GRAPE VARIETIES...

Introduced by the New York State Agricultural Experiment Station

1928–1961

by George L. Slate, John Watson and John Einset

New York State Agricultural Experiment Station
Cornell University, Geneva, N. Y.

Bulletin No. 794

February 1962
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**COVER**

**New York Muscat**

New York State Agricultural Experiment Station Photograph
Color plates New York Muscat courtesy FARM JOURNAL MAGAZINE

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A publication of the
New York State Agricultural Experiment Station
Geneva, N. Y.
New York State College of Agriculture
A unit of the State University of New York
At Cornell University
Grape Varieties Introduced By The New York State Agricultural Experiment Station 1928-1961

GEORGE L. SLATE, JOHN WATSON AND JOHN EINSET

Introduction

This bulletin records formally the origin, introduction, characteristics, and technical descriptions of 23 varieties of grapes originated at the New York State Agricultural Experiment Station. Three of these, Erie, Van Buren, and Westfield resulted from crosses made by the late F. E. Gladwin, at the Vineyard Laboratory of this Station at Fredonia, N. Y. In addition to the Station originations, Concord Seedless was also introduced by the Station and is included. The varieties described here have not previously been described formally. Their only notice has been in articles in Farm Research and brief descriptions in catalogs of the New York State Fruit Testing Cooperative Association, Inc. Varieties resulting from the breeding program carried on in the Department of Pomology at the Station are named and introduced by the Station and have been propagated and disseminated through the New York State Fruit Testing Cooperative Association, Inc. since its inception in 1918. These varieties have also been listed with brief descriptions in the “Register of New Fruit and Nut Varieties” published annually in the Proceedings of the American Society for Horticultural Science.

In addition to these 23 varieties 15 more were named earlier and their origins, characteristics and technical descriptions were recorded in the New or Noteworthy Fruits Bulletin series of this Station.

These varieties were as follows:

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1 Richard Wellington, a member of the Division of Pomology of this Station 1906-13, 1920-1953, now Emeritus Professor of Pomology, and George D. Oberle of the Division of Pomology 1937-1948 originated many of the varieties described in this bulletin. The authors' indebtedness to them is hereby acknowledged.
Published Description

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Objectives of the Program

The principal objectives of the grape breeding project in the past have been the development of a series of varieties of table grapes ripening from early to late and possessed of the vigor, hardiness and pest resistance of our native American varieties in addition to the highly desirable fruit characteristics of the best *Vitis vinifera* varieties. These are high dessert quality, including the delicious muscat flavor, good handling quality and the characteristic of remaining in good eating condition for a long time on the vine and in storage, in contrast to the poor keeping quality of the American-type grapes, such as Concord, Niagara, and Delaware.

Parental Material

The American-type parents have in their background the wild fox grape, or *V. labrusca*, of the Northeastern United States. Most of them also have some blood of *V. vinifera*, the European grape.

Of the 23 introductions herein described, nine are first generation hybrids between an American-type grape and a pure *V. vinifera*. The others are advanced generations of similar background.

Two charts are included, which graphically present what is known of the origin of a number of the parents used and the species involved. Several other American-type grapes used as parents, that do not appear in these charts, do appear in table 1.
### Grape Varieties

#### AMERICAN-TYPE PARENTS

<table>
<thead>
<tr>
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<th>Parentage</th>
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<td>Dutchess</td>
<td>(W) lab., vin., bourq.? aest.?</td>
<td>A. J. Caywood</td>
<td>1868</td>
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<tr>
<td>Governor Ross</td>
<td>(W) seedling of Triumph</td>
<td>T. V. Munson</td>
<td>1894</td>
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<tr>
<td>Jefferson</td>
<td>(R) Concord x Iona</td>
<td>J. H. Ricketts</td>
<td>1888</td>
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<tr>
<td>Niagara</td>
<td>(W) Concord x Cassady, a lab., vin., hybrid</td>
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#### THE PURE V. vinifera PARENTS

- **Black Hamburg** (B) midseason, all purpose, often grown under glass, origin Austria.
- **Chasselas Musque** (W) early, fine flavored muscat from France.
- **Chasselas Rose** (R) early, neutral flavor, dessert type.
- **Chasselas Rose-Violet** (R) early, neutral flavored dessert grape.
- **Gros Guillaume** (B) midseason, large berried dessert and shipping grape of French origin.
- **Lignan Blanc** (W) early, high quality dessert grape, from France.
- **Muscat Hamburg** (B) midseason, muscat flavored dessert type, often grown under glass in England.
- **Sultanina or Thompson Seedless** (W) very productive, early midseason, seedless, for dessert, shipping, raisins and wine.
- **Sultanina Rose** (R) midseason, pink seedless, dessert variety, from California.
- **Zinfandel** (B) very productive, midseason, leading red-wine grape in California.

The season of maturity as indicated refers to ripening period in main areas of cultivation. At Geneva the "early" varieties ripen with Delaware or later, and the "midseason" varieties ripen near the end of the season, after Concord.

The *V. vinifera* varieties in addition to their highly desirable fruit characteristics also contribute susceptibility to low winter temperatures, downy and powdery mildew, and the grape phylloxera, a very serious root insect of grape vines. These new varieties are a combination of the desirable and undesirable characteristics of both parents. Growers will have to decide whether the advantages of a new variety are sufficiently attractive to make it worthwhile to provide the cultural conditions necessary to circumvent its faults.

These varieties, at present, will be most useful in the home garden, and for local markets where their superior quality, earliness and good keeping quality at the other end of the season will command a premium. The table grape industry of the East, based on Concord, Delaware and Catawba, disappeared in the late 1920s. This market is now supplied almost completely by *V. vinifera* grape varieties from California. The Concord grape, Catawba, Delaware and a few others find profitable outlets at the grape juice factory and wineries. They are
handled easily in bulk. There is little inducement now for large commercial growers to produce table grapes with the fuss and bother of careful handling, packing in small packages and becoming established again in the already crowded supermarkets.

Cultural Requirements

These varieties, especially those predominantly of V. vinifera ancestry, will usually not tolerate minimum winter temperatures lower than —15° F. Temperatures lower than this are infrequent at Geneva and elsewhere in the better grape growing regions of New York.*

Vines in good vigor are more resistant to low winter temperatures. Vine vigor and resistance to winter injury may be increased by these measures:

Prevention of overbearing. Overbearing occurs frequently with many of these varieties. This results in a very heavy crop, failure to attain the normal high sugar content of the variety and failure of the fruit to develop the normal color and characteristic flavor of mature grapes. Moreover, vigor that is lost from overcropping is not easily regained.

Overbearing may be prevented by leaving fewer buds at pruning time. Those whose experience in pruning grapes is limited to Concord must leave considerably fewer buds than with Concord. The optimum number of buds has not been determined experimentally for these varieties and one's judgment must be the guide.

Control of leaf-hoppers. This insect sucks the juice from the leaves and reduces their efficiency as sugar manufacturing organs. There is less sugar to move to the fruit and be stored in the canes, a factor in winter hardness.

Control of mildews. These may greatly reduce foliage efficiency as well as injuring the fruit.

Potash deficiency. Vines on soils deficient in potash are less vigorous and their foliage is less efficient than if the potash requirements of the plant are met.

Early defoliation by frost may also contribute to increased susceptibility to winter injury.

The role of the grape phylloxera in reducing vine vigor of these varieties is not known. However, it is a widely distributed native insect that is capable of injuring seriously V. vinifera varieties. The amount of V. vinifera blood in these varieties makes it highly possible that the

*Minimum temperatures were recorded at Geneva as follows: 1934, —31° F.; 1943, —18° F.; 1948, —14° F.; 1957, —25° F.
Grape Varieties

phyloxera may be the cause of reduced vigor. The remedy is to grow these varieties on phyloxera-resistant rootstocks among which are 3306 and 3309.

Alden

Alden was produced by crossing Ontario with Gros Guillaume in 1926. Gros Guillaume, a V. vinifera variety, was received under that name from Fancher Creek Nursery, Fresno, California in 1920. As grown at Geneva it was described as large berried, round oval to oval, black with thick, tough skin and tender, crisp, meaty flesh.

According to Professor Richard Wellington this grape was similar to, and may have been Ribier. This tentative determination was made from published descriptions (Viala and Vermorel) and not from comparison of plant and fruit material.

From a population of 63 seedlings Alden and several other selections were made in 1932. It was tested as N. Y. 13035 until 1952 when it was named and introduced.

Alden is a fine quality dessert grape for home use and local market. It resembles the European grape in appearance, flavor and flesh characteristics. Some tests indicate that it may have value for a dessert wine.

The berries are large, reddish black in color with a heavy bloom that causes the fruit to appear nearly black. The skin is medium in thickness and toughness and does not separate readily from the pulp as with typical American, or slip-skin varieties. The skin cracks occasionally, but the amount of cracking is usually not serious. The meaty, but tender flesh combined with the pleasant flavor make this variety a fine table grape.

The clusters are rather large, usually loose, but occasionally of medium compactness when well-grown.

