

BROOKLYN BOTANIC GARDEN RECORD

*Return to Elizabeth C. White
Whitesbog, N.J.*

PLANTS & GARDENS

Spring, 1947

See page 41

Planting a Slope

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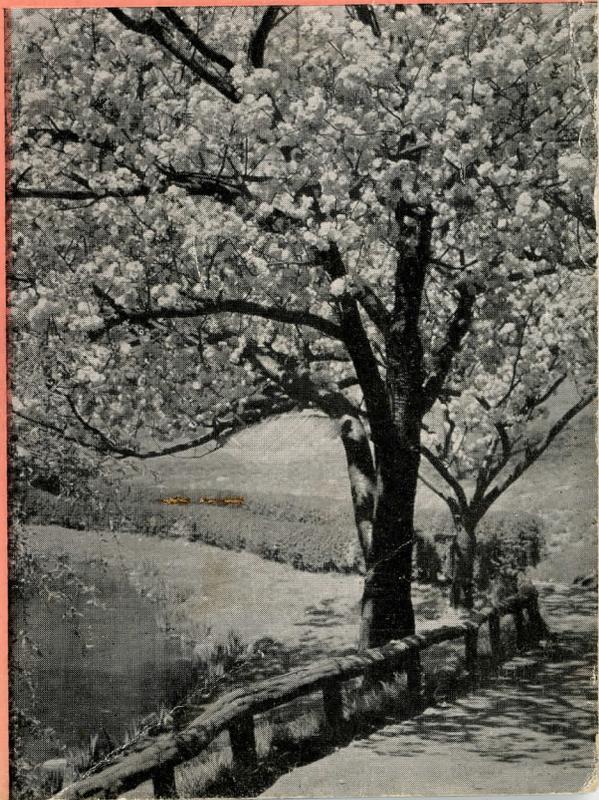
Hybridizing Plants

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Rhododendrons, Azaleas,
Blueberries,
and other Heaths

—

Propagating Arbutus



VOL. 3

NEW SERIES

NO. 1



CULTIVATED BLUEBERRIES

*Their story from the beginning,
by a pioneer*

Elizabeth C. White

IN 1946 the crop of cultivated blueberries in three States, New Jersey, Michigan, and North Carolina, was approximately eleven and one-quarter million pints, and sold for approximately three and one-half million dollars. Of these New Jersey produced nine million pints, Michigan one and one-half million, and North Carolina about three quarters of a million.

Besides these three principal States there are commercial fields in Massachusetts, New York, Delaware, and Connecticut in the East; and in the West the same varieties of blueberries are grown in Washington, Oregon, and British Columbia.

All of this was started at Whitesbog, New Jersey, in the pine-barren section, where cranberries, blueberries, and many other plants of the heath family are native. It was started there in an effort to secure a suitable companion crop on a large cranberry bog.

In the first decade of the century my father and I were planning developments

Dr. Coville and Miss White, 1922. Notice Dr. Coville's "huckleberrymeter," a gauge with round holes to measure the berries; and Miss White's notebook—both important tools.

