Laboratory fee, \$2.

Courses 4 and 5 are introductory laboratory courses in the structure and classification of insects, required of all students who plan to take advanced work in entomology. The work is individual, and both courses may be taken in one term.

6. Elementary Insect Taxonomy. First and second terms. Credit three hours each term. Prerequisite, course 5. M W F 2-5. Roberts Hall 301. Professors BRADLEY, NEEDHAM, HERRICK, and JOHANNSEN, Assistant Professor CLAASSEN, Dr. FORBES, and Mr. SIBLEY.

A survey of the more important species of insects, and a study of the characters by which they may be recognized. Laboratory fee, \$4.50 a term.

APICULTURE

9. General Beekeeping. First term. Credit three hours. Prerequisite, course 3. Lecture, M W 10. East Roberts Hall 222. Practical exercises, T 2-4.30. Professor PHILLIPS.

This course is intended to afford a general knowledge of the fundamentals of beekeeping. It will be the aim to acquaint the student with the various phases of bee culture, such as life history, instincts, and general behaviour of bees, their products, the sources of honey, the rôle of bees in cross-pollination, the equipment of the apiary, wintering problems, the diseases of bees, and the rearing of queens. Laboratory fee, \$2.50.

SYSTEMATIC ENTOMOLOGY

11. Advanced Systematic Entomology. First term. Credit three or more hours. Prerequisite, course 5. Three laboratory periods of three hours each, by appointment. Roberts Hall 301. Professor BRADLEY.

A training course in the identification and interpretation of obscure characteristics of insects. One hundred and thirty-five or more hours a term in the laboratory must be accomplished by students registered for this course. Laboratory fee, \$6.

14. Entomological Literature and its Technics. First term. Credit three hours. Prerequisite, course 3 or 5, or Zoology 5. Lectures and recitations, M W F 11. Roberts Hall 392. Professor BRADLEY.

A study of general entomological literature. Practice in the use of generic and specific indices and of bibliographies, and in the preparation of the latter; methods of preparing technical papers for publication. The rules of nomenclature, including the formation of scientific names.

This course is of a technical nature, and intended to aid students who desire to specialize in entomology or systematic zoology in their contact with literature.

15. **Lepidoptera.** First term. Credit three hours. There is no formal prerequisite, but students must be familiar with elementary entomology and used to handling insects. They should satisfy the instructor on this point before electing the course. Lecture, M 9. Roberts Hall 392. Laboratory, M 10-12, and W by appointment. Roberts Hall. Dr. FORBES.

Identification and classification of Lepidoptera, including their caterpillars; with practice in the technique of preparation involved. Mimicry and other biological problems best illustrated by the Lepidoptera.

INSECT MORPHOLOGY

20a. **Comparative Anatomy and Histology of Insects.** First term. Credit two hours. Prerequisite, courses 4, and 3 or 5. Lectures, assigned reading, and reports. T Th 10. Roberts Hall 392. Professor JOHANNSEN.

20b. **Insect Embryology and Postembryonic Development.** First term. Credit two hours. Prerequisite, courses 4, and 3 or 5. M W 10. Roberts Hall 392. Professor JOHANNSEN.

Course 20b is the equivalent of the second half of course 20 of former years. It may be taken independently of course 20a.

21. **Histology of Insects.** First term. Credit three hours. Must be preceded or accompanied by course 20. Laboratory, three periods a week, by appointment. Roberts Hall 391. Professor JOHANNSEN.

Technique in histological methods as applied to insects. Laboratory fee, \$4.50.

[27. **Entomological Reading in Foreign Languages.** German first term, French second term. Two hours a week. Without credit. Open to advanced students in entomology who have an elementary knowledge of the language. Professor JOHANNSEN. Not given in 1924-25.]

ECONOMIC ENTOMOLOGY

30. **Parasites and Parasitism.** First term. Credit two hours. Prerequisite, General Biology 1 or Zoology 1. Lecture, T 9. Roberts Hall 301. Practical, exercise, T 2-4.30. Professor MATHESON and Mr. WEST.

A consideration of the origin and biological significance of parasitism, and of the structure, life, and economic relations of representative parasites. Laboratory fee, \$2.

31. **Medical Entomology.** Second term. Credit two hours. Prerequisite, Zoology 1 or Biology 1. Lecture, T 9. Roberts Hall 392. Practical exercise, T 2-4.30. Roberts Hall 301. Professor MATHESON and Mr. WEST.

This course deals with insects and other Arthropods which are the causative agents of disease in man and animals or are the vectors or intermediate hosts of disease-producing organisms. Laboratory fee, \$2.

40. **Advanced Economic Entomology and Insectary Methods.** Second term. Credit three hours. Open only to qualified seniors and graduate students. Lecture, Th 11. Roberts Hall 392. Seminary, Th 2-4.30. Field and laboratory work by appointment. Insectary. Professor MATHESON.

Economic problems connected with applied entomology will be discussed and reported on, and field observations will be made. Experimental methods in breeding, photographing, investigating, and controlling insects will be discussed and studied. Designed for advanced students in entomology who desire to fit themselves for experiment-station work. Laboratory fee, \$2.50.

41. **Forest Insects.** Second term. Credit two hours. Prerequisite, first term of course 3. Lectures, Th S 8. Roberts Hall 301. Professor HERRICK.

A course of lectures dealing with insects injurious to forest and shade trees, together with a consideration of the best methods of controlling their ravages.

LIMNOLOGY

50. **General Limnology.** Second term. Credit three hours. Open to students who have taken or are taking courses 1 and 3, or the equivalent. Lecture, Th 9. Roberts Hall 392. Laboratory, Th 2-4.30, and one period by appointment. Roberts Hall 492. Professor NEEDHAM and Mr. SIBLEY.

An introduction to the study of the life of inland waters. Aquatic organisms in their qualitative, quantitative, seasonal, and ecological relations. The course includes one all-day trip, taken on some Saturday in May. Laboratory fee, \$2.50.

51. **Aquiculture.** First term. Credit three hours. Lectures, M W F 12. Roberts Hall 392. Professor EMBODY.

A laboratory and field course designed to give practice in the methods of fish culture. May be taken one or two terms. Laboratory fee, \$2.50 a credit hour.

52. **Fish Culture.** First and second terms. Credit two or more hours a term. Must be preceded or accompanied by course 51. T Th 2-4.30. Biological Field Station and Experimental Hatching Station. Professor EMBODY.

A course on the conservation and utilization of the resources of inland waters. A visit to one of the state fish hatcheries and a report on its operations is required. The expense of this trip will not exceed \$7.

53. **Problems in Aquiculture.** First and second terms. Credit two hours or more. Prerequisites, courses 50, 51, and 52. For seniors and graduates only. Professor EMBODY.

100. **Research.** Throughout the year. Credit three or more hours a term. Prerequisite, permission to register from the professor under whom the work is to be taken. Roberts Hall. Professors NEEDHAM, HERRICK, CROSBY, JOHANNSEN, BRADLEY, EMBODY, and MATHESON, and Assistant Professor CLAASSEN.

SEMINARY

Seminary. Throughout the year. M 4.45-5.45. Roberts Hall 392.

The work of an entomological seminary is conducted by the Jugatae, an entomological club which meets for discussion of the results of investigations by its members.

EXTENSION TEACHING

1. **Oral and Written Expression.** First term. Credit two hours. Open to juniors and seniors, and to others by arrangement. Public Speaking I should precede this course. The number in each section will be limited. Students will consult Mr. PEABODY for assignment to sections. Lectures and practice, M W 9, M F 11; W F 10, T Th 11, Roberts Hall 131; T Th 10, Roberts Hall 292. Criticism, by appointment, daily, 8-1. Professors EVERETT and WHEELER and Messrs. PEABODY and ———.

Practice in oral and written presentation of topics in agriculture, with criticism and individual appointments on the technique of public speech. Designed to acquaint students with parliamentary practice, to encourage interest in public affairs, and, through demonstrations and the use of graphic material and other forms, to train for effective self-expression in public. Special training will be given to competitors for the Eastman Prizes for Public Speaking. (See page 16).

2. **Oral and Written Expression.** Second term. Credit two hours. Prerequisite, course 1, of which course 2 is a continuation. Lectures and practice, W F 10, or T Th 9, or T Th 10, M F 11. Roberts Hall 131. Criticism, by appointment, daily, 8-1. Professors EVERETT and WHEELER and Mr. PEABODY.

3. **Extension Methods, Organization, and Policy.** First term. Credit two hours. Open to graduate students and seniors, and to juniors by special arrangement. Lectures and written exercises based on field work. W F 9. Stone Hall 192. Professors WHEELER and CROSBY and Mr. CORYELL.

This course deals with extension agencies, methods, and policies, as exemplified in the State of New York and throughout the United States. It is designed to familiarize students with extension principles as well as practices. It is intended not only for the prospective county agent or other extension worker in agriculture and home economics, but also for those who are preparing for effective service as citizens in rural communities. Students will submit reports based on personal visits to farm and home bureau offices and committeemen, junior extension leaders, and the college scheduling office, and on attendance at several types of extension meetings. The expense of these visits will vary with the student's own selection of places; it may be kept within \$5 or \$10.

4. **Advanced Oral Expression.** Second term. Credit two hours. Prerequisite, courses 1, 2, and 3 or Home Economics 260. Hours to be arranged. Mr. PEABODY.

An advanced course of study and practice in oral expression as directly related to the needs of the county agent, the home demonstration agent, the junior club leader, and the extension specialist.

[5. **Agricultural Journalism.** First term. Credit three hours. Open only to those who have passed the required hours in English. Professor B. ADAMS. Not given in 1924-25.]

This course is intended to give the principles of news writing, largely in connection with agricultural extension work and for prospective county agricultural and home demonstration agents; it is also intended to be of value to those who may wish to undertake the writing of agricultural bulletins.

[6. **Agricultural News Writing.** Throughout the year. Credit two hours a term. No credit for less than two terms. Prerequisite, course 5 or English 8. Professor B. ADAMS. Not given in 1924-25.]

This course requires the equivalent of laboratory work in practical news writing for publication, on agricultural topics in rural and agricultural journals, and will include criticisms, discussions, and consultations on actual problems in agricultural journalism.

[7. **The Country Newspaper.** First term. Credit two hours. Prerequisite, course 5. Professor ———. Not given in 1924-25.]

A study of the country newspaper, its problems, its make-up, and its place as a factor in rural life in New York.

[8. **Agricultural Information Service.** Second term. Credit two hours. Prerequisite, course 5. Professor B. ADAMS. Not given in 1924-25.]

Advance information, or publicity, in connection with agricultural work; the uses and abuses of publicity; its forms, principles, and effects, including the use of various forms of information in print, such as drawings, photographs, charts, posters, and other similar material in agricultural extension.

FARM PRACTICE

The farm-practice requirement is forty points, twenty of which must be obtained by actual farm work. (See page 22.)

Students taking courses offered in the various departments of the College which include laboratory periods that familiarize them with the materials and methods of the farm, will be given one point toward the farm-practice requirement for each hour of university credit obtained in such laboratory work.

The Office of Farm Practice will assist students in getting work on farms during vacations and at other times, and will supervise and keep records of the work.

Students should consult the office in regard to work on farms.

The office will also be glad to assist those students who have completed the farm-practice requirement in obtaining places on farms where they can gain wider experience.

1. **Farm Practice.** First and second terms. Without credit toward graduation, but giving credit toward the farm-practice requirement, depending on the amount and quality of the work done. Hour and place, by appointment. Mr. ——— and assistants.

A course designed to assist those students who enter with little or no farm experience. Students will have an opportunity to hitch, harness, and drive horses, and to familiarize themselves with the use of the common farm tools. Admission to this course will be determined by the result of the farm-practice tests. This course should be taken by all new students who have had limited farm experience.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

Instruction in floriculture is planned for the following classes of students:

(1) those who intend to make some branch of commercial flower growing their life work; (2) those who plan to enter a retail business; (3) those who are inter-

ested in amateur flower growing for pleasure and home decoration; (4) those who plan to take up some line of work on private estates or in city parks. Courses 4 and 5 should not be elected until courses in botany, soils, plant physiology, plant pathology, plant breeding, and economic entomology have laid a broad foundation on which to build the scientific principles of commercial flower growing.

Instruction in ornamental horticulture is planned to meet the requirements of students for (1) work in the propagation of all types of ornamental plants; (2) nursery practice; (3) plant materials for ornamental planting about the home grounds, village squares, and other public properties; (4) the use of plants in landscape planting.

1. Woody-Plant Propagation and Nursery Practice. First or second term. Credit two hours. Prerequisite for course 9. Lectures, Th 12. Floriculture Building. Practice: first term, Th 2-4.30, or S 8-10.30; second term, Th 2-4.30, or S 10.30-1. Mr. HUNN.

This course is planned to meet the needs of all students in the department. It considers the methods of propagation of all classes of ornamental woody plants and their special treatment during the first stages of growth. A practical course to acquaint students with the principles governing the transplanting of trees and shrubs, and the methods practiced in all types of nursery management. Laboratory fee, \$3.

2. Principles and Methods of Greenhouse Practice. First term. Credit three hours. Prerequisite to courses 3, 4, 5, and 8. Lecture, T Th 9. Practice, T 2-4.30. Floriculture Building. Professor WHITE and Mr. _____.

A course intended to acquaint students with general floricultural methods and the scientific principles governing them. This is an elementary course in commercial flower growing. Laboratory fee, \$2.50.

[3. Greenhouse Construction. Second term. Credit two hours. Prerequisite, course 2. Lectures and discussions, M W 12. Floriculture Building. Professor NEHRLING. Not given in 1924-25.]

The evolution of the greenhouse; present-day types; materials and methods of construction; principles and methods of heating.

4. Commercial Floriculture. First term. Credit four hours. Prerequisite, courses 2 and 3, Botany 1 and 20, Agronomy 1, and the farm-practice requirement. This course is planned for men students who intend primarily to grow flowers and potted plants for sale, and no student will be admitted to the course who has not had at least a half year of practical experience in a greenhouse range. Lectures and recitations, M W F 10. Floriculture Building. Practice, F 2-4.30. Greenhouses. Professor NEHRLING.

Studies in the culture of commercial florists' crops. Methods of packing, shipping, and marketing will be considered. The class will participate in a required excursion to Syracuse on October 24. Laboratory fee, \$2.

5. Commercial Floriculture. Second term. Credit four hours. Prerequisite, course 4. Lectures and recitations, M W F 10. Floriculture Building. Practice, F 2-4.30. Greenhouses. Professor NEHRLING.

A continuation of course 4, with methods of culture of commercial crops not previously considered. These courses, with their prerequisites, aim to fit students for commercial work. Students taking these courses are expected to work on commercial ranges during one semester and vacations. The class will participate in a required excursion to Elmira on April 10. Laboratory fee, \$2.

6. Wholesaling and Retailing Flowers. First term. Credit three hours. Prerequisite, courses 4 and 5 and permission to register. Lecture, T Th 10. Practice, W 2-4.30. Greenhouses. Professor NEHRLING.

This course is planned with the view of giving students a thorough knowledge of methods of retail-store management, store equipment, salesmanship, business methods, delivery, decorating for all functions, flower arrangement and the making of designs, methods of conducting cooperative flower exchanges, and wholesale markets. Other topics of a like nature will be discussed. There will be a required trip to Rochester, to visit a wholesale establishment and retail stores, on November 19. Laboratory fee, \$5.

7. **Floral Arrangement.** Second term. Credit one hour. Registration limited to fifteen students. Preference will be given to students specializing in Floriculture and to seniors in Home Economics. Lectures, demonstrations, and practice, T 2-4.30. Greenhouses. Professor WHITE.

A study of the principles and methods of arrangement of flowers for home decoration and table decoration, in baskets, vases, and formal designs; also the arrangement of flowers and plants for all types of interior decoration. Laboratory fee, \$5.

