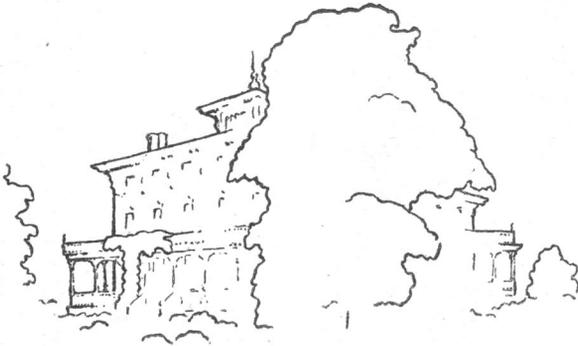


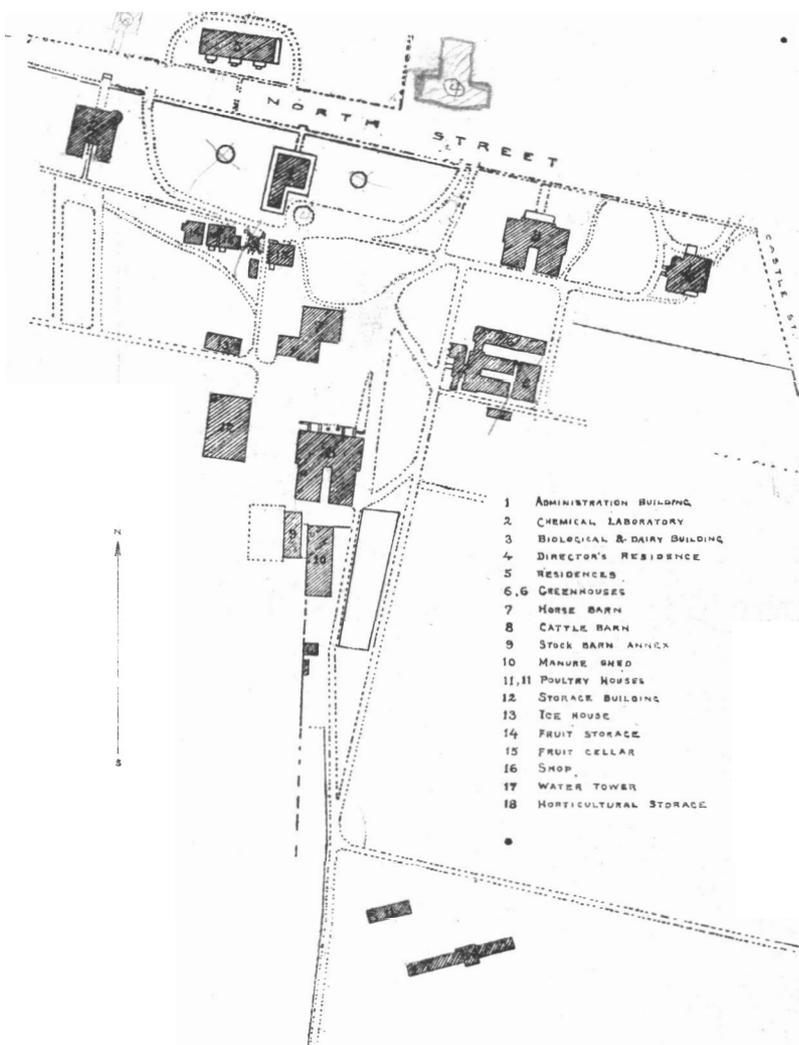
NEW · YORK · AGRICULTURAL ·
EXPERIMENT · STATION ·

WHAT · IT · IS · AND ·

WHAT · IT · DOES ·



MAP SHOWING LOCATION OF PRINCIPAL BUILDINGS
N. Y. AGRICULTURAL EXPERIMENT STATION



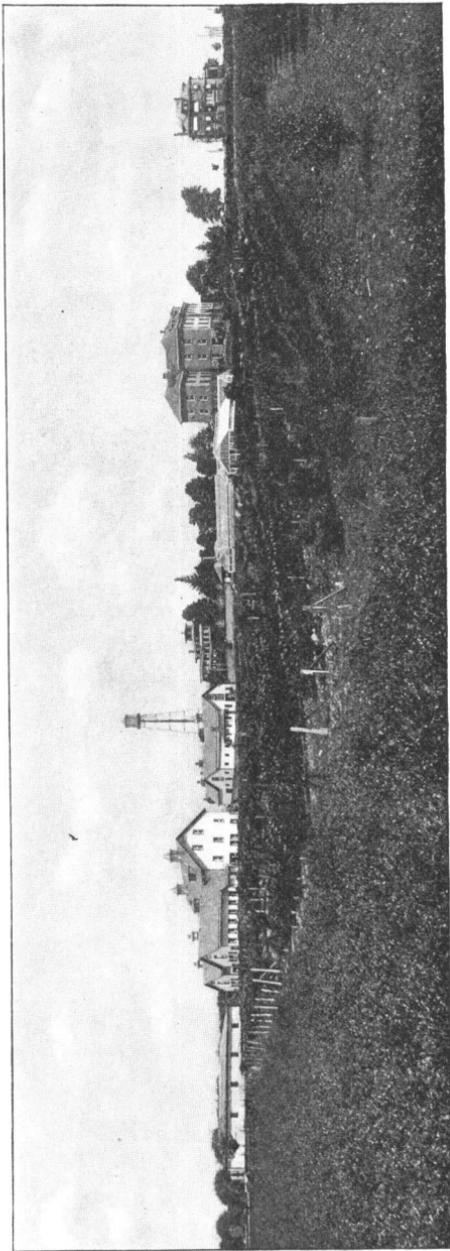
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NEW · YORK · AGRICULTURAL ·
EXPERIMENT · STATION ·

WHAT · IT · IS · AND ·

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AS THE VISITOR FIRST VIEWS THE STATION.

The New York Agricultural Experiment Station: What it is and what it does.



“DOWN THE LANE”

AGRICULTURAL experiment stations are now permanently established institutions. There are sixty in the United States, one in each state and territory, and in some states two. In 1903, these stations employed 757 persons, not including laborers, expended about a million and a half dollars and published 371 reports and bulletins, which were mailed to over half a million addresses, and it is fair to say that there is now no line of agricultural activity in any state that does not depend upon them to a greater or less extent for information and assistance.

The general purpose of these experiment stations cannot be better expressed in concise terms than in the language of the act establishing the New York State Station, viz., “For the purpose of promoting agriculture in its various branches by scientific investigation and experiment.” But while these stations are established specifically in the interests of agriculture, they sustain such broad relations to economic

progress and conditions that their work is important and beneficial to all classes.

The New York Agricultural Experiment Station was established in 1881 by an act of the Legislature, being placed under the control of a board of trustees. As now constituted this board consists of the Governor of the State and the Commissioner of Agriculture as ex-officio members and seven other members appointed by the Governor. The present membership of the Board is as follows :

BOARD OF CONTROL.

GOVERNOR BENJAMIN B. ODELL, JR., Albany.

COMMISSIONER CHARLES A. WIETING, Albany.

STEPHEN H. HAMMOND, Geneva.

FREDERICK C. SCHRAUB, Lowville.

LYMAN P. HAVILAND, Camden.

EDGAR G. DUSENBURY, Portville.

JENS JENSEN, Binghamton.

THOMAS B. WILSON, Halls Corners.

MILO H. OLIN, Perry.

IRVING ROUSE, Rochester.

CHARLES W. WARD, Queens.

The Station began its work on March 1st, 1882. It is, therefore, nearly a quarter of a century old. Notwithstanding the fact that it has maintained an active existence for so long a time, there are many people in the State who do not know of its work and some who do not even know of its existence. It is not an uncommon experience for the officers of the Station to be asked by residents of the State,