McFarland photo



Elsie M. Kittredge photo
ry in fruit

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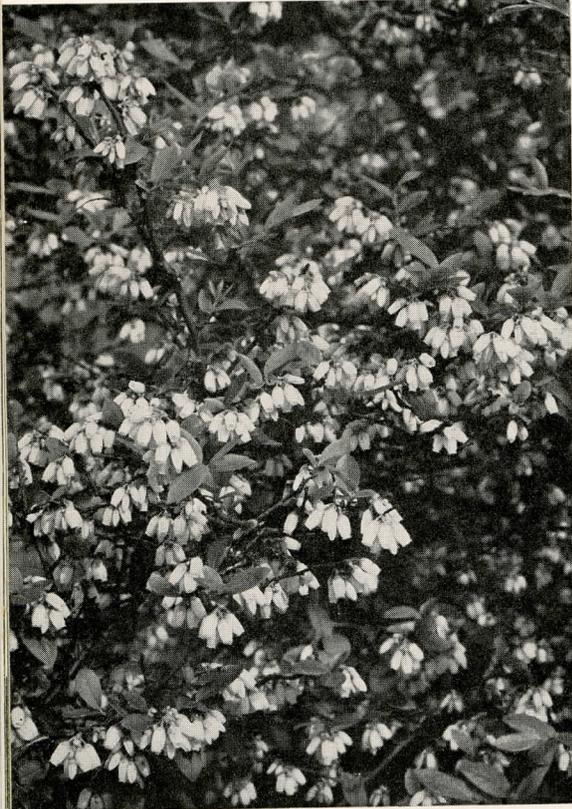
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for The Bog. In 1910 he had his first crop of fifty thousand bushels of cranberries. Wild highbush blueberries (*Vaccinium corymbosum*), which the local people called "huckleberries,"* grew abundantly about the margins of the cranberry bogs. We used to go from bush to bush and judge the quality of the fruit. This one had berries that were too sour; those from the next bush were too

Blueberry bush in flower

Gottscho-Schleisner photo



* Throughout this article the term "huckleberry," as used by the New Jersey pinebarren natives, refers to *Vaccinium*, not to *Gaylussacia*.

mealy in texture; and then we would come to a bush whose berries my father would pronounce "peachy."

We had acres of land that could not be used for cranberries because it could not be flooded—even though there was water running to waste after it had been used for irrigating the cranberries. We needed to stabilize our labor force with work for the slack seasons; and we needed another income crop before the last months of the year, when our cranberries were harvested. Also a second crop might succeed in an off year for cranberries. We knew the need of all fruit growers for a uniform high-grade fruit. Neighborhood farmer tradition said that "huckleberries" could not be cultivated or grown from cuttings. We did *not* know how to begin.

Early Experiments and Cooperation

In my zeal to find new ideas for use at The Bog, I was examining each month the list of new publications issued by the United States Department of Agriculture, and sending for any that promised help. I promptly secured "Experiments in Blueberry Culture," written by Frederick V. Coville and published in the last months of 1910.

I found it fascinating. It was a book of about a hundred pages. It told the reason for many phenomena with which I was familiar, such as why cranberries succeeded best on brown water streams. The brown water was acid. Best of all, it revealed that here was a man who had succeeded in rooting blueberry cuttings. If I could only get to know that man well, I might learn how to root cuttings myself. Conditions for growing blueberries, I knew, were not very favorable about Washington where he had to do his work. He might like to use facilities at The Bog, where wild bushes thrive. My father and I discussed the possibilities. Early in 1911 I wrote a letter to the head of the Bureau of Plant Industry, offering the use of our natural blueberry

land, a small amount of the experiments. Later I learned from Blueberry Culture by Frederick V. Coville many requirements that had been tried in the past.

Thus a close cooperation was established. It is hard to make a bush burn well; but if it is in the right relation to the soil they burn brightly. Coville's relations with the fifteen or eighteen special knowledge men were needed in blueberry culture were equally thrilling.

Blueberry bush



land, a small amount of money to finance the experiments, and my assistance. Later I learned that "Experiments in Blueberry Culture" had brought Dr. Coville many requests for plants; but mine had been the only offer of assistance.

