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View in Excellent Commercial Field of Strawberries in New Jersey.

Miss Elizabeth White Is a Horticultural Pioneer

J. HAROLD CLARK

The development of the cultivated blueberry industry has been so much a New Jersey enterprise that it is fitting that it be told in the Horticultural News. Although the blueberry is the newest of our fruit crops, so far as commercial culture is concerned, its development has been phenomenal and even now expansion is limited primarily by lack of plant material.

The first serious publication dealing with blueberry culture was a bulletin entitled "Experiments in Blueberry Culture" published by the late Dr. F. V. Coville of the United States Department of Agriculture in 1910. The publication brought out the importance of growing the blueberry in an acid, peaty soil.

The blueberry situation might have rested at this point for a long time if the bulletin had not been read by Miss Elizabeth White, residing at that time in New Lisbon, New Jersey. Miss White immediately wrote to Dr. Coville and offered to cooperate with him in a breeding project. The offer was accepted, Dr. Coville coming to New Jersey to meet Miss White in March, 1911.

One of the first things that had to be done was to find the most promising wild seedlings to be used for parents in the breeding work. In the summer of 1911 Miss White, working through two agents, Jake Sooy and Alfred Stevenson, offered a dollar each to pickers who could tag bushes of a specified size and take her to them. In addition to the one dollar, the pickers were paid for the time involved in finding the bushes again, usually amounting to half a day's pay. At first the size requirement was set at $\frac{1}{2}$ inch but a little later was raised to $\frac{3}{8}$ inch. Two bushes from the wild were found which produced berries $\frac{3}{4}$ inch in diameter, although both were later discarded because of other faults. One variety, later named Sooy, was discovered in 1911. In 1912, other varieties were brought in including one found in July of 1912 near Chatsworth by Rube Leek. This was later named Rubel and became the leading commercial variety. All in all, an even hundred wild seedlings were brought in by Miss White through the cooperation of various pickers. Besides Rubel, the following were named and planted commercially—Adams, Dunfee, Grover, Harding and Sam.

The plants which were brought in from the wild were usually dug com-



Miss Elizabeth White examining boxes of blueberries

pletely, the stump broken up, and some of the heavier wood put in the propagating bed. Rooted sprouts arising from it were later broken off for plants. The first cuttings at Whitesbog were made in the summer of 1912, although no complete fields

were planted from cuttings for some years.

Probably the first successful field planting of blueberries was made in the spring of 1912 where Miss White's residence now stands. The first planting in which varieties were set in alternate rows for purposes of cross-pollination was made just east of Miss White's home and is still standing.

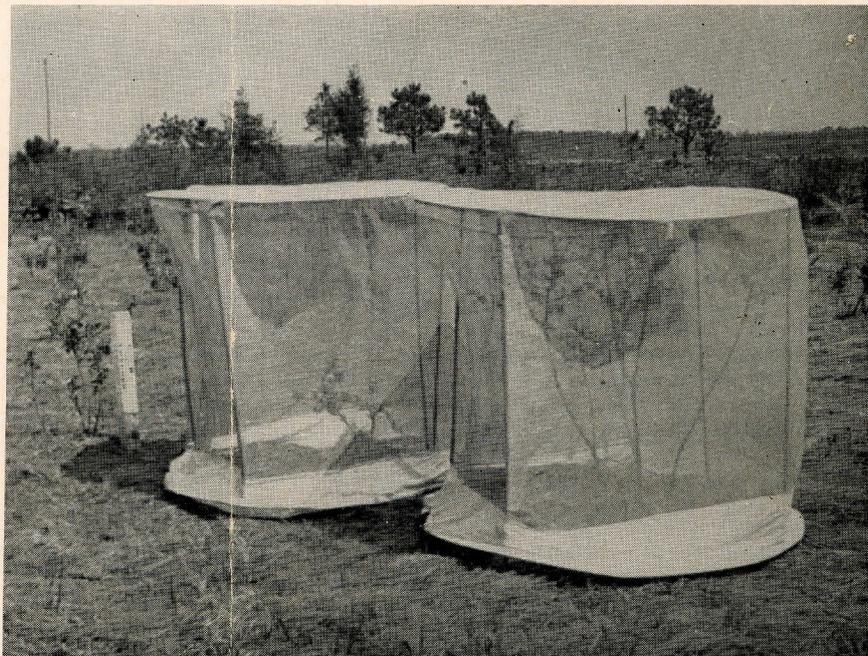
Crosses from Miss White's material were made by Dr. Coville in 1913, the first being Brooks x Sooy.