8. **Conservatory Plants.** Second term. Credit two hours. Prerequisite, course 2. Lectures and demonstrations, T Th 10. Floriculture Building. Professor NEHRLING.

Designed for students interested in work on private estates or in parks. This course should be preceded by course 2. A study of such tropical and subtropical foliage and flowering plants as are used for the ornamentation of glasshouses of decorative type. Laboratory fee, \$1.

9. **Principles and Methods of Nursery Practice.** Second term. Credit one hour. Prerequisite, course 1. Lectures and practice, F 2-4.30. Floriculture Building and Nurseries. Mr. HUNN.

A practical course to acquaint students with the principles governing the transplanting of trees, shrubs, and herbaceous perennials, and the methods practiced in all types of commercial nursery management.

10. **Amateur Floriculture.** First or second term. Credit three hours. Lectures, M W 11. Floriculture Building. Practice, M 2-4.30. Greenhouses. Miss MINNS.

The culture, in the home, of potted plants suitable for window gardening and for outdoor home gardening. The course includes a study of containers, soils, fertilizers, and insecticides; also, the preparation and planting of flower beds. It is planned primarily for students in home economics, but is open to any one desiring information regarding simple methods of plant culture. Laboratory fee, \$2.

13. **A Brief Introduction to Woody-Plant Materials.** Second and first terms. Credit three hours. Lecture, W 8. Laboratory and field trips, M W 2-5. East Roberts. Professor R. W. CURTIS.

A brief study of the characteristics and requirements of trees, shrubs, and vines for landscape planting. This course is intended for general election, and students registering are advised to begin with the second semester and to continue through the summer session and fall semester.

The laboratories and field trips enable the student to recognize common woody plants. The lectures discuss planting areas, planting practices, and plant materials, the last named from the point of view of plants as elements in composition, in order that the student may learn to see plants not only as growing things but as possible units in planting design with which he may be able to improve his surroundings, as outlined in course 18. All members of the class will be required to participate in an excursion to Rochester, May 29 and 30. Laboratory fee, \$1.50.

15. **Garden Flowers.** Second term. Credit three hours. Lectures, T Th 9. Floriculture Building. Practice, S 8-10.30. Greenhouses and gardens. Miss MINNS.

A study of the identification and culture of annuals, herbaceous perennials, and roses. The aim is to give the student an intimate knowledge of those forms of annual and herbaceous plants that may be used in garden planting, either on home grounds or in public parks. An excellent collection of plant material is available for demonstration work in this course. Students are strongly advised to follow this course with the one given in the summer session. All members of the class will be required to participate in an excursion to the Thompson estate at Canandaigua, on May 28. Laboratory fee, \$2.

[17. **Lawn-making and Green-keeping.** First or second term. Credit three hours. A special course, not open to general election. F 2-6. Floriculture Building. Professor R. W. CURTIS. Not given in 1924-25.]

This course deals with the principles, practices, and materials which have to do with the construction and maintenance of lawns and greens. It includes weekly

lectures, laboratories, and reports, and discussions by men prominent as turf experts and green-keepers.

18. **Planting Design, Elementary Course.** Second term. Credit two hours. Prerequisite, course 13. Intended primarily for third-year students in landscape architecture. Lecture, F 8. White Hall. Drafting and outdoor practice, F 2-5. Professor R. W. CURTIS.

A preliminary study of the use, adaptation, and arrangement of plants with reference to problems of landscape design.

19. **Planting Design, Advanced Course.** First and second terms. Credit two hours. Prerequisite, course 18. Hours by appointment. White Hall. Professor R. W. CURTIS.

20. **A Brief Introduction to Landscape Design.** First or second term. Credit three hours a term. Lectures, T Th 10. Recitation, S 10. Caldwell Hall 100. Professors DAVIS and R. W. CURTIS.

A discussion of the first principles involved in landscape planning, with special application to small city and suburban homes, farmsteads, and cottage grounds. The course is intended for students who desire an intelligent point of view in landscape work but who do not intend to take the more technical courses in theory.

28. **The History and Literature of Ornamental Horticulture.** First term. Credit two hours. Lectures, T Th 11. Roberts Hall 234. Designed primarily for seniors, and required of graduate students. Professor BEAL.

A comprehensive study of the evolution of gardening, the introduction of plant material, and the development of floricultural ideals. Beginning with the earliest records, these are traced through the centuries to the present time. The unusually large library collection of herbals and European works of late date offers exceptional facilities for presenting this course.

29. **Investigation in Floriculture and Ornamental Horticulture.** Throughout the year. Credit one or two hours a term. Prerequisite, permission to register. Designed primarily for upperclassmen and graduate students. Consultation by appointment. Professors WHITE, BEAL, R. W. CURTIS, and NEHRING.

The investigations of problems in materials for ornamental planting and in the commercial culture of cut flowers and potted plants, exotics, garden flowers, and the like.

30. **Seminary.** First and second terms. Credit one hour a term. Required of advanced students who elect course 29, and of all graduate students in the department. F 9. Floriculture Building. Departmental staff.

Drawing. The courses in freehand drawing, water color, and perspective, formerly listed here, are now to be found under the heading Drawing.

FORESTRY

The instruction in forestry is designed to meet the needs of several classes of students: (1) students of general agriculture who wish elementary instruction in the care of woodlands and in forest planting and forest nursery work; (2) prospective teachers, business men, lawyers, and others who desire an understanding of the place of forestry in the life of a nation; (3) technical students in other lines who wish one or more technical forestry courses, such as wood technology; (4) professional forestry students, preparing for forestry as a life work. The entrance requirements are the same as for general agriculture.

During the four years the student is registered in the College of Agriculture his work must include: (a) all the courses required of general agricultural students; (b) solid geometry and plane trigonometry, unless accepted for entrance; (c) such other courses as the Department of Forestry believes to be best adapted to meet the needs of the individual student; (d) at least four months experience in forestry work or in a forest industry, one month of which, in the summer following the junior year, must be spent in the forestry camp conducted by the Department of Forestry in a forest in New York State; (e) Civil Engineering summer camp, of five weeks (see page 47). Requirements (d) and (e) are demanded of all professional forestry students, in lieu of the farm-practice requirement. On the following pages is a recommended sequence of studies that will prove desirable

for most students specializing in this field, but at the discretion of the department deviations from it may be made for students entering the course with advanced standing, and for other students, when advisable. In all cases the course of study for a professional forestry student must be planned by the Department of Forestry; and it has been ruled that each professional forestry student must choose as his faculty adviser one of the professors or assistant professors in the Department of Forestry. Admission to candidacy for the degree of master in forestry may be conditioned on compliance with this regulation. Professional students must register with the department in order that their standing as such may be recognized.

Further details regarding the professional course may be obtained through correspondence with the Department of Forestry. Freshmen who are planning to take the professional forestry course must register with the Department of Forestry. They should enter the College at the beginning of the first term of the college year. Those entering in the second term are likely to have difficulty in arranging satisfactory schedules of courses.

RECOMMENDED SEQUENCE OF STUDIES FOR PROFESSIONAL STUDENTS IN FORESTRY

Freshman year

| <i>First term</i> | <i>Hours</i> | <i>Second term</i> | <i>Hours</i> |
|----------------------------------|--------------|---------------------------|--------------|
| Freshman Orientation Course..... | 1 | English 1..... | 3 |
| English 1..... | 3 | Botany 1..... | 3 |
| Chemistry 101..... | 6 | Geology 1..... | 3 |
| Botany 1..... | 3 | Rural Engineering 51..... | 3 |
| Mathematics 3*..... | 3 | Forestry 5..... | 2 |
| | | Forestry 6a..... | 2 |

Summer following freshman year

Period of required field experience, thirteen weeks.

Sophomore year

| <i>First term</i> | <i>Hours</i> | <i>Second term</i> | <i>Hours</i> |
|---|--------------|--|--------------|
| Civil Engineering 110 (Elementary Surveying)..... | 3 | Physics 3†..... | 6 |
| Botany 2..... | 3 | Botany 20..... | 4 |
| Entomology 3..... | 3 | Civil Engineering 211A (Advanced Surveying)..... | 3 |
| Economics 51..... | 5 | Entomology 41..... | 2 |
| Elective | | Geology 11..... | 3 |

Summer following sophomore year

C. E. summer camp, five weeks. Civil Engineering 213 (Surveying).

Junior year

| <i>First term</i> | <i>Hours</i> | <i>Second term</i> | <i>Hours</i> |
|-----------------------------|--------------|------------------------|--------------|
| Botany 4..... | 1 | Forestry 7..... | 4 |
| Forestry 13..... | 3 | Forestry 11..... | 3 |
| Plant Pathology 1..... | 3 | Forestry 16..... | 3 |
| Agronomy 1†..... | 5 | Plant Pathology 9..... | 2 |
| Civil Engineering 214a..... | 2 | Elective..... | |
| Elective..... | | | |

Summer following junior year

Department of Forestry summer camp, four weeks, August and September. Professional forestry students must attend this camp to satisfy in part the requirement for forestry practice demanded of forestry students, in lieu of farm practice.

*Mathematics 3 (plane trigonometry) and Mathematics 1 (solid geometry) must be taken during the freshman year if these subjects were not offered for entrance.

†Required of students who do not present physics for entrance. Other students should elect Agronomy 1 this term.

‡Students who have not had Agronomy 1 in the sophomore year should elect it this term.

Senior year

| <i>First term</i> | <i>Hours</i> | <i>Second term</i> | <i>Hours</i> |
|-------------------|--------------|--------------------|--------------|
| Forestry 8..... | 3 | Forestry 9..... | 2 |
| Forestry 10..... | 2 | Forestry 12..... | 3 |
| Forestry 13a..... | 1 | Forestry 15..... | 2 |
| Forestry 14..... | 4 | Forestry 18..... | 3 |
| Forestry 17..... | 2 | Forestry 19..... | 2 |
| Electives..... | | Geology 15..... | 1 |
| | | Electives..... | |

Graduate year

Adequate preparation for the profession of forestry requires at least a year of graduate study in addition to the four-years undergraduate course. The undergraduate work in forestry leads to the degree of bachelor of science; the graduate work leads to the degree of master in forestry. (See the Announcement of the Graduate School.)

GROUP A

Courses intended primarily for students who do not expect to make forestry their major work. Standing as professional students may not be gained by taking courses 1-6.

1. **The Farm Woodlot.** First or second term. Credit two hours. Lecture, M 9. Practice, M 2-4.30. Fernow Hall 8. Assistant Professor GUISE.

A course covering those phases of forestry that are applicable to the farm woodlot. Identification of the principal trees of this region; measurement of logs, trees, and stands; nursery work, forest planting, thinnings, and improvement cuttings; the preservative treatment of farm timbers. Laboratory fee, \$1.

Students expecting to take courses 2 and 3 should not elect course 1, as the ground covered in course 1 is repeated in courses 2 and 3.

2. **Elements of Forestry: Mensuration and Management.** Second term. Credit three hours. Lectures, T Th 9. Fernow Hall 122. Practice, T 2-4.30. Fernow Hall 118. Professor BENTLEY.

An elementary course including: estimating and measuring the amount of standing timber and its value; measurement of logs and other forest products; rate of growth of timber in diameter, height, and volume; value increment; age at which timber should be harvested; methods of regulating the amount of timber cut so as to insure a permanent income. (See course 3.) Laboratory fee, \$2.

3. **Elements of Forestry: Silviculture.** First term. Credit three hours. Lectures, T Th 9. Fernow Hall 122. Practice, T or W 2-4.30. Fernow Hall 118. Professor SPRING.

An elementary course covering the life history of the forest; the influence of soil and climate on forests; the influence of forests on stream flow, climate, and soil; forest planting, seeding, and nursery work; natural reproduction of the forest; care of the crop during its growth, including thinnings; protection from fire and other enemies; identification of a few of the principal timber trees of this region. (See course 2.) Laboratory fee, \$1.

Courses 2 and 3 may be taken independently. If both courses are taken, they should meet the needs of students who wish a more detailed knowledge of woodland management than is given in course 1, but do not wish the professional courses.

4. **Forest Resources of New York State.** Second term. Credit two hours. Lectures, M W 10. Fernow Hall 122. Professor RECKNAGEL.

The place of the forests in the economic and social welfare of New York State. Forest regions and important forest trees. The forest industries of the State. State and private forest holdings and their development, with special emphasis on the utilization of products from farm woodlots.

[5. **Conservation of Natural Resources.** Second term. Credit two hours. For others than professional forestry students, Economics 51 is prerequisite. Lectures, T Th 10. Fernow Hall 122. Professor B. ADAMS. Not given in 1924-25.]

The conservation of natural resources in the United States; the interrelation of the uses and wastes of the forests with those of various resources. The influence of the physical equipment of America on human life and on American civilization, with especial reference to the natural resources, including the human element, as the basis of national strength and power.

6. **The Field of Forestry.** First term. Credit two hours. The course is limited to 125 students. Registration at the department is required. Lectures, M W 10. Fernow Hall 122. Professor HOSMER.

The place of forestry in the life of a nation; its nature, aims, and importance; the five main branches of forestry; national, state, communal, and private forestry.

GROUP B

Courses intended both for professional forestry students and for students in other lines.

6a. **Introduction to Forestry.** Second term. Credit two hours. Required of first-year professional forestry students. Others should take course 6. Lectures, F 10, 12. Fernow Hall 122. Professor SPRING and other members of the forestry staff.

An introductory course intended to acquaint the student with the forestry profession, and to give him a broad view of it as a basis for subsequent technical instruction.

7. **Wood Technology.** Second term. Credit four hours. Prerequisite, Botany 4. Lectures, M W F 11. Fernow Hall 122. Practice, W 2-4.30. Fernow Hall 118. Professor RECKNAGEL and Assistant Professor GUISE.

Macroscopic structure of wood; physical, chemical, and mechanical properties of wood; technical uses of wood (paper pulp, destructive distillates, and the like); identification, qualities, and uses of the wood of important trees. Kiln drying and air seasoning of wood; grading of lumber; and wood preservation. Laboratory fee, \$2.

8. **Forest Utilization.** First term. Credit three hours. Lectures, M W F 10. Fernow Hall 118. Professor RECKNAGEL.

Logging methods and equipment; logging in representative regions; manufacture of lumber; determination of stumpage values; timber sale contracts; timber sale administration, including marking, brush disposal, and sealing in practice; minor industries; the organization of the lumber industry; markets.

Field studies in forest utilization are made during the required month of camp, immediately preceding the fall term of the senior year.

9. **Forest Industries.** Second term. Credit two hours. Prerequisite, course 8. Lectures, T Th 10. Fernow Hall 118. Professor RECKNAGEL.

The organization and development of the forest industries, particularly the lumber industry and the pulp and paper industry, and their relation to forest management.

GROUP C

Courses intended primarily for professional forestry students

Professional forestry students should not elect courses 1, 2, 3, and 4, as the following required professional courses cover the same ground in greater detail.

10. **Forest Engineering.** First term. Credit two hours. Prerequisite, plane trigonometry and courses in surveying. Lectures, T Th 11. Fernow Hall 122. Professor BENTLEY.

The construction of trails, roads, telephone lines, and the like, especially as applied in work on the national forests.

Opportunity for practice is afforded during the required month in camp.

11. **Forest Mensuration.** Second term. Credit three hours. Lectures, W F 9. Practice F 2-4.30. Fernow Hall 118. Professor BENTLEY.

Measurement of logs and standing timber; timber cruising; study of the rate of growth of timber; volume and yield tables. Laboratory fee, \$3.

Opportunities for additional training in methods of forest mensuration are given during the month of required work in camp.

12. Forest Management. Second term. Credit three hours. Prerequisite, courses 11, 14, and 15. Lectures, T Th 9. Fernow Hall 118. Practice, T 2-4.30. Fernow Hall 8. Assistant Professor GUISE.

The organizing of a forest property for management, with special attention to forest working plans; forest finance, including forest valuation and forest statics. Advanced work in forest management is given in course 20. Laboratory fee, \$1.

