usual sweetness and fruity flavor that was a favorite of the writer since he first remembers eating grapes. The writer is also very fond of muscadine grape varieties such as Thomas and Topsail, but his experience in growing these types has been too limited to offer comments.

Hardiness

The minimum temperatures that varieties derived from the vinifera and muscadine species will withstand is not precisely known because of inherent differences in hardiness among varieties and/or environmental conditions, wood maturity, etc., which influence the degree of hardiness of a given vine. It has been suggested that under favorable conditions, 0°F is about the minimum they will endure without serious injury; but injury has been noted at a few degrees above 0°F under some conditions. This would mean that winter protection should be provided in areas north of northern Alabama and Georgia. Some varieties of vinifera have been known to succeed fairly well in particularly favorable areas further north, but most of these were relatively hardy, early-maturing wine sorts.

Of the French hybrid and American type varieties, Seibel 14664, Seyve-Villard 20-365, Mills, and Seneca are less hardy than the others in their respective groups. Temperatures lower than −10°F have injured these varieties at Urbana often enough so that winter protection must be provided, unless very favorable sites and optimum cultural practices can be provided. Other sorts mentioned, such as Seyve-Villard 20-473, Galibert 133-6, Iona and Keuka, should be included in the same hardiness catigory.

The other French hybrid and American type varieties seldom experience winter injury at Urbana, but growers who live in regions where winter temperatures lower than −15°F can be expected regularly, should be prepared to give their vines winter protection.

In closing the writer would like to emphasize that the list of twenty varieties plus the comments on several others is strictly a personal choice based upon a single criterion for selection—dessert quality as fresh fruit—nothing more.

The Chehalis Apple

C. D. SCHWARTZE*

The late Lloyd Lonborg of Oakville, Washington chose the name Chehalis for a new apple variety that he discovered. It resembles Golden Delicious in appearance, but ripens earlier, and is affected much less by apple scab. The original tree was a chance seedling on the Lonborg property near Oakville, a small town situated near the Chehalis river, and about seventeen miles northwest of the city of the same name. The Chehalis ripens at Oakville in early October, three or four weeks ahead of Golden Delicious.

Mr. Lonborg wrote on November 9, 1965: "The original tree came up about a quarter of a mile east of our present location. I don't know how old this tree was when it bore two fruits in the fall of 1955. In the spring of 1956 we sold that part of our property and moved to our present location. The following winter I moved

*Horticulturist, Western Washington Research and Extension Center, Washington State University, Puyallup, Wash.

the tree to approximately the location of the present tree. Three small suckers adhered to its roots. The tree died, but all three suckers survived. One of the suckers is the tree you took the picture of. Late in the winter of 1956-57 I placed a Chehalis graft in a multiple tree. This limb has borne for four years. The tree from the sucker has borne three years."

The author received specimens of Chehalis from Mr. Lonborg in October, 1963. The following descriptive notes and comments are the result of annual examination of specimens since then, and a personal visit at the Lonborg farm on October 2, 1965 with Mr. John C. Dodge, Extension Horticulture Specialist:

Chehalis apples are medium to above in size, somewhat variable in shape but mostly long conic, tapered toward the calyx end. Some have been "pinched in" some distance above the apex, as shown in Fig. 1. In contrast, Golden Delicious grown in this climate is typically less conic, sometimes even broader than long, and roundish.

Chehalis is slightly lighter colored than Golden Delicious, and fruits exposed to the sun often have had a bright pinkish blush. The skin of Chehalis is smoother and slightly thinner than the skin of Golden Delicious, with less conspicuous, scattered, russet dots. Stems of Chehalis are shorter than in Golden Delicious; the stem cavity is similar but less russeted. The basin also is similar but slightly broader. A distinguishing characteristic is the calyx which is broad and wide open, so that the ring of stamens is visible inside the large, cone-shaped calyx tube. In contrast, the calyx of Golden Delicious is small and almost closed, and the tube is longer and funnel-form. The core is median and often more open than in Golden Delicious; the carpels are reniform; seeds are medium-large, acute, dark brown. Flesh is almost white, medium-fine, crisp, breaking, slightly more tender than in Golden Delicious; flavor is subacid, spritely, becoming mild and almost sweet when overripe; and slow in browning upon exposure to air.

