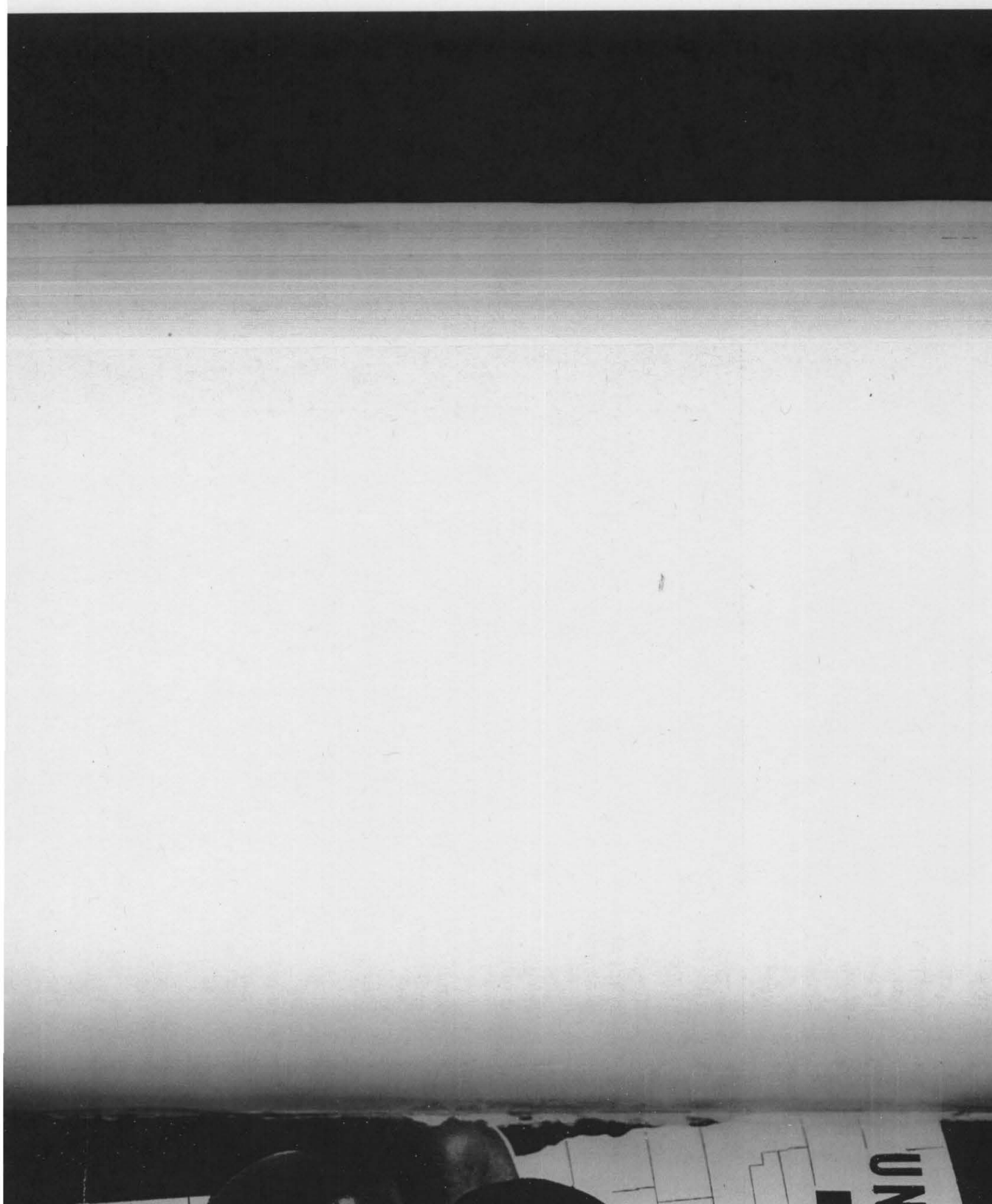






The Haralson Apple is pictured on the cover.

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Acknowledgments

The authors are only a few of the members of the academic staff who have assisted in the breeding and testing of the fruit varieties described and in the preparation of this publication. In particular, the following should be named.

W. G. Brierley, Professor Emeritus. For many years Dr. Brierley was responsible for the distribution of trees and plants in a widespread variety-testing project involving many cooperating growers, Experiment Stations, and Branch Stations in Minnesota and other states and in Canada.

L. C. Snyder, Head of the Department of Horticulture and Superintendent of the Fruit Breeding Farm. Dr. Snyder set up demonstration variety tests in many parts of Minnesota. He also participated actively in gathering field data and in quality tests of both fresh and processed fruit.

Shirley Trantanella, Instructor in Horticulture. Miss Trantanella has prepared or supervised the preparation of hundreds of samples of processed fruits and arranged the samples for panel tests to determine the adaptability of the varieties for various types of processing.

O. C. Turnquist, Associate Professor and Extension Horticulturist. Dr. Turnquist has cooperated in the cooperative variety tests and in the panel testing of quality and general value of both fresh and processed fruits.

J. D. Winter, Associate Professor in charge of the Food Processing Laboratory. Professor Winter has supervised the extensive panel testing program to determine the quality and value of the fruits for various methods of processing. He also is Secretary of the Minnesota Fruit Growers Association. In that capacity he has collected much information regarding the behavior of the new fruits in the orchards of growers.

Any complete history of the Fruit Breeding Farm would also have to mention many other individuals. M. J. Dorsey was in charge of fruit breeding from 1911 to 1921 and J. H. Beaumont from 1921 to 1928. Ernest Angelo was a member of the fruit breeding staff from 1929 to 1938. Likewise there is a lengthy list of research assistants and U. S. Department of Agriculture field agents, and many skilled employees at the station, some with service ranging from 20 to 35 years.

There are also the many experiment station staffs and individual fruit growers throughout the United States and Canada who cooperated in the testing of selections under trial. And such organizations as the Minnesota State Horticultural Society, the Minnesota Nurserymen's Association, the Minnesota Fruit Growers' Association, and similar groups have always given great help to the overall program with their encouragement, cooperation, and enthusiastic support.

Fruit Varieties Developed at the Minnesota Fruit Breeding Farm

W. H. ALDERMAN,¹ A. N. WILCOX,² AND T. S. WEIR³

BREEDING NEW VARIETIES of fruit to meet the extremes of our mid-continental climate is scarcely a new venture for the University of Minnesota. Fifty years have passed since the state legislature authorized establishment of the present Fruit Breeding Farm at Excelsior. And before that were the now-discontinued "Minnetonka Farm" (1878-89) and the "Owatonna Station" (1887-1925). In one way or another, the University has been supervising fruit breeding experimentation since 1878.

If the earlier attempts at Minnetonka and Owatonna were not entirely successful, the efforts to further fruit breeding have been more than justified by the success of the Excelsior station. The Haralson apple, the Latham red raspberry, and the Red Lake currant are known to all Minnesota growers—and widely grown in other areas of the United States and Canada.

Those are but three of over sixty new varieties of tree and small fruits introduced to date by the University's Fruit Breeding Farm. In the annual *Recommended Fruit List for Minnesota Planting* issued by the Minnesota State Horticultural Society, some 40 percent of all the varieties listed are from the Excelsior station, constituting about 60 percent of all the fruit acreage in the state.

EARLIER FARMS AT MINNETONKA AND OWATONNA

From the homesteading days, the Minnesota State Horticultural Society

(established 1866) encouraged citizens of the new state to find fruit varieties suitable to Minnesota. Standard Eastern varieties proved largely unsatisfactory, but the growing of seedlings—spurred by prizes offered by the Society and its distribution of promising seed—eventually produced several winterhardy varieties. One of the outstanding successes was scored by pioneer Peter M. Gideon.

From the thousands of seedlings grown on his farm near Lake Minnetonka, Gideon produced the famous Wealthy apple, introducing it to the public in 1868. The success of the Wealthy apple within the next 10 years led directly to the Minnesota legislature's approval of state-supported experimentation in fruit breeding. (See Appendix II.) Authorized by an act of March 8, 1878, the Board of Regents of the University acquired 116 acres of land near the Gideon homestead. Governor John S. Pillsbury then appointed Gideon superintendent of the new "State Experimental Fruit Farm."

¹ Head of the Department of Horticulture and Superintendent of the Fruit Breeding Farm, University of Minnesota, until retirement on June 30, 1953.

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(Commonly called "The Minnetonka Fruit Farm.")

During the next 11 years, Gideon grew and tested many varieties of apples but produced no more significant introductions. In 1888 he asked to be allowed to retire, being 71 years old. As a result, the legislature authorized the University to close the project and sell the property.

Two years previously, however, the legislature had also acted to establish "an experimental fruit, forest and ornamental tree station" on the "state school farm" at Owatonna. (See Appendix II.) This was also placed under the general supervision of the University Regents.

E. H. S. Dartt was appointed superintendent at Owatonna in 1887, serving until his death on January 31, 1903. Dartt established variety trials and cultural studies, and grew a number of seedling apples. He was succeeded by the late Thomas E. Cashman. Cashman remained in charge until the Owatonna Station was discontinued on July 1, 1925.

THE EXCELSIOR STATION

While the efforts to further fruit breeding through the Minnetonka and Owatonna farms had not achieved the hoped-for results, the legislature apparently felt that the experience and knowledge gained there justified a third attempt. In 1907 it voted \$16,000 to the University to purchase land suitable for a new fruit breeding station, and provided an annual appropriation of \$2,000 for operating expenses. (See Appendix II.)

Prof. Samuel B. Green, head of the University's Department of Horticulture, aided by a committee from the State Horticultural Society, selected the present site near Excelsior in the summer of 1907. Charles Haralson, an associate of Dr. N. E. Hanson of South Dakota in fruit breeding work, was appointed superintendent. Active work in fruit breeding was started at the present University of Minnesota Fruit Breeding Farm in the spring of 1908.

On Charles Haralson's retirement in January 1923, W. H. Alderman, chief of the Division of Horticulture was given the additional title of Superintendent of the Fruit Breeding Farm. Fred E. Haralson, a brother of Charles Haralson, was designated Assistant Superintendent, serving until he retired on June 30, 1946. Associate Professor T. S. Weir of the horticulture staff succeeded Fred E. Haralson and is presently the assistant superintendent of the farm.

When W. H. Alderman retired on June 30, 1953, the University selected Dr. Leon C. Snyder (then Extension Horticulturist) to succeed him as departmental head and superintendent of the farm. At this time Dr. A. N. Wilcox was given the responsibility for directing the fruit breeding program.

The original area of the Fruit Breeding Farm, 77.89 acres, has grown to approximately 230. In 1920, 31.98 adjoining acres were purchased, and in 1931 a 120-acre farm a mile and a quarter to the east was acquired.

Since July 1938, the U. S. Department of Agriculture has cooperated with the University's Excelsior station as part of the National Fruit Breeding program. That cooperation is carried on through the Division of Fruit and Vegetable Crops and Diseases of the U.S.D.A. Federal funds of \$1,000 annually provide for part-time employment of U.S.D.A. field agents to assist with fruit breeding work in Minnesota.

SCOPE OF THE PROGRAM

Science may accelerate natural cycles to some extent, but breeding, selecting, and testing new fruits is not a job for the impatient. Since active work did not begin at Excelsior until 1908, the official introduction of 11 new varieties in 1920 represented truly rapid progress. Among these was the Latham red raspberry, at one time grown more extensively in North America than all other varieties combined and still the leading variety in many areas.

A long list of tree and small fruit introductions have since followed. Several, promising at first, failed to make good. Others were superseded by later and better varieties, after brief periods of popularity. But some have proved to be outstanding, in themselves justifying the public support Minnesota has given fruit breeding experimentation—at one location or another—for nearly 80 years.