13. Timber Trees and Forest Regions. First term. Credit three hours. Lectures, M F 8. Practice, T 2-4.30. Fernow Hall 122. Professor BENTLEY.

A brief account of the forest regions of the world; detailed description of the forest regions of the United States and Canada; the distribution, importance, and silvical characteristics of a large number of the leading timber trees of the United States and Canada, and the identification of such of these as do not grow near Ithaca. (The identification of trees growing near Ithaca is included in Botany 2.) Laboratory fee, \$2.

13a. Forests of Foreign Countries. First term. Credit one hour. Prerequisite, course 13 or its equivalent. Lecture, M 11. Fernow Hall 122. Professor BENTLEY.

Lectures and assigned readings on the forest trees and resources of foreign countries.

14. Silviculture A. First term. Credit four hours. Prerequisite, course 13 and Botany 2 and 20 or their equivalents. Lectures, M W F 9. Fernow Hall 122. Field work, F 2-4.30. Fernow Hall 118. Professor SPRING.

A study of the fundamentals of silviculture; the standard methods of reproducing forests naturally; the methods of tending forests. Laboratory fee, \$1.

15. Silviculture B. Second term. Credit two hours. Prerequisite, courses 13 and 14. Lectures, T Th 11. Fernow Hall 122. Professor SPRING.

The application of silviculture to the principal species of timber trees in the United States.

16. Forest Planting. Second term. Credit three hours. Lectures, until spring recess, M W 8; thereafter, W 8. Fernow Hall 122. Practice, until spring recess, S 8-10.30; thereafter, S 8-1. Fernow Hall 118. Professor SPRING.

Collection, care, and testing of tree seeds; identification of tree seeds and seedlings; raising trees in a forest nursery; starting forests by planting trees and by direct seeding; fixation of sand dunes; forestation on the prairies and under semi-arid conditions; great forestation enterprises of the world. Laboratory fee, \$2.

17. The Development of Forestry. First term. Credit two hours. Open only to professional forestry students. Lectures, T Th 9. Fernow Hall 118. Professor HOSMER.

The historical development of forestry in the leading countries of the world, with particular reference to its present status; the history of forestry in the United States under federal, state, and other auspices.

18. Forest Protection. Second term. Credit three hours. Open only to professional forestry students. Lectures, M W F 11. Fernow Hall 118. Professor HOSMER.

The protection of forests from fire and other enemies. Emphasis is placed on the principles underlying forest-fire prevention, detection, and control, especially as these are put in practice through the forest-fire plan. (Protection from injury by insects and fungi is covered in Entomology 41 and Plant Pathology 1 and 9, respectively.)

19. Forest Policy: Federal and State. Second term. Credit two hours. Prerequisite, course 17. Open only to professional forestry students. Lectures, M F 9. Fernow Hall 122. Professor HOSMER.

The economic basis of forestry; the public land policy in its relation to forestry in the United States; the forest policies of the Nation and of the several States, with especial reference to the principles that underlie them; forest policy as expressed in law; forest taxation.

20. Advanced Forest Management. First term. Credit three hours. Prerequisite, course 12. Open only to graduate students. Lectures, T Th 10.

Practice, S 10-12.30. Fernow Hall 118. Professor RECKNAGEL and Assistant Professor GUISE.

The organizing of a forest property for management. An important part of this course is the critical study of working plans.

The forest as an investment, including forest valuation (the ascertainment of values) and forest statics (the comparison of values).

[21. **Forest Administration.** First term. Credit two hours. Professor RECKNAGEL. Not given in 1924-25.]

The administrative organization and business practice in federal, state, and private forestry.

22. **Seminary.** Second term. Without credit. Required of graduate students in forestry. Hours to be arranged. Fernow Hall 118. Professors HOSMER, SPRING, RECKNAGEL, and BENTLEY, and Assistant Professor GUISE.

Field and classroom conferences on important phases of forestry.

23. **Advanced Work.** Throughout the year. Credit two or more hours a term. Open to graduate and undergraduate students who have had the necessary training. Hours by appointment. Professors HOSMER, SPRING, RECKNAGEL, and BENTLEY, and Assistant Professor GUISE.

Individual advanced study of designated topics.

HOME ECONOMICS

Instruction in home economics is given to resident students in four-years courses, to special, and to summer-school students. A large amount of extension work is also carried on with the homemakers of the State. The courses for resident students are planned to meet the needs of two main classes, as follows: (1) Students who wish to specialize in some particular phase of home economics and to make vocational or professional use of the training they receive constitute the first class. Teaching, extension work, social service work, laboratory work, work as hospital and institution dietitians or managers, interior decorating, costume designing, and editing suggest fields in which such training may be put to professional use. For this group, various suggested outlines for arrangement of courses throughout the four years are available on request to the School of Home Economics. These outlines are to be considered not as inflexible, but as indicating possibilities in combining courses during the four years. They include suggested courses of study for students who are preparing to become (a) teachers of general home economics subjects, (b) teachers of special home economics subjects, such as food and nutrition or clothing, (c) extension workers, (d) dietitians in hospitals and other institutions, (e) hotel and institution executives. (2) Students in general home economics, or those who neither wish to specialize in any phase of the subject nor intend to use this knowledge in professions other than that of home-making, but who desire some understanding of the principles underlying such of the problems of human welfare as are dealt with in these courses, are those of the second class.

All students specializing in home economics must satisfy the practice requirement in home economics before the beginning of the senior year. This requirement is equivalent to six weeks of actual, independent housekeeping experience. In order to meet this the student must have a good working knowledge of the care and management of the house and of food preparation.

FOODS AND NUTRITION

1. **Foods, Introductory Course.** First or second term. Credit three hours. This course or its equivalent is required of all home economics students and should be taken in the freshman year. Lecture and conference, first term, M W 10; practice, T 2-4.30, one section, Th 2-4.30, one section, or F 10.30-1, one section; second term, lecture and conference, M W 11; practice, M T or Th 2-4.30. Home Economics Building 205, 265, 270, and 310. Professor HENRY, Assistant Professor ROBERTS, and Miss FENTON.

This constitutes the introductory course in food selection and preparation. Food selection is emphasized from the dietetic standpoint; food preparation is

emphasized from the standpoint of principles underlying the processes of cooking. Simple table service is stressed. Laboratory fee, \$10.

3. **Foods, General Course.** First and second terms. Credit four hours a term. Should be taken in the sophomore year. Must be preceded or accompanied by organic chemistry. Lectures, M F 11. Home Economics Building 245. Practice, M 2-4.30 and T 10.30-1, two sections; W 2-4.30 and Th 10.30-1, one section; or F 2-4.30, and S 8-10.30, one section. Home Economics Building 200, 205, and 270. Assistant Professor ——— and Miss FENTON.

This course is intended to establish a fundamental knowledge of foods. The lectures include a discussion of the composition and character of foodstuffs; sources and methods of manufacture; principles of selection from the standpoint of marketing and of satisfactorily combining foods; methods of, and principles underlying, food preparation and preservation; comparative nutritive and economic values of foods. Laboratory practice consists in applying scientific principles of food preparation. Laboratory fee, \$14 a term.

9. **Food Preparation, Advanced Course.** First or second term. Credit three hours. Open to seniors only. Prerequisite, course 3. First term: lecture, T 8; practice, M W or T Th 2-4.30. Second term: lecture, M 10. Home Economics Building 245. Practice, T Th 2-4.30. Home Economics Building 270. Assistant Professor BOYS.

This course gives the student an understanding of the history and development of methods of cookery, with a brief survey of the food habits of the nations represented by residents in this country. Practice and demonstrations are given to develop appreciation of the variety of methods of food preparation. Laboratory fee, \$15.

15. **Food Preparation.** First or second term. Credit two hours. Open to students registering for hotel management. Practice, first term, Th S 8-10.30, one section, or F 8-10.30; S 10.30-1, one section; second term, W F 8-10.30, one section. Home Economics Building 270. Assistant Professor BOYS.

This course acquaints the student with the underlying principles of the various ways of cooking typical foods. Detailed attention will be given to manipulation and economy in use of time and materials. Standards in preparation and serving are emphasized. Laboratory fee, \$14.

16. **Food Preparation.** First or second term. Credit two hours. Open to students registering for hotel management. Prerequisite, course 15. Practice, first term, W F 8-10.30, one section; second term, T Th 8-10.30, two sections. Home Economics Building 270 and 205. Assistant Professor BOYS.

This course is a continuation of course 15. Laboratory fee, \$14.

17. **Food Preparation, Advanced Course.** First or second term. Credit two hours. Open to students registering for hotel management. Prerequisite, courses 15 and 16 or their equivalent. Practice, F 2-4.30, S 8-10.30, one section. Home Economics Building 270. Assistant Professor BOYS.

This course gives the student a more extensive knowledge of the preparation of foods. Attention will be given particularly to those foods usually served in hotels and in high-class restaurants. Laboratory fee, \$18.

[19. **Food Preparation, Survey Course.** First and second terms. Credit three hours. Designed especially for students in other colleges. Assistant Professor BOYS. Not given in 1924-25.]

A general survey of the history and development of cookery, with laboratory practice in the preparation and serving of the different types of food. Laboratory fee, \$14.

22. **Nutrition and Dietetics.** Second term. Credit five hours. Should be taken in the junior year. Prerequisite, course 3, Chemistry 375, and Biochemistry 14. Lectures and discussions, T Th 9. Home Economics Building 100. Practice, T Th 10.30-1, one section, or T Th 2-4.30, one section, or W F 2-4.30 one section. Discussion period by appointment. Home Economics Building 200, 205, and 270. Professor HENRY and Miss FENTON.

A course which gives the student a working knowledge of dietetics. Methods of investigating dietary problems, and practical means of applying scientific

principles in the planning of dietaries for the family are studied. Special attention will be given to the problems of feeding infants and children. Laboratory fee, \$10.

24. **Diet in Relation to the Treatment of Disease.** First term. Credit three hours. Open to seniors and graduate students. Required of those specializing in dietetics. Prerequisite, course 22 or its equivalent. Lectures, M Th 9. Home Economics Building 265. Practice, M 10-12, or F 2-4.30. Home Economics Building 200. Professor MONSCH. Laboratory fee, \$14.

31. **Nutrition of Children.** Second term. Credit two hours. Open to seniors and graduate students. Required of prospective teachers and extension workers. Prerequisite, course 22 or its equivalent. Conference period, M 2-4.30. Home Economics Building 245. Practice, T Th or F 2-4.30. Home Economics Building 245. Professor MONSCH.

This course will give special consideration to the feeding of infants and children in health and in disease. For those preparing to teach, special laboratories will be planned with the children in the public schools, and opportunity for home visiting will be arranged for all. Laboratory fee, \$2.

35. **Dietetics, Survey Course.** First term. Credit two hours. Open to students in other colleges. Lectures and recitations, T Th 10. Home Economics Building 245. Professor HENRY.

A course designed to give the student a practical knowledge of the application of nutrition principles to the feeding of individuals and groups of varying ages and conditions of health.

[35a. **Dietetics, Survey Laboratory Course.** First term. Credit one hour. Prerequisite, course 1 or its equivalent. Must be accompanied by course 35. Professor MONSCH. Laboratory fee, \$7. Not given in 1924-25.]

50. **Laboratory Methods in Food and Nutrition.** First term. For graduate students with training satisfactory to the instructor. Laboratory work at least ten hours. Hours to be arranged. Home Economics Building 410. Assistant Professor SPOHN.

A course planned to train students in methods of investigation such as are employed in research work in food and nutrition. Opportunity is offered for the study of methods used in feeding experiments with small animals; experiments with human subjects, on the nutritive value and digestibility of foods; and metabolism studies, using the Benedict portable respiration apparatus. Laboratory fee, \$8.

54. **Research in Food and Nutrition.** Throughout the year. For graduate students with training satisfactory to the instructor. Hours to be arranged. Assistant Professor SPOHN and other staff members.

This course offers opportunity for individual research in animal nutrition, human nutrition and metabolism, food chemistry, and chemical changes taking place in the process of food preparation. Laboratory fee, \$2 for each credit hour.

56. **Seminary in Foods and Nutrition.** Throughout the year. Without credit. Required of graduate students taking a major in this department. M 4.45. Members of the Food and Nutrition staff.

Food Chemistry. See Chemistry 880.

CLOTHING AND TEXTILES

60a. **Elementary Textiles and Clothing Selection.** First or second term. Credit three hours a term. Required of all students in home economics. 60b must be taken the following term. No credit given for 60a until 60b is completed. Practice: first term, M W F 8-10.30, M W F 10.30-1, two sections; second term, M W F 8-10.30 (this section may not be given in 1924-25), M W F 10.30-1, T Th 2-4.30, S 8-10.30. Home Economics Building 300. Professor BLACKMORE and Miss SCOTT.

Courses 60a and 60b emphasize the economical and appropriate selection of clothing, textiles, and millinery. The planning of the wardrobe is studied with reference to its appropriateness and cost. Laboratory practice includes hand and machine sewing suitable to the garments constructed. The use and adaptation of commercial patterns is studied. A brief study will be made of textiles appropriate for clothing. Hat selection will be discussed, and hats appropriate to be worn

with the clothing made in class will be constructed. Students provide all dress materials, subject to the approval of the instructors. Estimated cost of materials, \$15 to \$25 a term. Laboratory fee, \$3 a term.

60b. Elementary Textiles and Clothing Selection. First or second term. Credit three hours a term. Required of all students in home economics. To be preceded by course 60a. First term: lecture, T 9, practice, Th S 8-10.30; lecture, W 11, practice, Th S 8-10.30; lecture, W 11, practice, T Th 2-4.30; lecture, T 9, practice, M 2-4.30, T 10.30-1. Second term: lecture, S 9, practice, T Th 8-10.30; (this section may not be given in 1924-25); lecture, S 9, practice, T Th 10.30-1; lecture, T 12, practice, W F 2-4.30. Home Economics Building 300 and 310. Professor BLACKMORE and Miss SCOTT. Estimated cost of material, \$15 to \$25 a term. Laboratory fee, \$3 a term.

[61. Dressmaking, Survey Course. First term. Credit three hours. Miss ——. Not given in 1924-25.]

This course is adapted to meet the needs of students in other colleges who desire a general knowledge of clothing selection and design. Laboratory practice includes machine sewing, the use of commercial patterns, and the modeling of patterns. Students provide all dress materials, subject to the approval of the instructor. Estimated cost of dress materials, \$15 to \$25. Laboratory fee, \$3.

65. Constructive Costume Design. First or second term. Credit three hours. Should be taken in the sophomore year. Prerequisite, courses 60a, 60b, and 105; prerequisite or parallel, course 107. First term, lecture, T 12; practice, T Th 2-4.30. Second term, lecture, W 11; practice, M 2-4.30 and T 10.30-1, or W 2-4.30 and Th 10.30-1. Home Economics Building 305. Assistant Professor HUNTER.

This course applies the principles of color and design to the modeling of clothing. Preliminary sketches are made in pencil and water-color and carried out by means of modeling on the dress form. Patterns are modeled for use in later dressmaking courses. Students provide all materials, subject to the approval of the instructor. Estimated cost of materials, \$10. Laboratory fee, \$3.

70. Principles and Practice in Clothing Construction and Design, and Advanced Problems in Textile Selection. First and second terms. Credit four hours a term. Should be taken by juniors. Prerequisite, courses 60a, 60b, 65, 105, and 107. First term: lecture, Th 9; practice, M W F 8-10.30, or M W F 2-4.30. Second term: lecture, M 12; practice, M W F 8-10.30, or T Th 2-4.30 and S 8-10.30. Home Economics Building 305. Professor BLACKMORE, Assistant Professor HUNTER, and Miss SCOTT.