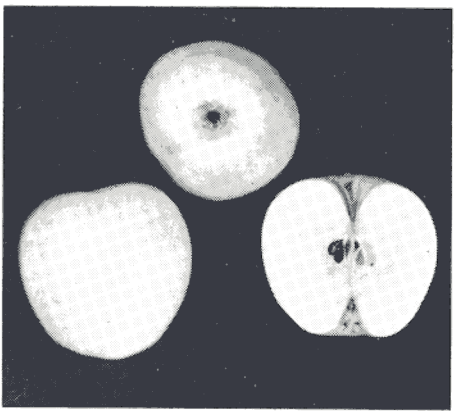

Figure 1. Chehalis apple; the large open calyx and large conic calyx tube distinguish it from other yellow varieties.

The texture of Chehalis is perhaps its most appealing quality, being slightly softer, smoother and juicier than Golden Delicious. Chehalis grown at Oakville has had much the same texture as Golden Delicious grown at Wenatchee or Yakima where the climate is warmer.

In a very critical appraisal of flavor, Chehalis seems to be slightly less sweet, or slightly more tart, and just a shade lower in flavor than Golden Delicious. In general eating quality the two varieties deserve an equal rating, in the writer's opinion. However, as sauce, Golden Delicious must be given a higher rating.

Chehalis fruits in different parts of the tree have varied considerably in color and in texture of skin and flesh. Those exposed to the sun have been lighter colored, smoother, firmer and are earlier to mature than those on the inside of the tree. In a coastal

climate, color picking may be necessary to obtain uniformity in color and maturity. This is true with Golden Delicious also.

No storage study has been made. A few specimens placed in a household refrigerator in October, 1965 kept perfectly until Christmas.

The tree at the Lonborg farm is vigorous, with an almost upright habit, spreading branches, brownish-green bark, lenticels lighter colored and less conspicuous than in Golden Delicious. Spurs are not numerous but adequate in number. The variety is not a "spur type." Some blossom buds develop on the ends of twigs.

As to fruitfulness, it can only be said that the single branch and tree have borne fruit regularly for the last three years. Cropping has been quite satisfactory for a garden variety but no meaningful records of production have been obtained. The productivity and usefulness of Chehalis as a commercial orchard variety can be proven only by planting and obtaining harvest records in commercial orcharding areas.

It seems worth mentioning again that this new variety apparently has considerable resistance to the apple scab fungus. On the branch that Mr. Lonborg grafted into the multiple tree in 1957, some very small skin blemishes, presumably caused by scab, were found on a few apples of the Chehalis variety. There was much scab on both leaves and fruit of some other varieties on the same tree. The Chehalis tree had no scab.

Mr. Lonborg did not apply chemical sprays to his trees at any time. He believed that most home gardeners will not apply such sprays and that disease resistant varieties must be found, otherwise tree fruits will disappear from home gardens in a very few years. He was certain that Chehalis will become popular with home gardeners because of its scab resistance and good quality.

The Monroe Peach

GEORGE D. OBERLE*

The Monroe peach variety is a recent product of the peach breeding program underway at Virginia Polytechnic Institute. Monroe is the fourth of the Virginia Presidential series of peach varieties. Like its predecessors, Washington, Jefferson, and Madison, Monroe was named after a Virginian who served as President of the United States.

Monroe was formerly identified as V. P. I. 58. It was selected from a population of seedlings resulting from crossing Rio Oso Gem with an unnamed V. P. I. seedling. The latter seedling came from a cross of Shipper's Late Red with Sunhigh. Trees or buds were distributed for evaluation to 29 Experiment Stations in the United States and Canada, and to stations in France and Italy.

The original tree first bore fruit in 1958. It was selected and propagated for further testing in 1960. The fruits were noted as being above average in size with bright, with attractive skin color, very firm flesh, and exceptionally good flavor for a peach ripening so late in the season. The fruit of the original tree showed no special susceptibility to attack by diseases or insects when adequately protected by

*Dept. of Horticulture, Virginia Polytechnic Institute, Blacksburg, Va.