quality to those of the Whitesbog varieties, yet they were eagerly purchased at from 30 to 60 cents per quart, wholesale. After deducting transportation and commission charges, the 1919 crop of 300 bushels sold for an average price of about $10 per bushel, the 1920 crop of 500 bushels at an average price of about $12 per bushel, and the 1921 crop at an average price of about $12.50 per bushel. The latter amounted to 300 bushels, only half a normal crop, but even so demonstrates possibilities for Blueberry culture. The frost which injured the Blueberries almost wiped out the Jersey peach crop and took more than half the apples. As the Whitesbog named varieties showed a frost-resistance much greater than the average of the plants under cultivation, the prospect for good crops of Blueberries in poor fruit years seems excellent.

BLUEBERRY CULTURE

Consideration of the conditions under which wild Blueberries thrive is a helpful preliminary to Blueberry culture.

Blueberries require an acid, peaty soil and a water-supply so balanced during the growing season that the roots never dry yet always have air. These requisites are found in widely different situations, for Blueberries abound on mountainsides and hilltops, in swamps and neglected pastures. When found on dry hillsides, the Blueberry areas, by reason of their particular slope in reference to prevailing winds, gather from mist and cloud sufficient moisture to carry the plants through summer drought. In swamps, where the Blueberry picker wades knee deep, the bushes are perched on tussocks, the loose, open texture of which gives the rootlets access to air.

Blueberry plants may survive a season unfavorably wet or dry but crops are uncertain unless the supply of moisture is well balanced. Careful investigation of possible water-supply and drainage should therefore be made before deciding on a location for commercial Blueberry culture. Some locations may naturally have an abundant water-supply and require artificial drainage. For others, anything from a garden hose to an elaborate overhead irrigating system may supply water, while drainage takes care of itself.

When Blueberries are to be grown for profit, a soil which naturally suits them should be chosen. Such soils are abundant, as indicated by the distribution of wild Blueberries and allied plants. In many parts of the country these soils are also cheap because too acid for ordinary agriculture.

THE WHITESBOG METHOD OF CULTURE

As the physical character of wild Blueberry land varies, so may vary the methods of cultivation by which the essentials of acid, peaty soil, constant moisture, and good drainage are maintained.

The following description of the method of cultivating Blueberries at Whitesbog is therefore given, with no thought that it is the only way, or necessarily the best, but that it may suggest to other pioneers the possibility of taking advantage of local conditions.

The Whitesbog Blueberry fields are being developed in connection with older cranberry bogs, on ground a little too high for cranberries and heretofore considered useless. The soil is white sand overlaid with a peaty layer from 2 to 6 inches deep. Before plowing, the land is overgrown with wild Blueberry and other bushes. After plowing, the fields are kept cultivated a year or more to kill the original growth before they are planted.

The plants are set about the last of August, or in early spring. They are spaced 4 feet apart in rows 8 feet apart. It is anticipated that later it may be necessary to move half the plants, leaving the spacing 8 feet each way.

The Blueberry fields are underlaid with a "hard-pan" 2 feet or more below the surface. At a level higher than the fields are reservoirs, from which water percolates through the sandy soil above the hard-pan for a great distance, because the hard-pan prevents its sinking into the ground.

These reservoirs were built for the benefit of the cranberry bogs, and the seepage from them, which now irrigates the Blueberry fields, was wasted. Undoubtedly the swamp water from the reservoirs, clear, brown, and slightly acid, contributes plant-food as well as moisture. Drainage is cared for by lines of tile laid just above the hard-pan.

The resulting balance of moisture and aëration is very successful, except for a few small areas which are still too wet. On them, in consequence, the plants are dead or dying.

Clean cultivation keeps down the weeds, which are not very troublesome on this new land. It also assists in maintaining good ventilation of the soil, so essential to the welfare of Blueberries.

A chemical fertilizer[1], containing approximately 5 per cent nitrogen, 14 per cent phosphorus, and 4 per cent potash, applied at the rate of 500 pounds per acre, per year, has given good results in increased crop and plant-growth.

[1]Further information in regard to fertilizing Blueberries at Whitesbog can be obtained from an article by Chas. S. Beckwith, entitled "The Effect of Fertilizers on Blueberries," which appeared in *Soil Science*, Vol. X, No. 4, October, 1920. Reprints of this article may be obtained from Mr. Beckwith, New Jersey Agricultural Experiment Station, New Brunswick, N. J.

A BIT OF THE GOVERNMENT TRIAL-GROUND AT WHITESBOG

The plants in this field are set 4 by 8 feet. When planted, three years and ten months before being photographed, they had one or two slender stems about 6 inches high and a root ball from a 2-inch pot.