Three (besides the Latham raspberry) should be named. The Haralson apple (a 1922 introduction) has replaced the Wealthy as the most extensively planted variety in Minnesota. The Red Lake currant (introduced in 1933) holds first place among American varieties, and is attracting favorable attention in Europe. And the Beacon apple (introduced in 1936), now just getting into significant commercial production in Minnesota, has become so popular that the demand has quickly exhausted available planting stock for the past 3 years.

The introductions from the Univer-

sity of Minnesota Fruit Breeding Farm to date can be classified into 12 groups. Those are summarized here.

Groups of Fruits and Ornamentals	Number of Varieties
Apple	12
Apple-crab hybrid	1
Cherry	3
Cherry-plum	3
Currant	2
Gooseberry	1
Grape	4
Pear	3
Plum	20
Red raspberry	2
Strawberry	10
Ornamentals	3
TOTAL	64

The following pages give the history, description, and a more complete evaluation of the 64 varieties introduced. They may be found under the general sections on "Tree Fruits," "Small Fruits," and "Ornamentals." Citations of the original publication of each varietal name are given in Appendix I.

Tree Fruits

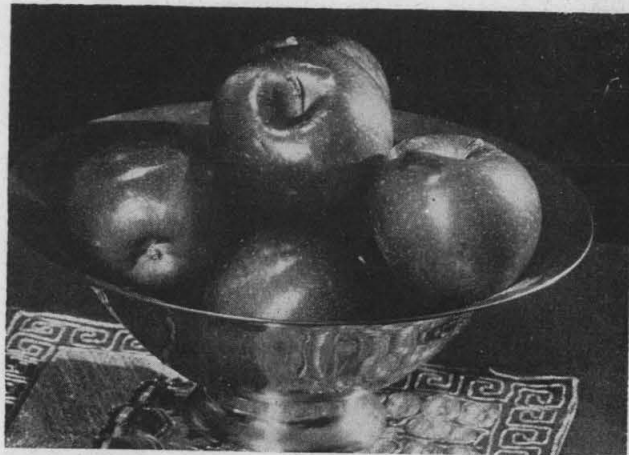
APPLES

Beacon. Minn. No. 423. Malinda open pollinated. Introduced 1936.

This attractive all-red, late summer variety has aroused widespread interest since early plantings have come into production and the fruit has been selling at premium prices. Its importance for home and commercial planting is best indicated by the following comparison with Duchess.

Beacon is equally hardy and productive; the tree is larger; fruit ripens nearly as early; it is much better colored; drops easily but responds to stop-drop sprays; should be

color picked about three times; has better dessert quality; and keeps longer in good condition. It is similar in sus-



Beacon Apple

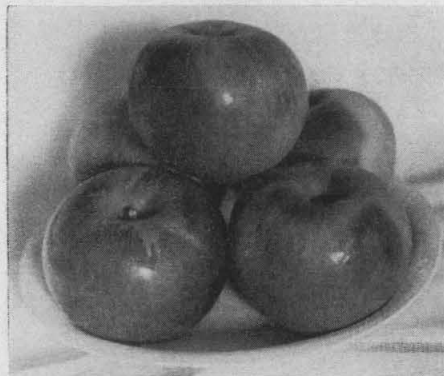
ceptibility to fire blight and scab but much more susceptible to cedar rust.

The tree is upright-spreading with round head, tends towards annual production. Fruit is evenly distributed throughout the tree, does not cluster; size medium; form round to slightly round-conic; color attractive deep red, usually over entire fruit; dots prominent; stem medium; cavity medium-deep, flaring; basin medium, slightly wrinkled; calyx closed, tube funnel-form; flesh yellowish, firm, medium-tough; skin thick, tough; flavor subacid; quality good for fresh and culinary use.

Fireside. Minn. No. 993. Parentage unknown. Introduced 1943.

Following its introduction in 1943, Fireside was widely planted in both home and commercial orchards. It proved to be highly productive and popular with consumers as a dessert fruit because of its rich, nonacid (subacid) quality. It is late in ripening, the fruits are sometimes variable in size and in northern sections may be lacking in color development. The tree is moderately susceptible to scab and fire blight, slightly susceptible to cedar rust.

The tree is large, vigorous, hardy and productive; habit is moderately spreading, developing a slightly flattened head. The fruit is large, roundish to slightly oblate; the color when well



Fireside Apple

developed is a bright, attractive medium-red, lightly striped or splashed with dark red, one-half to almost completely covering a yellow ground; dots small, russet; stem slender, medium length; cavity deep, flaring, greenish; basin medium to deep, medium-wide; calyx closed to nearly closed, tube conic; core small; skin medium-tough; flesh yellowish, firm, medium-tough, medium-juicy; flavor very rich, pleasant mild subacid; quality excellent for eating, fair for culinary use, season November to April.

Folwell. Minn. No. 237. Open pollinated seed from selected seedling of Malinda open pollinated. Introduced 1921.

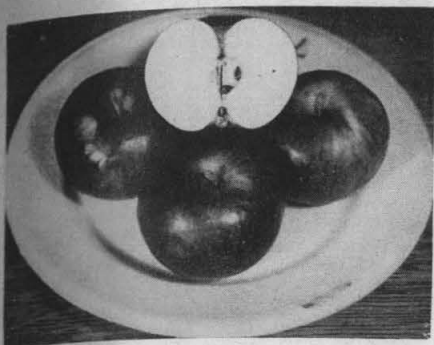
A very large fruited fall variety of good dessert and culinary quality not now on the recommended planting list but still grown in home orchards. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Haralson. Minn. No. 90. Malinda open pollinated. Introduced 1922.

Haralson is an all purpose, red winter variety which has become the most widely and extensively grown of all apples introduced from the Minnesota Fruit Breeding Farm. A recent survey of commercial orchards in Minnesota indicates that it is now the leading variety in this state from the standpoint of acreage planted.

Haralson is hardy and highly productive with a marked tendency to biennial bearing. The habit of setting fruit in clusters and overloading in alternate years usually can be corrected by chemical thinning. It is moderately susceptible to scab, but only slightly susceptible to fire blight and cedar rust. Under some conditions, the fruit tends to develop excessive russetting.

The tree is hardy and vigorous but relatively small in size of head; the natural form is pyramidal with a strongly developed central leader and wide angled lateral branches. The fruit is medium in size, round conic; color a bright, attractive red; dots large, green-



Lakeland Apple

ish russet, moderately conspicuous; skin medium-tough; stem medium; cavity medium-deep, rather narrow; basin medium; calyx closed, tube conic; flesh nearly white, firm, medium-tender, crisp, juicy; flavor pleasant, mildly acid; quality fair to good for eating fresh, and very good for sauce, pies and baking; season October to March.

Lakeland. Minn. No. 978. Malinda open pollinated. Introduced 1950.

Lakeland is too recently introduced to have demonstrated its value in Minnesota orchards, but it possesses four characteristics which are highly important in a commercial apple variety. It is an annual bearer; has an attractive all-over red color; has a non-clustering fruiting habit and adheres well to the tree at harvest time. It ripens a little later than Wealthy and keeps longer in storage. It is susceptible to cedar rust but only moderately susceptible to fire blight and scab.

The trees are hardy, only moderately vigorous while young but older trees become large, strong, spreading, well shaped and productive. The fruit is medium in size, oblate to roundish oblate, sometimes obscurely angled; color bright, attractive medium-red, three-quarters to solid covering, obscurely striped; stem short, medium-thick; cavity medium-deep, flaring; basin medium, moderately furrowed; calyx closed, lobes often large and foliar; tube urn-shaped; core closed;

skin medium-tender; flesh light, creamy yellow, sometimes lightly tinged with red; texture fine-grained, medium-tender, juicy; flavor pleasantly mild acid changing to subacid; quality good for dessert and very good for sauce and pies, since the cooked slices hold their shape but are not tough; season of use September 15 to January.

Minjon. Minn. No. 700. Parentage unknown but probably Wealthy x Jonathan. Introduced 1942.

Minjon, as the name suggests, resembles the Jonathan in many fruit and tree characters. In size, color and form the fruits of these varieties are very similar. However, Minjon matures about 3 weeks earlier and the flesh usually is stained with red to some degree. On the market it offers successful local competition to the first Jonathans shipped in from southern and western orchards.

A fault of Minjon is a natural tendency to set fruit in clusters and overload, but fortunately it responds readily to chemical thinning sprays and the difficulty is easily corrected. The variety is hardy and productive and only moderately susceptible to scab, fire blight and cedar rust.

The young trees are vigorous and rapid growers but the mature tree is only medium in size with a round head and slightly drooping branches. The fruit, like the Jonathan, is medium to below in size, roundish, slightly flattened at the ends; color solid bright,



Minjon Apple

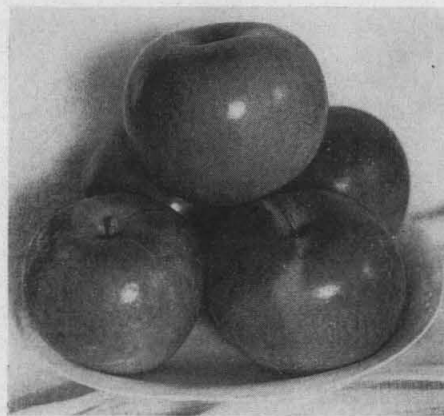
attractive dark red; stem medium with good adherence; cavity narrow and deep; basin medium in size, abrupt and slightly furrowed; flesh yellowish with a red stain varying from a mere tinge beneath the skin to a prominent coloration extending nearly to the core in some fruits at full maturity; texture firm, medium-coarse, crisp and juicy; flavor sprightly acid at hard-ripe stage but soon changes to a pleasant tartness; quality good for fresh use and very good for culinary purposes; season of use from early September to January.

Minnehaha. Minn. No. 300. Malinda open pollinated. Introduced 1920.

A medium-sized, oblate, red, late fall and early winter variety not now available from nurseries nor recommended for planting. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230. 1926.)

Oriole. Minn. No. 714. Parentage unknown. Introduced 1949.

Oriole is a large summer apple of highest quality for both cooking and eating. It is nearly as winterhardy as Duchess and ripens almost a week earlier. It is one of the best varieties of its season for the home orchard, but because of tender flesh requires careful handling for market use. It is of medium susceptibility to scab, cedar rust, and fire blight.



Prairie Spy Apple

The tree is medium in size, vigorous, upright, branches slightly willowy, productive with tendency to annual bearing. The fruit is large, roundish to roundish-conic; striped and splashed with attractive red over yellow-orange ground; stem medium; cavity and basin medium; flesh creamy white, very tender, fine-grained, juicy, aromatic, subacid; quality excellent for fresh and culinary use, cooks well a week before ripe.

Prairie Spy. Minn. No. 1007. Parentage unknown. Introduced 1940.

When this variety was introduced it attracted much attention as a high-quality winter apple adapted to both home and commercial orchards. In acres planted it ranked sixth among varieties grown in Minnesota in 1952. Grower opinion as to its ultimate value has not yet crystallized. Points in its favor are good production, good keeping quality in common storage, good tree type and large attractive fruits of excellent dessert and cooking quality.

Unfavorable points are late tree maturity, which has led to winter injury under some conditions; a lack of good adherence at harvest time; a tendency to produce fruit of variable size with too many small ones; and a tendency to scald in cold storage at temperatures below 35° F. or 36° F. Removal of "weak wood" by pruning and the use of blossom thinning and stop-drop sprays will correct some of these faults. The variety is somewhat resistant to cedar rust and medium-susceptible to fire blight and scab.

The trees are vigorous with an upright habit when young but develop a round or spreading head at maturity. The fruit is medium to large, roundish conic; color about 50 percent bright attractive red over yellow; stem short; cavity wide, flaring, and frequently marked with an outspreading patch of greenish russet; basin medium; calyx closed; calyx tube broad; flesh creamy white, medium fine-grained, crisp, medium tender; flavor sprightly subacid, rich, pleasant; quality is excellent for

fresh and culinary purposes; season of use October to April.