The vine is vigorous and often overbears so that the fruit ripens unevenly, or the whole crop of an overloaded vine may not mature, and the sugar content and quality is inferior to that of well ripened fruit. Vines that overbear may fail to recover normal vigor; hence careful pruning is essential to limit the crop to what the vine can ripen well. Overbearing, if followed by severe winter temperatures, may also result in winter injury. Winter injury has been severe following the winters of 1943 and 1948. Lesser injury with reduced crops was experienced during the winters of 1938, 1957 and 1959.

Vine vigorous, hardly, drooping, productive. Canes straight; bark distinctly striated; nodes enlarged; diaphragm thin; shoots tinged with
red, glabrous, cylindrical, with young tips green, with cobwebby hairs; tendrils intermittent, forked, glabrous, weak.

Leaves medium to large, 18 cm wide × 15 cm long, cordate-orbicular; apex sharply acute; lobes 3–5; upper sinuses shallow, narrow, U- to V-shaped; lower sinuses shallow, medium depth, U-shaped; petiolar sinus narrow, V-shaped; upper surface dark green, rugose, of uneven contour, glabrous; lower surface covered with brownish tomentum; texture thick, tough; petiole medium in length and thickness, tough, medium red, with brownish wooly hairs when young; teeth large, irregular, long, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters medium size, 100 to 300 gms, larger than Concord, short conical, shouldered, loose; peduncle medium long, thick, woody; pedicels medium to long, medium thick, warty; torus small to medium, rough; brush long, red. Berries 20–23 mm long × 19–21 mm wide, ellipsoidal, reddish black with heavy bloom, moderately adherent. Skin medium thick, medium tough, cracking slightly, outer flesh tends to cling to skin, slightly astringent. Flesh tender, slightly fibrous, meaty, juicy, greenish, translucent, not aromatic, mildly acid, spicy, refreshing, good in quality.

Season a few days after Concord, keeps well.

Seeds small, rounded; beak short, pointed; chalaza medium size, elongated, depressed; raphe cord-like.
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Athens

Athens resulted from the crossing of Hubbard, a black or blue V. labrusca type, with Portland, an early ripening green-fruiting labrusca. V. labrusca is the native American grape from which Concord was derived. Hubbard, Portland and Athens are predominantly labrusca in their vine and fruit character.

The cross was made in 1925 and from a population of 42 seedlings Athens was selected in 1932. It was named and introduced in 1938.

Athens is a Concord type grape that ripens about three weeks earlier than Concord. It will be most useful where the growing season is too short to ripen Concord. In tests in other states it has been reported as promising in Pennsylvania, West Virginia, Illinois, Wisconsin, Minnesota and South Carolina. The flavor is sweet and characteristically foxy. The clusters are usually loose but occasionally are well-filled. The berries crack easily and do not stand handling well which limits the variety to garden plantings, or local markets. The fruit deteriorates rapidly in quality and should be used within two weeks after ripening.

The vine is usually vigorous and tends to bear heavy crops in alternate years, a fault that might be corrected by careful adjustment of the bud number to the vigor of the vine when pruning. In a test in Ohio the average yield for four years was 34 pounds per vine.

Vine vigorous, hardy, drooping, productive. Canes slightly zigzag; bark distinctly striated; nodes enlarged; diaphragm thick; shoots green, faintly tinged red, pubescent, cylindrical, with young tips green, with brownish tomentum; tendrils continuous, forked, with hairs, strong.

Leaves medium to large, 19 cm wide × 16 cm long, cordate-orbicular; apex sharply acute; lobes 3–5, often only 3; upper sinuses deep, narrow, U-shaped; lower sinuses shallow when present, narrow, U-shaped; petiolar sinus wide, U- to V-shaped; upper surface dark green, rugose, dull, uneven, glabrous; lower surface covered with brownish tomentum; texture thick, tough; petiole medium long, medium thick, tough, light red, with brownish woolly hairs when young; teeth irregular, medium long, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens medium long, upright.

Fruit: Clusters medium to large, 100 to 300 gms, larger than Concord, conical, heavily shouldered, loose; peduncle medium long, thick, tough, tinged reddish; pedicels medium long, thick, warty; torus medium size, rough; brush long, green with brownish tinge. Berries medium to large, variable size, 17–22 mm long × 17–19 mm wide, ellipsoid, reddish black, with heavy bloom, moderately adherent. Skin medium thick, tough, separating from pulp (slip-skin),
Grape Varieties

astringent. Flesh tough, greenish, translucent, juicy, slightly foxy, sweet subacid, refreshing, fair in quality.
Season three weeks before Concord, short, does not keep well.
Seeds small, rounded: beak medium long, blunt; chalaza medium size, elongated, flat; raphe obscure.

Bath

Bath resulted from the crossing in 1930 of Fredonia with N. Y. 10805 (Chasselas Rose-Violet × Mills). The seedling, N. Y. 18149, which eventually was named Bath was selected in 1937 from a progeny of 34 seedlings. It was named and introduced in 1952.
The usefulness of Bath as a variety and its suitability for cultural conditions in other areas has not been determined, except in a very limited way. An amateur in North Carolina reported it as very productive and very promising. In Illinois it is considered worthy of further testing. In New Jersey it is described as very productive. In Virginia the vines were reported to defoliate before the fruit ripened, resulting in poor maturity.

In the Station plantings the vines are so productive that unless the crop is restricted by severe pruning, or cluster thinning, much of the fruit will not ripen well and vine vigor may be affected adversely. Winter injury of buds and vines has been noted several times and mildew injury was severe in 1958. The vines are usually vigorous if not permitted to overbear.

The medium sized clusters are compact, the berries are black with a heavy bloom, and the flesh is tender and juicy. The flavor is rather neutral and very sweet. The quality is fair to good. The fruit keeps moderately well after harvest.

Vine vigorous, hardy, drooping, open, productive. Canes straight; bark faintly striated; nodes enlarged; diaphragm thin; shoots medium red, glabrous, cylindrical, with young tips tinged reddish and with cobwebby hairs; tendrils continuous, forked, with hairs present, weak.
Leaves medium size, 19 cm wide × 15 cm long, cordate-orbicular; apex sharply acute; lobes 3; upper sinuses medium, U- to V-shaped; lower sinuses absent; petiolar sinus variable in width, usually medium, but a few are closed with the lobes meeting at the edges, V-shaped; upper surface dark green, rugose, dull, concave, glabrous; lower surface covered with brownish tomentum; texture thick, brittle; petiole short, medium thick, tough, with reddish tinge, and brownish woolen hairs when young; teeth irregular, medium long, broad, acute; veins prominent, thick, reddish.

Flowers self-fertile; stamens upright.
Fruit: Clusters medium size, 100 to 300 gms, cylindrical, occasionally
with a small shoulder, compact; peduncle short, medium thick, tough, reddish; pedicels medium in length and thickness with a few small warts; torus medium size, rough; brush long, wine-colored. Berries medium size, 16–18 mm long × 15–16 mm wide, uniform, slightly obovoid, bluish black with heavy bloom, medium adherent. Skin medium thick, tough, not adhering to pulp (slip-skin), neutral in flavor. Flesh tender, soft, greenish, translucent, juicy, sweet, neutral, fair to good in quality.

Season ten days before Concord, fair keeping quality.

Seeds small, cuneate; beak medium long, blunt; chalaza small, elongated, depressed; raphe obscure.

**Buffalo**

Buffalo is the result of a cross between Herbert and Watkins made in 1921. Five seedlings were raised and this seedling, N. Y. 10830, was selected for further test in 1928. Watkins, the pollen parent, is a Station variety of Mills × Ontario parentage. The variety was named in 1938.

Buffalo is one of the better black Station varieties at Geneva, as well as in trials in other States. It has been reported an excellent variety in Washington and Illinois. In North Carolina, Pennsylvania, Kentucky, and Missouri it has shown considerable merit.

The fruit is of excellent quality, ripens early, or about with Fredonia, and retains its flavor even when harvesting is delayed until early October. The flavor is very characteristic and appeals to many. In storage it keeps much better than the Concord types, remaining in good condition until late November. The sugar content is high, a refractometer reading of 23.4 having been recorded.

The clusters are usually loose, but are occasionally moderately compact on vigorous vines.

The vines are vigorous and produce heavy crops. As with many varieties of *V. vinifera* ancestry the vines may overbear and unless this is prevented by adjusting the crop to what the vines can mature the fruit will ripen unevenly, or fail to fully ripen. Sugar content will be low, flavor inferior and the vine vigor will be reduced in later years. One report from an area where black rot is serious indicates that Buffalo has considerable resistance to black rot.

Buffalo has winter-killed seriously in southeastern New Hampshire, on the fringe of the grape area in Ontario and in severe winters at Geneva. In 1948 some of the plants were killed to the ground and the average injury was about 50 percent. Some injury was recorded in 1943 and 1945.
All things considered, earliness, high quality, keeping quality, vigor and productiveness, Buffalo is a first class grape for the home fruit garden and local markets.

Vine vigorous, hardy, drooping, productive. Canes straight; bark distinctly striated; nodes enlarged; diaphragm medium thick; shoots green, pubescent, cylindrical, light green tips; tendrils intermittent, forked, pubescent, weak, small.