Thus a close cooperation was started. It is hard to make one stick of wood burn well; but if two sticks are placed in the right relation one to the other, they burn brightly. Such were Dr. Coville's relations and mine for seventeen or eighteen years. We each had special knowledge and facilities which were needed in blueberry culture, and we were equally thrilled by each new devel-

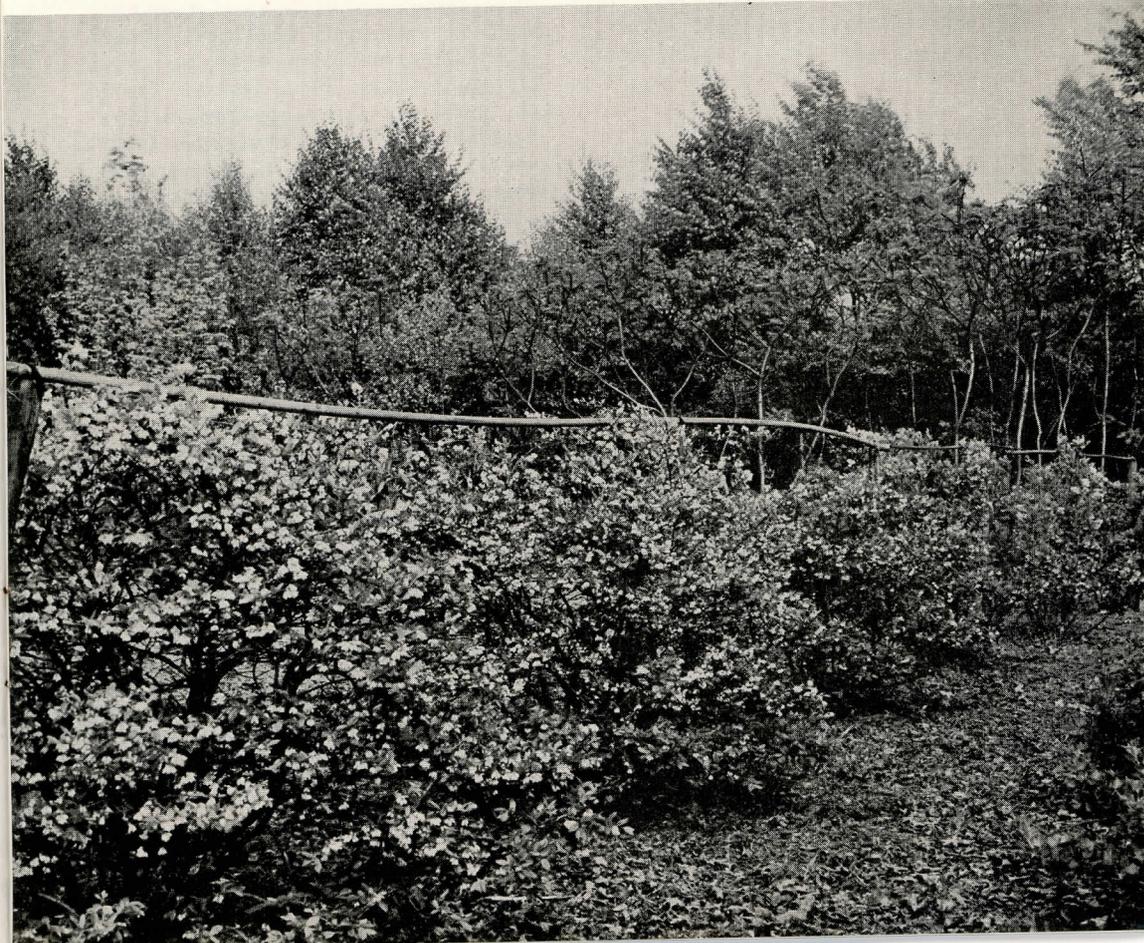
opment. During the course of this cooperation and because of the progress of blueberry culture, Frederick V. Coville had the title of Doctor bestowed upon him by Washington University. Because of advertising the blueberries, a post office was established at The Bog. This necessitated the choice of a name; "Whitesbog" was chosen, passed upon by the United States Geographic Board, and commended by the Post Office Department because it was the only post office of that name in the country.