The application of design to dressmaking and the technique of costume construction are emphasized. Problems are presented from the standpoint of the organization of subject matter for teaching purposes. Laboratory practice includes the construction of garments, the carrying on of one project, and the making of a dress for a high-school student. The lectures include discussions on dress design, applied design in dress decoration and textiles. Students provide all materials, except those used for garment for high-school student, subject to the approval of the instructor. One laboratory period each week is spent in the Costume Shop. Laboratory fee, \$3 a term.

75. Commercial Clothing Construction. First or second term. Credit three, four, or five hours. Not less than three hours may be taken by students, registering in this course for the first time. Prerequisite, courses 60a, 60b, 65, 70, 105, and 107. Conference hour: first term, W 12; second term, T 10. Laboratory practice by arrangement at time of registration. Home Economics Building, Costume Shop. Mrs. McILROY and Miss BROOKINS.

Students are directed by instructors experienced in commercial work. Dressmaking problems in designing, construction, fitting, and finishing are considered. A shop with a number of paid workers is maintained, and the students are given experience in meeting customers, in shopping, and in shop organization. Students specializing in clothing will be given an opportunity to make a trip to New York City to visit shops and openings the second week in March if six students register for the trip. Probable cost of trip, \$50 to \$75. Laboratory fee, \$3 a term.

80. **Millinery.** First or second term. Credit three hours. Prerequisite, course 105 or its equivalent. Practice: first term, T Th S 10.30-1 (this section may not be given 1924-25), M W F 2-4.30; second term, M W F 8-10.30. Home Economics Building 310.

This course takes up methods of manipulation of materials in the construction of hats, remodeling of hats, and the making of simple trimming. Emphasis is placed on the selection of hats from the standpoint of suitability, becomingness to the wearer, technique, and cost with reference to time spent. Students provide all hat materials. Estimated cost of materials, \$10 to \$20. Laboratory fee, \$3.

[90. **Textiles.** First or second term. Credit two hours. Should be taken during junior or senior year by general students and students especially interested in clothing. Prerequisite, courses 60a and 60b or their equivalent. Not given in 1924-25.]

This course includes problems in shopping for materials; an intensive study of fabrics with a view to their appropriateness in clothing; a study of ready-made clothing; fabrics used in home furnishing; chemical and physical testing of fabrics. A study is made of the history of the processes of manufacture of fabrics and of the textile industry as affected by economic conditions. Estimated cost of materials, \$3 to \$5. Laboratory fee, \$3.

[91. **Hotel Textiles.** First term. Credit two hours. Should be taken first term of sophomore year. Required of students in hotel management. Professor BLACKMORE. Not given in 1924-25.]

This course includes an intensive study of the selection, use, and distribution of fabrics used in hotels. Estimated cost of materials, \$3. Laboratory fee, \$4.

[92. **Household and Institutional Textiles.** First term. Credit two hours. Required of students in institution management. Professor BLACKMORE. Not given in 1924-25.]

This course includes an intensive study of the selection, use, care, and distribution of textiles used in typical institutions. Estimated cost of materials, \$3. Laboratory fee, \$4.

HOUSING AND DESIGN

[100. **Housing.** First term. Credit one hour. Required of all students in home economics. May be taken in either the junior or the senior year. Professor ———. Not given in 1924-25.]

A course dealing with fundamental phases of the housing problem and the trend of housing progress. The subjects under discussion include the following: housing in its relation to the home, to health, to community problems, to industry, to finance, to town planning; city housing; rural housing; housing standards; housing laws; types of housing; a housing program.

[101. **House Planning.** First or second term. Credit two hours. Elective for juniors. Registration limited to forty-five students. Professor ———. Not given in 1924-25.]

A study of the arrangement of dwellings from the standpoint of economy, convenience, and design. Laboratory fee, \$1.

105. **Color and Design.** First or second term. Credit two hours a term. Should be taken in the sophomore year. Required of all students in home economics. Practice, first term, M 2-4.30 and T 10.30-1; or W 2-4.30 and Th 10.30-1; or F 2-4.30 and S 8-10.30; or T Th 8-10.30; second term, F 2-4.30, S 8-10.30, one section. If necessary, a second section may be formed, T Th 2-4.30. Home Economics Building 415. Assistant Professor WETHERBEE.

A course intended to give the student an understanding of the elementary principles of color and design. The work includes experiments with water colors, dyes, and fabrics. Practical applications are made to problems in everyday life. Estimated cost of materials, \$7 to \$10. Laboratory fee, \$5.

107. **Clothing Design.** Second term. Credit two hours. Should be taken in the sophomore year. Required of all students who are planning to teach. Prerequisite, courses 60a, 60b, and 105. Practice, T Th or W F 8-10.30. Home Economics Building 415. Assistant Professor WETHERBEE.

A course dealing with color and design as applied to clothing. Laboratory fee, \$4.

110. Home Decoration and Furnishing. First or second term. Credit three hours. Prerequisite, course 105. First term: lecture, T 9. Practice, W F 8-10.30. Second term: lecture, F 12. Practice, M 2-4.30 and T 10.30-1; W 2-4.30 and Th 10.30-1. Home Economics Building 415. Professor WARNER.

A course dealing primarily with the decoration and furnishing of the house. The object of the work is to develop good judgment and taste in the selection and arrangement of house furnishings, to the end that students may learn to express themselves in their environment. Laboratory fee, \$5.

113. Advanced Design. Second term. Credit two hours. Should be taken in the senior year. Prerequisite, courses 105 and 110. Practice, W F 10.30-1. Home Economics Building 415. Assistant Professor WETHERBEE.

This course is open to students who have talent or a special inclination to continue work in design. The nature of the problems will be determined by the needs of the students and by the possibilities for practical application that may develop. Laboratory fee, \$5.

115. Decoration and Furnishing. First term. Credit three hours. Open to students registering for hotel management. Should be taken in the junior year. Prerequisite, Drawing 2. Lecture, Th 9. Home Economics Building 245. Practice, M 10.30-1, Th 2-4.30. Home Economics Building 415. Professor WARNER.

A course dealing with the essentials of decoration and furnishing applied to the problems in the hotel industry. Laboratory fee, \$5.

HOUSEHOLD AND INSTITUTION MANAGEMENT

120. Economics of the Home. First term. Credit three hours. Prerequisite, Economics 51. Required of seniors in home economics. Lectures, T Th S 10. Home Economics Building 100. Assistant Professor ———.

This course includes a study of economic problems in their relation to the home; source and division of the income; standards of living; personal and household accounts and budgets; savings and their use.

121. Mechanics of the Home. First term. Credit two hours. Required of seniors in home economics. Lecture, S 11 or 12. Practice, M T W Th F 2-4.30, or F 8-10.30. Assistant Professor KELLOGG.

This course includes a study of household processes and equipment, in which comparative studies are made in relation to efficient use of time, strength, and materials. Laboratory fee, \$3.

130. House Practice, Laboratory Course. First or second term. Credit two hours. Required of all seniors in home economics. Practice consists of five consecutive weeks in the practice house, time to be arranged. Should be taken by prospective teachers together with courses 75 and 120 and Rural Education 8b. Should not be taken with course 140. Assistant Professor ROBERTS and Miss FENTON.

This course furnishes an opportunity for the student to test her ability to apply theoretical knowledge in solving household problems and to receive instruction in infant care and feeding. Laboratory fee, \$30, including room and board for the five weeks in the practice house.

[137. Home Hygiene and Sanitation. First term. Credit three hours. Required of all students in home economics, in the junior or the senior year. Prerequisite, Dairy Industry 2. Assistant Professor ———. Not given in 1924-25.]

This course includes an intensive study of the fundamental principles of home hygiene, and the work is based on a consideration of the home as a unit of community and national health. Special emphasis is placed on an analysis of the processes of housekeeping from the standpoint of their hygienic effects, and on the importance of proper personal habits in home and in community life.

Bacteriology for the Home. See Dairy Industry 2.

Household Mechanics. See Rural Engineering 10.

140. Institution Practice. First or second term. Credit three hours a term. Elected preferably in the junior year, but may be taken in the senior year. Should not be taken with course 130. Class limited to fourteen students, two divisions of seven each. Required of all students specializing in institution management or dietetics. Lecture and discussion, S 8. Home Economics Building 265. Practice, M W F 11.30-1.30, or T Th S 11.30-1.30. Assistant Professor FARMER and Mrs. NEHRLING.

Discussion of types of institutions, practice work in counter service and supply, office and storeroom work. Laboratory fee, \$5.

141. Marketing and Large-Quantity Cookery. First or second term. Credit four hours a term. Prerequisite, course 140. Open to seniors in home economics. Class limited to fourteen. Required of all students specializing in institution management or dietetics. Lecture and discussion, M 8. Home Economics Building 265. Practice, W F 8-12. Mrs. NEHRLING.

Laboratory work in large-quantity cooking. A study of marketing and buying in large quantities; the principles underlying the purchase of foods; production, grading, and distribution of various classes of foods; methods of purchase and storage. The class will be given an opportunity to make a trip to New York City to visit markets, kitchens, and institutions. Probable cost of trip, \$75. Laboratory fee, \$10.

142. Institution Management. Second term. Credit two hours. Prerequisite, courses 140 and 141. Open to seniors in home economics. Required of all students specializing in institution management or in dietetics. Lectures and discussions, M S 9. Home Economics Building 245. Assistant Professor FARMER.

A study of the organization and management of institutions; the rise of present-day institutional problems; opportunities and openings in the institutional field.

145. Marketing and Hotel Cookery. First or second term, as arranged. Credit four hours a term. Required of juniors in hotel management. Registration limited to fourteen. Lecture and discussion, M 8. Home Economics Building 265. Practice, T Th 8-12. Assistant Professor FARMER.

Laboratory work in large-quantity cooking, a study of marketing and buying in large quantities; the principles underlying the purchase of foods; production, grading, and distribution of various classes of foods; methods of purchase and storage. Laboratory fee, \$10 a term.

150. Institution Accounts. Second term. Credit three hours. Open to juniors and seniors only. Should be taken in the junior year by students in institution management. Lecture, M 2. Home Economics Building 100. Practice period, M 3-5.30. Mr. ———.

A study of the principles of accounting and the application of these principles in keeping institution accounts.

156. Hotel Accounts. First term. Credit three hours. Prerequisite, Economics 58. Required of juniors in hotel management. Lecture, M 10. Practice period, M T 3-5.30. Mr. ———.

160. Hotel Organization. First term. Credit three hours. Prerequisite, Economics 58, and hotel experience. Open to juniors and seniors. Required of students in hotel administration. Lectures and discussions, M W F 9. Home Economics Building 100. Professor MEEK.

This course deals with the personnel factor in the hotel business, the selection of employees, and their organization into a working unit.

161. Hotel Operation. Second term. Credit three hours. Prerequisite, course 160. Open to juniors and seniors. Required of students in hotel administration. Lectures and discussions, M W F 9. Home Economics Building 100. Professor MEEK.

A study of the financing and operation of hotels of various sizes and types.

162. Special Hotel Problems. First term. Credit two hours. Prerequisite, courses 160 and 161. A seminar course with lectures, discussions, and reports. M W 10. Home Economics Building 100. Professor MEEK.

This course will be devoted to a study of special problems of particular importance in the hotel business.

ADDITIONAL COURSES

[190. **Woman and the Family.** Second term. Credit two hours. Professor VAN RENSSELAER. Not given in 1924-25.]

This course embraces a study of woman and the family through early ages to the present time. It treats of survivals with reference to various characteristics and conditions of woman in the family and in the state. Woman's work and her industrial and economic conditions are studied with reference to the home and to society; the opening of occupations and professions to women; laws governing the family; the family as a basis of civilization; a study of modern social and economic problems of women and the home.

[215. **Child Training.** Second term. Credit three hours. Lectures, M W 10. Conferences, M 12, T 10 or 12, W 9. Miss ———. Not given in 1924-25.]

This course aims at an understanding of the proper technique in the care and management of children. Knowledge of the changing attitude toward child life, of the native reactions of children, and of the modification of these by environmental factors will serve as a basis for the visioning of behavior possibilities and for the interpretation of behavior problems peculiar to the parent-child relationship.

220. **Special Problems.** First and second term. Credit and hours by arrangement. Open only to seniors and graduate students in home economics, and to other qualified persons by special consent. Prerequisite, a fundamental knowledge of home economics. Instruction by members of the departmental staff and others.

A course intended for the development of the individual student in particular lines of work. It includes not only the acquisition and discussion of subject matter, but also consideration of the logical organization of subject matter by teachers and extension workers, and the proper presentation of findings by research workers. Fee determined by the problems.

260. **Home Economics Extension.** First and second terms. Credit three hours a term. Open to seniors and graduate students. Lecture, W 12. Practice, W F 2-4.30. Home Economics Building 100. Miss MORTON.

This course includes a study of home economics extension plans in the United States; legislation, national and state, under which extension is promoted; organization plans; survey of needs in this field; organization of home economics subject matter to be extended, and means by which it may reach the community; cooperation with agencies already established; preparation of material for printing and for public addresses; office management and county administration of home economics extension work. Laboratory fee, \$3 a term. Field trips will be arranged for the study of extension activities in the State. Probable cost to student, \$10 to \$15.

270. **Home Economics Extension, Advanced Work.** Throughout the year. Credit two or more hours a term. Open only to graduate students who have had the necessary training and experience. Hours by appointment. Students will be given opportunity to do field work under supervision. Miss MORTON. Laboratory fee, \$3 a term.

METEOROLOGY

1. **Elementary Meteorology.** First or second term. Credit three hours. Lectures, T Th 10. East Roberts 222. Laboratory, to be assigned at the time of registration, M T W or Th 2-4.30. East Roberts 341. Professors W. M. WILSON and MORDOFF.

This is a course designed to acquaint the student with the principles of the general and secondary circulation of the atmosphere; the elements of weather and climate; practical weather forecasting from weather maps and local observations. The laboratory periods include demonstrations, recitations, practice, and comparative studies of general and local weather. Laboratory fee, \$2.

2. **General Climatology.** Second term. Credit two hours. Prerequisite, course 1. Lectures and recitations, M W 8. East Roberts 341. One conference period a week, by appointment. Professor MORDOFF.

This course is designed to give a general knowledge of climatology and of the various climates of the United States, with emphasis on those of New York State. During the conference hours, there will be general discussions of all subjects which are taken up in the course.

11. Research. First and second terms. Credit one or more hours a term. Prerequisite, permission to register. Hours, by appointment. Professors W. M. WILSON and MORDOFF.

A course designed for advanced and graduate students. Original investigations in meteorology and climatology.

12. Seminary. Second term. Credit two hours. Prerequisite, course 2 and permission to register. M 4-6. East Roberts 341. Professor MORDOFF.

Preparation and reading of reports on special topics. Abstracts and discussions of papers dealing with the current literature of meteorology and climatology. A specific problem will be required of each student.

PLANT BREEDING

1. Genetics. First term. Credit four hours. Prerequisite, Botany 1 and plant physiology, or Zoology 1 and either animal or human physiology. Courses in cytology and in taxonomic botany and zoology will be found helpful in connection with this course. Assignment to sections must be made at the time of registration. Lectures, M W F 8. Fernow Hall 210. One conference period, to be arranged. Laboratory, M W or F 2-4.30. Fernow Hall 212. Assistant Professor FRASER and Messrs. DORSEY and ———.

A general introductory course designed to acquaint the student with the fundamental principles of heredity and variation. Special attention is given to the Mendelian interpretations of the facts of inheritance. Among the topics to be discussed are: the physical basis of heredity, simple cases of Mendelian inheritance, factor interaction, the determination of sex, factor linkage, the measurement of variation, quantitative inheritance, pure lines, inbreeding and crossbreeding, maternal inheritance, and mutation, with suggestions as to the relation of genetical principles to eugenics. Laboratory studies of variation, and of the laws of heredity as illustrated by hybrid material in plants and by breeding experiments with the fruit fly, *Drosophila*. Laboratory fee, \$3.

8. Principles and Methods of Plant Breeding. Second term. Credit two hours. Prerequisite, course 1. Lectures, T Th 9. Fernow Hall 210. Professor BUSSELL.