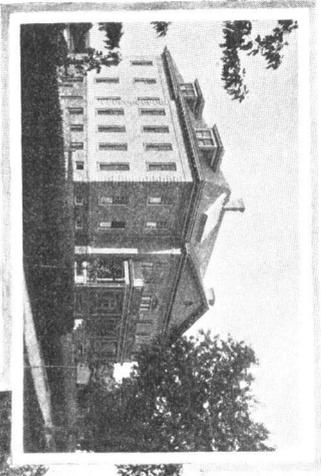
“ What is the purpose of your institution ?” “What do you do ?” these questions being often followed by some such remark as “ I suppose you grow all kinds of seeds and plants,” indicating a limited conception of the breadth and scope of the Station’s functions. The proper general answer to such questions is, that the Station seeks to elucidate and establish on a scientific basis principles and facts which have an important relation to agriculture as an industry and then to demonstrate how and to what extent these facts may be usefully applied to agricultural practice. The function of the Station is greatly different from, and broader than, that of a model farm, even if such a thing as a model farm were ever possible. The local name “ State Farm” is, therefore, an unfortunate misnomer. A large part of the work of the Station is done in laboratories, and the farm itself becomes a laboratory for demonstration and experiment rather than a place for the growth of crops novel in kind or phenomenal in quantity, or for the keeping of well fed and well groomed show animals.

It is obviously necessary for an agricultural experiment station to deal with the air and soil, with plants and animals and their nutrition, growth and breeding, with the diseases, insects and conditions which are deleterious to plant and animal growth, with farm methods, and with the technics involved in the manipulation and manufacturing of agricultural products. As a means of carrying on work on this comprehensive basis, an experiment station requires

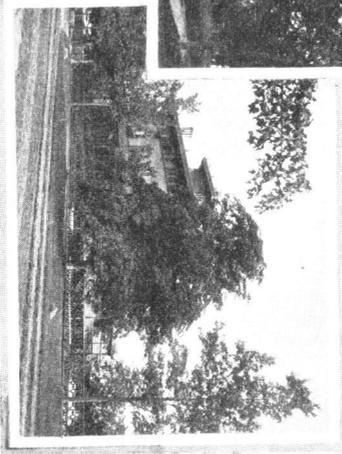
an equipment of men, land, buildings and laboratories. The New York Agricultural Experiment Station has a scientific staff of twenty-two men besides other employees, a farm and grounds of one hundred and thirty acres, on which are located eight principal buildings and other minor structures besides fruit plantations and other means of experimental work, the various buildings containing nine laboratories equipped with scientific apparatus. The Station staff and equipment are divided into groups or departments, including the following: Animal Husbandry, Bacteriology, Botany, Chemistry, Entomology, Horticulture.

The Station staff.—A list of the present members of the staff appears on the next page.

These men, as a rule, have acquired a college training in special directions, supplemented in a majority of cases by post-graduate studies either in this country or in Europe. They are necessarily specialists both in training and in work; because the problems they are called upon to study are among the most profound and complex, requiring reasonable completeness of knowledge and a concentration of effort along narrow lines. Their chief function is research and not practice, although generally they possess a working knowledge of practical agricultural operations, which is helpful or even essential to the proper direction of investigation.



BIOLOGICAL AND DAIRY BUILDING



ADMINISTRATION BUILDING



CHEMICAL LABORATORY

STATION STAFF.

WHITMAN H. JORDAN, Sc.D., - - - Director.

Department of Animal Husbandry.

THE DIRECTOR.

GEORGE W. CHURCHILL, -
Agriculturist and Superintendent of Labor.
GEORGE A. SMITH, - - - Dairy Expert.
WILLIAM P. WHEELER, - - - First Assistant.

Department of Bacteriology.

HARRY A. HARDING, M.S., Dairy Bacteriologist.
MARTIN J. PRUCHA, Ph.B., Assistant Bacteriologist.

Department of Botany.

FRED C. STEWART, M.S., - - - Botanist.
HARRY J. EUSTACE, B.S., - - - Assistant Botanist.

Department of Chemistry.

LUCIUS L. VAN SLYKE, Ph.D., - - - Chemist.
EDWIN B. HART, B.S., - - - Associate Chemist.
WILLIAM H. ANDREWS, B.S., Assistant Chemist.
FREDERICK D. FULLER, B.S., " "
CHARLES W. MUDGE, B.S., " "
ANDREW J. PATTEN, B.S., " "
FRANK A. URNER, A.B., " "

Department of Entomology.

PERCIVAL J. PARROTT, M.A., - - - Entomologist.
HAROLD E. HODGKISS, B.S., Assistant Entomologist.

Department of Horticulture.