Redwell. Minn. No. 638. Scotts Winter open pollinated. Introduced 1946.

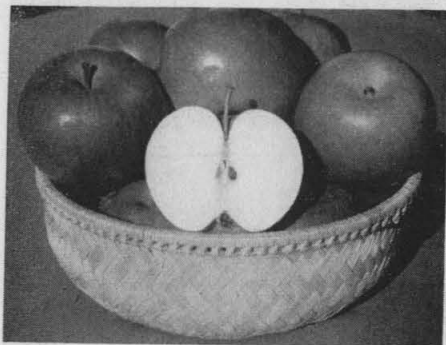
Many fruit growers were testing Redwell before it was commercially introduced, with the result that a fair volume of fruit moved to market in 1951 and 1952. Consumer acceptance of this variety was very favorable and it is believed that orchard plantings will be increased.

Redwell has four important characteristics for a commercial variety: annual bearing, attractive red color, uniform distribution of fruits, and strong adherence to the tree at harvest time. It seems to be one of the hardiest of Minnesota introductions, but it ripens late and its northern range may be limited by length of season. Susceptibility to scab is medium, and to fire blight and cedar rust slightly above medium.

The trees are very hardy and vigorous but develop to only a medium size with roundish head and slightly drooping branches. Apples set singly on terminals of shoots and long spurs and are so well distributed that no thinning is required. The fruit is medium to above in size, roundish to slightly oblate, usually fully colored with bright medium-red overlaid with a thin bloom; stem long, medium-thick; cavity medium; basin wide, medium-deep; calyx partly open, lobes long, slender; tube short conic; skin thin, medium-tough and with a smooth satiny-like finish; flesh yellowish-white, medium fine-grained, firm, tender, medium juicy; flavor pleasant mild subacid; quality good for eating, baking or sauce and fair for pies; season of use mid-October to January.

Victory. Minn. No. 396. McIntosh probably open pollinated. Introduced 1943.

In many respects Victory resembles its McIntosh parent. It has the characteristic McIntosh flavor; tender, white flesh; vigorous spreading tree. Its some-



Redwell Apple

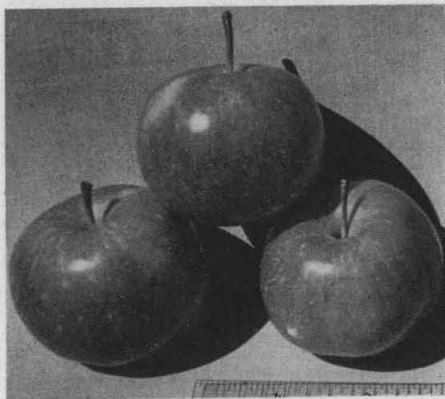
what greater acidity contributes to its cooking quality without detracting from its dessert quality. It is more productive, is a longer keeper, has a shorter stem, and is a little more winter-hardy. Faults of Victory are a shape a little too flat and tendency to green color around the stem.

The trees are medium in size, hardy, vigorous and very productive; growth is spreading, forming a broad head. The fruit is medium to large, distinctly oblate; color bright attractive medium-red except for a greenish star-shaped pattern around the stem; dots numerous, large, yellowish with russet center; stem short and medium-thick; cavity wide and shallow; basin wide and medium-shallow; calyx usually closed, tube funnel-shaped; flesh white, fine-grained, tender, juicy, aromatic; flavor similar to McIntosh except slightly more acid; quality excellent for fresh or culinary use, especially good for salads because the slices retain their fresh white color longer than most varieties; season of use. October to March.

Wedge. Minn. No. 207. Ben Davis open pollinated. Introduced 1921.

Although never extensively planted this variety is still of interest because of its hardness and adaptability to northern Minnesota.

The tree is very large, vigorous and productive. The fruit is very large; color bright red, very attractive; qual-



Chestnut Apple-Crab

ity fair for dessert but excellent for baking and good for sauce and pies. Season of use late September to January. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230. 1926.)

APPLE-CRAB HYBRID

Chestnut. Minn. No. 240. Malinda open pollinated. Introduced 1946.

Chestnut is presumably a natural hybrid between Malinda and some variety of crab. The tree retains the vigor, hardiness and productivity of the crab while the fruit resembles a small well flavored apple. It can be grown successfully in regions where standard varieties of apples winter kill, but it deserves a place in any home orchard because of the excellent dessert and culinary qualities of its fruits. In limited amounts, it meets a ready sale in local markets. The variety is resistant to cedar rust and only moderately susceptible to scab and fire blight.

The trees are medium in size, vigorous, strong-crotched, and develop a wide spreading to flattened head. The fruits are large for a crab, averaging about 2 inches in diameter, oblate; color light red over yellow ground, often russeted giving an attractive reddish-bronze effect; stem long, slender; cavity deep, medium-wide; basin deep, wide; calyx closed, tube short funnel-form;

flesh yellow, firm, crisp, fine-grained, juicy; flavor pleasant subacid; quality very good for dessert and for sauce, pies, and pickles. Not recommended for jelly. Season of use from about September 1 to November 15.

CHERRIES

Nanking or Chinese Bush Cherry.
(*Prunus tomentosa*)

Orient. Minn. No. 63. Self-pollinated seedling of a Nanking Cherry obtained from O. M. Jensen of Albert Lea, Minnesota in 1925. Selected in 1940 and introduced in 1949.

Orient and other Nanking cherries are in the novelty class. They make an interesting addition to the home garden both for their fruit and their ornamental qualities. The pinkish white bloom comes very early in the spring and is followed by attractive foliage, the leaves being dull rugose above and heavily pubescent beneath. The bright red fruits add a splash of color during the short period of maturity in early summer.

Orient is very vigorous and may be grown as a bush or small tree reaching a height of about 7 feet. Unlike many Nanking cherries, this variety is self-fertile, but fruit setting may be aided at times by cross-pollination when weather conditions are unfavorable. The fruits are borne on very short stems in clusters or "ropes" along the branches. When the fruit is picked, the stems remain attached to the tree.

The cherries are a little more than ½-inch in diameter, bright, attractive medium-red; the flesh is meaty, juicy and of a pleasant subacid cherry flavor; the stone is small, long oval, and free; season early July. The fruit is of good quality when eaten fresh or used in jelly; very attractive to birds.

Pie or Sour Cherries. (*Prunus cerasus*.)

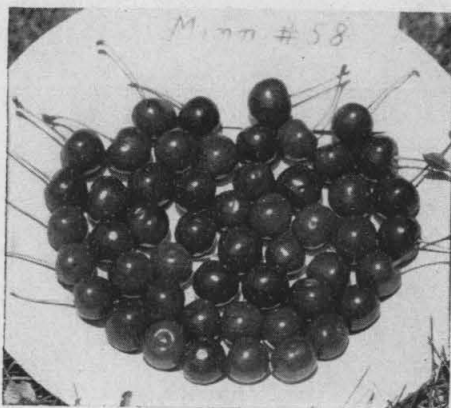
Meteor. Minn. No. 66. Montmorency x selection of Russian cherry. Introduced 1952.

The male parent of this variety was a very hardy, small-fruited, medium-dark-red, unnamed cherry obtained from the Dominion Agricultural Experiment Station, Morden, Manitoba, Canada. It had been selected from seed which that station had received from the late A. P. Stevenson of Morden, who had been growing seedlings from the Russian varieties, Vladimir and Shubianka.

This selection crossed with Montmorency combined some of the qualities of the most extensively planted pie cherry of the United States with those of one of the most winterhardy sour cherry stocks available to American fruit breeders. It is believed that Meteor together with Northstar will make possible the growing of good quality pie cherries in Minnesota and other Northern districts.

The tree of Meteor is a strong and vigorous grower with an upright and moderately spreading habit. The unusually large leaves produce a dense and luxuriant foliage that apparently is partially resistant to leaf spot. The variety is very hardy and productive.

The fruit, which is similar to Montmorency, is large, roundish-oval, blocky, flattened at the ends; apex slightly depressed; cavity medium; suture a faint line; stem medium; color a very attractive clear, light, bright red; skin thin and tender; flesh a light, bright yellow, medium-firm and medium-juicy; flavor a pleasant mild acid; quality pleasant for fresh use and makes good pie and



Northstar Cherry

jam with bright and attractive color; stone small, long oval and very free, fruit ripens in mid-season, (mid-July at Minnesota Fruit Breeding Farm).

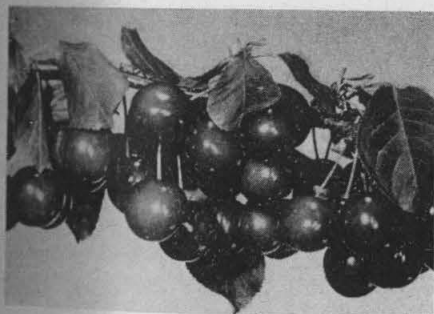
Northstar. Minn. No. 58. English Morello x unnamed selection from Yugoslavia. Introduced 1950.

In 1918 Professor C. P. Bull of the University of Minnesota was in Serbia (now Yugoslavia) and found cherries growing successfully on the Monastir Plains where they survived winter conditions comparable to those in Minnesota. He provided the Fruit Breeding Farm with seed of these cherries and the resulting seedlings did prove winterhardy.

A selection, Serbian Pie No. 1, was crossed with English Morello in 1933. Only two seedlings survived to produce fruit in 1942 when No. 58 was selected for propagation and further testing. It proved to be a regular and consistent bearer of excellent fruit and was introduced in 1950. The name seems appropriate since Minnesota is the "North Star" state.

The tree of Northstar is small in stature, only about 7 feet tall, but it is vigorous, productive and self-fertile so that cross pollination is not essential for fruit setting. The variety appears to be resistant to leaf spot and brown rot.

The fruit is of Morello type, about $\frac{3}{4}$ -inch in diameter, roundish heart



Meteor Cherry

shaped with slightly depressed apex; cavity of medium depth and width; suture an indistinct, slightly depressed line; stem medium in length and slender; color at first a bright red, but changes to a dark, glistening mahogany red at full maturity; flesh juicy, tender and meaty and of a yellowish-red color changing to dark red as maturity advances; flavor a pleasant, somewhat spicy acid; both fresh and frozen fruits make good pie, jam and jelly but the color is somewhat dark; stone small, roundish with a slight ridge and easily removed. The fruit ripens early July at the Fruit Breeding Farm and holds on the tree in good condition for about two weeks.

CHERRY-PLUMS

Nicollet. Minn. No. 144. Parentage uncertain. Introduced 1924.

Doubt exists as to the true parentage of Nicollet and Zumbra. The records indicate that originally an unknown variety of black sweet cherry (*P. avium*) was pollinated by pin cherry (*P. pennsylvanica*) and that one seedling was grown which fruited in the field in 1911 and died. Open-pollinated seed from this tree was saved and planted in 1912, producing a number of seedlings from which these two varieties were selected.

Undoubtedly, Sand Cherry (*P. Besseyi*) or a Sand Cherry hybrid entered into the parentage, either by accident in the original cross or as the pollen parent in 1911. No description was made of either the tree or fruit of the original cross. Positively identified characteristics of Sweet Cherry or Pin Cherry have never appeared either in the first open-pollinated generation, or in subsequent generations in which Nicollet or Zumbra have been used as parents. All such seedling populations have been typical of Sand Cherry crossed with various species of plum.

The tree is small, bush-like, finely branched; leaves small; one-year shoots conspicuously reddish color; flowers

small, very numerous but many have abortive pistils especially on weak wood. Fruit set is poor and productivity low. The fruit is small, roundish, resembling sour cherries; cavity very small; suture a line; stem short, slender; skin thin, medium-strong; color dull but attractive cherry red; flesh greenish yellow, medium-firm, tender, mildly sour, cherry-like in flavor and texture; quality good; stone small, roundish oval, free; ripens mid-season. A good pollinizer for cherry-plums but no longer recommended for planting.