Leaves medium size, 17 cm wide \( \times \) 13 cm long, orbicular; apex sharply acute; lobes 3; upper sinuses shallow, narrow, U-shaped; lower sinuses usually absent; petiolar sinus closed, lobes overlapping; upper surface dark green, medium smooth, dull, plane, glabrous; lower surface uniformly covered with whitish tomentum, appearing green; texture thin, tough; petiole long, medium thick, tough, green tinged with light red, woolly hairs usually present to maturity; teeth slightly irregular, long, narrow, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters medium to large, 100 to 300 gms, conical, shoulder frequently long, usually loose, occasionally well-filled; peduncle short, thick, woody, green; pedicels medium in length and thickness, with smallwarts; torus large, rough; brush short, red. Berries variable in size, varying from above to below medium, 18–19 mm long \( \times \) 16–18 mm wide, spherical to slightly ellipsoidal, reddish black with heavy bloom, adhering strongly. Skin medium thick, tough, not adhering to pulp (slip-skin), slightly acid in flavor. Flesh tender, greenish, translucent, juicy, not aromatic, sweet, mildly acid at center, vinous, spicy, very good in quality.

Season with Fredonia, retains high quality on vine and in storage.

Seeds medium size, cuneate; beak medium long, blunt; chalaza medium size, elongated, depressed; raphe obscure.

**Canada Muscat**

Canada Muscat was produced by crossing Muscat Hamburg, a reddish black muscat flavored *V. vinifera* variety with Hubbard, a black *V. labrusca*-type variety. The cross was made in 1928, and in 1936 this variety was selected from a population of 12 seedlings. As N. Y. 17806 it was first distributed by the New York State Fruit Testing Cooperative Association, Inc., Geneva, N. Y. in 1958. In the fall of 1961, it was named and formally introduced.

This variety attracted the attention of a commercial winery in the Niagara Peninsula of Ontario before 1950 for a white muscatel wine. It has been propagated and grown commercially for this purpose for several years in Ontario. The name Canada Muscat is applied because its usefulness was discovered and exploited in Canada, and because commercial plantings are likely to increase in that area.
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This variety with its characteristic muscat flavor is useful as a dessert grape, but its full dessert quality may not be attained where the growing season is too short and cool to ripen Catawba. It has not yet been established as a wine grape in New York, but it may have some value for producing a muscatel wine.

The vine is a strong grower and produces medium crops. Severe winters have occasionally injured the vines and occasionally mildew has done some damage.

Canada Muscat

Vine vigorous, usually hardy, drooping, moderately dense, moderately productive. Canes slightly zigzag with distinct narrow bark striations; nodes prominent, enlarged, flattened; diaphragm medium thick; shoots green, slightly tinged red, slightly pubescent except at tips, slightly flattened, young tips pale yellowish green with cobwebby hairs; tendrils intermittent, forked, hairs present, strong.

Leaves medium size, 22 cm wide \times 15 \text{cm} long, cordate; apex sharply acute; lobes 5; upper sinuses deep, narrow, variable, U-shaped with base broader than the top; lower sinuses medium in depth and
width, U-shaped; petiolar sinus narrow, V-shaped; upper surface dark green, rugose, dull, concave, glabrous; lower surface uniformly covered with brownish white cobwebby hairs; texture thick, brittle; petiole short, unusually thick, brittle, light red with whitish wooly hairs; teeth irregular, long narrow, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters small to medium, 175–200 gms, cylindrical, shouldered, usually well-filled; peduncle short, medium thick, tough, green; pedicels medium in length and thickness, warty; torus medium size, rough; brush short, straw-colored. Berries medium size, variable. 16–23 mm long × 16–20 mm wide, ellipsoidal, yellowish green with heavy bloom, of medium adherence. Skin medium thick, tough, slightly adherent to pulp (slip-skin). Flesh slightly tough, juicy, greenish, translucent, not aromatic, muscat-flavored, sweet, good quality.

Season a few days after Concord, keeping quality fair.

Seeds medium size, cuneate; beak short, stubby; chalaza small, round, flat; raphe prominent, small.

Eden

Eden originated from a cross made in 1923 between Ontario and N. Y. 10085 (Triumph × Mills). From a population of 8 seedlings Eden was selected in 1928. It was named in 1938.

Eden had only one asset, high quality, and as there are a number of high quality grapes that are much better in other respects this variety never became established. It is not available from nurseries.

The clusters were usually poorly filled wherever the variety was grown. Crops were often light and in many places the vines were not vigorous. Some winter injury occurred on several occasions.

Vine medium vigorous, hardy, drooping, open, medium productive. Canes slightly zigzag; bark faintly striated; nodes slightly enlarged; diaphragm medium thick; shoots tinged slightly reddish, glabrous except near tips, slightly glaucous, cylindrical, tips reddish with a few cobwebby hairs; tendrils intermittent, forked, hairs present, weak.

Leaves medium size, 14 cm wide × 11 cm long, cordate-orbiculat, apex sharply acute; lobes 3; upper sinuses shallow, narrow to medium, U-shaped; lower sinuses absent; petiolar sinus usually medium wide, V-shaped; upper surface medium green, slightly rugose, dull, slightly concave around petiole, glabrous; lower surface uniformly covered with brownish-white tomentum; texture thin, brittle; petiole short, medium thick, tough, tinged reddish, with whitish wooly hairs when young; teeth irregular, short, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters small, 100 to 300 gms, long conical, shouldered, loose, often scraggly; peduncle medium in length and thickness, tough; pedicels medium long, slender, warty; torus large, rough; brush short, wine-colored. Berries medium size, uniform, 17–18 mm long × 17–18
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mm wide, spherical, reddish black with heavy bloom, strongly adherent. Skin thick, tough, not adhering to pulp (slip-skin), slightly astrin gent, acid. Flesh firm, greenish, juicy, mildly aromatic, vinous, sweet, good quality.

Season with Delaware.

Seeds small, rounded; beak short, pointed; chalaza medium size, round, depressed; raphe obscure.

**Erie**

Erie was originated by the late Fred E. Gladwin of the Vineyard Laboratory of this Station at Fredonia, N.Y. The cross was (Goff × Worden) × Worden, and the date that it was made is not known. It was named in 1930 and first disseminated in 1932 by the New York State Fruit Testing Cooperative Association, Inc.

Erie is a good quality very early ripening Concord type of grape that was introduced for home use. It has not become established and is probably not available from nurseries.

Erie may ripen ten days earlier than Fredonia, or the last week in August, is of better quality and retains its good flavor longer on the vine than other early labrusca types. The berries are of medium size and the clusters are small and poorly filled, probably because of the reflected stamens, which produce poor, or no pollen. The refractometer reading August 27, 1942 was 14.8. A sugar reading of 15.9 was recorded by Gladwin September 4, 1940. The vine is only medium in vigor at Geneva, but was described by Gladwin at Fredonia as "quite vigorous". Crops at Geneva have been light, or only medium. An average yield for four years in Ohio of 18 pounds per vine has been recorded. The vine is less winter hardy than the other commonly grown labrusca varieties.

Vine medium in vigor, hardy, drooping, moderately productive. Canes slightly zigzag; bark faintly striated; nodes enlarged; diaphragm thick, shoots reddish brown, pubescence sparse, or absent except near tips, cylindrical; tips whitish green with brown tomentum; tendrils continuous, forked, pubescent, strong.

Leaves medium size, 18 cm wide × 16 cm long, cordate-orbicular; apex sharply acute; lobes usually 3; upper sinuses deep, narrow, U-shaped; lower sinuses usually absent; petiolar sinus narrow, U- to V-shaped, upper surface dark green, medium smooth, dull, with contour concave and uneven, glabrous; lower surface uniformly covered with a heavy brown tomentum: texture thick, tough; petiole short, medium thick, tough, medium reddish with brown wooly hairs present to maturity, but occasional and sparse on older petioles; teeth irregular, short, broad, acute; veins prominent, thick.

Flowers not self-fertile; stamens reflexed.
Fruit: Clusters very small, less than 100 gms, short conical, irregular, loose to straggly; peduncle short to medium, medium to thick, tough, green, tinged reddish; pedicels medium long, slender, warty; torus small, rough; brush long, wine-colored. Berry size variable, small to medium, 16–20 mm long × 16–20 mm wide, spherical, jet black with heavy bloom, medium in adherence. Skin medium in thickness and toughness, not adhering to pulp (slip-skin). Flesh slightly tough, greenish, translucent, juicy, slightly foxy like Concord, sweet, good quality.

Season very early, ten days before Fredonia, holds quality.

Seeds small, cuneate; beak short, pointed; chalaza small, elongated, depressed; raphe small.

**Hanover**

Hanover resulted from a cross between Brighton and Niagara which was made in 1899. From a population of 95 seedlings Hanover was selected in 1908. On the basis of its performance at the Station’s Vineyard Laboratory at Fredonia, N. Y. it was named in 1924 by the late F. E. Gladwin of that station and introduced in 1928.

Hanover is of average, or below average merit. It has been in existence for 60 years without attracting attention, or becoming established. It is not outstanding in any characteristic or combination of characteristics that make a good grape variety. In some years the vines have experienced considerable winter injury. Vigor and crops have been low, or variable from year to year. The crop ripens rather late, is not superior in quality and the color is very dark red and not attractive.