For a number of years practically all of the blueberry seedlings from crosses made by Dr. Coville were planted at Whitesbog, there being at one time over 50 acres of such seedlings in the field. Most of the present named varieties have been developed from plants grown on the White property.

Starts Own Breeding Project

Beginning in 1928, Miss White started a breeding project of her own and has since raised hundreds of thousands of seedling blueberry plants from controlled crosses. Only a portion of these have actually been set in the field as she practices selection from the time the seedlings are very small, discarding those which are weak or which by their type of

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Blueberry bushes covered with cheesecloth for controlled breeding

Dr. J. H. Clark Resigns

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berries, and is included in the present day recommendations.

Blackberry Breeding

One of Dr. Clark's more recent undertakings is the breeding of blackberries. The object of this program is the development of better commercial blackberry varieties which are adapted to New Jersey conditions. This work is still in its infancy, but at present several selections are being grown at the Horticultural farm. However, all of these selections need further testing before it is certain that they have real commercial value.

Fruit Processing Laboratory

A fruit processing laboratory was organized at the Pomology Department in 1943 under the leadership of Dr. Clark. His first assistant was Miss Gertrude Swanson and since 1944, Mrs. Margaret Okerson.

The work done thus far has included the investigation of methods and procedure in canning and freezing, and the determination of the relative value of numerous varieties and unnamed selections of fruits. The fruits which have received the most attention are strawberries, peaches, and blueberries. Other fruits which have been processed are raspberries, cherries, blackberries, apples, currants, and beach plums.

During the 1945 season Mrs. Okerson processed 1,824 samples of fruit. These fruits are now being tested and rated on a quality basis.

Dr. Clark has made contact with members of the commercial frozen foods industry in an attempt to learn something of the problems involved in commercial processing.

A Station Circular entitled "Preservation of Food Products by Freezing," was prepared by Dr. Clark in 1943. This circular contains suggestions regarding the fundamentals essential in order to secure a quality product.

Small Fruits Council Organized

In 1933 Dr. Clark recommended to the Executive Committee of the New Jersey State Horticultural Society that a Small Fruits Council of Growers be organized. The Council consisting of nine members was appointed by the President of the Society in April of 1933. This Council has already demonstrated its ability to be of service in such problems as selection and distribution of new varieties, price control, and other interests of the small fruits industry.

Beach Plum Investigations

Extensive areas of land in the Coastal Plain region consist of soils too sandy for fruits such as apples and pears. Beach plums, however,



Hundreds of blueberry seedlings from known crosses made by Miss White growing in flats

grow very well on these soils. To improve this fruit, selections from the wild have been made and these wild seedlings have been planted at the Horticultural Farm and a few other areas in the state. Recently some controlled crosses were made in an attempt to obtain better fruits which will merit at least small scale commercial production. The accompanying photograph shows Dr. Clark examining a top-grafted beach plum tree.

Although resident teaching and research investigations have demanded much time and effort, Dr. Clark has made many visits to the farms of small fruit growers during the past 23 years. All of these growers will miss his friendly council and advice, but they and the staff members of the University wish him the best of luck and happiness in his new venture.

A Horticultural Pioneer

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growth impress her as being undesirable.

At the present time there are 50 selections which are being propagated for row tests. These are from crosses made previous to 1940. Some later crosses have been made, those in 1945, for instance, being designed to produce a better variety which will ripen very early in the season.

Born at New Lisbon in the house where the head office of the Jos. White Company is now located, Miss White at an early date went to the present Whitesbog property to assist her father in taking care of pickers' tickets in the cranberry field. Just

back of her present home is the original bog purchased by her father in 1857—a bog of wild cranberry plants.

Miss White has been a keen observer of blueberry characters and it is reasonable to assume that some of the 50 selections now being tested have sufficient good characters to make them important varieties of the future. Even if none of these later seedlings prove to be outstanding, Miss White's contribution to the starting of the blueberry industry still make her as one of the real pioneers of American horticulture. New Jersey takes pride in her accomplishments.

Vegetables Require Water

C. H. NISSLEY

A vegetable plant requires a lot of water to make normal growth. Those who should know tell us that a plant must have from 300 to 700 gallons of water in order to make one pound of plant tissue,—leaves, roots, stems, etc. If the plant is to make normal growth the water must be there when it is needed, right through the season. The larger the plants grow the more water they must have. Many of the troubles in growing vegetables would be automatically taken care of if we could provide that important continuous supply of water.

One of the most important functions of the soil is to act as a reservoir for the storing of water. A well drained deep soil where the roots of vegetable crops can develop to a depth of 20 or more inches should be the goal for every vegetable grower.