Earliest Parents

When we started, Dr. Coville had two blueberry plants which he had selected

Blueberry bushes; netting placed over the rod prevents birds from eating the berries

Gottscho-Schleisner photo



from near his summer home at Greenfield in southern New Hampshire. One of these was a specimen of highbush blueberry (*Vaccinium corymbosum*), which he called "the Brooks"; the other was a specimen of lowbush blueberry (*Vaccinium pennsylvanicum* var. *angustifolium*). From these he had a few hundred plants, some grown from cuttings, others from seed. Some of the seedlings were from berries resulting from open pollination in the wild, others from controlled pollinations made in the greenhouse.

The Search for Better Parents

It was at once evident that more, and if possible better, parent material was needed. I undertook to find it, with the aid of the people who lived in the pines where the wild swamp "huckleberries" grew. These people were accustomed to picking the blueberries (which they called "huckleberries") for a living during July and August; and in September and Octo-

ber they helped us pick our cranberries. Consequently I knew many of them well and on a friendly basis.

This search began in a small and informal fashion, by talking to Zeke Sooy, who had been one of our foremen and was then making his living during the season by taking his large family of children into the swamps to pick "huckleberries." In succeeding seasons the search was better organized. Handmade advertisements were put up in the little stores where "huckleberry" pickers traded. Packages for the searchers were prepared, including a measure for the berries, tags for the bushes, and means of preserving the berries for a week or more till they could be brought to me.

Those were still horse-and-buggy days over the sandy roads of the pines and along the edges of "huckleberry" swamps. Though automobiles were becoming fairly common near the cities, they were not used much in the pines; and it might be a week or more before the busy pickers could get the berries to me. Three or four agents were appointed at strategic points. (Alfred Stevenson at Chatsworth, who had grown up at what later became Whitesbog, was the most successful in inspiring the pickers with my enthusiasm.) In this way an area with a radius of twenty miles from Whitesbog was covered.

Some school children took part in the search; but for the most part the finders were experienced woodsmen, men who had the skill to find one special bush among acres of bushes growing hit or miss in the wild. The finders usually received a dollar for marking some especially fine bush that they found in the course of the day's picking, and then were paid a half day's wages for the hour or two required to guide me to that bush. If possible, I visited the bush while it was still in fruit; but I could not do that in the majority of cases. I always had to be guided to a bush when it was to be dug, in the early spring or in the late fall. From 1911 through 1916 there

were thus located an
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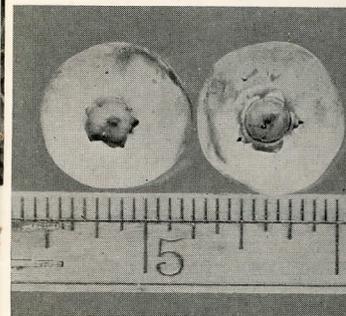
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Blueberries, Rubel variety

McFarland photo



were thus located an even hundred superior bushes.

Propagation

When the bushes were dug they were always dismembered, and usually cut up into 6- to 8-inch pieces which were used for starting new plants. These new plants were set out in rows in a field, where they were grown to fruiting stage; they were carefully watched and compared as to growth and fruiting characteristics under uniform cultural conditions. Of each of the more promising bushes a portion was always given to Dr. Coville for his work in the greenhouses in Washington.

Early Named Varieties

During the summer of 1911 Zeke Sooy found three bushes for me. One of them, which was later known as the Sooy, had its largest berries $\frac{5}{8}$ inch in diameter. Wonderful! The largest berry on the Brooks had been only $\frac{1}{2}$ inch. Many different crosses were made between Brooks and Sooy, and some three thousand seedlings were tried out in the field under my care and close observation. Among these three thousand we found four or five plants which bore berries $\frac{3}{4}$ inch in diameter; two of these were named and extensively propagated. Of these the Katherine was found to have stalk fibers extending into the heart of the berry somewhat like those of a Con-

cord grape. The berry tore so badly when picked that the variety was soon discarded from all commercial fields. It was found later that the Katherine had inherited this characteristic from its Brooks parent.