At Fredonia it was considered desirable by F. E. Gladwin, who named it, and in one test in Ohio a few vines yielded an average of 34 pounds of fruit for a 4 year period. It is no longer available from nurseries.

Vines vigorous, hardy, productive, drooping. Canes straight; bark distinctly striated; nodes enlarged; diaphragm medium thick, shoots tinged reddish, medium tomentose the entire length, cylindrical, tips pale green, heavily tomentose; tendrils intermittent, forked, hairs present, strong.

Leaves medium size, 19 cm wide × 14 cm long, cordate-orbicular: apex sharply acute; lobes 5; upper sinuses deep, narrow, U-shaped; lower sinuses medium in depth, narrow, U-shaped; petiolar sinus narrow, V-shaped; upper surface dark green, slightly rugose, dull, contour slightly convex, becoming concave around petiole, uneven, glabrous; lower surface uniformly covered with brownish tomentum; texture thick, brittle; petiole short, medium thick, brittle, medium reddish, with whitish wooly hairs present to maturity; teeth irregular, long, broad, acute; veins prominent, thick.
Flowers self-fertile; stamens upright.

Fruit: Clusters medium size, 100–300 gms, long conical, long-shouldered, well-filled; peduncle short, thick, woody, green; pedicels medium long, medium thick, warty; torus large, rough; brush long, straw-colored. Berries variable, size small to medium, 15–18 mm long × 14–18 mm wide, spherical, dark red with heavy bloom, moderately adherent. Skin medium thick, tough, not adhering to pulp (slip-skin), astringent, acid. Flesh tough, slightly fibrous, greenish, translucent, juicy, mildly acid to medium acid at center, good quality.

Season late, a week before Catawba.

Seeds, small, cuneate; beak short, blunt; chalaza medium size, elongated, depressed; raphe obscure.

Hector

Hector originated from a cross between Chasselas Rose, a V. vinifera variety, and Brocton, a Station variety which resulted from crossing Brighton with N. Y. 125 (Winchell × Diamond). The cross was made in 1923 and the seedling, which became Hector, was selected in 1928 from a population of three. It was named and introduced in 1937.

At its best Hector is a good quality vinifera type of grape with a meaty texture, compact clusters and a pleasant vinous flavor. Unfortunately the vines tend to overbear and the crop ripens unevenly. Other faults are lack of winter hardiness, susceptibility to downy mildew and lack of vigor which may possibly be associated with overbearing or susceptibility to phylloxera. In test in other States Hector has failed. It is not being propagated by nurseries.

Vines medium in vigor, horizontal growth habit, hardy, productive. Canes straight, bark distinctly striated; nodes enlarged; diaphragm medium thick; shoots dull reddish, glaucous, glabrous except at tips, cylindrical, tips bronze green with a few cobwebby hairs; tendrils intermittent, forked, with very few hairs, weak.

Leaves medium size, 16 cm wide × 13 cm long, orbicular; apex sharply acute; lobes 3–5; upper sinuses deep, narrow, U-shaped; lower sinuses shallow, medium wide, U-shaped; petiolar sinus medium wide, V-shaped; upper surface dark green, rugose, dull, contorted, concave, glabrous; lower surface with a thick tomentum distributed all over in tufts; texture thick, tough; petiole medium in length and thickness, brittle, heavily tinged with red, wooly hairs when young; teeth irregular, medium long, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters small, 100–300 gms, short conical, usually not shouldered, compact; peduncle short, medium thick, woody, tinged reddish; pedicels short, medium thick, warty; torus medium size, rough; brush short, green. Berries of variable size, small to medium, 15–18 mm long × 15–18 mm wide, spherical to slightly ellipsoidal,
medium red, with light bloom, coloring very uneven, adherent. Skin thick, tough, not adhering to pulp (slip-skin), slightly astringent, acid. Flesh tender, slightly meaty, slightly fibrous, whitish green translucent, juicy, not aromatic, mildly acid at center, vinous refreshing; good quality.

Season late, about a week before Catawba.

Seeds small, rounded; beak short, blunt; chalaza medium size, elongated, depressed; raphe obscure.

**Kendaia**

Kendaia originated from a cross between Portland and Hubbard, the reciprocal of the cross which produced Athens. The cross was made in 1925 and from a population of 42 seedlings Kendaia was selected in 1932. It was named and introduced in 1939.

Kendaia is an early ripening Concord type of grape that has demonstrated considerable merit at Geneva and in tests in other States. Generally, these tests indicate that it is superior to Athens in cropping, and the berries, although subject to some cracking, are superior to Athens in this respect. This variety is likely to be most useful in the home garden, or for local markets in areas where the growing season is too short for Concord. In southern New Hampshire it has been reported to be one of the hardiest along with Van Buren and Fredonia. From 1939 when the vines were planted until 1956 no serious winter injury was experienced.

Comments from reports at other experiment stations are frequently favorable. From Pennsylvania, one of the best: Washington, promising; Ohio average yield per vine for 4 years of 22.5 pounds. Illinois reports commercial possibilities, better than Fredonia, very vigorous, very productive, does not crack like Athens, very promising; Massachusetts, berries tend to crack, but in general a desirable variety; Canby, Minnesota, private grower, another good performer, always loaded.

From southern Stations the reports indicate that the variety is usually not promising. The berries shatter badly in Delaware, ripen unevenly in Arkansas, and the vines are weak and defoliate early in Virginia.

At Geneva the vines are very vigorous, but cropping has been variable, possibly because the pruning has been too severe for the vigor of the vine. At its best, it bears heavy crops with good clusters. Serious winter injury was noted following the winter of 1947–48, but usually Kendaia has been one of the hardiest.
The clusters are of medium size, usually well-filled. The flavor is slightly foxy, moderately acid, and the quality good. Refractometer readings of 19.0 at Geneva and 22.5 at Fredonia have been recorded.

As with many labrusca types the quality deteriorates rapidly after the fruit is ripe and the crop should be used within two weeks of maturity.

Kendaia

Vine vigorous, hardy, drooping, productive. Canes slightly zigzag; bark striations distinct; nodes slightly enlarged; diaphragm medium thick; shoots reddish to reddish green, pubescent, cylindrical, tips light green with brown tomentum; tendrils intermittent, forked, heavily pubescent, very strong, often reddish.

Leaves medium size, 18 cm wide \( \times \) 16 cm long, cordate; apex sharply acute; lobes 3–5, usually 3; upper sinuses deep, narrow, U-shaped; lower sinuses shallow when present, narrow, U-shaped; petiolar sinus medium wide, U to V shaped; upper surface dark green, rugose, dull, slightly convex, with a few cobwebby hairs on young leaves; lower surface uniformly covered all over with brown tomentum; texture
thick, tough; petiole short, medium thick, brittle, dark red, with brownish woolly hairs present to maturity; teeth irregular, short, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters medium to large, 300–600 gms, conical, shouldered, well-filled; peduncle short, thick, tough; pedicels medium in length and thickness, warty; torus large, rough; brush long, usually tinged red. Berries medium to large, 18–20 mm long × 18–20 mm wide, uniform, spherical, bluish black with heavy bloom, medium in adherence. Skin thick, tough, not adhering to pulp (slip-skin), slightly foxy. Flesh tough, greenish, translucent, juicy, slightly foxy, medium acid, good.

Season about three weeks before Concord with Fredonia, keeping quality fair.

Seeds large, oblong; beak medium size, blunt, chalaza medium size, elongated, depressed; raphe obscure.

Naples

Naples was selected in 1935 from a population of 9 seedlings produced by crossing Delaware with N. Y. 8042 (Mills × Iona) in 1928. This variety was named and introduced in 1952.

Naples is a late-ripening red grape that resembles its parent, Delaware, in flavor and attractive bright red color. The clusters are larger, less compact, and the berries are larger and have a tougher skin.

Naples ripens two or more weeks after Delaware and keeps much better in storage.

The vine is normally vigorous and so productive that bud number must be limited, or the vine will overbear with consequent failure of the fruit to mature properly. Vine vigor may also be reduced by overproduction.

If the growing season is long enough and the vine is managed to prevent over-bearing and maintain good vigor Naples is worth trying as a high quality Delaware type of grape.

Vine vigorous, hardy, drooping, productive. Canes slightly zigzag, bark striations faint; nodes slightly enlarged; diaphragm thin; shoots reddish, glabrous, cylindrical, tips green with a few cobwebby hairs; tendrils intermittent, forked, hairs present, weak.

Leaves small, 17 cm wide × 14 cm long, cordate; apex sharply acute; lobes 5; upper sinuses deep, narrow, U to V-shaped; lower sinuses shallow, medium wide, U-shaped; petiolar sinus wide, V-shaped, base often flat; upper surface dark green, slightly rugose, dull, variable in contour, some concave, contorted, glabrous; lower surface with a medium number of cobwebby hairs in tufts on mid-rib and veins; texture thick, brittle; petiole short, medium thick, brittle, deep red,
with wooly hairs only when young; teeth irregular, short, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters small, 100–300 gms, short conical, shouldered, compact; peduncle medium in length and thickness, tough, tinged reddish; pedicels medium long, slender with a few warts; torus medium size, rough; brush long, green. Berries small to medium size, 13–15 mm long $\times$ 12–15 mm wide, spherical, bright medium red, similar to Delaware, faintly striated, with heavy bloom, strongly adherent. Skin thick, tough, not adhering to pulp (slip-skin), neutral. Flesh tough, juicy, light green translucent, mildly aromatic, spicy, sweet, vinous, with Delaware flavor, good.