SPENCER A. BEACH, M.S., - - - Horticulturist.
NATHANIEL O. BOOTH, B.AGR.,
Assistant Horticulturist.
ORRIN M. TAYLOR, Foreman in Horticulture.

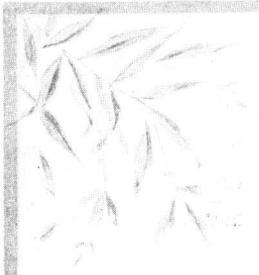
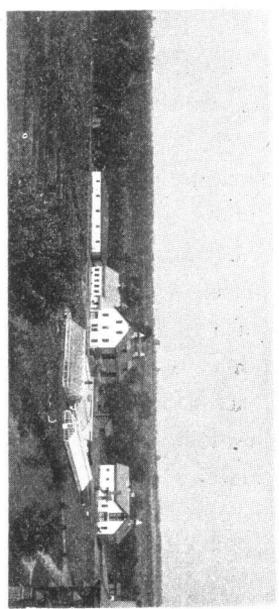
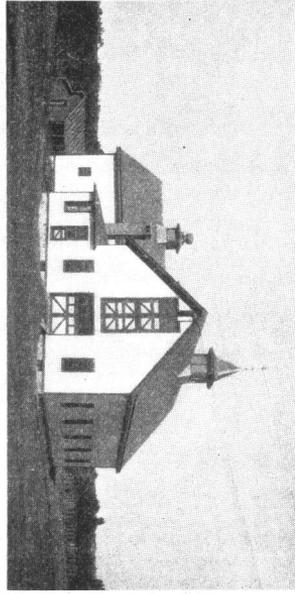
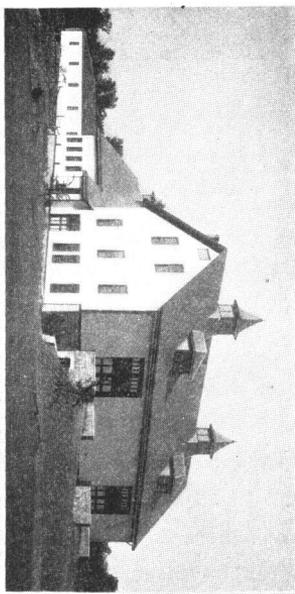
FRANK H. HALL, B.S., Editor and Librarian.
F. ATWOOD SIRRINE, M.S., Special Agent.

Clerical Staff.

F. E. NEWTON, - - - Clerk and Stenographer.
JENNIE TERWILLIGER, " " "
ADIN H. HORTON, - - - Computer.
JULIA H. HOEY, - - - Junior Clerk.

HA AND

HORSE



STATION EQUIPMENT

The principal Station buildings and their uses are as follows :

The Administration Building.—This building contains the executive offices of the Station and the library and reading room. The Director of the Station may be found here and it is here that all the general business of the Station is transacted. Here also are located the supplies of reports and bulletins.

The Biological and Dairy Building.—Several departments are located in this building, including bacteriology, botany, dairying, entomology, and horticulture, each department being equipped with offices and laboratories. In connection with the laboratories and museums of these departments may be seen a variety of apparatus and illustrative objects, such as dairy machinery and utensils, apparatus for the culture and study of low forms of life known as bacteria and fungi, collections of agricultural and horticultural plants, specimens illustrating plant diseases, cases showing insects both beneficial and harmful, models of fruit and other museum displays setting forth the objects and results of station work.

The Chemical Laboratory.—This building is devoted entirely to chemical work. In its several laboratory rooms are carried on chemical researches pertaining to soils, plant and animal nutrition, dairying, and other important lines. Here also are performed the analyses necessary in the inspection of fertilizers, feeding stuffs and insecticides. There may be seen here the apparatus used for making

analyses of samples of plants, fertilizers, feeding stuffs, dairy products and other material undergoing examination. There is located on the second floor of this building a museum illustrating the raw materials and development of the fertilizer and feeding stuff trade. (Now in preparation.)

The forcing houses.—These include about 6,000 feet of glass and are used for studies in plant nutrition and for cultural experiments with forcing-house crops. One house is given over to breeding of insects and to a study of such plant diseases as are caused by fungi and other parasitic growths. Experiments are in progress in these houses mostly in the winter. Some attention is given to floriculture and at the proper season fine displays of carnations, chrysanthemums and other ornamental plants may sometimes be seen.