The other (and first named) variety selected from the Brooks-Sooy cross was Pioneer. It was extensively planted in commercial fields, and has become one of the ancestors of many better varieties that have resulted from continued breeding and close selection.

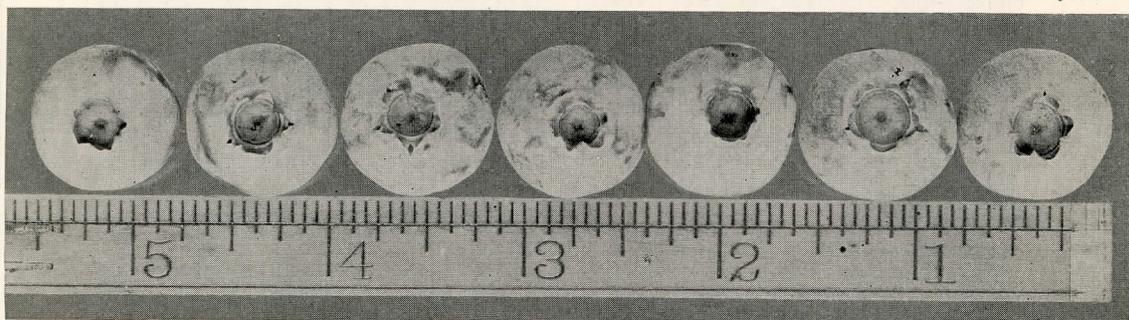
One remarkable characteristic of the Brooks-Sooy cross, a most fortunate circumstance for the infant blueberry industry, was that a few of the progeny were much larger and better than either parent. This characteristic was found in very few of the combinations of the original wild bushes. Through the Pioneer it seems to have been passed on to later generations.

Thus the increase in size of the cultivated blueberry over its wild ancestors has resulted from drastic selection among the wild bushes and among the large number of seedlings that have been tried. Literally hundreds of thousands of good, but not highly superior, blueberry plants have been destroyed. One has to develop great hardness of heart to throw away so many plants on which so much thought and work have been expended.

The finders of the wild plants were

Large berries from one of the Rubel crosses

McFarland photo



encouraged by being told that theirs might prove to be the very best bush ever found; and in most cases the bush was named for the finder. Thus the bush found by Jim Adams was called the "Adams"; that found by Ralph Harding, the "Harding"; and the one found by Theodore Dunfee, the "Dunfee." When, in 1916, Sam Lemmon found a bush with $\frac{3}{4}$ inch berries, light blue and lovely-looking, we thought Lemmon would never do as a name; and so we called it "Sam." This variety never lived up to our early expectations.

I had learned to bud that summer, and was most eager to increase as fast as possible this (as I then thought) finest bush of all. We had no prepared stocks into which to insert the buds. But the plants along the dams at Whitesbog had been trimmed that spring, and here and there the cut "huckleberry" bushes had sent up fine new sprouts. These would serve very well for stocks. I telephoned Alfred Stevenson at Chatsworth, ten miles away, telling him just what kind of wood to cut for the buds; that all the leaves must be cut off; and that a little of the stem must be left, to be used as a handle when the bud was inserted. The bud wood had to be put on ice, carried to the bush, and kept there. I spent two or three days inserting those buds, days when the thermometer registered 100 degrees in the shade; and the work had to be done in full sun.

We planted several acres with plants raised from cuttings made from these bud sprouts. The variety was increased much faster than had been possible with bushes found earlier. The variety "Sam" was used liberally as a parent, but none of its progeny compared favorably with the best. It does not figure as a parent in any of the varieties accepted today.

An important bush was one found by Rube Leek, under the influence of Alfred Stevenson, four years earlier than Sam. The berries were only $\frac{5}{8}$ inch in diameter; and, though it was a nice clean bush, it attracted no especial interest in either

Dr. Coville or myself. I kept notes on the Rube Leek bush for some years. Dr. Coville objected to compound names; he said Leek savored of onions, and Rube seemed no name for an especially aristocratic bush. Dr. Coville suggested that we use Rube with the initial of the last name; and so the name "Rubel" was coined. This variety has become the standard of comparison for all others.