Season several days after Concord, keeps well in storage.

Seeds small, cuneate; beak short, pointed; chalaza medium size, round, depressed; raphe cordlike.

**New York Muscat**

New York Muscat was produced by crossing Muscat Hamburg, a black, muscat-flavored *V. vinifera* grape, with Ontario. From a population of 16 seedlings, of which 5 died before fruiting, this variety was selected in 1932. Plants have been distributed as N. Y. 12997 by the New York State Fruit Testing Cooperative Association, Inc., Geneva, N. Y. since 1954. It was named and formally introduced in the fall of 1961.

New York Muscat is an early ripening, very sweet, high quality, muscat-flavored grape. The characteristic muscat flavor, which is found only in varieties of *V. vinifera*, is highly appreciated in dessert grapes. The famous Muscat of Alexandria, the variety from which seeded raisins are made in California, has a strong muscat flavor. New York Muscat ripens early and well, and the berries stand handling fairly well. A refractometer reading of 23.0 has been noted. The berries are reddish black to almost black with a heavy lilac bloom and ripen in early mid-season, or about with Delaware. They remain in good condition on the vine much longer than Concord types and keep well in cold storage. The clusters are usually loose; occasionally a few are fairly well-filled.

The vine is moderately vigorous and productive. Considerable winter injury to the vine occurred in the winter of 1947–48 and 10 percent injury was recorded in 1959.

New York Muscat is well worth growing in the garden for its muscat flavor, high quality, early ripening and productiveness in regions where the winters are not more severe than at Geneva. It may also be useful for making a red muscatel wine.

Vine vigorous, hardy, drooping, productive. Canes sinuous, with dis-
tinct narrow forked striations; nodes prominent, enlarged, flattened; diaphragm medium thick; shoots reddish, turning brown early, cylindrical, with a few cobwebby hairs, tips green with cobwebby hairs; tendrils intermittent, forked, with hairs, weak.

Leaves medium size, 18 cm wide × 15 cm long, cordate-orbicular; apex sharply acute; lobes 3; upper sinuses variable in depth, usually shallow, narrow, U- to V-shaped, petiolar sinus narrow, V-shaped; upper surface dark green, slightly rugose, uneven contour, glabrous; lower surface uniformly covered with large quantity of cobwebby hairs felted closely; texture thick, tough; petiole short, medium thick, brittle, light red with whitish woolly hairs only when young; teeth irregular, long, broad, acutely pointed; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters medium to large, 100–300 gms, long conical, shouldered, loose to nearly well-filled; peduncle short, thick, woody, tinged reddish; pedicels short, medium thick, warty; torus medium size, rough; brush variable length, usually short, red. Berries variable in size, small to medium, 14–17 mm long × 14–17 mm wide, spherical, reddish black with heavy bloom, of medium adherence. Skin medium thick, not adhering to pulp (slip-skin), tough, not cracking, astringent. Flesh slightly tough, juicy, greenish, translucent, not aromatic, sweet, refreshing with a medium muscat flavor; quality very good.

Season ahead of Delaware, early mid-season, retains quality well.

Seeds small, rounded; beak medium long, stubby: chalaza round, small, flat; raphe prominent, cord-like, small.

Ruby

Ruby originated from a cross made in 1923 between Keuka and Ontario. From a population of 11 seedlings Ruby was selected in 1930. This variety was named and introduced in 1938.

Ruby, when the vines are vigorous, not overloaded, and the growing season is somewhat longer than is needed to ripen Concord, can be a good quality attractive red grape suitable for the home vineyard. In tests in other States it has been reported promising in Pennsylvania and Illinois. Elsewhere, the vines are often weak and the crop ripens unevenly.

At Geneva the faults of weak vines, overbearing and consequent uneven ripening, as well as serious winter injury on several occasions have outweighed any usefulness the variety might have because of dessert quality and appearance, and its propagation has been discontinued. There are already good quality varieties without these disadvantages.

Vine medium in vigor, drooping, a few shoots upright, moderately productive. Canes straight; bark striations distinct: nodes slightly en-
larged; diaphragm medium thick; shoots reddish, glabrous, cylindrical, tips pale green with very few wooly hairs; tendrils intermittent, forked, hairs present, weak.

Leaves medium size, 16 cm wide $\times$ 12 cm long, cordate-orbicular; apex sharply acute; lobes 3–5; upper sinuses usually shallow, but a few are medium or deep, form varies from narrow to wide, U-shaped; lower sinuses shallow, medium wide, V-shaped; petiolar sinus narrow, V-shaped; upper surface dark green, rugose, slightly glossy, uneven and slightly convex, glabrous; lower surface uniformly covered with large quantity of cobwebby hairs on mature leaves; texture thick, tough; petiole long, medium thick, brittle, lightly tinged red, with wooly hairs when young; teeth irregular, short, broad, obtuse; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters medium to small, 300 to 600 gms, long conical to conical, shouldered, compact; peduncle short, medium thick, woody, green; pedicels medium long, medium thick, warty; torus medium size, rough; brush short, green. Berries variable size, small to medium, 17–20 mm long $\times$ 16–20 mm wide, spherical, medium red, medium bloom, moderately adherent. Skin thick, tough, not adhering to pulp (slip-skin), slightly acid. Flesh slightly tough, juicy, greenish, translucent, not aromatic, mildly acid, neutral, vinous, good quality.

Season late, a week before Catawba, keeps well.

Seeds small, rounded; beak short, blunt; chalaza medium size, elongated, depressed; raphe obscure.

Schuyler

Schuyler resulted from a cross between Zinfandel, a black-fruited wine grape grown extensively in California, and Ontario. The cross was made in 1926, the seedling which became Schuyler was selected in 1933 from a population of 20, and was named and introduced in 1947.

Schuyler is a high quality, very early-ripening black grape with a very characteristic pleasant vinous flavor. A refractometer reading of 21° has been recorded. The skin is medium tough and slightly astringent. The flesh is tender, melting and juicy. Schuyler ripens about 3½ weeks before Concord or during the first week in September at Geneva. It is one of the best flavored, very early black grapes and well worth a place in the home vineyard.

The vines are only medium in vigor and as with many varieties of *V. vinifera* parentage will overbear if bud number is not adjusted to the vigor of the vine. Severe spur pruning is essential. During the winter of 1947–48 the vines experienced severe winter killing. In the winter of 1942–43 a low of $-18^\circ$ F. in December injured the wood but a light crop of fruit was borne in 1943. Spraying for downy mildew is necessary.
In tests elsewhere Schuyler has shown considerable merit as an early variety. It is on the list of recommended varieties in Washington and New Jersey, and has been noted as promising in Pennsylvania and Arkansas. Reports of low vigor and uneven ripening may be due to overcropping.

The birds often damage the fruit as with other early ripening grapes and it may be necessary to protect the fruit by covering the clusters with white paper sacks, or preventing bird damage by other means.

Vine vigorous, hardy, upright, productive. Canes slightly zigzag; bark striations faint; nodes enlarged; diaphragm thin; shoots pale green, glabrous, slightly glaucous, cylindrical, tips pale green; tendrils intermittent, forked, few cobwebby hairs, weak.

Leaves medium size, 15 cm wide × 18 cm long, cordate-orbicular; apex sharply acute; lobes 3–5; upper sinuses deep, narrow, U-shaped; lower sinuses shallow, narrow, U-shaped; petiolar sinus medium to closed, lobes overlapping, U-shaped; upper surface dark green, dull, slightly rugose, convex; lower surface uniformly covered with a whitish tomentum; texture thin, brittle; petiole short, medium thick, tough, green, a few faintly tinged red, glabrous; teeth irregular, short, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters medium to large, 100–300 gms, conical, shouldered, compact; peduncle short, medium thick, woody, tinged reddish; pedicels medium long, medium thick, with very few small warts, some pedicels smooth; torus medium size, rough; brush short, light red. Berries variable size, small to medium, 15–18 mm long × 15–18 mm wide, spherical, jet black with heavy bloom, moderately adherent. Skin medium in thickness and texture, not adherent to pulp (slip-skin). Flesh tender, melting, juicy, greenish, translucent, mildly aromatic, vinous, neutral, good quality.

Season very early nearly a month before Concord.

Seeds small, cuneate; beak short, blunt; chalaza small, round, flat; raphe cord-like.

**Steuben**

Steuben originated from a cross made in 1925 between Wayne (Mills × Ontario) and Sheridan (Herbert × Worden). It was selected from a population of 31 seedlings in 1931 and was named and introduced in 1947.