The cattle barn.—This is a comparatively new structure, the erection of which was completed in 1903. In its arrangement, prominent consideration was given to facilities for carrying on experimental work in cattle feeding and milk production, but it is believed that the barn presents many features of construction worthy of study by farmers, especially by those who are aiming at convenience or who desire to engage in the production of sanitary milk.

The horse barn.—This building was completed in 1904 and is designed to accommodate the carriage and work horses belonging to the Station, besides giving proper space for carriages. It is a fairly

well arranged and convenient building for the purposes which it is intended to serve.

The poultry houses.—The poultry plant at the Station is in no sense a commercial one, being devoted entirely to experiments in the breeding, feeding, care and production of poultry. Notwithstanding this, the houses present some features of construction which experience has shown to be desirable and efficient in commercial work. The main house contains an incubator room well stocked with modern incubators, brooder pens warmed by a



LARGER POULTRY HOUSE

current of hot water, and pens well adapted to the keeping of breeding stock. The smaller house, erected in 1904, is designed for breeding and feeding experiments where many small lots of poultry must be kept separate.

The storage building.—In this building are stored farm apparatus and machinery in such a manner that the various objects may be conveniently seen, and on the second floor are located grain bins which illustrate a convenient and safe method of storing and handling grain in quantities.



DIRECTOR'S RESIDENCE

Other buildings.--In addition to the buildings enumerated there are on the Station grounds six dwelling houses, a cold storage building for the stor-



THE "OLD ORCHARD"

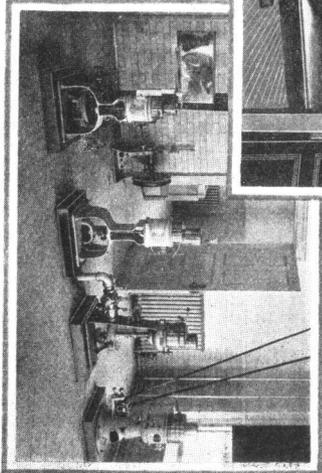
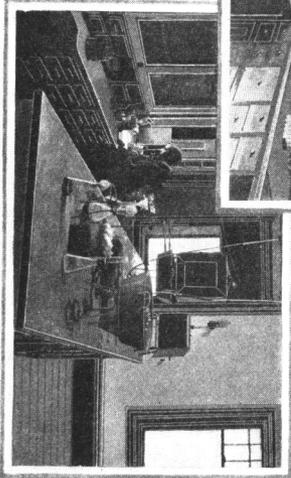
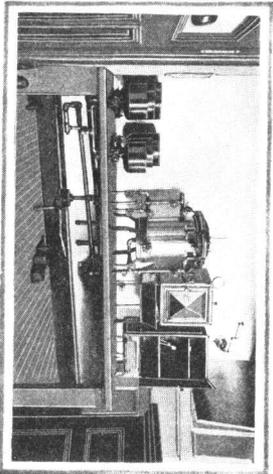
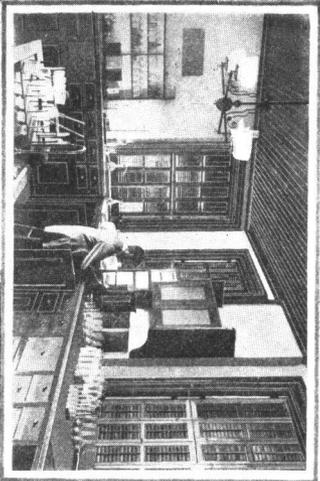
age and keeping of fruit, a small building devoted entirely to horticultural apparatus and the preparation of spraying mixtures, a workshop, a covered manure platform, a piggery, and an ice house.

The farm.—The farm and Station grounds comprise about 130 acres. This area is very largely devoted to experimental purposes. The orchards and fruit plantations now include approximately 5,000 varieties of large and small fruits. One field of 12 acres is devoted to a study of systems of maintaining fertility of the soil. Experiments with forage crops, grains and sugar beets are also carried on and may be seen in progress during the growing season. The alfalfa fields of this farm have been notably successful for fifteen years or more.