The Rubel variety is simply one wild bush, divided and divided again till it occupies many hundreds of acres. With this exception, all cultivated blueberries are descended from some combination among the two wild bushes selected by Dr. Coville in southern New Hampshire and five of the hundred superior wild bushes which my pine-barren friends located here in New Jersey. Crosses among these seven have been made in many combinations; and have been carried to the second, third, and fourth generation.

All the acceptable crosses today have Rubel in from one to several of their ancestry lines. It has given stability and good balance to its progeny. It is the only one of the original wild bushes tried that is not almost or entirely sterile to its own pollen. Rubel sets good crops when it is pollinated with its own pollen, but the berries are slightly smaller and later than when it is cross-pollinated.

Testing of Seedlings

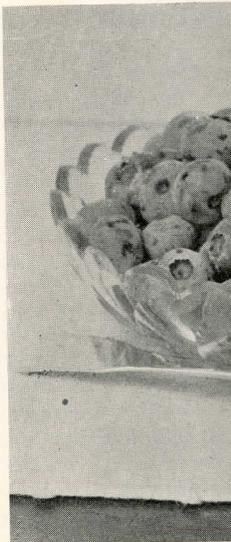
From 1912 to 1928 at least 98 per cent of Dr. Coville's seedlings were tested under my care at Whitesbog. I am familiar with the parentage and results of his seedlings tested since 1928 at Weymouth. I have also produced several hundred thousand seedlings of my own since then.

Of the hundreds of crosses made by Dr. Coville and myself not more than one in ten has produced progeny better than the parents; and of the good crosses not more than one plant in a thousand has been counted sufficiently good for commercial use. It was pure luck that the

parents of Pioneer and of the few blueberry parents a great improvement in a few of their progeny.

My early offer of to carry the expenses of experiments was never accepted. Dr. Coville became a facilities we had to offer tract was made between States Department of my firm of Joseph J. V. blueberry seedlings. B were to receive 50 dollars year, for four years, seedlings that we tested vide all necessary care fruit produced except were needed in Washington of four years, for each the plants were ours right to sell or give of them without permission.

In the early years from these miscellaneous to compete only with market, their sale was



parents of Pioneer and Katherine were of the few blueberry plants which made great improvement in size and flavor in a few of their progeny.

My early offer of a little money to carry the expenses of the blueberry experiments was never accepted. But after Dr. Coville became acquainted with the facilities we had to offer, a formal contract was made between the United States Department of Agriculture and my firm of Joseph J. White, Inc., to test blueberry seedlings. By this contract we were to receive 50 dollars per acre, per year, for four years, for each lot of seedlings that we tested. We were to provide all necessary care, and have all fruit produced except such samples as were needed in Washington. At the end of four years, for each lot of seedlings, the plants were ours; but we had no right to sell or give away any portion of them without permission from Washington.

In the early years, when the fruits from these miscellaneous seedlings had to compete only with wild berries in the market, their sale went a long way to-

wards paying the experimental expenses. But by 1928 we had some acres of Rubel, Sam, Harding, Pioneer, and other uniform varieties. When the berries from the seedlings had to compete with the fruit from these varieties, the twenty acres that we then had planted to seedlings became a liability rather than an asset. We could no longer afford to renew the old contract. Dr. Coville then entered into a similar contract with another cranberry grower at Weymouth, New Jersey.