Steuben is one of the best grape varieties introduced by the Station. Its suitability for culture as a high quality dessert grape for home use and for market has been demonstrated in a number of widely separated regions. In vine vigor, productiveness and fruit characteristics it has been reported as outstanding in New Jersey, Pennsylvania, Washington, North Carolina, Illinois, Delaware, Tennessee and Mis-
souri. Since its origination it has performed consistently well at Geneva.

The clusters are somewhat larger than those of Concord, much more compact and very attractive in appearance. The black berries are covered with a heavy lilac bloom. The skin is medium in thickness and toughness and the fruit stands handling without cracking. In dessert quality Steuben is one of the best and its high flavor is retained until December in cold storage. It ripens a day or two after Concord.

The vines are vigorous and bear heavy crops. Steuben will overbear if not carefully pruned and the fruit will not ripen well. Although Steuben was originally reported as resistant to black rot, this has not been borne out by later experience and the usual spray program is essential as with other varieties. The vines are usually winter hardy, but some winter injury was recorded following the winter of 1947–48.

Steuben is recommended for trial for market and home use where the growing season is long enough to ripen Concord and the winters are not more severe than at Geneva.

Vine vigorous, hardy, drooping, productive. Canes slightly zigzag; bark striations distinct; nodes slightly enlarged; diaphragm medium thick; shoots strongly tinged with red, glabrous except near tips which are pubescent, cylindrical; tips pale green; tendrils intermittent, forked, hairs present, strong.

Leaves large, 20 cm wide × 16 cm long, cordate-orbicular; apex sharply acute; lobes 3–5: upper sinuses shallow, narrow, U-shaped; lower sinuses shallow, narrow, U-shaped; petiolar sinus medium wide, V-shaped; upper surface dark green, slightly glossy, rugose, somewhat uneven, concave around petiole, glabrous; lower surface uniformly covered with a brownish tomentum; texture thick, brittle; petiole short, medium thick, slightly tough, tinged light red, with brown wooly hairs present to maturity; teeth irregular, short, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters medium to large, 100–300 gms, cylindrical, small shouldered, often not shouldered, compact; peduncle medium long, medium thick, tough, reddish; pedicels medium long, medium thick, warty; torus large, rough: brush short, tinged red at tip. Berries medium size, 14–17 mm long × 14–16 mm wide, spherical, slightly elongated by pressure in cluster, jet-black with heavy bloom, medium in adherence. Skin medium thick, medium tough, not adhering to pulp (slip-skin), slightly astringent, acid. Flesh slightly tough, juicy, greenish, translucent, not aromatic, vinous, sweet, very good quality.

Season with or just after Concord, outstanding in holding quality in storage.

Seeds small, rounded; beak short, blunt; chalaza medium size, elongated, depressed, raphe obscure.
Van Buren

Van Buren is one of several early ripening Concord-type of grapes developed by the late F. E. Gladwin at the Vineyard Laboratory of this Station at Fredonia, N. Y. The varieties that he used in this phase of his grape breeding project were typical *V. labrusca* types. Van Buren was a cross between Fredonia and Worden and it was selected from several hundred seedlings of the same parentage. The seed parent, Fredonia, resulted from a Champion × Lucile cross, and Erie was (Goff × Worden) × Worden. Gladwin considered that Worden was a good parent for breeding early varieties.

The date the cross was made is not known, but Gladwin noted in 1936 that Van Buren had just borne its fifth consecutive crop. It was introduced in 1935.

Van Buren has established itself as the best very early Concord-type of grape in the Northeast. It normally ripens the last days of August at Geneva or a week or more before Fredonia. In regions where killing frosts occur before Concord is ripe, or wherever a very early Concord-type of grape is desired to lengthen the season for home use, or local markets, Van Buren is first choice.

The fruit is equal to Concord in dessert quality but not for the commercial manufacture of unfermented juice and other grape products. As with other Concord types Van Buren does not keep well and the crop should be harvested and used as soon as it matures. In garden plantings its earliness makes it attractive to the birds and the clusters may have to be covered with white paper sacks or otherwise protected as the berries begin to color.

The vines are as productive as Concord, equally vigorous, and if they overbear because too much fruiting wood is left, the effect on the vine is less disastrous than with varieties with considerable *V. vinifera* blood. Following the winter of 1947–48 considerable winter killing of Van Buren was noted, but at Geneva and elsewhere the variety has been one of the hardiest.

Downy mildew may attack the clusters and the usual spray program is necessary as with all other grapes.

Vine vigorous, hardy, drooping, productive. Canes straight; bark striations distinct; nodes enlarged; diaphragm thick; shoots pale green, pubescent, cylindrical, tips whitish green, tomentose; tendrils continuous, forked, pubescent, strong.

Leaves large, 22 cm wide × 20 cm long, cordate-orbicular; apex sharply acute; lobes 3; upper sinuses usually shallow, narrow, U-shaped; lower sinuses rarely present, U-shaped; petiolar sinus medium wide, U-shaped; upper surface dark green, medium smooth, dull, irreg-
Van Buren
ularly convex, glabrous; lower surface uniformly covered between the veins with a heavy brownish tomentum; texture thick, tough; petiole short, medium thick, tough, medium red, with brown wooly hairs present to maturity; teeth irregular, short, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters small to medium, 100–300 gms, short, cylindrical, shouldered, well-filled; peduncle short, medium thick, tough, green, tinged reddish; pedicels short, medium thick with small brown warts; torus large, rough; brush short, straw-colored. Berries medium size, 16–20 mm long × 14–19 mm wide, uniform, spherical, jet black with heavy bloom, weakly adherent, shattering when over-ripe. Skin thick, tender, not adhering to pulp (slip-skin), foxy. Flesh slightly tough, juicy, greenish, translucent, slightly foxy, sweet, good.

Season very early, ten days before Fredonia.

Seeds medium size, oblong; beak short, blunt; chalaza medium size, elongated, depressed; raphe obscure.

**Watkins**

Watkins originated from crossing Mills with Ontario in 1911. It was selected from a population of 101 seedlings in 1916 and was named in 1930.

Watkins was introduced as a high quality grape for home use. Except for its quality it had little to recommend it and it is no longer being propagated.

Vine of medium vigor, hardy, horizontal to drooping, moderately productive. Canes sinuous; bark distinctly striated; shoots striped red, heavily tomentose; tendrils intermittent, forked, glabrous, medium size.

Leaves above medium size, roundish; lobes 3–5; upper sinuses medium to deep, medium wide; lower sinuses shallow, medium wide; petiolar sinus medium in depth and width; upper surface medium green, dull, medium contour; lower surface covered with brownish tomentum; texture medium thick; petiole short, medium thick; teeth shallow, medium in width, broad, acute.

Flowers self-fertile; stamens upright.

Fruit: Clusters small, 100–300 gms, smaller than Concord, cylindrical, winged, loose; peduncle short, slender, herbaceous, green; pedicel medium long, medium thick, warty; torus large, rough, brush long, red. Berries 18.3 mm long × 18.6 mm wide ellipsoidal, reddish black with heavy bloom, moderately adherent. Skin thick, tough, separating from pulp (slip-skin), slightly foxy. Flesh tough, soft, greenish, medium juicy, foxy, sweet, spicy, good quality.

Season a little after Concord.

Seeds medium size, oblong; beak medium long, stubby; chalaza small, elongated, flat; raphe prominent, small.
Westfield

Westfield was one of several varieties originated by the late F. E. Gladwin at the Vineyard Laboratory of this Station at Fredonia, N. Y. The date of origin is not known, but Gladwin named it in 1930 and distributed some plants soon after that. It was first offered in the catalogue of the New York State Fruit Testing Cooperative Association in the fall of 1937 and was listed by the Association for several years, the last offering being in the 1953–54 catalogue. The parentage was Herbert × Concord Seedless.

The following description was prepared by Gladwin in 1930.

"Westfield; blue, ripens just before Concord. Cluster medium, berry medium, very compact and clusters very uniform. Usually four clusters are borne to the shoot, and each is of like size. Berry very firm with medium thick skin, but rather hard flesh. Berries with thin bloom. Peduncle very long. Juice very deep in color, 12 times deeper than Concord. Very vigorous and productive. Essentially a juice variety because of high color and the sugar-acid ratio."

In spite of its apparent suitability for juice purposes Westfield failed to become established and its propagation by the Fruit Testing Association was discontinued.

Vine vigorous, hardy, drooping, productive. Canes straight; bark distinctly striated; nodes enlarged; diaphragm thick; shoots reddish, pubescent, cylindrical; tips reddish with cobwebby hairs; tendrils intermittent, forked, hairs present, strong.

Leaves medium size, 18 cm wide × 15 cm long, cordate-orbicular; apex sharply acute; lobes 3; upper sinuses shallow, usually wide, V-shaped; lower sinuses absent, petiolar sinus usually wide, V-shaped; upper surface medium green, rugose, dull, slightly convex, glabrous; lower surface uniformly covered with light-brownish tomentum; texture thick, soft; petiole short, medium thick, tough; teeth irregular, short, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters small to medium, 100–300 gms, cylindrical, occasionally shouldered, compact; peduncle short, slender, tough, tinged reddish; pedicels short, slender, warty; torus small, rough; brush short, red. Berries variable size, small to medium, 17–19 mm long × 15–18 mm wide, spherical, black with heavy bloom, of medium adherence. Skin thick, tough, (slip-skin), astringent, acid, slightly foxy. Flesh tough, greenish, translucent, juicy, mildly aromatic, foxy, mildly acid; quality fair.