A study of the application of genetic principles to plant breeding, with special reference to the rôle of hybridization and selection in plant improvement; consideration of methods, technique, and results of plant-breeding investigations.

Trips to the departmental greenhouses, gardens, fields, and seedhouse will be made to acquaint the student with the methods and technique of plant-breeding work.

ADVANCED AND GRADUATE COURSES

[10. Taxonomy of the Cereal Crops. Credit two or more hours. Primarily for graduate students who have had adequate training in botany and whose primary interest is in the cereals. Prerequisite, permission to register. Assistant Professor WIGGANS. Not given in 1924-25.]

A large part of the work consists of field laboratory studies in the gardens of the department on the identification and classification of the cereal crops.

[11. Biometry. First term. Credit two hours. For graduate students only. Professor LOVE. Not given in 1924-25.]

A discussion of statistical methods as applied to problems in biology and genetics. The course is designed primarily to develop methods for the study of variation, correlation, curve fitting, and probable error.

13. Genetics, Advanced Course. Second term. Credit three hours. Primarily for graduate students. Prerequisite, course 1 or its equivalent, Botany 1, 10, and 20, and permission to register. A reading and laboratory course, with two conference hours and one laboratory period to be arranged. Fernow Hall 212. Assistant Professor FRASER.

An advanced course dealing with the following topics: the methods of genetical testing and analysis, factor interaction, factor linkage, sex inheritance, mutation, and sterility. Particular attention will be given to the modes of attacking problems in genetics. Laboratory analyses of experimental data, and studies with *Drosophila*. Laboratory fee, \$3.

16. **Research.** Throughout the year. Hours by appointment. Fernow Hall. Professors EMERSON, LOVE, MYERS, and BUSSELL, and Assistant Professors FRASER and WIGGANS.

Investigations of problems in plant breeding, heredity, and variation.

17. **Seminary.** First and second terms. For graduate students only. W 11. Fernow Hall. Professors EMERSON, LOVE, MYERS, and BUSSELL, and Assistant Professors FRASER and WIGGANS.

A seminary for the discussion of papers dealing with the current literature of genetics, plant breeding, statistical methods, and crop varieties and classification, and for the presentation of reports on the research problems of graduate students and members of the staff.

PLANT PATHOLOGY

1. **General Plant Pathology.** First or second term. Credit three hours. Prerequisite, Botany 1 or its equivalent. Assignment to laboratory sections must be made at time of registration. Lecture, W 8. Stone Hall 192. Practice, first term, W F 2-4.30, or Th 2-4.30 and S 10.30-1; second term, W F 2-4.30. Bailey Hall, West Basement. Professor WHETZEL and Messrs. HONEY and WELCH.

A fundamental course treating of the nature, cause, and control of plant diseases, illustrated by studies of the commoner diseases of cultivated crops. The practice sections must be taken in the couplets announced above, and are limited to twenty-four students each. Admission, if registration is in excess of twenty-four, on the basis of average scholastic standing to date. Laboratory fee, \$4.50; breakage deposit, \$3.

2. **Principles of Plant-Disease Control.** Second term. Credit three hours. Prerequisite, course 1. Lecture, Th 8. Stone Hall 192. Conferences (one a week) by arrangement during practice periods. Practice, Th 2-4.30, S 8-10.30. Bailey Hall, West Basement. Professor WHETZEL.

A consideration of the principles and methods of controlling plant diseases. This will include studies on: exclusion by laws, regulations, quarantine, and inspection; eradication, by pruning, seed selection, tree surgery, rotation, disinfection, and other means; protection, by spraying, dusting, wound dressing, and the like; immunization, by selection, breeding, and feeding. Number taking the course limited to twenty-four. Admission, if registration is in excess of this number, on the basis of average scholastic standing to date. Breakage deposit, \$3.

6. **Comparative Morphology of Fungi.** First term. Credit four hours. Prerequisite, Botany 1 or its equivalent. Lectures, M W 9. Bailey Hall, West Basement. Practice, M W 2-4.30. Bailey Hall, East Basement. Professor FITZPATRICK and Mr. FLYNN.

A synoptical course designed to acquaint the student with the general field of mycology. Emphasis will be placed on morphology and phylogeny, rather than on taxonomy. Laboratory fee, \$6; breakage deposit, \$3.

9. **Forest Pathology.** Second term. Credit two hours. Prerequisite, course 1. Lectures, M W 10. Bailey Hall, West Basement. Professor WHETZEL and Mr. WELCH.

A course designed for students in forestry, dealing primarily with fundamental principles of forest pathology and tree-disease control. Breakage deposit, \$3.

10. **Advanced Plant Pathology.** First and second terms. Credit three hours. Prerequisite, courses 1 and 2. Students should consult the professor in charge before registering. Lecture, F 8. Practice, T F 10-12.30. Bailey Hall, Basement. Professor MASSEY.

A presentation and analysis of the experimental and empirical knowledge of plant diseases. The phenomena of infection, susceptibility, host reactions, and symptomatology will be critically considered. Laboratory fee, \$4.50; breakage deposit, \$3.

12. **Mycology.** First and second terms. Credit four hours. Prerequisite, Botany 1 or its equivalent, and permission to register. Lectures, M W 11. Bailey Hall, West Basement. Practice, T Th 2-4.30. Bailey Hall, East Basement. Professor FITZPATRICK and Mr. WELCH.

An advanced course designed especially for students who wish to specialize in plant pathology or mycology. An intensive study of the morphology, taxonomy, and phylogeny of the fungi. (Phycomycetes and Ascomycetes.)

Laboratory fee, \$6; breakage deposit, \$3.

[14. **Mycology.** First and second terms. Credit four hours. Prerequisite, Botany 1 or its equivalent, and permission to register. Professor FITZPATRICK and Mr. FLYNN. Not given in 1924-25.]

An advanced course, alternating with course 12, dealing with the Basidiomycetes, Fungi Imperfecti, Myxomycetes, and identification of miscellaneous fungi.

17. **History of Plant Pathology.** First and second terms. Credit one hour. Prerequisite, course 1 and reading knowledge of French and German. Conference hour by appointment. Bailey Hall, Basement. Professor WHETZEL.

19. **German Phytopathological Reading.** First and second terms. For graduates and advanced students. Without credit for undergraduate students. Two one-hour periods a week, to be arranged with the professor in charge. Stone Hall 192. Professor WHETZEL.

20. **Research.** Throughout the year. Not less than three laboratory periods of three clock hours a week. Professors and assistant professors on the departmental staff.

Laboratory fee, \$1.50 a credit hour; breakage deposit, \$3.

25. **Seminary.** First and second terms. Required of graduate students taking work in the department. Biweekly, Tuesday, 7.30-10 p. m.

POMOLOGY

1. **Pomology.** Second term. Credit three hours. Prerequisite, Botany 1, Chemistry 101, and, for those who have not met the farm-practice requirements, permission to register. Lectures, T Th 8. East Roberts 222. Laboratory, to be assigned at the time of registration, M T W Th or F 2-4.30. East Roberts 108. Professor CARRICK and Messrs. ——— and ———.

A study of the general principles and practices in pomology; propagation and care of orchard trees and small fruits; harvesting, storing, and marketing fruit. Practical work in budding, grafting, pruning, and planting; study of varieties, growth, and fruiting habits. Laboratory fee, \$2; deposit, \$1, to be refunded provided all tools lent to the student are returned in good condition.

8. **Fruit Varieties: Identification, Judging, Exhibits.** First term. Credit two hours. Prerequisite, course 1. Lecture, M 12. East Roberts 222. Laboratory, to be assigned at time of registration, F 2-4.30, S 8-10.30 or 10.30-1. East Roberts 108. Professor MACDANIELS and Mr. ———.

A study of the most important varieties of apples, pears, peaches, plums, and grapes, chiefly from the standpoint of their identification. Some emphasis is also given to tree characters, regional adaptation, season of ripening, storage quality, and other matters of a similar nature. A part of the time is given to the judging of exhibition fruit, and the Farmers' Week fruit exhibit will be set up by the students of this course. Laboratory fee, \$2.

9. **Packing Fruit for Market.** First term. Credit one hour. Prerequisite, courses 1 and 8, and permission to register; should be preceded or accompanied by Entomology 3, Plant Pathology 1, and Agricultural Economics and Farm Management 10 or 13. S 8-1. East Roberts 122 and the packing house. Professor OSKAMP or Professor PECK.

Particular emphasis is placed on packing apples in barrels, boxes, and other retail packages, but the work covers also such fruits as peaches, plums, pears,

and grapes, in so far as these are available. The effect of grades and packages on distribution and marketing is fully discussed, and consideration will be given to some of the problems of operating a central fruit-packing house. Laboratory fee, \$2.

10. Economic Fruits of the World. First term. Credit three hours. Prerequisite, course 1 and permission to register; should be preceded or accompanied by course 8. Lectures, W F 8. Laboratory, W 2-4.30. East Roberts 108. Professor MACDANIELS and Mr. ———.

A study of all species of fruit-bearing plants of economic importance, such as the date, the banana, citrus fruits, nut-bearing trees, and newly introduced fruits, with special reference to their cultural requirements in the United States and its insular possessions. All fruits not considered in other courses are considered here. The course is designed to give a broad view of world pomology and its relationships with the fruit industry of New York State. Emphasis is placed on botanical relationships and fruit structure. Laboratory fee, \$2.50.

11. Orchard Field Trip. Credit one hour. Prerequisite, courses 1 and 8, and permission to register. To be taken during the week preceding the week of registration for the first term. Students who wish to take this trip must signify their intention by July 20 preceding. The expense of this trip must be met by the individual student. Students may register for this course in the first term. Professor HEINICKE, or Professor CARRICK, or Professor MACDANIELS.

The course is designed to give the students who specialize in pomology an intimate knowledge of practical orchard conditions.

12. Advanced Pomology. Second term (during 1924-25 only). Credit four hours. Prerequisite, courses 1 and 8, Botany 20, and permission to register; should be preceded or accompanied by course 10, Plant Pathology 1, Entomology 3, and Agronomy 1. Discussions, M W F 8. East Roberts 108. One conference period, to be arranged. Professor HEINICKE.

A systematic study of the sources of knowledge and opinion as to practices in pomology; methods and difficulties in experimental work in pomology, and results of experiments that have been concluded or are being conducted.

13. Pomology, Advanced Laboratory Course. First or second term, or both. Credit one hour a term. For seniors only. Prerequisite, permission to register. S 8-1. Professors HEINICKE, CARRICK, and MACDANIELS and Messrs. ——— and ———.

During the first term opportunity is given to gain greater familiarity with varieties and experience in judging than can be given in course 8; during the second term this course is designed to give more extended practice in the various nursery and orchard operations than can be given in course 1. It is intended for students doing their major work in pomology. Laboratory fee, \$2 a term.

19. Research. Throughout the year. Credit one or more hours a term. Prerequisite, course 12, and permission to register. Professors HEINICKE, CARRICK, OSKAMP, MACDANIELS, and PECK.

20. Seminary. Throughout the year, without credit. Required of students taking course 19 and of graduate students in pomology. Time to be arranged. East Roberts 122. Members of the departmental staff.

Undergraduates who are interested will be welcome to attend but will not receive credit toward graduation.

POULTRY HUSBANDRY

1. Farm Poultry. First or second term. Credit three hours. Lectures, W F 9. Poultry Building 375. Practice: first term, W Th or F 2-4.30; second term, M T W Th or F 2-4.30. Poultry Building 300. Professors RICE and HEUSER, Assistant Professors BOTSFORD and WEAVER, and Messrs. BRADLEY, C. K. POWELL, and HALL.

A brief general course dealing with the practical application of the principles of poultry husbandry to general farm conditions. One or two out-of-town trips taking an entire afternoon will be included.

2. **Poultry Feeds and Feeding.** Second term. Credit two hours. Prerequisite, course 1, and Animal Husbandry 1. Lecture or recitation, Th 11. Practice, Th 2-4.30; also, reporting three times daily, including Sunday, for four weeks, 7.45-8.30, 12.45-1.15, 4.30-5. Poultry Building 325. Professor HEUSER.

A study of feeds suitable for poultry; the principles of feeding for egg production, fattening, and rearing; the compounding of poultry rations.

Daily practice for four weeks in flock management.

3. **Poultry Incubation and Brooding.** Second term. Credit three hours. Prerequisite, course 1. Lecture, M 11. Practice, M 2-4.30; also reporting three times daily, including Sunday, for eight weeks, 7.45-8.30, 12.45-1.15, 4.30-5. Poultry Building 325. Assistant Professor WEAVER.

Principles and practice of incubation and brooding. Daily practice for four weeks in operating incubators and in the management of a brooder and a flock of chickens.

4. **The Breeds of Poultry and Judging.** First term. Credit two hours. Prerequisite, course 1. Lecture or recitation, F, 11. Poultry Building 325. Practice, Th or F 2-4.30. Breed Observation House. Mr. HALL.

The origin, history, and classification of breeds of domestic poultry; judging the principal breeds for fancy and production points by score-card and comparison methods; fitting fowls for exhibition. A required trip will be made to one of the leading poultry shows the second or third week of January. Trips to near-by farms will also be made.

5. **Poultry Breeding.** Second term. Credit two hours. Prerequisite, course 4. Lecture or recitation, T 11. Poultry Building 375. Practice, T 2-4.30. Poultry Building 325. Mr. HALL.

The principles and practice of poultry breeding.

6. **Poultry-House Design and Construction.** Second term. Credit two hours. Prerequisite, course 1, and permission to register. Lecture or recitation, F 11. Practice, F 2-4.30. Poultry Building 325. Assistant Professor BOTSFORD.

A study of principles of poultry-house construction; planning, arranging, and designing poultry houses; estimating the cost of buildings; studying building plans; practice in erecting and remodeling houses and in making appliances. An excursion to neighboring farms will be made.

7. **Marketing Poultry Products.** First term. Credit two hours. Prerequisite, course 1. Lecture or recitation, M 11. Poultry Building 325. Practice, M or T 2-4.30. Poultry Building 100. Mr. C. K. POWELL.

This course deals with the preparation of poultry and eggs for market, and with storage and preservation. A class trip to New York, following the Christmas holidays, is required of all students. This trip gives the students an opportunity to become familiar with the live- and the dressed-poultry markets, and with wholesale dealers. The total necessary expense is about \$35.

8. **Poultry Farm Management.** Second term. Credit two hours. Prerequisite, course 1. Lecture or recitation, W 11. Poultry Building 325. Practice, W 2-4.30. Poultry Building 375. Professor RICE and Assistant Professor BOTSFORD.

The principles of farm management as applied to the poultry farm; selection of the farm; use of poultry-farm score cards; farm layout and arrangement of buildings; study of farm records. As a final problem, each student will work out plans for the management of a poultry enterprise that seems most adaptable to his personal needs. The course will include several required excursions, one of which will be a two-day trip, to representative poultry plants in April and May, at an approximate cost of \$15.

9. **The Field of Poultry Husbandry.** First term. Credit two hours. Prerequisite, course 1. Lectures, T Th 11. Poultry Building 375. Professor RICE.

A study of the general field of poultry husbandry, for students specializing in the department. The course includes a study of the bibliography of poultry husbandry and of the history, the scope, and the opportunities of the poultry industry.

10. **Seminary.** Throughout the year. For graduate students only; required of all graduate students in poultry husbandry. T 4.45. Poultry Building 325. Members of the departmental staff.

A discussion of advanced work in poultry husbandry.

11. **Research.** First or second term, or throughout the year. Credit one hour. Prerequisite, permission to register. Time arranged by appointment. Poultry Building. Members of the departmental staff.

An original investigation of a problem in poultry husbandry to be presented as a written thesis. Frequent conferences are required of all students electing this course.

RURAL EDUCATION

1. **Introduction to the Problems of Public Education.** First term. Credit two hours. Intended primarily for sophomores, not open to freshmen. Lectures, T Th 9. Caldwell Hall 100. Professor WORKS.