Commercial Methods

Dr. Coville's success in propagating blueberries was what made me seek him out in the first place; but his methods by no means entirely solved the problem of commercial propagation. We tried many methods, the details of which are too many for this article. A comparatively easy and cheap method for New Jersey was finally worked out by Thomas Windon, who worked with me at Whitesbog for some twenty years. He used a house made of laths placed about as far apart as the width of the lath. Under

Two blueberries—a teaspoonful

McFarland photo



such a house are beds of sand and peat-moss, in which the cuttings are planted. These lath houses are now to be found all through the pine region in New Jersey. Blueberries are now so readily propagated that the older varieties, Rubel, Pioneer, Cabot, etc., are listed in the catalogs put out by Sears Roebuck and Montgomery Ward: a far cry indeed from the days when it was said blueberries could not be propagated.

In 1927, when there were a few other growers, but while 90 per cent of the berries were still grown at Whitesbog, a Blueberry Cooperative Association was organized. Today Mr. Stanley Coville, the eldest son of Dr. Frederick V. Coville, is the manager of the Blueberry Cooperative Association. He gave me the crop

figures at the beginning of this article. The majority of the berries from these three States are sold under the Coop's master brand, Tru-Blu-Berries. Mr. Stanley Coville was the pioneer in developing pruning of blueberries.

The industry of cultivating blueberries has now taken its place with the older fruit industries. It has diseases and insects to combat, problems of organization in selling, and possibilities of greatly improved varieties and methods of cultivation. Besides many growers, workers in the United States Department of Agriculture and in the New Jersey, Michigan, North Carolina, and other State Agricultural Experiment Stations are working on these problems. All success to them and to the industry!



GARDEN CULTIVATION OF BLUEBERRIES

For garden cultivation blueberry plants can be set 4 feet apart in rows 8 feet apart; this is usually sufficient for permanent spacing; but if the plants grow very strongly it may later be wise to take out every other plant in the row, leaving the plants 8 x 8. To provide for cross-pollination it is advisable to plant more than one variety. The ground should have good drainage, and sand and leaf mold; in sections where the soil is not

acid, oak leaves should be added, or if necessary, even aluminum sulfate.

The soil may be cultivated enough to keep weeds down; or a heavy mulch of leaves may be used for this purpose. If a commercial fertilizer is desired, one analyzing about 5-10-5 should be good under most conditions.

Where small quantities of blueberries are grown, the birds are likely to get them if they are not covered with mosquito netting or wire.



AN UNUSUAL SMALL HEATH

A beautiful member of the heath family which is not well known is the spike-heath (*Bruckenthalia spiculifolia*), native in southeastern Europe and Asia Minor. It is very closely related to the true heath (*Erica*). The spike-heath is an evergreen plant, not more than about 6 inches high. It forms large tufts of bright green, covered with pink bell-shaped

flowers, which last for a period of weeks in June and July. It is quite hardy in the North, and succeeds under the same conditions as the true heath, in a peaty, well-drained soil. It has flourished in the Rock Garden of the Brooklyn Botanic Garden for several years. It could also be used as a border in a planting of other members of the heath family.

HOW TO

Something about shrubs and wintergreens, too

Florence L. B.

TRAILING arbutus, (*Epigaea repens*), need of protection and care. Fortunately it can be propagated by cuttings and can be grown by anyone who has a little patience and care of the game.

Requirements

Arbutus is considered a shade plant, but it has been found to grow in soil that is approximately neutral. Acidity is undoubtedly shown by favorable growth of granulated peat-moss, but good drainage, plenty of light, and partial shade are all necessary.

These requirements are essential for the growth of the plant, but a fungus which is found on the roots of healthy plants. In nature, arbutus can be found on edges of oak woods, along the sides of old logging roads, on sloping pastures, especially on the eastern exposure; on hummocks, or close to a rock where it can receive moisture. Large flowers are produced in the spring. Some of the plants have the most numerous flowers in partial shade, but get sun part of the day. For commercial or home growing, a cold frame is desirable.

Cuttings

One may propagate arbutus by cuttings or by seeds. The cuttings root readily in a mixture of sand and peat.