Season about with Concord.

Seeds medium size, cuneate; beak medium long, pointed; chalaza elongated, large, flat; raphe obscure, small.
Yates

Yates was produced by crossing Mills with Ontario in 1923. From the 8 seedlings which were raised Yates was selected in 1928 and named in 1937. The same cross made in 1911 produced Wayne and Watkins which were introduced in 1927 and 1930 respectively.

Yates is a late ripening, very good quality red grape that remains in good edible condition in storage longer than most other American grapes. The color of well-ripened fruit is dark red which with the heavy bloom is very attractive in appearance. The meaty, slightly tough flesh and thick tough skin are associated with its excellent keeping quality.

Yates ripens after Concord, or about with Catawba, which limits its culture to areas where Catawba ripens satisfactorily.

The vines are very vigorous and very productive. Overbearing results in poor ripening, but the effect of overcropping on vine vigor is less serious than with other less vigorous varieties. In all the years since Yates originated vine vigor has been well maintained at Geneva. In 1934, following the lowest minimum temperature ever recorded at Geneva, Yates, as well as most other varieties, was killed to the ground, but little winter injury has been experienced in other years.

Vine vigorous, hardy, horizontal, dense, productive. Canes slightly zigzag; bark striations faint; nodes enlarged; diaphragm thick; shoots strongly tinged reddish, pubescent, cylindrical, slightly glaucous; tips tinged reddish, covered with a thick mat of cobwebby hairs; tendrils intermittent, forked, hairs present, strong.

Leaves medium size, 18 cm wide × 14 cm long, cordate-orbicular: apex sharply acute; lobes 3–5, usually 3; upper sinuses shallow, narrow, U-shaped; lower sinuses occasional, shallow and ill-defined; petiolar sinus medium, V-shaped; upper surface dark green, rugose, dull, slightly convex with some leaves concave around petiole, glabrous; lower surface uniformly covered with a white tomentum, texture thick, tough; petiole short, medium thick, tough, tinged red, with whitish woolly hairs present to maturity; teeth irregular, short, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters medium size, 100–300 gms, conical, shouldered, compact; peduncle short, thick, woody, strongly tinged reddish; pedicels short, thick, warty; torus large, rough, brush long, green. Berries medium to large, 15–19 mm long × 16–19 mm wide, variable, spherical, medium red, striated, heavy bloom, strongly adherent. Skin thick, very tough, not adherent to pulp (slip-skin), slightly astringent. Flesh slightly tough, meaty, fibrous, juicy, greenish, translucent, vinous, sweet, very good.

Season late a week after Concord, has excellent keeping quality.
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Seeds medium size, rounded; beak short, blunt; chalaza medium size, elongated, depressed; raphe obscure.

Seedless Grape Breeding at Geneva

The breeding of seedless grapes began in 1919 as a cooperative project between the New York Botanical Garden and the Station. The late Dr. A. B. Stout of the Botanical Garden staff directed the project from the beginning until his retirement in 1948. The project is being continued as part of the grape breeding program at Geneva.

The project had three objectives:

1. The study of the nature and scope of types of seedlessness in grapes.
2. A study of the inheritance of seedlessness in grapes.
3. The production by breeding of hardy seedless grape varieties suitable for culture in New York.

During the early years of the project Concord Seedless was used as a parent in a number of crosses. As a parent it was similar to Concord. All of its descendants in the first and second generations had the usual number of normal seeds, and none was outstanding.

The European grape, *V. vinifera* has several seedless varieties, some of which are very important viticulturally. Sultanina, the Thompson Seedless of California, is the basis of the seedless raisin industry. Black Corinth produces the dried currents of commerce, most of which come from Greece. Black Monukka and several others are grown. Several of these varieties, particularly Sultanina (Thompson Seedless) have been used as parents in the grape breeding project at Geneva. None of the seedlings of Black Corinth has been seedless in the first or second generation.

These *V. vinifera* varieties produce no seeds, but their pollen is good so they are used as pollen parents in crosses with seeded varieties that are winter hardy in this area. Large numbers of seeds have been produced, but germination is poor, and many seedlings are not winter hardy. Over the years, a considerable number of moderately winter hardy seedlings have been raised.

Fortunately, about half of the first generation seedlings from certain crosses between the seeded varieties and the seedless *V. vinifera* varieties have been seedless, and moderately winter-hardy. Some have been very desirable in other respects.

Five seedless varieties have been named. Stout Seedless, the first, was named in 1929 and described in New York State Agricultural Experiment Station Bulletin 578. Plants were first offered for sale in the Fruit Testing Association catalogue in 1937. Although it was originally de-
scribed as winter hardy at Geneva, the vines have experienced so much winter injury, and the fruit ripens so late that the variety is of no value in the grape-growing regions of the state.

Bronx Seedless was introduced in 1937 and it is herein described. The cross between Ontario and Sultanina (Thompson Seedless) was most fortunate. The seedless varieties, Interlaken Seedless, introduced in 1947, and Himrod and Romulus, both introduced in 1952, are from this cross. In addition to two other selections, N. Y. 15302 and N. Y. 15305, have much merit and are being distributed under number by the Fruit Testing Association for more extensive trial. These five promising seedless grapes were selected from a population of 56 seedlings.

Of more recent origin and still under trial are several black- and red-fruited seedless selections, some of Black Monukka parentage. Several are promising at this time.

**Interlaken Seedless, Himrod and Romulus**

These three varieties are of the same parentage, Ontario × Sultanina (Thompson Seedless). Thompson Seedless, as it is known in California, is the seedless variety grown extensively for raisins as well as for shipping to the fresh fruit market in mid-summer. The cross was made to produce a seedless grape of this type that would be winter-hardy in New York. The cross was made in 1928, 56 seedlings were raised and these three varieties were selected in 1938. Interlaken Seedless was introduced in 1947, and Himrod and Romulus in 1952.

The three varieties are all seedless, yellow in color, and ripen at different times, Interlaken Seedless in late August, Himrod, a few days later, and Romulus about the season of Concord. The vines of all three varieties are very vigorous, productive and hardy enough for normal winters at Geneva if they have not borne excessive crops and the foliage has been protected from leaf-hoppers and mildew. Southward, and in the middle West, they have been susceptible to anthracnose.

Interlaken Seedless, the earliest, bears heavy crops, necessitating careful pruning to prevent overbearing. In Illinois winter injury at 0°F. has been reported, but it has withstood temperatures down to about −15°F. at Geneva. Protection of the fruit from birds is necessary as the crop may be destroyed just as it begins to ripen if not protected.

Interlaken Seedless is on the list of recommended varieties in Washington, but reports from other States, except one from a Missouri
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nursery, have not been favorable. Its earliness and good performance at Geneva suggest that it may be useful in the home garden or in short season areas where frosts come early. In these areas the vines should be laid down and covered with earth for winter protection.

Himrod is somewhat hardier than Interlaken Seedless and ripens a few days later. It is less productive, but of good quality and certainly should be tried for its earliness and ability to ripen where the growing season is shortened by early autumn frosts. Bird protection may be essential as with most sweet early-ripening grapes.

Romulus is the latest of this group, ripening with Concord. It is very productive and a vine loaded with its large well-filled clusters of seedless grapes is an impressive sight. The flavor is not as rich and sweet as the two earlier ripening varieties, but is good if the vine is not overloaded and the season is warm. It is the most promising variety of the three for commercial purposes because of its large crop and large clusters. It is on the list of recommended varieties in Washington.

N. Y. 15305: This early ripening selection of the same parentage is the best of the lot in quality, but the vine is less vigorous. It is worth a place in a home vineyard. The fruit keeps well on the vine.

N. Y. 15302: This selection ripens later than Romulus and rarely attains the rich flavor of its sister seedlings. The clusters are the largest and vine vigor and yields are high. There is some cracking of the berries, but it is usually not serious. It has been reported to produce some fruit after experiencing —19° temperature in Illinois. It is worth trying where the growing season is somewhat longer and hotter than at Geneva.

**Himrod**

Vine vigorous, moderately hardy, drooping, medium to below in productiveness. Canes straight; bark faintly striated; nodes enlarged; diaphragm medium thick; shoots green faintly tinged reddish, glabrous, cylindrical; tips green with a few cobwebby hairs; tendrils intermittent, forked, hairs present, weak.