An introduction to the study of the meaning of education, the problems and movements in modern education, as reflected in the State of New York. What opportunities boys and girls have for educational training; growing responsibilities of the school to meet the requirements of society, particularly with reference to vocational education; and the special phases of education typical of the State will be considered.

2a. **Psychology.** First or second term. Credit four hours. For students in education. Open to juniors and seniors. First term: Section 1, lectures, M W F 11. Caldwell Hall 143; laboratory, Th 2-4.30, Caldwell Hall 282. Section 2, lectures, T Th S 8, Home Economics Building 100; laboratory, W 2-4.30, Caldwell Hall 282. Section 3, lectures, M W F 9, Caldwell Hall 282; laboratory, T 2-4.30, Caldwell Hall 282. Second term: section 1, lectures, M W F 11, Caldwell Hall 143; laboratory, T 2-4.30, Caldwell Hall 282. Section 2, lectures, T Th S 8, Caldwell Hall 143; laboratory, Th 2-4.30, Caldwell Hall 282. Professors KRUSE and EATON and Mr. BAYNE.

2b. **Psychology.** Second term. Credit four hours. For students in hotel administration. Open to juniors and seniors. Lectures, M W F 9. Stone Hall 192. Laboratory, Th 2-4.30. Caldwell Hall 250. Assistant Professor ———.

4. **Principles of Teaching in Secondary Schools.** First or second term. Credit three hours. Open to juniors and seniors who have completed course 2. Lectures: first term, M W F 11, Home Economics Building 100; second term, section 1, M W F 11, Caldwell Hall 100; section 2, M W F 8, Roberts Hall 292. Professors FERRISS and STEWART.

The development of certain principles of teaching in secondary schools, and their application to practical questions arising from the problems of selecting and organizing teaching materials, planning class work, making the assignment, determining classroom and laboratory methods, directing study, managing the class, measuring the results of teaching, and so forth, considered in the light of the principles developed.

5a. **Teaching Agriculture in the High School.** First and second terms. Credit three hours a term. Open to students who have completed course 2, who have met the farm-practice requirements, and whose progress in agricultural courses is adequate. Lectures, T Th 8. Caldwell Hall 282. Laboratory, not less than a one-half day teaching period a week in the practice school. Regular conferences by appointment. Professor STEWART.

Problems in teaching agriculture involved in practice teaching. The practicing teacher performs the jobs typical of a high-school department of agriculture. This experience is made the basis of the organization of laboratory exercises, practicums, reports, and discussions, which constitute the principal forms of procedure. The problems described under courses 4, 6, and 8a are organized into a year course on the basis indicated for students preparing to teach agriculture.

[6. **The Teaching of Agriculture in the High School.** Second term. Credit three hours. Professor STEWART. Included in course 5a for 1924-25; given in the Summer School of Agriculture, 1925.]

A consideration of the problems confronting the teacher of agriculture: the purpose of the instruction; the determination of courses of study and the making of curricula for departments of agriculture; the forms of teaching used, including a consideration of the use of the project and the survey; the selection and utilization of textbooks, supplementary materials, and other facilities for teaching; the relation of the teacher to the community, to the school, and to the Division of Vocational and Extension Education.

7. The Teaching of Home Economics in the High School. Second term. Credit three hours. Should be taken by juniors. Lectures, T Th 8. Home Economics Building 100. Laboratory, one-half day each week. Professor BINZEL.

This course is particularly concerned with modern methods of teaching as related to the field of home economics. Problems treated: types and purposes of homemaking courses; the needs and native interests of the high-school girl, and the project as one means of meeting these needs; the socialized curriculum; the socialized class hour and assignment; supervised study; the plant and equipment; textbooks; the school lunch; the relation of the home economics department to the school and to the community. A one-day excursion is part of the course.

8a. Teaching Agriculture. First or second term. Credit from two to five hours, amount to be determined by work done. There is opportunity for a limited number of apprentice teachers. Students planning to take this course should arrange with the department during their junior year. Professor STEWART and Mr. HOSKINS.

This course is designed to give students opportunity for observation and teaching under the guidance of the department.

8b. Teaching Home Economics. First or second term. Credit two to five hours, amount to be determined by work done. Open to students preparing to teach home economics. Students planning to take this course should arrange with the department during the junior year. General conferences, S 8-10. Caldwell Hall 294. Professor BINZEL and Miss MATTSO.

This course is designed to give students opportunity for observation and teaching under the guidance of the department. A week-end trip for the purpose of studying equipment is a part of the course.

9. Junior Extension. First term. Credit two hours. Must be preceded or accompanied by courses 2 and 4. Lecture, M 9. Laboratory, M 2-4.30. Poultry Building 325. Professor WRIGHT.

This course is designed for those who wish to prepare for local or county leadership in extension work with boys and girls (junior project work). Topics considered are: organization; cooperating agencies; relationship of leader to cooperating agencies; types of projects; enrollment; supervision; demonstrations; exhibits; records; and reports. Field and inspection trips, not to exceed \$10 in cost, will be taken in May.

10. Educational Measurement. Second term. Credit three hours. Primarily for graduate students. M W 4.30-5.45. Caldwell Hall 282. Mr. BAYNE.

The place, the means, the method, and typical results of measurement in education in preparation for intelligent reading of current pedagogical and psychological literature, cooperation in giving tests, conducting of educational experimentation, and development of tests; scales and standards for rural schools; elementary statistical terms and methods. Students whose special problems require quantitative treatment of data will be expected to have this course or its equivalent. Rural school survey work conducted by the department will furnish the specific problems and materials of the course.

11. Conferences on Statistical Methods. Credit may be arranged. Designed primarily for students taking courses in the department of Rural Education. By appointment. Caldwell Hall 225. Mr. BAYNE.

12. Principles of Method. Second term. Credit three hours. Alternates with course 24. Designed for graduate students. Professor STEWART. Not given in 1924-25.]

Deals with principles of educational method with special reference to their appearance in vocational education. Typical teaching situations are analyzed

for the purpose of discovering the fundamental principles involved. Attention will be given to the special forms of teaching procedure, such as: the project, the survey, the socialized assignment, the socialized recitation, direction and supervision of study, and similar problems, in the light of modern educational philosophy and current practices.

14. **The Preparation of Teachers of Agriculture.** Second term. Credit three hours. Open to graduate students only. Lectures, M W F 10. Caldwell Hall 143. Professor EATON.

A course based upon a study of the work of teachers of agricultural vocations in secondary schools. In the light of such study will be discussed: the demands upon the teacher in terms of capacities and abilities; current and ideal standards of qualification in teachers; the aims, admission requirements, course-content, methods, and administrative organization of institutions for the training of teachers of agricultural vocations.

15. **The Preparation of Teachers of Home Economics.** First term. Credit four hours. Open to graduate students only. Lectures, T Th S 10. Laboratory, Th 2-4.30. Caldwell Hall 282. Professor BINZEL.

This course is designed to meet the needs of persons who have had both technical preparation in home economics and teaching experience, and who desire to prepare for the special problems involved in the professional work of preparing teachers of home economics subjects on a vocational basis. It treats of collegiate and secondary curricula in home economics with reference to the technical preparation of teachers, their professional needs, supervised teaching experience, and the organization and content of the special-method courses in home economics.

16. **Rural Secondary Education.** Second term. Credit four hours. Designed primarily for graduate students. M W F 9, and a period to be arranged. Caldwell Hall 282. Professor FERRISS.

A course to consider some of the more basic problems in the nature, organization, curriculum, and extension of secondary education in its adaptation to rural needs. Among the topics treated are: the functions of rural secondary education; present demands upon the rural secondary school; the problems of curriculum building and subject matter; a comparative study of existing types of curricula and courses of study; prevocational and vocational work; pupil guidance; the rural secondary school and the adult.

17. **The Rural and Village Principalship.** Second term. Credit two hours. Given in alternate years. Open to undergraduates by special permission. Professor FERRISS. Given in 1925-26.]

A course designed primarily for those preparing to be principals of schools containing both the high school and the elementary grades. Attention is given to the needs of those combining the work of principal and teacher of agriculture.

18. **Principles of Rural School Administration.** First term. Credit three hours. W F 11-12.30. Roberts Hall 292. Professor BUTTERWORTH.

The purpose of this course is to develop the principles that govern the organization and administration of education in a State, particularly with reference to the rural situation.

19. **Special Problems in Rural School Administration.** This course is divided into three units in such a manner as to include the major problems of the rural school administrator.

[A. **Developing the Local School Unit.** Second term. Credit two hours. Prerequisite, course 18. Professor BUTTERWORTH. Given in 1926-27.]

B. **School Finance.** Second term. Credit two hours. W F 10. Caldwell Hall 282. Professor BUTTERWORTH. Given in 1924-25.

A study of sources of school revenue, relation of revenues to wealth, types of equalization funds, methods of distributing such funds, cost accounting, budget making.

[C. **Pupil Accounting.** Second term. Credit two hours. Professor BUTTERWORTH. Given in 1925-26.]

The school census, attendance, grading and promotion, retardation, elimination, and similar problems.

20. Administration and Supervision of Vocational Agriculture. First term. Credit three hours. Open to graduate students only. Hours to be arranged. Professor WORKS.

A course designed for persons fitting themselves for state supervision of agricultural education. It treats of: administration and supervision of agricultural education under the Federal Vocational Education Act; state legislation relating to agricultural education; curriculum and course-of-study problems; supervision and comparative study of types of schools. Visits to schools in New York State and to adjacent States are required as a part of the course.

21. The Supervision of Home Economics. Second term. Credit four hours. Open to graduate students only. Lectures, T Th S 10. Caldwell Hall 282. Laboratory, hours to be arranged. Professor BINZEL.

This course is intended for supervisors and for teachers who are preparing for supervisory positions in the field of home economics. The course is concerned with the analysis of the supervisor's job and with methods of supervision. Among the problems presented for study and investigation will be the organization and the administration of homemaking departments; principles underlying the present-day changes in home economics education; principles underlying the organization of courses; evaluation of teaching; improvement of teachers in service; teachers' conferences and study classes.

22. Psychology for Students of Education. First term. Credit four hours. Section 1, for mature students with teaching experience. Lectures, T Th S 11-12.30. Caldwell Hall 282. Professor EATON. Section 2, for members of the college staff. Lectures, M W F 11-12.30. Caldwell Hall 282. Professor KRUSE.

The topics treated in this course are similar to those in course 2. The method will be modified to meet the needs of mature students.

23. Problems of Agricultural College Teaching. Second term. Credit two hours. Prerequisite, course 22. T Th 11. Caldwell Hall 282. Professor WORKS.

The purpose of this course is to introduce students to the problems involved in agricultural college teaching and to assist in their solution; to consider aims, functions, and present practices in college instruction; and to analyze the work of the college teacher. An effort will be made to relate the lectures, reports, and discussions to the instructional work of the College of Agriculture.

24. Principles of Supervision. Second term. Credit three hours. Designed for graduate students. Alternates with course 12. T Th S 9. Caldwell Hall 282. Professor BUTTERWORTH.

The work of the supervisor will be analyzed, and the problems arising will be considered in the light of the principles of teaching.

25. Research in Rural Education. Throughout the year. Primarily for graduate students. Credit hours to be arranged. Members of the staff.

26. Seminary. First term. Required of graduate students. Those desiring credit must register in course 25. Hours to be arranged. Professor STEWART.

28. Special Seminars. Second term. For graduate students.

[A. **Educational Psychology.** Credit two hours. Professor KRUSE. Not given in 1924-25.]

[B. **Agricultural Education.** Required of graduate students in agricultural education. Those desiring credit must register in course 25. Hours to be arranged. Caldwell Hall 282. Professors EATON and WORKS.]

[C. **Rural School Administration.** Credit two hours. Designed for those desiring an intensive study of certain problems of rural school administration. T 4-6. Caldwell Hall 143. Professor BUTTERWORTH.]

[D. **Rural Secondary Education.** Credit two hours. Professor FERRISS. Not given in 1924-25.]

30. The Preparation of Teachers for Rural Schools. First term. Credit three hours. M W F 10. Caldwell Hall 282. Professor BUTTERWORTH.

To meet the needs of those now responsible for the training of rural elementary and secondary school teachers or who are preparing for such duties. A general analysis of the teacher's work will first be made, in order to determine the needs that teacher-training courses should supply. Ways and means of meeting these needs will then be considered in as much detail as time allows.

37. **The Curriculum for Rural Schools.** Second term. Credit two hours. For graduate students only. T Th 9. Caldwell Hall 143. Professor FERRISS.

A discussion of the major problems of curriculum content and organization in elementary and secondary schools with particular reference to rural conditions.

45. **The Theory of Vocational Education.** First term. Credit three hours. M W F 10. Caldwell Hall 143. Professor EATON.

This course will consist of discussion of questions arising under the following general heads: the meaning of vocation; its origin and evolution; conservation and progress in economic society; the function of education in vocation; the criteria of content and method of vocational education; the agencies of vocational education.

60a. **Field Nature Study.** First term. Credit one hour. Field trip Monday afternoon. Fernow Hall 16. Professor PALMER.

This course is designed to meet the needs of rural and other elementary school teachers, high-school science teachers, camp councilors and directors, leaders in scout organizations, and junior project workers who wish instruction based on field work.

60b. **Nature Study.** Second term. Credit three hours. Prerequisite, one-half year of botany, biology, or zoology. Lecture, M 12. Fernow Hall 16. Practical exercises, M W 2-4.30, and T Th 2-4.30. Professor PALMER.

Laboratory and field practice with those subjects in plant and animal life that are best fitted for nature study in the elementary schools. Special attention is given to the methods of study, manner of presentation, and relation of the topics to agriculture. A brief history of the nature-study movement and a study of present-day practices in nature study are given. The New York State Nature Study Syllabus and the correlation of nature study with other subjects are given consideration.

63. **The Teaching of Science in the Rural Secondary Schools.** Second term. Credit two or three hours. Prerequisite, courses 2 and 4 or their equivalents. T Th 10. Fernow Hall 16. Professor PALMER.

This course is designed to help high-school science teachers in the organization of their material, to aid them in introducing scientific ideas to high-school students, and to point out, particularly to biology teachers, useful sources of information and supply. Opportunity is provided for observation of high-school science teaching.

[65. **The Nature-Study Movement and its Makers.** Second term. Credit two hours. Prerequisite, courses 2, 4, and 60b. Professor PALMER. Not given in 1924-25.]

Discussions of the history of the nature movement, with consideration of the contributions made to it and to elementary school methods by administrators, educators, scientists, dramatists, and writers of prose, poetry, and fiction. The graded courses in nature study outlined for various States are considered, to assist in the perfection of similar work in the public schools in New York State.

RURAL ENGINEERING

1. **Gas Engines.** First term. Credit three hours. Intended for sophomores or juniors but open to freshmen. Reasonable proficiency in drawing is necessary, and Drawing 1 is recommended as preparation for this course. Primarily a preparation for course 2. Lectures, M W 8. Caldwell Hall 143. Practice, W or Th 2-5. Farm Mechanics Laboratory. Mr. JENNINGS.

A study of single-cylinder gas engines. Laboratory fee, \$2.

2. **Farm Power Machinery.** Second term. Credit three hours. Intended for seniors or juniors, and not open to freshmen. Prerequisite, course 1 or 3 and Drawing 1, or reasonable and approved proficiency in drawing, and permission to register. Lectures, W F 8. Caldwell Hall 100. Practice, Th or F 2-5. Farm Mechanics Laboratory. Assistant Professor FAIRBANKS and Mr. WRIGHT.

A study of multicylinder gas engines, electric-light plants, tractors, and tractor plows. There will be one one-day field trip during the term. Laboratory fee, \$5.