St. Anthony. Minn. No. 145. Parent varieties unknown (probably *P. besseyi* x *P. salicina*). Introduced 1923.

St. Anthony is a very productive cherry-plum with dark red flesh. It has been superseded by better varieties and is no longer recommended for planting. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Zumbra. Not given trial number. For parentage see Nicollet. Introduced 1920.

This once popular cherry-plum is now seldom grown because of the advent of new meritorious varieties.

The tree is small, bush-like, exceedingly productive but relatively short-lived. The fruit is medium size, roundish ovate; cavity medium to large, flaring, medium deep; suture a line; stem short, slender; skin medium-thick, medium-tough; color dark purplish black, attractive; flesh greenish yellow, firm, crisp, medium juicy; flavor subacid, pleasant but not rich; quality fair to good for dessert and very good for sauce; stone small, oval, semi-free; ripens late mid-season. No longer recommended for planting.

PLUMS

Anoka. Minn. No. 118. Burbank x DeSoto. (*P. salicina* x *P. americana*). Introduced 1922.

A medium-to-large, red, clingstone variety of fair quality never widely distributed and no longer recommended for planting. (For more complete de-

scription see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Elliot. Minn. No. 8. (*P. salicina* x *P. americana*.) Introduced 1920.

Uncertainty exists regarding the parental varieties of Elliot, but it is believed to be derived from the Apple variety pollinated by an unnamed native variety. It was named in honor of Wyman Elliot, a prominent Minneapolis horticulturist who was president of the Minnesota State Horticultural Society from 1883 to 1891.

Unlike most of the hybrid plums, Elliot displays only medium vigor and often poor form in the nursery, facts which undoubtedly have limited its propagation and distribution. In the orchard, the medium sized trees with spreading or slightly drooping branches are vigorous, very hardy, productive and long lived.

The fruit is large, roundish, base slightly flattened, apex rounded; cavity medium; suture indistinct or a line; dots small, russet, fairly conspicuous; skin medium-thick and tough, not astringent; color a clear red with only medium bloom, attractive; stem medium-slender; flesh yellow, firm, fine-grained, tender, juicy, only slightly fibrous, flavor sweet, pleasant; quality very good as fresh fruit, good for jam and fair for jelly; stone medium-size, oval, smooth, semi-free; season late.

Ember. Minn. No. 83. Shiro x S. Dak. No. 33. (*P. salicina* hybrid x *P. americana*.) Introduced 1936.

The cross from which Ember was produced was made in 1913. The first fruit was produced in 1918, when it was selected for further trial. This variety is of very fine quality as a fresh fruit. In addition, it has the unusual features of adhering to the tree even after complete ripening, and of keeping in good condition after harvest for 2 or 3 weeks without refrigeration.

The tree is vigorous, of medium size, broadly spreading with slightly drooping branches but only moderately productive. The fruit is sometimes subject

to cracking. It is fully winterhardy in southern and central Minnesota, but it is not recommended for northern parts of the state because of late maturity and questionable hardiness there.

The fruit is medium to large; ovate to sometimes roundish conic; apex rounded; cavity very small, shallow and narrow; suture a line; stem long, very slender, strongly adherent; color yellowish, often with a red blush; bloom medium; skin medium in thickness and toughness, not astringent; flesh rich yellow, firm, meaty, fine-grained, tender, juicy, not stringy; flavor sweet, pleasant; quality excellent for dessert, fair to good for jam, fair for jelly. Stone medium-size, long oval, cling; season late.

Goldenrod. Minn. No. 120. Shiro x Howard Yellow. (*P. salicina* hybrid x *P. americana*.) Introduced 1922.

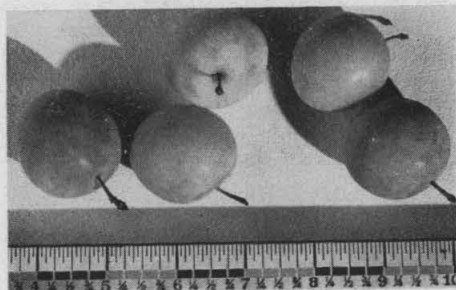
A large, firm-fleshed yellow plum which proved to be unproductive and is no longer recommended for planting. (For more complete description, see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Hennepin. Minn. No. 132. Satsuma x unknown americana. (*P. salicina* x *P. americana*.) Introduced 1923.

Hennepin is a very hardy and productive variety which has never been grown extensively, in spite of the fact that it possesses unusual merit for commercial and home jam making. It is the only Minnesota plum introduction with red flesh.

The tree is medium in size, vigorous and regularly productive. The foliage is distinctly different from most plums, having long, slender, twisted leaves which are yellowish green when young and light green at maturity.

The fruit is medium in size, roundish oval to long oval; apex pointed; suture distinct, slightly depressed; cavity medium; stem medium-long, slender; skin medium-thick; rather tough, very slightly astringent; color dark reddish purple with very heavy bloom; dots many, conspicuous when bloom is removed; flesh dark red, slightly stringy,



LaCrescent Plum

medium-firm, medium-juicy; flavor sweet; quality good for dessert and excellent for jam and jelly; stone medium-size, oval, cling. The fruit drops easily and ripens unevenly, requiring two or more pickings; season early.

LaCrescent. Minn. No. 109. Shiro x Howard Yellow (P. salicina hybrid x P. americana). Introduced 1923.

For delicate coloring and delicious flavor LaCrescent ranks high among all hybrid plums. Unfortunately, it is too tender in skin and flesh to stand rough handling and is adapted to home use rather than commercial production. It came from a cross made in 1913.

The tree is extremely vigorous in both nursery and orchard, making a handsome appearance with its tall, oval head and luxuriant foliage.

The fruit is below medium in size; obliquely oval; apex rounded; cavity very small; suture a line; stem slender, poorly adherent at maturity; skin thin, tender, easily removed, no astringency; color a beautiful clear apricot yellow, often blushed, and covered with a delicate bloom; dots very inconspicuous; flesh yellow, juicy, tender, melting, not fibrous; flavor sweet, aromatic; quality excellent for eating fresh, very good for jam and fair to good for jelly; stone oblique oval, small, free; season early.

Mendota. Minn. No. 5. Burbank x Wolf (P. salicina x P. americana). Introduced 1924.

The fruit of Mendota is very large, attractive red in color and of good

quality. The tree lacks vigor in the nursery and is of only medium size in the orchard. The variety is no longer recommended for planting. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Monitor. Minn. No. 70. Burbank x unnamed americana. (P. salicina x P. americana.) Introduced 1920.

Monitor has been widely grown in Northern United States and Canada. But with the advent of newer varieties its popularity is on the wane.

The tree is upright, spreading, vigorous, hardy, and very productive. The fruit is large, roundish ovate, slightly pointed at the apex, roundish or slightly flattened at the base; cavity medium; suture a line; stem rather thick, medium-length, adheres well; skin thick, strong, not astringent; color an attractive rich bronze-red, with conspicuous russet dots and fine irregular lines; bloom thin; flesh yellow; tender, juicy but firm, slightly fibrous; flavor sweet except for acidity around the pit; quality fair to good for fresh use and jam, only fair for jelly; stone medium to large, broadly ovate, apex pointed, cling; season late mid-season.

Mound. Minn. No. 50. Burbank x Wolf. (P. salicina x P. americana.) Introduced 1921.

A very productive, large-fruited, red plum of only fair quality. No longer recommended for planting. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Pipestone. Minn. No. 218. Burbank x (Burbank x Wolf). P. salicina x (P. salicina x P. americana). Introduced 1942.

Pipestone came from a cross made in 1919 and first fruited in 1926. This attractive large red plum has been widely tested in the Great Plains area. It seems to be best adapted to Western Minnesota, Nebraska, and the Dakotas.

The tree is upright spreading in form, medium in size, vigorous, and productive. The fruit is large to very large; form round-conic; apex rounded; cavity

small; suture a line; stem medium; color attractive solid deep red overlaid with medium heavy bloom; skin thin, tough, easy to peel, slightly astringent; flesh bright yellow, medium-firm, melting, juicy, slightly fibrous; flavor sweet, pleasant; quality very good for fresh use and jam, good for jelly; stone medium-size, obovate, pointed, cling; mid-season.

Radisson. Minn. No. 157. Parent varieties unknown. (*P. salicina* x *P. americana*.) Introduced 1925.

Radisson blooms and ripens very early; tree is of medium size; fruit large, red, quality very good; no longer recommended for planting. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

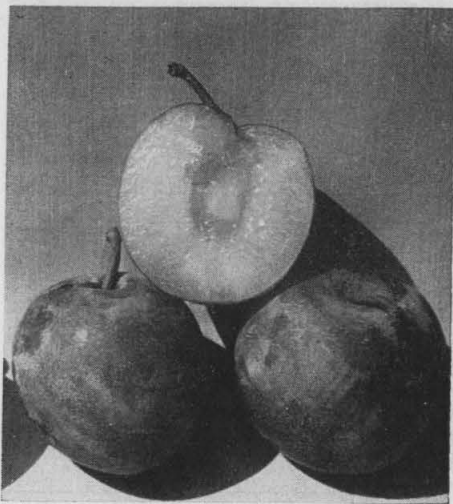
Redcoat. Minn. No. 17. Burbank x Wolf. (*P. salicina* x *P. americana*.) Introduced 1942.

This very productive freestone variety came from a cross made in 1908. The tree is of medium size, very productive; early and regular bearer; foliage dense and luxuriant; terminal shoots sometimes subdivided into a broom-like growth which usually winter kills but does not seriously impair vigor or productiveness.

The fruit is medium to above in size; shape long ovate (prune shaped); apex pointed; cavity small, shallow; suture varies from a distinct line to medium deep; stem slender, medium length; color bright attractive red overlaid with heavy bloom; skin thick, medium-tough, not astringent; flesh bright yellow, firm, tender, meaty, medium juicy to dry; flavor sweet pleasant; quality fair to good for fresh use, very good for sauce and jelly but only fair for jam; stone long oval, pointed at ends, medium-size, very free; season early.

Redglow. Minn. No. 101. Burbank x Jewel (*P. salicina* x *P. munsoniana*). Introduced 1949.

Redglow came from a cross made in 1913 and first fruited in 1919. Through an error it was distributed widely for testing under the two numbers, Minn.



Redglow Plum

No. 101 and Minn. 161. It was introduced because of its reliable productivity and the good handling and marketing qualities of the large firm fruits which are much appreciated for processing into jam or jelly.

The trees are above medium in size, hardy, vigorous, and productive; foliage normally is good, although susceptible to leaf spot which may cause serious defoliation on weak trees. The fruits are large, roundish oblong; apex rounded; cavity shallow, wide; suture a line; stem medium with good adherence; color attractive dark red overlaid with heavy bloom; dots numerous; skin thick, strong, medium astringent; flesh orange colored, firm, tender, slightly fibrous, juicy; flavor sweet; quality good for fresh use and jelly, very good for jam; stone medium size, broadly ovate, apex rounded, cling; ripens mid-season.

Red Wing. Minn. No. 12. Burbank x Wolf. (*P. salicina* x *P. americana*.) Introduced 1920.

When Red Wing was introduced it was highly esteemed because of its large size, a very free stone, a delicious flavor and a strong skin which permitted easy peeling and slicing of



South Dakota Plum

the fruit for serving as fresh sauce. It was very susceptible to leaf spot, however, and for this reason was removed from the list of recommended varieties. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

South Dakota. S. Dak. No. 27. Parent varieties unknown (*P. americana*). Introduced 1949 jointly by the Minnesota and South Dakota Agricultural Experiment Stations.