The bush on which the berries are being measured with a Blueberry gauge is carrying a crop of three quarts. If all the bushes bore such a crop it would amount to more than 125 bushels per acre. These plants are babies, but wild bushes have been known to yield half a bushel at one picking and to produce abundantly for more than fifty years.

WILL BLUEBERRIES GROW IN THE GARDEN?

Yes, when their needs are understood and met. Some special preparation of the soil and care of the plants is, of course, necessary, but less than that demanded by many other plants commonly grown in gardens.

Acid peat, such as Blueberries need, may be defined as vegetable matter in an incomplete state of decomposition. Freshly fallen leaves, twigs, old wood and rootlets, dead but still sound, are quite acid. They are also full of plant-food but in a form in which plants cannot use it. As these leaves, twigs, etc., rot they become less acid and the food they contain is released so that plants can use it. When disintegration is nearly complete they lose their acidity. The ordinary processes of cultivation hasten the disintegration of vegetable matter in the soil, causing it to lose its acidity unless the tendency is overbalanced by the chemical composition of the rocks from which the soil is derived, by a cool damp climate or in some other way.

Consequently the soil for Blueberries should be mixed with partially rotted leaves or similar material, which must be prevented from reaching the non-acid stage of disintegration by annual applications of freshly fallen leaves or other sound vegetable matter, the leachings from which will preserve soil acidity. Besides maintaining acidity, annual additions of leaves keep up the supply of plant-food.

Furthermore, a heavy mulch of leaves goes a long way toward maintaining a properly balanced supply of moisture, for it holds water in a porous mass through which air penetrates freely. This is most important where no special system of irrigation and drainage is provided, and it is impractical to cultivate with horse- or motor-drawn machinery.

TO GROW BLUEBERRIES IN THE GARDEN

A location that is *well drained* should be chosen. It is commonly believed that Blueberries like a wet soil. It is true they like abundant moisture provided they are growing in fluffy material, such as moss or loose partially decayed vegetation, but nothing discourages them more than soggy, wet ground. This is because excess water in the soil excludes air and thus prevents root-development or confines it to the immediate surface where the roots are quickly killed by subsequent drought. Because of their need of air, Blueberry roots always develop near the surface, but if well-aërated soil is

maintained, myriads of rootlets grow to a depth of 6 or 8 inches, and the deeper the root development the greater the resistance to drought. Then it is easier to supply water during dry weather than to get rid of an excess during a rainy spell; so *be sure to give Blueberries good drainage.*

Full sun is usually to be preferred, but if such a location is not convenient, partial shade may confidently be tried, as wild plants are found thriving under both conditions.

Pollen from Wild Blueberry bushes, near the selected location will have no detrimental effect upon the fruit of choice varieties, but seedlings grown from such fruit would combine the characteristics of the wild plants with those of the choice varieties.

It is Essential that at least two varieties of Blueberries grow near together, for, as Dr. Coville explains, "When Blueberry flowers are pollinated with pollen from their own bush the berries are fewer, smaller, and later in maturing than when the pollen comes from another bush. Some bushes are almost sterile to their own pollen. The pollen of a plant grown from a cutting is likewise unsatisfactory for the pollination of the parent plant or of other plants grown from cuttings of it. It is important, therefore, that a plantation should not be made up wholly from cuttings from one bush."[2]

Prepare the Soil, if light and sandy, by thoroughly mixing a 6-inch layer of peaty material with the top 12 inches. In heavy soil it is best to dig a trench, 4 feet wide and about a foot deep, and fill it with a mixture of two-thirds sand and one-third peaty material. *Never use lime or stable manure.* For peaty material, partially rotted leaves are recommended because excellent results have been secured by using them. Those which rot quickly, such as maple leaves, do not answer the purpose so well as those which rot slowly, like oak leaves, pine needles, or laurel leaves. The "peat" easiest for many people to obtain is partially rotted sawdust or the partially rotted chips and litter always to be found around an old wood-pile. This is excellent material. Spent or live tan bark, used in connection with a leaf-mulch, is recommended by a prominent rhododendron grower, who says, "it has proved an active agent in producing persistent acid conditions where the soil is not naturally acid." It has been suggested that apple pomace or unsalable beet pulp might be suitable peaty material and it would be interesting to have them tried.

[2] From "Directions for Blueberry Culture," 1916. A new and beautifully illustrated edition of this bulletin is ready for distribution and can be obtained by addressing Dr. Frederick V. Coville, Department of Agriculture, Washington, D. C.

Plants May Be Shipped and Set in early spring, or about the last of August. If the distance is great, and especially if the shipment is to a colder climate, early spring is to be preferred. At that season the plants can safely be kept for weeks, at a low temperature, in the original Whitesbog packings. When plants are received in warm weather, if the soil is not prepared, they may be heeled in where the sun will not strike them. Never permit the roots to dry.