3. **Farm Mechanics.** First or second term. Credit three hours. Intended for sophomores or juniors, but open to freshmen. Planned primarily for the general student who wishes to get a general idea of the farm applications of mechanical methods and appliances. Reasonable proficiency in drawing is necessary, and Drawing 1 is recommended as preparation for this course. Lectures, T Th 10. Dairy Building 218. Practice, first term, M T or F 2-5; second term, M T or W 2-5. Farm Mechanics Laboratory. Professor RILEY and Messrs. JENNINGS and WRIGHT.

A course intended to develop ability to think and to reason in terms of mechanical devices, the machines used for this purpose being types of mowers, binders, single-cylinder gas engines, pumps, spray machinery, and water supply systems. Laboratory fee, \$2.

10. **Household Mechanics.** Second term. Credit three hours. For women students. Lectures, T Th 12. Caldwell 143. Practice, F 10-1, or F 2-5. Rural Engineering Building. Professor ROBB and assistants.

A course intended to develop ability to think and to reason in terms of mechanical devices. Among the problems selected for this training are exercises in plumbing, soldering, power transmission, and studies in the principles of operation, care, and repair of small mechanical devices, sewing machines, domestic electrical equipment, and automobile engines. Laboratory fee, \$1.

19. **Research in Rural Engineering.** First or second term. Credit one or more hours. Prerequisite, adequate ability and training for the work proposed, and permission to register. Professors and Assistant Professors of the department.

Special work in any branch of rural engineering on problems under investigation by the department or of special interest to the student, provided, in the latter case, that adequate facilities can be obtained.

20. **Farm Engineering.** First or second term. Credit three hours. It is recommended but not required that students have training in mechanical drawing. Lectures, M W 9. Caldwell Hall 143. Practice, M or T 2-5. Rural Engineering Building and field. Professor ROBB.

A study of the practical solution of the elementary problems involved in connection with surveying and mapping the farm; leveling for farm drainage; laying out building foundations and water supply. From data obtained in the field, a contour map will be drawn of one of the fields near the College. Farm sanitation and sewage disposal are studied. Attention is given to concrete construction, including the design of simple concrete structures and estimates of their cost. Laboratory fee, \$2.

21. **Drainage.** Second term. Credit two hours. Prerequisite, course 20 and Agronomy 1, or their equivalent. Lecture, M 10. Fernow Hall 210. Practice, Th 2-5. Rural Engineering Building and field. Professor ROBB.

A course covering the principles and practice of drainage. One two-day excursion to drainage projects at some distance from Ithaca will be taken some time in May. Laboratory fee, \$1.

[24. **Farm Concrete.** First term. Credit two hours. Given in alternate years. Professor McCURDY. Not given in 1924-25.]

A study of the selection, testing, and proportioning of the materials used in making concrete. Building forms, mixing, placing, finishing, and curing concrete. Waterproofing. Inspection of local sand and gravel banks and of some local concrete structures. Laboratory fee, \$1.

[28. **Farm Engineering, Advanced Course.** First term. Credit three hours. Prerequisite course 20 or its equivalent. Professor McCURDY. Not given in 1924-25.]

A course in topographic surveying and mapping; leveling, including cross-section and earthwork computations; a study of the use and adjustments of the better class of levels and the transit.

30. **Farm Structures.** First or second term. Credit three hours. Laboratory periods, T Th, 10-11, and three two-hour practice periods by appointment. Dairy Building, Fourth Floor. Assistant Professor REYNA.

A study of the principles of design, including lighting, ventilation, sanitation, equipment, floor spacing, and construction, for barns, stables, and other farm buildings, and the application of those principles in the drafting room. Laboratory fee, 50 cents.

31. Farm Structures, Advanced Course. First or second term. Credit two or three hours. Prerequisite, course 30. Laboratory periods, T Th 10-11, and two or three two-hour practice periods by appointment. Dairy Building, Fourth Floor. Assistant Professor REYNA.

A study of the practical design of any major farm building other than that designed in course 30. Preparation of specifications and bills of materials. Study of strength of materials.

41. Farm Shop Work. First or second term. Credit three hours. Planned for prospective high-school teachers of agriculture. Lecture, S 8. Practice, T 2-4, 30 and S 9-1. Farm Mechanics Laboratory. Assistant Professor ROEHL.

Practice in woodworking, carpentry, saw filing, tool sharpening, fitting of handles, window repairing, painting, and studying of builders' hardware. Study will be made of the farm shop and the selection, care, and use of the tools necessary for farm construction and general repair work. Laboratory fee, \$3.

42. Farm Shop Work. First or second term. Credit two hours. Planned for prospective teachers of agriculture. Lecture and practice, Th 2-5, and any two hours. Th 9-12. Farm Mechanics Laboratory. Assistant Professor ROEHL.

Practice in harness repairing, soldering, cold-metal working including drilling, tapping, threading, hack sawing, filing, and riveting, and hot-metal working including certain forging operations and the shaping and tempering of tools. The course also includes rope work, visits to farms and schools to ascertain farm shop needs, and the making of an inventory of the equipment on some farm. Laboratory fee, \$3.

43. Farm Shop Work. First or second term. Credit two hours. Similar to course 41 but open to students generally. Drawing 1 is recommended as preparation. Lecture and practice: W 2-5 and any two hours, W 9-12 or F 2-5. Farm Mechanics Laboratory. Assistant Professor ROEHL. Laboratory fee, \$3.

44. Farm Shop Work. First or second term. Credit two hours. Similar to course 42 but open to students generally. Lecture and practice, M 2-5, and any two hours, M 9-12. Farm Mechanics Laboratory. Assistant Professor ROEHL. Laboratory fee, \$3.

Drawing. The courses in mechanical drawing formerly listed here are now to be found under the heading Drawing.

COURSES FOR STUDENTS SPECIALIZING IN HOTEL MANAGEMENT

61. Mechanism of Hotel Machines. First term. Credit three hours. For juniors. Prerequisite, Drawing 2 and Physics 3. Lectures and recitations, M W 11. Practice, W Th or F 2-5. East Roberts 2. Assistant Professor RANDOLPH.

A study of the elements of machines as applied to the mechanical equipment of hotels: Kitchen and laundry machinery, vacuum cleaners, the machine and repair shop, plumbing, communication systems, illumination, and fire protection. A study of graphical representation is included in preparation for the work of this and for other courses. Laboratory fee, \$3.

62. Hotel Power Plants. First and second terms. Credit three hours. For juniors and seniors. Prerequisite, course 61. First term: lectures and recitations, M W 9. Practice, F 9-12. East Roberts 2. Second term: lectures and recitations, W F 11. Practice, T 9-12, or F 2-5. East Roberts 2. Assistant Professor RANDOLPH.

Fuels and combustion: fire and water tube boilers and their accessories; steam engines of the current types; lubrication; pumping machinery and its applications. Laboratory fee, \$3.

63. Hotel Auxiliary Equipment. Second term. Credit three hours. For seniors. Prerequisite, course 62. Lectures and recitations, W F 9. Practice, Th 2-5. East Roberts 2. Assistant Professor RANDOLPH.

Electrical machinery, motors, and generators; elevators, electric and hydraulic; mechanical refrigeration systems; heating and ventilation; metering devices as an aid to obtaining efficient operation and financial economy. Laboratory fee, \$3.

[64. **Hotel Engineering Problems.** Second term. Credit three hours. For seniors. Not given in 1924-25.]

The inter-relations of the apparatus. Conditions which determine the type of equipment. Studies of the advisability of different methods for obtaining light, heat, and power.

RURAL SOCIAL ORGANIZATION

1. **The Social Problems of Rural Communities.** First term. Credit four hours. Lectures, reports, and discussions, T Th S 11. Roberts 292. Laboratory and excursions, M 2-4.30. East Roberts 3. Acting Professor MELVIN.

An introductory study of the social problems of rural communities, as a basis for the social organization of rural life. Some of the problems considered are: health, standard of life, education, religion, the family, recreation, government, community organization, and so forth. Students will make individual studies of selected communities. Laboratory fee, \$1.50.

2. **The Rural Family.** Second term. Credit three hours. Prerequisite, course 1. Lectures, T Th S 10. Roberts Hall 292. Professor SANDERSON.

This course is introduced by a brief historical survey of the evolution of family life, particularly during the past century, and a study of the differences between family life in the country and in the city. It considers the problems of family life which are most significant in rural communities, and the position of the rural family and the farm home in their relation to other social institutions and forces of rural life.

[3. **The Organization of Agriculture in the United States.** Credit three hours. Professor SANDERSON. Not given in 1924-25.]

A discussion of the organization of the agricultural work of the federal, state, and county governments, and of farmers' organizations.

4. **Rural Leadership.** Second term. Credit two hours. Prerequisite, courses 1 and 8, or permission of instructor. W 2-4. East Roberts 3. Professor SANDERSON.

A seminary course for the study of the psychology of rural leadership and the means for discovering and developing local leadership.

5. **The Rural Community.** Second term. Credit three hours. A seminary course primarily for graduate students. Prerequisite, course 1 and Economics 55a and 55b, or their equivalent. T Th 2-4. East Roberts 3. Professor SANDERSON.

A detailed study of the nature of the rural community; its historical development; a comparative study of types of rural communities; their social psychology and the methods of community development and organization.

8. **The Social Psychology of Rural Life.** First term. Credit three hours. For advanced students. Prerequisite, course 1, one or more courses in psychology, Economics 55a or its equivalent, and permission to register. T Th 2-4. East Roberts 3. Acting Professor MELVIN.

Consideration is given to the development of group psychology. On the basis of this, specific application is made to rural life. The dominating rural mores, folkways, and attitudes which arise from the vocation of agriculture and of different types of agriculture, the reactions of family and community life, and the activities of rural organizations, constitute the content of the course. The elements that make for social solidarity, coordination, change, and progress, under the rural environment are considered.

9. **The Village.** First term. Credit two hours. Seminary course for advanced students. Prerequisite, permission to register. W 2-4.30. East Roberts 3. Acting Professor MELVIN.

This course considers the structure and the function of the village. A brief survey of the history of the village is made at the beginning of the course. The major portion of the time is taken in gathering and interpreting material from specific villages. The object of this study is to find the present trend of evolution of the village and its part in rural community organization.

10. **Field Work in Rural Society.** Throughout the year. Open only to advanced students by special permission. Hours and credit, to be arranged. Professor SANDERSON and Acting Professor MELVIN.

15. **Research in Rural Social Organization.** Throughout the year. For graduate students only. Hours and credit, to be arranged. Professor SANDERSON and Acting Professor MELVIN.

VEGETABLE GARDENING

1. **Principles of Vegetable Gardening.** Second term. Credit three hours. Prerequisite, Botany 1; Agronomy 1 should precede or accompany this course. Assignment to laboratory section must be made at time of registration. Lectures, M W 11. Poultry Building 375. Laboratory, W or F 2-4.30. Vegetable greenhouses and East Ithaca gardens. If necessary, an additional section will be arranged, Th 2-4.30. Assistant Professor SCHNECK.

A general study of the principles of vegetable gardening, giving a comprehensive survey of the industry. This course is intended for the general agricultural student who desires a brief course concerning the subject, and as an introductory course for the student who wishes to specialize in commercial vegetable gardening. Lectures and laboratories consider the history, the economic importance, the cultural requirements, and the marketing, storage, and uses, of the important vegetables. Laboratory fee, \$2.

2. **Special Crops.** Second term. Credit three hours. To be preceded or accompanied by Agronomy 1 and Botany 1. Lectures, T Th 11. Laboratory, Th or F 2-4.30. Poultry Building 174. Assistant Professor HARDENBURG.

A special study of those crops which are grown in New York State principally as cash crops for the wholesale market, such as potatoes, field beans, field cabbage; and the principal canning crops, namely, tomatoes, sweet corn, garden beans, and peas. About one-third of the term's work is devoted to potatoes. Lectures consider the history, economic importance, classification, culture, marketing, and uses of these crops. Laboratory work devoted chiefly to studies of types and varieties. Laboratory fee, \$2.

3. **Vegetable Forcing.** First term. Credit three hours. Lectures, M W 9. Poultry Building 174. Practice, S 8-10.30. If necessary, a second section will be arranged, M 2-4.30. Poultry Building 174 and vegetable greenhouses. Assistant Professor SCHNECK.

Growing vegetables under glass; greenhouses for vegetables; management problems; the greenhouse crops, their requirements and culture. Laboratory work will consist chiefly of practical exercises in crop production. The class will participate in a required one- or two-day excursion to Rochester, in January, to visit greenhouses; cost, about \$9. Laboratory fee, \$2.

4. **Systematic Vegetable Crops.** First term. Credit two hours. Prerequisite, course 1. One week of laboratory work preceding beginning of instruction (September 22-27, 1924), at East Ithaca gardens. Combined lecture and laboratory, S 10.30-1. Poultry Building 174. Professor WORK.

This course deals with the botany, origin, history, characteristics, and adaptation of kinds, varieties, and strains of vegetables. Attention is also devoted to identification, to classification, and to exhibition and judging. The leading varieties of the vegetable crops are grown each year. The value of the course consists, to a great extent, in gaining an actual acquaintance with the crops as they grow. For this reason, most of the laboratory work is done in the gardens during registration week. Students expecting to take the course will report at the East Ithaca gardens Monday, September 22, at 9 a. m., prepared to spend five days of the week in study in the garden.

5. **Vegetable Gardening, Advanced Course.** Second term. Credit two hours. Prerequisite, course 1 and Botany 20. Lectures, T Th 9. Poultry Building 174. Professor THOMPSON.

This course is intended for students specializing in vegetable gardening. Lectures are given on the principles of production and handling of vegetables, based

largely on experimental evidence. The problems of the market gardener, the truck grower, the muck-land farmer, and the producer of canning crops, are considered.

6. **Research.** Throughout the year. Credit three or more hours a term. For graduate students only. Hours by appointment. Poultry Building. Students will usually be required to remain during at least one summer in order to work out experimental problems. Professors WORK and THOMPSON and Assistant Professors SCHNECK and HARDENBURG.

7. **Seminary.** First and second terms. Required of graduate students taking either a major or a minor in this department. Time to be arranged. Poultry Building 174. Members of department staff.

WILD-LIFE CONSERVATION AND GAME FARMING

1. **The Conservation of Wild Life.** First term. Credit two hours. Lectures, T Th 11. McGraw Hall 5. Professors NEEDHAM, HOSMER, WIEGAND, B. ADAMS, and EMBODY, Assistant Professors WRIGHT and A. A. ALLEN, and co-operating specialists.

This is an introductory lecture course given cooperatively by specialists within and without the College. It is intended to show the relations of the various conservation interests to one another, and to give the student who plans to fit himself for work in game farming, ornithology, fish culture, or other lines of conservation, a general view of the field and a basis for the selection of subsequent elective courses.

ZOOLOGY

1. **General Zoology.** First and second terms. Credit three hours a term. Two lectures and one laboratory period weekly. Lectures, section 1, T Th 9; section 2, T Th 11. Goldwin Smith B. Laboratory, M T W or F 2-4.30, or S 8-10.30. McGraw Hall 2. Registration with the department before instruction begins is necessary for the assignment of laboratory and lecture sections. Professor REED, Assistant Professor YOUNG, Dr. FISHER, and Misses MEKEEL and McMULLEN.

A comprehensive view of the subject, including the fundamentals of animal biology, the principles of structure, function, origin, and perfection of animal life, and a consideration of the generalizations in zoological theory which seem to be the best founded. Animal types and their classification are employed only as a service-base from which study may proceed. Laboratory fee, \$3.50 a term.

5. **Systematic Vertebrate Zoology and Ecology.** First and second terms. Credit three hours a term. Lecture, M 8. Laboratory, section 1, M W 2-4.30; section 2, T Th 2-4.30. McGraw Hall 7. Assistant Professor WRIGHT and Mr. HARPER.

Lectures on fishes, amphibians, reptiles, birds, and mammals, dealing with the principles of classification and nomenclature; the characters and relationships of these groups; the habits, life histories, and principles of coloration. Laboratory study of the parts employed in classification, and a practical identification of species of North American vertebrates. Field work on the various groups is given during the fall and spring. Laboratory fee, \$4.