In 1907, when Charles Haralson moved from South Dakota to Minnesota to become superintendent of the newly established Fruit Breeding Farm, he brought from the South Dakota Station propagating wood of a number of selections and varieties of fruits which he thought might be of value in future fruit-breeding work. One of these was a seedling plum selection which he designated S. Dak. No. 27. This variety did prove to be a good parent and also an excellent pollinizer. Furthermore, it had so many valuable horticultural attributes that it was deemed worthy of introduction. By mutual agreement between the two experiment stations, Minnesota sponsored the introduction of the new variety.

The tree is of the characteristic native *americana* plum type; medium size, very hardy, vigorous, and productive. It blooms somewhat earlier than most of the *americana* varieties and as a pollinizer is compatible with both

native and hybrid plums. When combined in plum plantings with the earlier blooming Toka the pollenization requirements are satisfactorily provided for all varieties of these types commonly grown.

The fruits are of medium size; ovate and somewhat flattened laterally; apex flat; cavity very small; suture a line; stem slender and of medium length; color attractive bright medium-red over a yellow ground; bloom thin; skin thin, medium-strong, not astringent; flesh yellowish, tender, meaty, juicy; flavor very sweet, pleasant; quality very good for eating fresh and for jelly, poor for jam; stone medium-size, oval, very free; ripens mid-season.

Superior. Minn. No. 194. Burbank x Kaga. (*P. salicina* x [*P. americana* x *P. Simonii*].) Introduced 1933.

Superior came from a cross made in 1920 and first fruited in 1925. It is outstanding for vigor of tree, early and prolific bearing, and for the size and



Superior Plum

quality of its large handsome fruits. Unfortunately it is not reliably winter-hardy north of the southern one-third of Minnesota.

The tree is very vigorous, upright spreading, foliage good; very productive, often overloading to the point where thinning is required. The fruits are very large, conic with pointed apex; cavity wide, very deep; suture shallow but well defined; stem long, thick; color clear dark red with russet dots; bloom medium to heavy; skin thick, medium tough, slightly astringent; flesh rich yellow, medium firm, tender, juicy; flavor sweet, sprightly except slightly tart at the skin; quality very good for eating fresh and for jelly, good for jam; stone very small, narrow ovate, thick, pointed at apex, cling; late midseason.

Tonka. Minn. No. 21. Burbank x Wolf. (*P. salicina* x *P. americana*.) Introduced 1920.

At one time Tonka was considered one of the best of the Minnesota hybrid plums because of its productivity and large, red, firm fleshed freestone fruits. The trees, however, developed large, rough wart-like excrescences on the trunk at about the time they reached bearing age. This abnormality weakened the trees and shortened their lives to such an extent that the variety is no longer recommended for planting. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Underwood. Minn. No. 91. Shiro x Wyant. (*P. salicina* hybrid x *P. americana*.) Introduced 1920.

Underwood was derived from a cross made in 1911 and first fruited in 1916. It was named in honor of J. M. Underwood of Lake City, who for more than 50 years had been a prominent nurseryman and a distinguished horticultural leader in this state. The new variety quickly gained popularity throughout northern plum-growing areas. A survey in 1934 disclosed the fact that it was being grown and sold by nurserymen in 11 states and in many parts of Canada.

The tree is hardy and a vigorous grower in both nursery and orchard; form tall, spreading; foliage luxuriant; productivity medium to good. The fruit is large; round-conic; apex rounded; cavity small; suture indistinct or a line; stem short, medium-slender; skin smooth, satin-like, waxy, medium-thick; color rich medium dark red over greenish yellow ground; bloom thin; flesh yellow, tender, slightly fibrous, juicy; flavor sweet, slightly astringent at the skin; quality very good for fresh use and jam, fair for jelly; stone small, long oval, cling to semi-cling; season early, ripening over a long period.

Waconia. Minn. No. 10. Burbank x Wolf. (*P. salicina* x *P. americana*.) Introduced 1923.

Waconia is a very productive, medium-to-large red plum of only fair quality; no longer recommended for planting. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

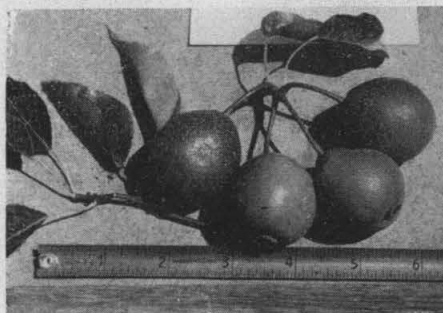
Winona. Minn. No. 30. Parent varieties unknown. (Probably *P. salicina* x *P. americana*.) Introduced 1921.

Winona is a large, productive, late-ripening plum of very fine quality but is no longer recommended for planting because of susceptibility to brown rot and lack of attractive color. This variety practically is indistinguishable from a plum Theodore Williams of Benson, Nebraska, introduced under the name "Emerald" and which, for a time, was distributed in the nursery trade erroneously as "Omaha", a name given by Williams to another plum he had originated. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

PEARS

Bantam. Minn. No. 3. Parentage unknown. Introduced 1940.

Bantam originated from seed of unknown origin planted about 1914 or



Bantam Pear

1915. As the name indicates, it is a small-fruited variety and is primarily adapted to home orchards. Perhaps its most important attribute is its high resistance to fire blight disease.

The tree is very hardy and productive; general form tall and narrow with rather slender, spreading and drooping branches which give the tree a characteristic open willow-like appearance. The fruit is small, about 2 inches long and $1\frac{3}{4}$ inches wide; form oval or roundish pyriform, tapering towards the ends; practically no cavity or basin; stem above medium length, medium-thick; color dull bronze-green, often with red blush; flesh tender, melting, juicy, with no grit cells; flavor sweet, pleasant; quality excellent for eating fresh and, if picked while still firm, very good for sauce or canning; season of ripening very early and of short duration.

Golden Spice. Minn. No. 4. Parentage unknown. Introduced 1949.

Golden Spice came from seed of unknown origin planted about 1914. Its good culinary qualities were quickly recognized and it was distributed for widespread testing in northern areas. Pear growers became impressed with the vigor and reliable productiveness of the trees and urged its introduction not only on account of fruit quality, but also because of the value of the tree as a stock on which less hardy varieties

could be top-worked. The name was suggested by Mrs. Leon Gates of Rochester, Minnesota.

The tree is very winterhardy, vigorous and productive; form tall, upright spreading; foliage good; resistant to fire blight disease. The fruit is small but somewhat larger than Bantam; form roundish pyriform; stem medium; color clear medium yellow; often accompanied by a red blush; flesh light yellow, firm, crisp, medium-tender juicy; flavor mildly tart, spicy, pleasant; quality fair for fresh use and sauce and very good for spiced pickles; hangs well to the tree and ripens mid-season.

Parker. Minn. No. 1. Parentage, supposedly seed received from Manchuria. Introduced for trial 1924. Named 1934.

The history of Parker is recorded with more than usual detail because, about 1950, pomologists at several eastern experiment stations reported that this variety in their collections appeared to be identical with Flemish Beauty. About the same year the Flemish Beauty came into bearing for the first time in the Fruit Breeding Farm variety test orchard and the same similarity was noted. Notwithstanding this situation the name "Parker" is being retained for the time being because it is well established in this region, and because of the evidence of its independent origin.

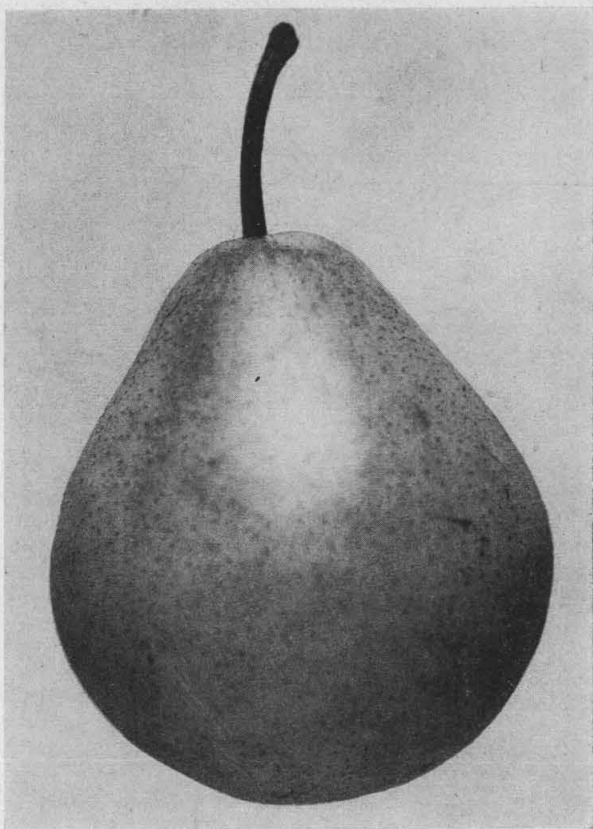


Golden Spice Pear

In 1908, Mr. Edward C. Parker, a graduate of the University of Minnesota was stationed in Manchuria where he observed pears under cultivation well back from the coast at latitude 42° North. He was so impressed with the hardiness of these pears that he collected both seed and cions and sent them to Samuel B. Green, then head of the Horticulture Department at the University. The cions dried out in shipment but the seed was turned over to Charles Haralson, superintendent of the recently established Fruit Breeding Farm, and about 300 trees were grown. All died from fireblight or winter injury except two, one of which produced only small, worthless fruits.

In 1920 the other survivor fruited for the first time and produced four or five large pears of excellent quality and the variety was designated Minn. No. 1, the first pear selection made at the Fruit Breeding Farm. No standard varieties of pears were available for comparison at that time and the fruit staff had no reason to suspect that the original tree might be a propagated variety. Certainly no evidence of a graft union was visible above ground. Propagating wood was distributed to nurseries in 1924 and in 1926 sale of trees under the trial number was authorized. In 1934 it was formally introduced under the present name.

The tree is hardy enough to be grown in favorable locations in southern Min-



Parker Pear

nesota; form is upright, moderately spreading, not resistant to fire blight. The fruit is large, roundish pyriform tapering gently towards the stem; cavity very small; basin shallow; calyx nearly open; stem medium; skin smooth; medium-thick; color clear medium-yellow, sometimes with a blush; dots numerous, small, russet, distinct; flesh tender, juicy, medium fine-grained, almost melting, grit cells visible but soften at maturity, not objectionable; flavor sweet, pleasant; quality very good for eating fresh and for sauce; core small, seeds small, light brown, pointed; ripens midseason.

Small Fruits

CURRENTS

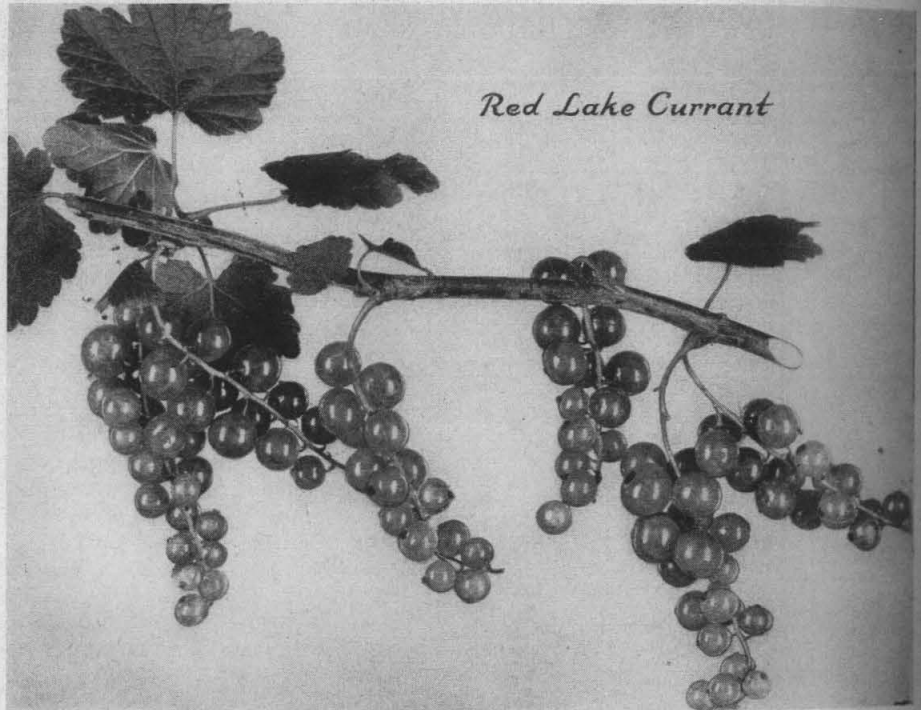
Cascade. Minn. No. 70. Diploma open pollinated. Introduced 1942.