Wild Bushes to be tried under cultivation should be carefully selected and marked while in fruit. Moving is best done after the leaves fall and before the buds start in spring. At the time of digging cut the top off 3 to 4 inches above the surface of the ground, so as to insure a shapely new top of a size to properly balance the cut roots. If it is desired to obtain a large specimen plant quickly, the entire root may be planted in the prepared ground, but if a number of plants are desired the root may be divided. This requires vigorous use of saw and hatchet. The large pieces may be permanently planted in prepared soil but small ones are more easily cared for when planted close together in a nursery bed. Pieces ½ inch in diameter and 3 to 4 inches long may so be used. The pieces should be covered with about an inch of peaty soil. The sprouts which come up through this soil form new roots at their bases. After these roots are well developed each sprout is a perfect plant which, if desired, may be carefully separated from the old root. Thus a hundred or more plants may sometimes be secured from one large wild bush.

Space Blueberries at least 4 feet apart, otherwise the branches will interlace within three to four years. This checks the development of the plants and makes picking difficult.

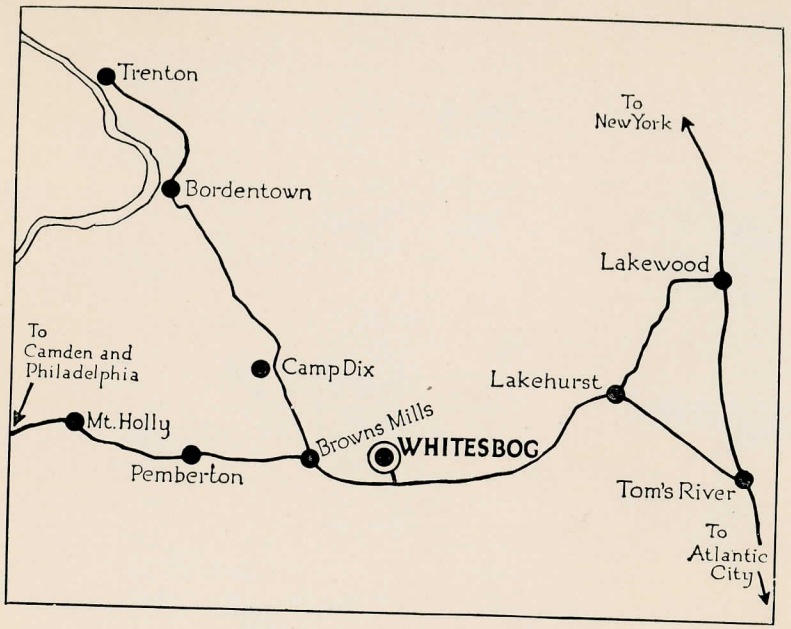
Set the Plants about half an inch deeper than they were in the nursery and water thoroughly.

Mulch, with Peaty Material, an area larger than the roots can possibly cover, taking care not to smother the plants while small. The roots will reach out farther from the base of the plant than the top does above it, and, under favorable conditions, growth is surprisingly rapid.

Maintain the Acidity of the Soil and the supply of plant-food with heavy additions of leaves each fall. After the first season the mulch should be 6 inches or more deep. Never remove this mulch but let it remain the year round and every fall add a new layer.

WATER SHOULD BE GIVEN AS NEEDED. When the foliage retains its rich green color till crimsoned by frost, the supply of water is very nearly correct. If the plants become too dry the edges of the leaves wither and turn brown. When the Blueberry has congenial, peaty soil and the leaves turn red or purplish before frost, the plant is too wet. It is an interesting fact that these leaves turn green again if drainage is promptly effected.

When understood, the needs of the Blueberry are easily met and the successful Blueberry grower has a double reward—the beautiful bushes are worthy to be the most prized ornaments of shrubbery or lawn and they yield wonderfully delicious fruit, especially if they are Whitesbog Blueberry plants.



ROADS TO WHITESBOG

Whitesbog is 4 miles from Browns Mills. The buildings of the village can be plainly seen from the gravel road.

From New York take the train to Camp Dix, where jitneys can be secured for the 9 miles to Whitesbog.

From Philadelphia take the train at Market Street Ferry to Browns Mills, if you wish a jitney; or to Hanover Farms, if you prefer to walk 2 miles.

Good meals and rooms can be had in Browns Mills.

July is the Blueberry month at Whitesbog. The blossoms come in April or early May. October or early November brings the most gorgeous autumnal coloring.

Visit the Blueberries at Whitesbog—you are most cordially invited—but send letters about them to

JOSEPH J. WHITE, Inc.
NEW LISBON, N. J.