6. **Field Ornithology.** Second term. Credit three hours. Lecture, W 11. McGraw Hall 5. Field work and laboratory, T Th 2-4.30, or W F 2-4.30. Assistant Professor A. A. ALLEN and Mr. PIRNIE.

This course is intended primarily for students wishing to gain a knowledge of local birds, their habits, songs, nests, and eggs, their relation to agriculture, and the general principles of their conservation. Field work will be supplemented by laboratory studies. After the first of May, field trips will be taken at 5.30 a. m. Laboratory fee, \$2.

7. **Ichthyology, Advanced Systematic and Field Zoology.** First term. Credit three hours. Lectures, T Th 9. McGraw Hall 7. Laboratory, F 2-4.30, or S 8-10.30. Assistant Professor WRIGHT.

An amplification of the prerequisite course 5. In the lectures, special emphasis will be laid on the principal phases of animal life; the taxonomy, origin, and evo-

lution of fossil and living groups; geographical distribution; and the literature and institutions of zoology. Laboratory periods will be devoted to the identification of exotic and indigenous forms.

[8. **Herpetology.** Second term. Credit three hours. See announcement for course 7. Assistant Professor WRIGHT. Not given in 1924-25.]

9. **Advanced Ornithology.** First term. Credit three hours. Prerequisite, course 5 or 6. Lecture W 11. McGraw Hall 5. Laboratory and field work, T Th 2-4.30. Assistant Professor A. A. ALLEN and Mr. PIRNIE.

A consideration of the birds of the world. The lectures will take up the structure and classification of birds; geographical distribution; the literature and institutions of ornithology. Laboratory periods will be devoted to the identification of skins of native and foreign representatives of the different families of birds. The first part of the term will be devoted to field work on the fall migration, and the identification of birds in winter plumage. Laboratory fee, \$2.

[10. **Mammalogy.** First term. Credit three hours. See announcement for course 7. Assistant Professor WRIGHT. Not given in 1924-25.]

[11. **Economic Ornithology and Mammalogy.** First term. Credit three hours. Should be preceded by course 5 or 6; presupposes an elementary knowledge of botany and entomology. Assistant Professor A. A. ALLEN and Mr. PIRNIE. Not given in 1924-25.]

This course is designed to assist those planning professional work with birds or mammals. The lectures will take up various phases of the life of birds and mammals in relation to agriculture, with the methods of increasing beneficial species and of destroying vermin, together with the elements of game breeding, and fur farming. The laboratory will give practice in the identification of game birds, vermin, the food of birds, the preparation of materials, and the making of skins. The field work will give opportunity for observation of feeding habits, field collecting, methods of attracting birds, and natural-history photography. Laboratory fee, \$2.

15. **Field and Museum Methods in Vertebrate Zoology.** First and second terms. Credit one hour a term. Prerequisite, course 5 and permission to register. Laboratory, hours to be arranged. McGraw Hall 7. Mr. HARPER.

Designed to furnish training in faunal and taxonomic investigations. Includes methods of field work, keeping of notes, and preparation of papers; preservation and cataloging of museum specimens; preparation of bibliographies and card catalogs of distribution, habits, and life histories; making of distributional maps; and other matters that will assist students in becoming faunal zoologists.

17. **Special Problems and Research.** Throughout the year. Credit one or more hours. For seniors and graduates only. Opportunity is given for the pursuit of special phases of ornithological study further than is permitted by the more elementary courses, and for investigation.

Permission necessary for registration.

18. **Seminary in Systematic Vertebrate Zoology.** First and second terms. Credit one hour a term. Life zone plans of North America, 1817-1920. Zoogeography of the Old World. Animal coloration. Other topics to be announced. Hours to be arranged. Assistant Professor WRIGHT.

EXTENSION WORK

The extension work of the College of Agriculture is designed to help persons directly on their farms, and to aid those who desire definite instruction but who cannot take a long or a regular course in agriculture at the University. The work supplements the teaching and experimenting of the College. It is professedly a popular work. It endeavors to reach the common problems of the people, to quicken the agricultural occupations, and to inspire a greater interest in country life. It is also a bureau of publicity, whereby there is an exchange of all important matters connected with the progress of the agriculture of the State.

The Office of Farm Bureaus is located on the second floor of Roberts Hall. This office represents the New York State Department of Agriculture, the College of Agriculture, and, through the Dean, the States Relations Service in the United States Department of Agriculture, in the administration and supervision of farm-bureau work in New York State. It has general charge of the organization and supervision of farm bureaus and of the cooperative relations of the institutions represented by the bureaus, and receives weekly work reports and monthly financial reports from the different counties. Its equipment consists mainly in files and records of the fifty-five farm bureaus in the State.

WINTER COURSES

The Winter Courses are six in number, all opening on November 5, 1924, and closing on February 13, 1925. They are:

- | | |
|-----------------------|-------------------------|
| 1. Agriculture. | 4. Fruit Growing. |
| 2. Dairy Industry. | 5. Flower Growing. |
| 3. Poultry Husbandry. | 6. Vegetable Gardening. |

A special program describing these courses will be sent on application to Robert P. Sibley, Secretary, New York State College of Agriculture, Ithaca, New York.

SUMMER SCHOOL

The Summer School is a six-weeks summer session beginning early in July. It is designed not so much to meet the needs of college students as of teachers, supervisors, superintendents, extension workers, and others professionally concerned with activities of an educational nature.

College students desiring to use the summer for additional study are in general advised to enter the summer session in Cornell University rather than the summer school of Agriculture.

SUMMER SCHOOL OF BIOLOGY

Coincident with the Summer School, there is held a School of Biology for teachers and advanced workers. The work is laid out in comprehensive courses including, unabridged, what is offered in the corresponding courses in a term of the regular academic year. For advanced students there is opportunity for special work under the various members of the staff.

A separate announcement of this school is available.

COURSES IN OTHER COLLEGES THAT MAY BE OFFERED TO MEET THE SPECIFIC REQUIREMENTS OF REGULAR STUDENTS IN THE COLLEGE OF AGRICULTURE

1. **English. Introductory Course.** First and second terms. Credit three hours a term. Students who have not taken the course in the first term may enter in the second term in sections provided for them. Open only to underclassmen who have satisfied the entrance requirement in English. Sections at the following hours: M W F or T Th S 8 9 10 11 12 2. Rooms to be announced. Assistant Professor SMITH, Messrs. BALDWIN, HOTCHKISS, MARX, NELSON, VAN ALLEN, FRENCH, HALE, JONES, MITCHELL, GREENE, JOHNSON, BLODGETT, CARROLL, and LINDSAY.

A study of composition in connection with the reading of representative works in English literature, including four plays of Shakespeare, two modern novels, selected essays, and poems of Browning and Tennyson.

Students who elect English 1 must apply at Goldwin Smith A on Wednesday, Thursday, Friday, or Saturday of registration week for assignment to sections. Registration in the course is in charge of Professor SMITH.

101. **Introductory Inorganic Chemistry.** First or second term. Credit six hours. Lectures: first term, two sections, T Th S 11, or M W F 11. Professors DENNIS and BROWNE. Second term, two sections, T Th S 11 or M W F 11. Professor BROWNE and Dr. McKINNEY. Main Lecture Room. Recitations,

one hour a week, to be arranged. Laboratory, two periods a week; M F 2-4.30, T Th 2-4.30, W 2-4.30, and S 8-10.30. Room 150. Professors DENNIS and BROWNE, DR. MCKINNEY, and assistants.

1. **Elementary Geology.** First or second term. Credit three hours. Lectures, first term, T Th 11; second term, T Th 9. Sibley Dome. Laboratory period, M T W Th or F afternoon, or S morning. Students must register for laboratory assignments at the elementary geology laboratory, McGraw Hall, before the beginning of the course. Professor RIES, Messrs. BELL, WATKINS, and TRAINER, and Miss ST. JOHN.

This course is planned to give beginners the fundamental principles of this branch of science. Those desiring additional work in geology are advised especially to take one or more of courses 1a, 2, 2a, 11, 21, and 32.

2. **Elementary Physical Geography.** First and second terms. Credit three hours a term; if taken after course 2a, credit two hours a term. Lectures, M W 9. McGraw, Geological Lecture Room. Laboratory, W or Th 2-4.30. Students must register for laboratory assignments at the physical geography laboratory before the beginning of the course. Professor VON ENGELN and Mr. STUCKEY.

High-school courses are not the equivalent of this course and will not be so considered as a prerequisite for advanced courses. All students are required to go on one all-day excursion to Enfield Gorge and Falls and Connecticut Hill.

1. **Introductory Experimental Physics.** First term. Credit three hours. Demonstration lectures and laboratory work covering heat, magnetism, and electricity. Lectures, W F 9, or W F 11. Rockefeller A. Professor MERRITT. One two-hour laboratory period a week as arranged. Rockefeller 220. Assistant Professor HOWE, and Messrs. BISHOP, FORD, HANSON, MORGAN, MORELL, and STANTON.

Courses 1 and 2 form a continuous first course. Course 1 may be taken either before or after course 2.

2. **Introductory Experimental Physics.** Second term. Credit three hours. Demonstration lectures and laboratory work covering sound, light, and properties of matter. Hours and staff as in Physics 1.

10. **Veterinary Physiology.** First or second term. Credit three hours. Lectures, M W F 10. Veterinary College. Professor FISH.

A course designed for students in agriculture and in veterinary medicine, relating to the physiology of nutrition and secretion in domesticated animals. A brief introduction to the general principles of animal physiology, with specific and extended discussions of salivary, gastric, pancreatic, and intestinal digestion; the liver, with its specific secretions and functions; the glands of internal secretion and their relation to the vital processes of the body; the circulatory and respiratory processes; physiology of milk secretion. The lectures are illustrated with experiments, lantern slides, and diagrams.

3. **Elementary Human Physiology.** First or second term. Credit three hours. First term, M W F 10, Professor SIMPSON and assistants. Second term, section A, M W F 10, Professor SIMPSON and assistants; section B, M W F 12, Dr. LIDDELL and Mr. DYE. Stimson Hall. In registering for this course in the second term, students are required to specify the section which they desire to attend.

An introductory course for students of the biological sciences; also for students who expect to teach physiology in secondary schools. The lectures are fully illustrated by experiments, lantern slides, and diagrams.

51. **Modern Economic Society.** First or second term. Credit five hours. Daily except S, 8 9 10 11 12 2. Assistant Professor SLICHTER.

Students should register, if possible, on the first day of registration. Section assignments will be made at Goldwin Smith 260 on registration days. In the first term the registration will be limited in number.

A survey of the existing economic order, its more salient and basic characteristics, and its operation.

1. **Solid Geometry.** First or second term. Credit three hours. First term, T Th S 10; second term, M W F 10.
3. **Plane Trigonometry.** First or second term. Credit three hours. First term, M W F 10; second term, T Th S 10.

UNIVERSITY REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE AND RELATED ELECTIVE COURSES

HYGIENE AND PREVENTIVE MEDICINE

All undergraduates must submit to a physical examination each year in the University Medical Adviser's office. Appointment for this examination must be made during the regular registration days by all new students and sophomores in the first term and by all juniors and seniors in the second term.

All students in the first two years of the undergraduate courses are required to attend lectures on hygiene and preventive medicine given once a week throughout the college year. The first year (Hygiene 1 and 2) is devoted to personal hygiene, mental hygiene, and first aid. The second year (Hygiene 3 and 4) is devoted to sanitation, disease prevention, and group hygiene.

MILITARY SCIENCE AND TACTICS, AND PHYSICAL TRAINING

1. **Practical and Theoretical Training.** Throughout the year. Every able-bodied male student a candidate for a baccalaureate degree, who is required to take five, six, seven, eight, or more terms in residence, must take, in addition to the scholastic requirements for the degree, one, two, three, or four, terms, respectively, in the Department of Military Science and Tactics. Three hours a week, M T W or Th 2.15-5.15 p. m. New York State Drill Hall.

The requirements in Military Science and Tactics must be completed in the first terms of residence; otherwise the student will not be permitted to register again in the University without the consent of the University Faculty.

The course of training is that prescribed by the War Department as basic for infantry and field-artillery units (as elected) of the Reserve Officers' Training Corps. The infantry includes instruction in physical training, disciplinary drills, ceremonies, military courtesy, auxiliary weapons (machine guns, automatic rifles, 37 mm. guns, and trench mortars), indoor and outdoor rifle practice, pistol practice, topography and mapping, tent pitching and camp sanitation, signalling, bayonet combat, field engineering, field maneuvers, interior guard duty, and fundamental principles in minor tactics and leadership. The field artillery includes instruction in organization of the battery, customs of the service, military courtesy and discipline, individual equipment, pistol practice, hippology, gunnery, signalling, physical training, equitation and horsemanship, topography and reconnaissance, and motors.

2. **Elective Military Training.** Throughout the year. Credit two hours a term. Hours by assignment. New York State Drill Hall.

This is the advanced course prescribed by the War Department for units of the Reserve Officers' Training Corps, and includes three hours each week in the performance of the duty of officer or non-commissioned officer with organizations undergoing the training given under course 1, and two hours each week of theoretical instruction in preparation for such duties. Prerequisite, course 1.

Course 2 may be elected only by permission of the Dean of the College and the Professor of Military Science and Tactics, and at least the first four hours of registration will be counted in the twenty elective hours allowed outside the College of Agriculture (page 24). To enjoy the benefits offered by the Federal Government the student must agree to continue the course for four terms, and to attend a summer camp having a duration of about six weeks.

1. **Physical Training for Men Excused from Drill (Freshmen).** Throughout the year, three periods a week. Class and squad work and prescribed exercises. Mr. AUER and assistants.

2. **Physical Training for Men Excused from Drill (Sophomores).** Throughout the year, three periods a week. Class and squad work and prescribed exercises. Mr. AUER and assistants.

3. **Physical Training for Men (Juniors and Seniors.)** Building-up and corrective exercises as prescribed by the medical examiners as a result of the physical examination required of all students in the University. Mr. LEONARD.

4. **Boxing and Wrestling.** Instruction for a small fee at hours to be arranged. Messrs. FALLON and O'CONNELL.

5. **Swimming.** Instruction, M T W Th F 4-6. Mr. BUMP.

6. **Physical Training for Women (Freshmen).** Throughout the year, three periods a week. Misses BATEMAN, READ, RYAN, CANFIELD, and CASHO.

7. **Physical Training for Women (Sophomores).** Throughout the year, three periods a week. Misses BATEMAN, READ, RYAN, CANFIELD, and CASHO.

The work of the two years consists of outdoor games and exercises from the beginning of the year to Thanksgiving, and from the Easter vacation to the end of the year. From Thanksgiving to Easter the work is in large part indoors, and consists of floor exercises, folk, aesthetic, and interpretative dancing, and indoor games, in all of which certain prescribed tests must be met at the end of each period.

For further information as to the required work in physical training, see the handbook issued by the department.

8. **Physical Training for Women (Juniors and Seniors).** Building-up and corrective exercises, as prescribed by the medical examiners as a result of the physical examination required of all students in the University. Miss CASHO.

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CORNELL UNIVERSITY OFFICIAL PUBLICATION

Entered as second-class matter, December 14, 1916, at the post office at Ithaca, New York, under the Act of August 24, 1912.

Issued at Ithaca, New York, twice a month from December to June inclusive, and monthly from July to November inclusive.

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 College of Law.

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 Veterinary College.

Announcement of the Department of Chemistry.

Announcement of the Graduate School.

Announcement of the Summer Session.

Announcement of the Summer Session of the College of Law.

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 preceding year. Price, 50 cents.

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

Directory of the University. Price, 10 cents.

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

Correspondence regarding the Cornell University Official Publication should be addressed to

THE SECRETARY, CORNELL UNIVERSITY,
ITHACA, NEW YORK.