Cascade was introduced because of its high productivity and unusually large berries. It was selected from more than a thousand open pollinated seedlings of Diploma. It ripens about a week earlier than Red Lake and makes a good companion to that popular variety.

The bush is vigorous, of moderate height and medium erect; foliage good, although moderately susceptible to leaf spot; clusters compact, above medium in size, with medium length stems; berries very large, attractive dark red; flavor mild, pleasant; quality very good; season medium early.

Red Lake. Minn. No. 24. Parentage unknown. Introduced 1933.

This currant first began to attract attention about 1920 when it was growing in a second test planting of selections from a block of seedlings of unknown parentage. It was distributed widely for trial and created something of a sensation among growers because of its productivity, its exceedingly long well-filled clusters and its long stems which permitted easy and rapid picking. After introduction, it became so popular that, for several years, nurseries were unable to completely satisfy the demand for planting stock. It is now the most extensively grown currant in North America and reports indicate that it is meeting with a favorable reception in Europe.



Red Lake Currant

Red Lake Currant

The plants are of medium height, moderately erect, very vigorous and productive; foliage light green, leaves medium to large and slightly lobed. The long-necked clusters under good conditions may attain a length of 6 inches or more and carry from 18 to 20 fruits. The berries are large, somewhat variable in size from base to tip of cluster; color a clear, bright light red, very attractive; skin medium thick, slightly tough, semi-transparent; flavor a mild, but sprightly acid; quality very good; makes excellent jelly; season late.

GOOSEBERRY

Como. Minn. No. 43. Pearl x Columbus. Introduced 1921.

Como came from a cross made about 1908. The plants are of medium size, hardy, very productive; foliage is good, medium dark green, somewhat susceptible to leaf spot and mildew; thorns are short, slant upwards, mostly dropped from 2-year old wood.

The fruits hang in dense clusters along the undersides of the canes; the berries are above medium size, slightly oval, quite resistant to sunscald, thus permitting a long period of harvest; stems are medium length, divided to carry two fruits, which adhere well; skin is smooth, spineless, thin, moderately tough, semi-translucent; color green with creamy yellowish tinge at full maturity; veins prominent; flesh green, tender, medium juicy; seeds small, few in number; flavor sweet; quality medium; ripens midseason.

GRAPES

Bluebell. Minn. No. 158. Parentage unknown. Introduced 1944.

Bluebell is a grape of the Concord type. It is nearly as large as Concord in size of cluster and berry and has a more sprightly flavor. It is somewhat less easily propagated than the other varieties described in this bulletin, and because of the limited supply of plant-

ing stock it has not attained the recognition and horticultural importance justified by its productivity and good quality.

The vines are vigorous, hardy, and very productive. The fruit clusters are large, somewhat loose; berries large; color attractive dark blue with medium heavy bloom; flavor sweet, spicy; quality good for dessert, juice and jelly; ripens midseason.

Blue Jay. Minn. No. 69. Parentage unknown. Introduced 1944.

Blue Jay is a hardy and productive blue grape that is much appreciated for juice and jelly purposes. It resembles Concord in size and appearance, but the clusters are slightly smaller and more compact. The vines are vigorous and productive but require cross pollination from another variety because the flowers have reflexed stamens with nonfunctional pollen making them self sterile.

The fruit clusters are medium to large, cylindrical, very compact, berries large; color very dark blue with heavy bloom; flavor when color first develops is sharp and acid but after a week or two at full maturity it becomes mild enough to attain fair dessert quality; excellent for juice and jelly; ripens midseason.

Moonbeam. Minn. No. 66. Parentage unknown. Introduced 1944.

Moonbeam is a very large green grape with vines of extraordinary vigor and luxuriant foliage but of only medium winterhardiness. It has the largest berries of the four Minnesota varieties.

The large dark green leaves with silvery gray lower surface are very attractive when the vine is used for arbor or screen planting. The fruit clusters are compact and of medium size. The berries are large; color attractive silvery green changing to translucent greenish-yellow at full maturity; skin very tender; flavor mild, bland, sweet; quality good; ripens midseason.



Red Amber Grape

Red Amber. Minn. No. 45. Parentage unknown. Introduced 1944.

Red Amber is probably the most popular and widely planted of the four varieties herein described. The vines are hardy, vigorous and productive; foliage bright green, clean, resistant to mildew; fruit medium susceptible to black rot; clusters medium to below in size, compact, usually borne three to a cane; berries medium size; color red with a distinct amber tone at maturity; shatter rather easily when overripe; very sweet with a distinct aromatic, foxy flavor characteristic of many varieties of the *Labrusca* (Northern Fox Grape) species; quality very good; ripens early midseason.

RED RASPBERRIES

Chief. Minn. No. 223. Latham selfed. Introduced 1930.

In 1916 both selfed and open pollinated seed were secured from Minn. No. 4, (later named Latham). About 4,000 seedlings were grown and 240 selections were made in 1920. After repeated tests these were reduced to selection No. 223 from the selfed seed. In 1930 this selection was introduced as "Chief" following a statewide contest for a suitable name. The variety at one time was widely grown, but now its culture is confined mainly to the Prairie Provinces of Canada and to Northern Minnesota. The fruit handles and

ships well but is sometimes hard to pick in hot weather.

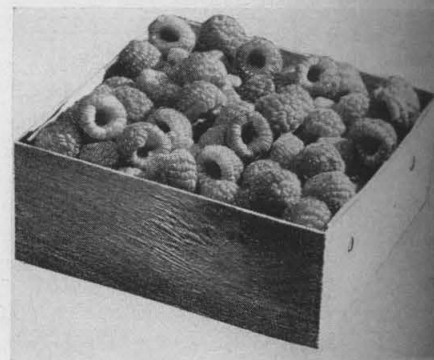
The plants are very hardy, productive, vigorous and prolific plant makers; canes reddish, stocky and of medium height; foliage luxuriant, leaves large; resistant to mildew and mosaic. The fruits are medium in size, roundish to slightly conic; color bright attractive red, but becomes pale red and dull when canned or frozen; drupelets medium to below in size, adhering well so that berries do not crumble; flesh firm, juicy; quality very good; season early.

Latham. Minn. No. 4. King x Loudon. Introduced 1920.

Latham is undoubtedly the most popular and valuable single variety of fruit introduced by the Minnesota Station. For more than 30 years it has been recognized as a leading standard red raspberry variety in the United States and Canada. It came from a cross made in 1908, and was first distributed for trial in 1914. It quickly established itself and attained considerable volume of commercial production prior to 1920.

It was formally named in 1920 in honor of A. W. Latham, a well-known and distinguished horticulturist of the Northwest and for 29 years secretary of the Minnesota State Horticultural Society.

The plants of Latham are hardy, vigorous and productive; canes robust,



Chief Red Raspberry



Latham Red Raspberry

very tall, nearly thornless, reddish with heavy bloom. The fruit is large, often an inch in diameter, sometimes double; form broad, rounded; color bright attractive red; very firm, medium juicy, medium sweet; drupelets medium to large; picks easily; stands up well in marketing; quality good for dessert and for preserving by canning or freezing; ripening season medium to late extending over a long period.

STRAWBERRIES, JUNE BEARING

Arrowhead. Minn. No. 1118. Duluth x Dunlap. Introduced 1946.

Arrowhead was derived from a cross made in 1927. It first fruited in 1929 when it was selected for further trial. Beginning about 1935 it was widely distributed for trial along with the pistillate variety Minn. No. 1192, which was introduced in 1943 under the name Burgundy. In these tests it proved to be not only a good pollinizer for its imperfect flowered companion but also a productive and valuable variety in its own right.

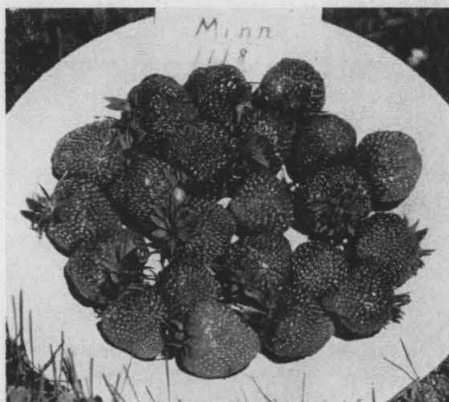
Arrowhead is vigorous, very winter-hardy, and a good plant maker. The foliage is good, medium-susceptible to leaf spot, leaves large, medium to coarsely serrate, terminal leaflets broadly elliptic; upper surface of leaves bright medium dark green, smooth, slightly pubescent; lower surface medium light green, with rather coarse pubescence on midrib and lower veins.

The petiole is long, medium slender, green, abundantly pubescent. Flowers are perfect and are borne on a long, erect peduncle. Season of bloom medium to late.

The fruit is large, regular, conic, glossy, dark red, evenly colored with very few green tips; calyx prominent, recurved; sepals long, medium narrow, entire; seeds numerous, slightly raised, yellow or red depending upon exposure; flesh firm, dark red, medium-juicy, fine texture; flavor sprightly tart; quality fair for freezing, good for fresh and culinary use; ripens midseason to medium late.

Burgundy. Minn. No. 1192. Easypicker x Duluth. Introduced 1943.

The cross producing Burgundy was made in 1927 and selection for trial occurred in 1929. After two more tests at the Fruit Breeding Farm it showed so much promise as a late-ripening commercial variety that plants were sent to other locations for trial in 1935, notwithstanding the fact that it had imperfect flowers and would require cross pollination for successful fruiting. During the course of these tests it was found to be very winterhardy, highly productive, an excellent shipping and processing berry, and so late in ripening as to extend the strawberry harvest season by at least a week. These valu-



Arrowhead Strawberry

able qualities were thought to be of such importance as to more than offset the handicap of pistillate flowers and it was named and introduced in 1943.

The plants are vigorous and upstanding with leaves borne on tall, medium-stout, green, pubescent petioles; leaflets large, rounded, slightly cupped, nearly smooth, margins coarsely serrate, upper surface dark green, lower surface medium dark green; medium susceptible to leaf spot. The flowers are late, pistillate, medium to large; petals usually six, round to slightly ovate; erect, medium-long, rather thick, heavily pubescent.

The fruits are large, regular, roundish cordate to roundish wedge-shaped, sometimes inclined to be oblate with obtuse, rounded tips; color dark red evenly spread over entire berry, medium glossy; seeds few to medium in number, raised, green turning to brownish red at maturity; flesh very dark red, firm, meaty, medium-juicy, flavor aromatic, subacid; quality very good for dessert, jam, sauce, and preservation by freezing; season late.

Chaska. Minn. No. 801. Brandywine x (Pocomoke x Dunlap). Introduced 1921. A productive, large-fruited, attractive variety no longer propagated. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Easypicker. Minn. No. 775. Crescent x Dunlap. Introduced 1921.

A pistillate variety introduced because of high productiveness, excellent quality, and ease of picking. No longer recommended for planting. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Minnehaha. Minn. No. 935. Abington x Minnesota. Introduced 1920.

An extremely vigorous and productive variety, Minnehaha for a time was very popular because of the large size and excellent shipping quality of the fruit. Its poor color when canned caused it to be dropped from the list

of recommended varieties and it is no longer propagated. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Minnesota. Minn. No. 3. Pocomoke x Dunlap. Introduced 1920.