A FINE CROP OF ALFALFA

As has been stated, the Station is divided into departments. Each department occupies the time of a division of the Station staff, and to a greater or less extent is provided with a separate equipment adapted to its peculiar work. The classes of problems with which these departments deal are briefly set forth in what follows.



A CHEMIST AT WORK

BACTERIOLOGICAL APPARATUS
BOTANICAL LABORATORY

IN THE BUTTER ROOM

DEPARTMENTS.

Department of Animal Husbandry.—Investigations and experiments in this department cover a wide range of subjects, relating as they do to the production of forage crops, the breeding, feeding and care of farm animals and the handling of animal products. The department utilizes portions of the farm, the cattle and horse barns, poultry houses, farm animals and poultry, and a section of the Biological and Dairy Building with its equipment of dairy apparatus.

As illustrations of specific problems among many which this department has studied may be mentioned alfalfa and its economic value, the digestibility of various feeding stuffs, a comparison of rations for milch cows, with especial reference to the protein supply, the food sources of milk fat, importance and efficient sources of the mineral nutrients in feeding poultry, and a comparison of the characteristics and production of cows of various breeds.

Department of Chemistry.—This department, located in the chemical building, is exceedingly important not only because of the problems which are studied on a purely chemical basis, but also because of its coöperation with other departments in carrying on investigations which have a chemical bearing, as, for instance, the departments of bacteriology and horticulture.

The chemical force attends to the analyses of samples of fertilizers, feeding stuffs and insecticides, which is in the nature of routine work. Its more

important function is the conducting of chemical researches, and as illustrations of what these have been may be mentioned the following : The necessary supply of plant food in orchards, composition of fruits as affected by the food of the plant, a study of sugar beets as grown in various sections of the State, the production and composition of cider vinegar, relation of the quality of milk to the amount and kind of manufactured product, the wastes of dairy processes, compounds present in cheese, chemistry of cheese ripening, and the proteids of cream in their relation to the mottling of butter.

Department of Bacteriology.—The minute organisms known as bacteria and their products are now shown to sustain an important relation to the growth of plants and to the manufacture and keeping of a variety of agricultural products.

As indicated in a general way, the problems considered by this department must be approached by first making a careful laboratory study of the organisms involved to be followed by demonstration experiments in the field, in cheese factories, in canning factories and other places, as to the functions of the organisms or the proper means for their control.

The subjects engaging the attention of this department in the past three or four years have included among others, a study of the rusty spot in cheddar cheese, the sweet flavor of cheddar cheese, bacteriological diseases of cabbage and cauliflower plants, gas formation in canned peas, the relation between the flora of cheese and its curing and flavor, and observations concerning bovine tuberculosis.

Department of Botany.—The demands made upon the Station have seemed to require that the members of this department should devote almost their entire time to the study and control of the fungous diseases of plants, although attention is given to agricultural plants and their economic relations. As in bacteriology, the fundamental facts concerning the nature and life history of fungi, of which apple scab and potato blight are examples, must be learned by laboratory studies, following which work is done in the field and orchards in efforts to discover and demonstrate methods of successful control. Diseases of agricultural plants and trees are numerous and seem to be on the increase, and they affect alike the general farmer, the gardener and the fruit grower. Some of those of importance in New York agriculture which have been studied at the Station and to a greater or less extent brought under control, are carnation rust, potato blights, cucumber blight, a bacterial disease of sweet corn, apple scab, fungi causing decays of stored apples, asparagus rust, and raspberry and blackberry cane-blight.

Department of Entomology.—This differs entirely from the ordinary entomological museum. Collections of insects have been acquired and arranged only so far as they are necessary to a study and demonstration of their economic relations and control. In many cases it is necessary by breeding experiments and otherwise to work out the life history and characteristics of comparatively unknown insects in order to open the way for successfully combating

their ravages, these observations being followed by field experiments in tests of methods, spraying preparations, and so on. The importance and value of the work of this department can be no more efficiently illustrated than by referring to what it has done in studying the life history and means of controlling the San José scale, a pest that at one time threatened the destruction of the New York fruit industry. Many troublesome insects have received attention, among which are the pistol case-bearer, caterpillars feeding upon the foliage of fruit trees, plant lice, the apple fruit worm and various other species.