Minnesota came from a cross made in 1907 and was first distributed for trial in 1913. It soon attained wide popularity and was in commercial production several years before it was named and introduced. In the first year of introduction, however, it became badly affected with June Yellows disease and was subsequently removed from the recommended list.

A few growers have maintained Yellows-free stock and the variety is still in limited commercial production. Both plants and fruits approach the Dunlap type but the ripening season is a little earlier and the fruits are more attractive and of better quality.

The plants set freely from runners, are vigorous and productive; foliage is medium in height and size; flowers are perfect, borne on a medium long, semi-erect peduncle. The fruits are medium to large, regular, conic, sometimes slightly necked; color bright, glossy medium dark red, attractive; seeds yellow, slightly raised; flesh red, firm, fine-textured, tender, juicy; flavor sweet aromatic; quality very good for dessert and culinary use; ripens early mid-season.

Nokomis. Minn. No. 489. Abington x Dunlap. Introduced 1921.

Nokomis was a very vigorous and productive variety, with large but somewhat soft fleshed fruits especially adapted for the home garden. No longer propagated. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

STRAWBERRIES, EVERBEARING

Deephaven. Minn. No. 41. Parentage uncertain, but believed to be Dunlap x Progressive. Introduced 1921.

Although Deephaven appeared to be superior to Progressive in fruit characters, it never became established commercially. The reason was that soon after introduction the plants began to suffer from loss in vigor, and the variety was discontinued. (For more complete information see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Duluth. Minn. No. 1017. Dunlap x Pan American. Introduced 1920.

Duluth was selected from progeny of a cross made in 1909. In 1913 a limited distribution of plants for trial was made. After its introduction in 1920, it was widely grown but never attained great commercial importance. For many years it continued to be grown in Northern Minnesota, Manitoba, and Colorado—but now has been replaced by newer varieties and planting stock is apparently no longer available.

The variety was characterized by large, vigorous, winterhardy plants and by attractive, glossy dark red berries of good dessert and culinary quality. (For more complete description see Minn. Agr. Exp. Sta. Bul. 230, 1926.)

Evermore. Minn. No. 1166. Duluth x Dunlap. Introduced 1945.

In 1927 a backcross was made between Duluth and Dunlap, with the object of producing an everbearer with larger fruits and better plant making qualities than Duluth. Several selections were made in 1929, and were carried into second and third test plantings.

In 1935 two of the most promising from the standpoint of plant vigor, productiveness and fruit size were selected for further trial in a number of locations. One of these, Minn. No. 1167, was discarded because of mediocre dessert quality. However, Minn. No. 1166 attracted wide and favorable attention, particularly in states other than Minnesota. Introduction was delayed because of lack of enthusiasm of local growers of everbearing strawberries. Important strawberry plant nurseries in at least eight states were offering

it for sale by the time it was formally introduced in 1945.

It is particularly well adapted to culture under irrigation in the dry climate of the northern Great Plains area and westward into Montana and Washington. Plants of Evermore appear to be more tolerant of alkaline soil conditions than other strawberry varieties.

Evermore is an excellent plant maker, very winterhardy, vigorous, and productive. The foliage is susceptible to leaf spot; medium in size; coarsely serrate; dark green, glossy and slightly pubescent above, light green beneath; leaflets round-elliptic with acute base; midribs are smoothly curved, with leaflets flattened at the tip and slightly folded at the base; petioles medium in length and thickness, green, pubescent. The flowers are perfect, with six to eight medium-sized, roundish petals, slightly acute at the apex; sepals long, narrow, entire, and recurved; peduncles semi-erect, medium length, thick, heavily pubescent; pedicels long.

The fruit is medium to large, regular, roundish-conic to oblong-conic, usually slightly flattened with obtuse, rounded tips; color medium to dark red, glossy; seeds few, raised; flavor is aromatic, mildly tart; quality medium to good; spring crop ripens medium early.

ORNAMENTALS

In the early work of the Minnesota Fruit Breeding Farm no serious attempt was made to produce new forms of strictly ornamental value. A few such forms did appear, however, as a by-product of the fruit breeding program and three have been named and introduced.

Flame (Crabapple). Minn. No. 635. Parentage unknown. Introduced 1934.

The ornamental qualities of this variety are found in the upright to pyramidal form of the tree, the graceful branching habit, the mass of white bloom in the spring preceded by pink and white buds and finally by its

crowning glory, the gleaming load of flaming red fruits in autumn from which the variety derives its name. The fruits adhere firmly to the tree and maintain their brilliant color for 6 to 8 weeks until heavy freezes turn the red to brown. Even then they remain attached to the tree and become a favorite bird food through fall and early winter. The variety is highly resistant to fire blight, apple scab, and cedar rust.

The trees are very hardy and vigorous but small to medium in stature; form is upright to loosely pyramidal; production of flowers and fruits is heavy and regular. The fruits are small, roundish conic with a distinct taper towards the apex; stem and cavity are medium for a crab, but the basin is lacking or even protruding, carrying a persistent and prominent calyx; color is a brilliant medium red; flesh is crisp, tender and juicy with a pleasant, spicy mild acid flavor; the quality is good for eating fresh or for jelly and pickles, but because of its small size the fruit is seldom used for these purposes; season late August until freeze up.

Manitou (Almond). Minn. No. 7. Siberian Almond x Bokhara Peach. (P. nana x P. persica.) Introduced 1923.

This cross was made with the hope of producing a hardy peach or peach-like hybrid. The results were disappointing, however, since the only seedling proved to be a sterile hybrid. It produced flowers in great profusion, but the pistils were nearly always aborted or defective. On one occasion it produced a few fruits with viable seeds when W. L. Kerr at the Dominion Experiment Station at Morden, Manitoba, pollinated the flowers with pollen of several species of stone fruits. The resulting seedlings were of no value in themselves, but they may be useful in further breeding experiments.

The tree makes a compact head and attains a stature of eight to ten feet. The flowers produce a dense mass of delicate pink bloom accentuated by the light green of the expanding leaves from terminal buds. The flower buds are at first a deep pink which changes to a light pink at full opening. The flowers are slightly under one inch in diameter; petals five to eight in number, long, narrow, tapering to a slender base, slightly indented at the apex; stamens are numerous; season of bloom early, following apricots and Nanking cherry.

Newport (Plum). Minn. No. 116. Omaha x Pissardi. ([P. salicina x P. americana] x P. pissardi.) Introduced 1923.

The cross producing Newport was made in 1913, in the hope of developing a red-leaved ornamental tree that would bear plums of good quality. The fruits were worthless, but the tree proved to be a hardy purplish red-leaved variety that has been widely used for landscape work in northern areas where Pissardi winter kills. A sister seedling has been propagated and sold in a limited way under the name of "Minnesota Purple" by a few Minnesota nurseries.

The tree of Newport has a narrow upright form attaining a height of about 15 feet. The foliage is a deep purplish red when young but changes to a bronze or greenish red at maturity. The flowers are small, pinkish white, and inconspicuous in the more highly colored foliage.

The fruits are small, roundish ovate; suture lacking or a line; stem long, slender; color magenta-red with light bloom, blending almost invisibly with the foliage; skin thin; flesh light red, tender, juicy, sour; quality very poor; stone medium-size, oval, smooth, red, semi-cling; ripens late mid-season.

Appendix I

Original Publication Citation for each variety of fruit introduced by
the University of Minnesota Fruit Breeding Farm

Tree Fruits

APPLES

BEACON. Alderman, W. H. New Minnesota Fruits Named. *Minnesota Horticulturist* 64:2:23-24. 1936.

FIRESIDE. Alderman, W. H., Wilcox, A. N., Weir, T. S., Haralson, F. E., Brierley, W. G., and Winter, J. D. Two New Apples. *Minnesota Horticulturist* 71:2:21-22. 1943.

FOLWELL. Alderman, W. H., Dorsey, M. J., and Haralson, Charles. Name and Description of the New Fruits. *Minnesota Horticulturist* 49:9:225-229. 1921.

HARALSON. Editorial Notes, New Fruits Named. *Minnesota Horticulturist* 50:6:191. 1922.

LAKELAND. Alderman, W. H., Brierley, W. G., Trantanella, Shirley, Weir, T. S., Wilcox, A. N., Winter, J. D., Hanson, K. W., Snyder, L. C. Northstar Cherry and Lakeland Apple. University of Minnesota, Agricultural Experiment Station, *Miscellaneous Report* 11. 1950.

MINJON. Alderman, W. H., Wilcox, A. N., Weir, T. S., and Haralson, F. E. New Fruits Introduced by Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 70:4:66. 1942.

MINNEHAHA. Names of New Fruits from the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 48:5:144. 1920.

ORIOLE. Alderman, W. H., Weir, T. S., Wilcox, A. N., Brierley, W. G., Winter, J. D., and Hanson, Kenneth. Five New Varieties of Fruits. *Minnesota Horticulturist* 77:3:37. 1949.

PRAIRIE SPY. Alderman, W. H. and Wilcox, A. N. A New Apple and Pear. *Minnesota Horticulturist* 68:3:45. 1940.

REDWELL. Alderman, W. H., Wilcox, A. N., Weir, T. S., Brierley, W. G., and Winter, J. D. New Minnesota Fruits. *Minnesota Horticulturist* 74:9:131-132. 1946.

VICTORY. Alderman, W. H., Wilcox, A. N., Weir, T. S., Haralson, F. E., Brierley, W. G., and Winter, J. D. Two New Apples. *Minnesota Horticulturist* 71:2:21-22. 1943.

WEDGE. Alderman, W. H., Dorsey, M. J., and Haralson, Charles. Name and Description of the New Fruits. *Minnesota Horticulturist* 49:9:225-229. 1921.

APPLE-CRAB HYBRID

CHESTNUT. Alderman, W. H., Wilcox, A. N., Weir, T. S., Brierley, W. G., and Winter, J. D. New Minnesota Fruits. *Minnesota Horticulturist* 74:9:131-132. 1946.

CHERRIES, NANKING

ORIENT. Alderman, W. H., Weir, T. S., Wilcox, A. N., Brierley, W. G., Winter, J. D., and Hanson, Kenneth. Five New Varieties of Fruits. *Minnesota Horticulturist* 77:3:37. 1949.

CHERRIES, PIE

METEOR. Alderman, W. H., Brierley, W. G., Weir, T. S., Wilcox, A. N., Blake, R. C., Hanson, K. W., and Snyder, L. C. Meteor Cherry. University of Minnesota, Agricultural Experiment Station, *Miscellaneous Report* 16. 1952.

NORTHSTAR. Alderman, W. H., Brierley, W. G., Trantanella, Shirley, Weir, T. S., Wilcox, A. N., Winter, J. D., Hanson, K. W., and Snyder, L. C. Northstar Cherry and Lakeland Apple. University of Minnesota, Agricultural Experiment Station, *Miscellaneous Report* 11. 1950.

CHERRY-PLUMS

NICOLLET. Wilcox, A. N. New Minnesota Plums are Named. *Minnesota Horticulturist* 53:3:72. 1925.

ST. ANTHONY. Alderman, W. H. Descriptions of new Varieties of Fruits, Introduced by the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 51:2:54-57. 1923.

ZUMBRA. Names of New Fruits from the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 48:5:144. 1920.

PLUMS

ANOKA. Alderman, W. H., Dorsey, M. J., and Haralson, Charles. Name and Description of the New Fruits. *Minnesota Horticulturist* 49:9:225-229. 1921.

ELLIOT. Names of New Fruits from the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 48:5:144. 1920.

EMBER. Alderman, W. H. New Minnesota Fruits Named. *Minnesota Horticulturist* 64:2:23-24. 1936.

GOLDENROD. Editorial Notes. New Fruits Named. *Minnesota Horticulturist* 50:6:191. 1922.

HENNEPIN. Alderman, W. H. Descriptions of New Varieties of Fruits, introduced by the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 51:2:54-57. 1923.

LACRESCENT. Alderman, W. H. Descriptions of New Varieties of Fruits, introduced by the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 51:2:54-57. 1923.

MENDOTA. Editorial Notes. Mendota Plum. (Minn. No. 5) *Minnesota Horticulturist* 52:3:96. 1924.

MONITOR. Names of New Fruits from the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 48:5:144. 1920.

MOUND. Alderman, W. H., Dorsey, M. J., and Haralson, Charles. Name and Description of the New Fruits. *Minnesota Horticulturist* 49:9:225-229. 1921.

PIPESTONE. Alderman, W. H., Wilcox, A. N., Weir, T. S., and Haralson, F. E. New Fruits Introduced by Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 70:4:66, 79. 1942.

RADISSON. Wilcox, A. N. New Minnesota Plums are Named. *Minnesota Horticulturist* 53:3:72. 1925.

REDCOAT. Alderman, W. H., Wilcox, A. N., Weir, T. S., and Haralson, F. E. New Fruits Introduced by Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 70:4:66, 79. 1942.

REDGLOW. Alderman, W. H., Weir, T. S., Wilcox, A. N., Brierley, W. G., Winter, J. D., and Kenneth Hanson. Five New Varieties of Fruits. *Minnesota Horticulturist* 77:3:37. 1949.

RED WING. Names of New Fruits from the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 48:5:144. 1920.

SOUTH DAKOTA. Alderman, W. H., Weir, T. S., Wilcox, A. N., Brierley, W. G., Winter, J. D., and Kenneth Hanson. Five New Varieties of Fruits. *Minnesota Horticulturist* 77:3:37. 1949.

SUPERIOR. Alderman, W. H. New Fruits Named—Superior Plum, Red Lake Currant. *Minnesota Horticulturist* 61:1:13. 1933.

TONKA. Names of New Fruits from the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 48:5:144. 1920.

UNDERWOOD. Names of New Fruits from the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 48:5:144. 1920.

WACONIA. Alderman, W. H. Descriptions of New Varieties of Fruits, introduced by the Minnesota Fruit Breeding Farm, *Minnesota Horticulturist* 51:2:54-57. 1923.

WINONA. Alderman, W. H., Dorsey, M. J., and Haralson, Charles. Name and Description of the New Fruits. *Minnesota Horticulturist* 49:9:225-229. 1921.

PEARS

BANTAM. Alderman, W. H. and Wilcox, A. N. A New Apple and Pear. *Minnesota Horticulturist* 68:3:45. 1940.

GOLDEN SPICE. Alderman, W. H., Weir, T. S., Wilcox, A. N., Brierley, W. G., Winter, J. D., and Hanson, Kenneth. Five New Varieties of Fruits. *Minnesota Horticulturist* 77:3:37. 1949.

PARKER. (As Minn. No. 1) Alderman, W. H. New Fruits Produced at the University of Minnesota Fruit Breeding Farm. *Minnesota Agricultural Experiment Station Bulletin* 230:44. 1926. (As Parker) Alderman, W. H. New Minnesota Fruits. *Minnesota Horticulturist* 62:2:25, 28. 1934.

Small Fruits

CURRANTS

CASCADE. Alderman, W. H., Wilcox, A. N., Weir, T. S., and Haralson, F. E. New Fruits Introduced by Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 70:4:66 and 79. 1942.

RED LAKE. Alderman, W. H. New Fruits Named—Superior Plum, Red Lake Currant. *Minnesota Horticulturist* 61:1:13. 1933.

GOOSEBERRY

COMO. Alderman, W. H., Dorsey, M. J., and Haralson, Charles. Name and Description of the New Fruits. *Minnesota Horticulturist* 49:9:225-229. 1921.

GRAPES

BLUEBELL. Wilcox, A. N., Alderman, W. H., and Haralson, F. E. New Grape Varieties Named. *Minnesota Horticulturist* 72:1:4-6. 1944.

BLUE JAY. Wilcox, A. N., Alderman, W. H., and Haralson, F. E. New Grape Varieties Named. *Minnesota Horticulturist* 72:1:4-6. 1944.

MOONBEAM. Wilcox, A. N., Alderman, W. H., and Haralson, F. E. New Grape Varieties Named. *Minnesota Horticulturist* 72:1:4-6. 1944.

RED AMBER. Wilcox, A. N., Alderman, W. H., and Haralson, F. E. New Grape Varieties Named. *Minnesota Horticulturist* 72:1:4-6. 1944.

RED RASPBERRIES

CHIEF. Alderman, W. H. Chief, Prize Winning Name for New Minnesota Raspberry. *Minnesota Horticulturist* 58:5:141. 1930.

LATHAM. Names of New Fruits from the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 48:5:144. 1920.

STRAWBERRIES, JUNE BEARING

ARROWHEAD. Alderman, W. H., Wilcox, A. N., Weir, T. S., Brierley, W. G., and Winter, J. D. New Minnesota Fruits. *Minnesota Horticulturist* 74:9:131-132. 1946.

BURGUNDY. Wilcox, A. N., Alderman, W. H., Haralson, F. E., Winter, J. D., Brierley, W. G., and Weir, T. S. The Burgundy Strawberry. *Minnesota Horticulturist* 71:3:35-36. 1943.

CHASKA. Alderman, W. H., Dorsey, M. J., and Haralson, Charles. Name and Description of the New Fruits. *Minnesota Horticulturist* 49:9:225-229. 1921.

EASYPICKER. Alderman, W. H., Dorsey, M. J., and Haralson, Charles. Name and Description of the New Fruits. *Minnesota Horticulturist* 49:9:225-229. 1921.

MINNEHAHA. Names of New Fruits from the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 48:5:144. 1920.

MINNESOTA. Names of New Fruits from the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 48:5:144. 1920.

NOKOMIS. Alderman, W. H., Dorsey, M. J., and Haralson, Charles. Name and Description of the New Fruits. *Minnesota Horticulturist* 49:9:225-229. 1921.

STRAWBERRIES, EVERBEARING

DEEPHAVEN. Alderman, W. H., Dorsey, M. J., and Haralson, Charles. Name and Description of the New Fruits. *Minnesota Horticulturist* 49:9:225-229. 1921.

DULUTH. Names of New Fruits from the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 48:5:144. 1920.

EVERMORE. Wilcox, A. N., Alderman, W. H., Haralson, F. E., and Brierley, W. G. The Evermore Strawberry. *Minnesota Horticulturist* 73:2:19. 1945.

ORNAMENTALS, CRABAPPLE

FLAME. Alderman, W. H. New Minnesota Fruits. *Minnesota Horticulturist* 62:2:25, 28. 1934.

ALMOND

MANITOU. Alderman, W. H. Descriptions of New Varieties of Fruits, introduced by the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 51:2:54-57. 1923.

PLUM

NEWPORT. Alderman, W. H. Descriptions of New Varieties of Fruits, introduced by the Minnesota Fruit Breeding Farm. *Minnesota Horticulturist* 51:2:54-57. 1923.

Appendix II

Complete citation of the laws under which were established three Fruit Breeding Experiment Stations in Minnesota.

FIRST STATION, "MINNETONKA FARM"

General Laws of the State of Minnesota, 1878. Chapter 82, Page 128.
An Act in Relation to the Encouragement of Fruit Culture in this State.
Be it enacted by the legislature of Minnesota:

Section 1. That the Board of Regents of the State University is hereby authorized to purchase and use as a part of the experimental farm of the agricultural department of said University, a tract of land of one hundred and sixteen acres (116), situated near Lake Minnetonka in Hennepin County in this State, at a cost of not to exceed two thousand dollars, the said land to be paid for out of the funds of the said State University, and to be subject to the said Board of Regents.

Section 2. That the said tract of land or so much thereof as may be necessary, shall be used for the growth of apple and other fruit trees, and for experimenting therein especially with a view to hybridizing the crabs and hardy seedling apples with long keeping standard apples to develop (hardy) long keeping varieties of the apple tree suitable to this climate; and said experiment shall be conducted by some person to be designated by the governor, and who shall receive annually the sum of one thousand dollars as compensation for his services, and to pay for such (necessary) labor as he may employ in conducting the said experiments. He shall report annually to the Board of Regents of the State University, who shall transmit said report to the governor.

Section 3. The sum of one thousand dollars is hereby appropriated to carry out the provisions of section two of this act.

Section 4. This act shall take effect and be in force from and after its passage.

Approved March 8, 1878.

SECOND STATION, "OWATONNA STATION"

General Laws of Minnesota for 1887. Chapter 160, Pages 268, 269.
An Act to Establish an Experimental Fruit, Forest and Ornamental Tree Station.

Be it enacted by the legislature of the State of Minnesota:

Section 1. That an experimental station be and hereby is established on the state school farm at Owatonna in this state for the purpose of producing new and valuable varieties of fruit trees, thoroughly testing promising varieties we now have, and securing reliable reports in regard to fruit, forest and ornamental trees best adapted to this state.

Section 2. That said station shall be under the general supervision of the Board of Regents of the State University, who shall with the advice of

the president and secretary of the State Horticultural Society, appoint a superintendent, who shall report to the Board of Regents as they may direct, and who shall report to the State Horticultural Society in person at each annual winter meeting thereof.

Section 3. That all products of the station shall be the exclusive property of the state and all surplus shall be disposed of as the Board of Regents may direct.

Section 4. That said Board of Regents is hereby authorized to set apart and appropriate from any fund at their disposal, for such purposes, such sum as they may deem advisable, not exceeding one thousand (1,000) dollars per annum for the total expense of said station.

Section 5. This act shall take effect and be in force from and after its passage.

Approved March 2, 1887.

THIRD (PRESENT) STATION, "EXCELSIOR FRUIT BREEDING FARM"

General Laws of Minnesota for 1907. Chapter 334, Page 457.

An Act Providing a Fruit Breeding Farm for the University of the State of Minnesota.

Be it enacted by the Legislature of the State of Minnesota:

\$16,000 Appropriated for Fruit Breeding Farm.

Section 1. There is hereby appropriated out of money in the State Treasury not otherwise appropriated, the sum of sixteen thousand dollars (\$16,000), or as much thereof as may be necessary, for the purchase of a Fruit Breeding Farm for the State University by the Board of Regents of the State University as hereinafter provided.

\$2,000 Annually Appropriated.

Section 2. There is hereby annually appropriated out of money in the State Treasury, not otherwise appropriated, the sum of two thousand dollars (\$2,000) for the care and management of said fruit breeding farm.
Regents to Select a Fruit Farm.

Section 3. As soon as may be after the passage of this act, the Board of Regents of the State University shall select a fruit farm which shall meet with the approval of the executive board of the Minnesota State Horticultural Society as being well adapted for fruit breeding purposes.
Visitors Committee.

Section 4. The executive board of the Minnesota State Horticultural Society is hereby required to appoint a committee of two suitable persons to visit said fruit breeding farm, at least once in each year, to examine the fruit breeding work being done there, and to report on the progress of such work to the Minnesota State Horticultural Society and Board of Regents of the State University, together with such recommendations for the future conduct of said farm as may seem to them best. This act shall take effect and be in force on and after its passage.

Approved April 23, 1907.

**FRUIT INTRODUCTIONS FROM THE
UNIVERSITY OF MINNESOTA
FRUIT BREEDING FARM**

Groups of Fruits and Ornamentals	Number of Varieties
Apple	12
Apple-crab hybrid	1
Cherry	3
Cherry-plum	3
Currant	2
Gooseberry	1
Grape	4
Pear	3
Plum	20
Red raspberry	2
Strawberry	10
Ornamentals	3
TOTAL	64

Manufacturing Costs in *Minnesota Creameries*



ED C. KNUDTSON

RED KOLLER

Agricultural Experiment Station
UNIVERSITY OF MINNESOTA