Department of Horticulture.—Horticulture, broadly defined, deals with the development, culture, growth and commercial qualities and handling of vegetables, fruits and ornamentals, so that this department is many sided in its relations; but it pays most attention to those divisions of horticultural theory and practice which are commercially prominent and important under New York conditions.

This department has under its care and study several thousand varieties of large and small fruits which are growing on the Station farm. It is conducting breeding experiments with certain species of fruits. During several years it has made an important investigation of the self-fertility of grapes. It is now engaged in studying some of the business aspects of fruit growing, such as the management of apple orchards, the commercial value of dwarf apple trees, and the most desirable stocks for American grapes. In the forcing house it has conducted

a long series of experiments in the culture of lettuce with reference to the preparation of the soil and the application of fertilizing materials. The cold storage of fruits both at the Station and in coöperation with the United States Department of Agriculture has received much attention.

Work outside the Station grounds.—The field experiments and demonstrations carried on by the Station extend beyond the Station farm and orchards. The Station is in temporary control in no less than forty-four places in the State of fields, orchards and vineyards where methods of orchard management and of controlling fungus and insect pests are being tested. One experiment involves the control for a period of years of a fine Baldwin orchard of about ten acres, and other experiments are planned to cover a somewhat extended time.

SOME THINGS THE STATION HAS ACCOMPLISHED.

The question is often asked “Of what value is the Experiment Station to practical agriculture?” It may fairly be claimed that the following are among the good results brought about by Station activity :

Studies which have been made of milk and its products have resulted in establishing certain standards of great utility and value in commercial dairying and have shown as could be done in no other way, what are the wastes of dairying processes and the means of avoiding them. The Station has also collected convincing evidence of great financial

importance concerning the storage of dairy products, especially cheese, and has given efficient aid and advice in the matter of controlling certain cheese troubles, notably what is known as red spot. As the dairy interests of this State equal in value yearly over fifty million dollars, these facts alone are of no mean importance.

Much attention has also been given to the study and control of certain fungus pests, such as apple scab, pear blight, cucumber mildew, raspberry cane blight, and other similar plant diseases. It is safe to say that our knowledge of and control over these troubles experienced by the orchardist and fruit grower are largely due to Station effort. A particular instance, somewhat striking, of the financial value of Station investigations of this kind, is the control on Long Island of cucumber mildew, a disease that had nearly broken down the pickle industry. The possibility of this control was first demonstrated by Station experiments. No less striking is the work now in progress by the Station in several parts of the State, showing beyond question the large money gains from controlling potato blight by means of the spray pump.

Of equal importance also have been the investigations with reference to the control of injurious insects. A notable illustration of this is the successful efforts of the Station in pointing out an efficient and available means of controlling the San Jose scale, a pest that at one time was believed to threaten the very existence of the fruit industry of

New York. The financial value of such work on the part of the Station is emphasized by pointing out the fact that New York produces fifteen million dollars worth of fruit annually. Briefly expressed, modern methods in vogue in fruit plantations and orchards in this State have been largely initiated and promoted by Station researches and demonstrations.

The Station has contributed useful information in other directions, among which may be mentioned a knowledge of the character and use of commercial fertilizers and feeding stuffs, reliable descriptions of varieties of orchard and garden fruits and their values, and facts concerning the characteristics and relative values of dairy breeds. In connection with all this the Station laboratories have made contributions to general scientific knowledge along the lines of the composition and nutrition of plants, the nutrition of farm animals, and the constitution of milk and its products.

STATION PUBLICATIONS.

The results and conclusions arrived at by the work of the Station are given to the public in bulletins and annual reports. **The bulletins are in the main of two forms, the *complete* and the *popular*.** The complete bulletins set forth in detail the data derived from the investigations and experiments that are carried on and discusses them from a scientific standpoint, while in the popular bulletins it is sought to convey in a simpler and briefer way the main facts

and conclusions that are believed to be of direct use to practice. Information bulletins and those giving the results of inspection are also published. The annual reports are little more than bound copies of the complete bulletins issued during a year. Any resident of the State may receive the bulletins, free of charge, as they are issued. The edition of each popular and inspection bulletin now numbers between forty and fifty thousand.