Leaves medium size, 17 cm wide × 12 cm long, orbicular; apex sharply acute; lobes usually 3; upper sinuses shallow, wide, V-shaped; lower sinuses usually absent, but shallow and narrow when present; petiolar sinus closed with lobes overlapping to narrow, V-shaped; upper surface dark green, nearly smooth, dull, uneven and contorted, glabrous; lower surface with a small quantity of cobwebby hairs in tufts on mid-rib and veins of young and mature leaves; texture thin, brittle; petiole short, medium thick, tough, faintly tinged with red, with very few whitish hairs on youngest leaves; teeth irregular, short, broad, acute; veins prominent, thin.
Himrod
Flowers self-fertile; stamens upright.
Fruit: Clusters very long and scraggly, 100–300 gms, conical, long-shouldered, peduncle long, thick, brittle, green; pedicels medium long, slender, warty; torus small, rough; brush long, milky. Berries medium to below in size, 14–16 mm long × 13–15 mm wide, slightly ellipsoidal, yellow green with dull amber cast when fully ripe, medium bloom, medium adherent. Skin thin, medium tender, intermediate in adherence to pulp, slightly acid. Flesh tender, greenish white, translucent, juicy, not aromatic, vinous, sweet; very good quality.
Season early, about a week before Fredonia, hangs and stores well. Seeds very small, abortive.

Interlaken Seedless

Vine vigorous, moderately hardy, drooping, medium to below in productiveness. Canes straight; bark striations distinct; nodes enlarged; diaphragm medium thick; shoots reddish tinged, glabrous, faintly glaucous, cylindrical, a few flattened; tips green with a few cobwebby hairs; tendrils intermittent, forked, hairs present, strong.
Leaves medium to large, 17 cm wide × 14 cm long, cordate-orbicular; apex sharply acute; lobes 3; upper sinuses shallow, wide, occasionally leaves are nearly entire; lower sinuses absent; petiolar sinus variable, closed to medium, V-shaped; upper surface dark green, smooth, dull, concave around petiole, glabrous; lower surface with medium number of cobwebby hairs on mid-rib and veins of mature leaves; texture thick, brittle; petiole medium in length and thickness, tough, medium red, woolly hairs when young; teeth irregular, short, broad, rounded; veins prominent, thin.
Flowers self-fertile; stamens upright.
Fruit: Clusters small, 100–300 gms, short conical, shouldered, well-filled to compact; peduncle medium in length and thickness, woody, green; pedicels short, slender, few warts; torus small, rough; brush short, green, a few with red rudimentary seeds at tips. Berries small, 12–16 mm long × 11–14 mm wide, uniform, ellipsoidal, yellowish green with small russet dots mostly on apical two-thirds of berry and a heavy bloom, medium adherent. Skin thin, medium texture, adherent to pulp, neutral flavor. Flesh tender, melting, nearly white, translucent, juicy, mildly aromatic, sweet, spicy, refreshing; very good quality.
Season very early, ten or more days before Fredonia.
Seeds small, abortive, 2.5 × 1 mm.

Romulus

Vine very vigorous, moderately hardy, drooping, very productive. Canes straight; bark striations faint; nodes slightly enlarged; diaphragm thin; shoots faintly tinged with red, glabrous, cylindrical; tendrils intermittent, forked, hairs present, weak.
Leaves medium size, 18 cm wide × 15 cm long, orbicular; apex
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sharply acute; lobes 3; upper sinuses shallow, narrow, V-shaped; lower sinuses absent or very shallow; petiolar sinus medium deep, V-shaped; upper surface dark green, nearly smooth, dull, convex except around petiole where it is concave, glabrous; lower surface with a small quantity of cobwebby hairs in tufts on mid-rib and veins of young and mature leaves; texture thin, brittle; petiole variable in length, averaging medium thick, brittle, tinged light red, with very few whitish wooly hairs when young; teeth irregular, short, broad, rounded; veins prominent, thin.

Flowers self-fertile; stamens upright.

Fruit: Clusters medium to large, 300–600 gms, conical, shouldered, well-filled to compact; peduncle medium long, thick, woody, tinged red; pedicels short, slender, warty; torus medium size, rough; brush short, green. Berries variable size, small to below medium size, 13–16 mm × 12–14 mm wide, ellipsoidal, yellowish green, with heavy bloom, slightly adherent. Skin medium thick, medium tough, intermediate in adherence to pulp, neutral. Flesh tender, juicy, greenish, translucent, not aromatic, mildly acid, slightly vinous, good quality.

Season about with Concord, stores well.

Seeds very small, abortive.

Bronx Seedless

Bronx Seedless, the second seedless variety resulting from Dr. Stout's crosses, originated from a cross between N. Y. 8536 (Goff × Iona) and Sultanina (Thompson Seedless). The cross was made in 1925, 68 seedlings were raised, Bronx Seedless was selected in 1931, and introduced in 1937.

Bronx Seedless at its best is a fine quality, large berried, red, seedless grape, borne on vigorous, productive vines. The clusters are large and often well-filled. In Washington it is on the list of recommended varieties with the comment that it is susceptible to cracking.

Unfortunately it is rarely at its best. Reports of cracking and rotting are frequent at Geneva and elsewhere. Susceptibility to mildew everywhere, and anthracnose in warmer regions, are serious faults. The vines frequently experience considerable winter injury. Several new seedless varieties, Interlaken Seedless, Himrod, Romulus and two others of the same parentage are much superior to Bronx Seedless and should replace it.

Vine very vigorous, moderately hardy, drooping, dense, moderately productive. Canes straight; bark much mottled with dull red; nodes slightly enlarged; diaphragm thin; shoots tinged with dull red, lightly pubescent, angular, with young tips dull bronze with cobwebby hairs; tendrils intermittent, forked, hairs present, strong and very large.
Leaves large, 20 cm wide × 14 cm long, orbicular; apex sharply acute; lobes 3–5; upper sinuses deep, narrow, U- to V-shaped; lower sinuses medium deep, narrow, U-shaped; petiolar sinus closed with lobes overlapping; upper surface rugose along mid-rib and around petiole attachment, dull, contorted around petiole attachment, few cobwebby hairs along veins; lower surface with a small quantity of cobwebby hairs in tufts on mid-rib and veins; texture thick, brittle; petiole long, medium thick, brittle, medium reddish, with wooly hairs when young; teeth irregular, medium long, broad, acute; veins prominent, thick.

Flowers with stamens upright.

Fruit: Clusters medium size, 300–600 gms, long conical, well-filled; peduncle long, thick, woody, green; pedicels medium in length and thickness, warty; torus medium size, rough; brush long, green. Berries 15–20 mm long × 15–18 mm wide, variable, spherical to short ellipsoidal, light red, striated, heavy bloom, strongly adherent. Skin medium thick, medium tough, cracking very easily, adhering to pulp, neutral flavor. Flesh tender, soft, greenish, translucent, juicy, very mildly aromatic, medium acid, neutral, fair quality.

Season after Delaware, a week before Concord.

Seeds large, soft, variable size, av. 6.0 × 3.0 mm.

**Concord Seedless**

The origin of Concord Seedless is unknown. It was brought to the attention of this Station in 1913 by E. H. Wetmore, Rushville, N. Y. who wrote that a vine which bore seedless grapes was growing in a row of Concords about 12 years old in a vineyard on the east shore of Canandaigua Lake. Cuttings were sent that fall and the variety has been in the Station plantings since then.

Earlier, in 1907, plants of a seedless grape were received from the T. S. Hubbard Co., Fredonia, N. Y. This variety, which was designated Hubbard Seedless in Station records, was under test in the Hubbard Co. vineyards to determine its usefulness as a variety to be introduced. In a letter from the Hubbard Co. in 1921 it was stated that it was discarded after testing. The same letter stated that this variety was found in a vineyard on the Hudson.

F. E. Gladwin said of these varieties in 1930, "We have, supposedly, Concord and Hubbard (Seedless), although I must confess I think they are one and the same." Richard Wellington believed the two varieties to be identical.

The Hubbard Co. was a large producer of Concord grape vines, and possibly a cutting of their seedless variety may have become mixed with their Concord wood to produce a vine which reached the Wet-
more vineyard. If this assumption is correct then the Concord Seedless grape may have originated before 1900 in a Hudson Valley vineyard, presumably as a mutation of Concord. This is the only seedless Concord type ever brought to the attention of this Station. Concord is widely grown and this seedless variant is very conspicuous; hence it must be an extremely rare mutant, if it is indeed a mutant of Concord.

Concord Seedless is a small-fruited seedless grape with the color, texture and flavor of Concord. The berries are about the size of Delaware. The vine is essentially Concord, but because of the small berries, the crop is much less. Most of the berries are seedless, but occasionally a few berries will have noticeable seeds.

Gladwin recommended the variety highly for grape pie. It is also useful for small children who are not able to remove the seeds from the seeded varieties.

Vine vigorous, hardy, drooping, usually medium, or below, in productiveness. Canes straight; bark distinctly striated; nodes enlarged; diaphragm thick; shoots green tinged reddish, glabrous, cylindrical, tips pale green with mat of cobwebby hairs; tendrils continuous, forked, with hairs, strong.

Leaves medium size, 18 cm wide × 15 cm long, cordate-orbicular; apex acuminate; lobes 3; upper sinuses variable in depth from usually very shallow to occasionally deep, width varying from closed to medium, V-shaped; lower sinuses absent; petiolar sinus wide, base flat to wide, U-shaped; upper surface dark green, slightly rugose, slightly glossy, slightly uneven, glabrous; lower surface uniformly covered with brownish tomentum; texture thick, tough; petiole short, medium thick, tough, medium red, with brownish wooly hairs only when young; teeth irregular, short, broad, acute; veins prominent, thick.

Flowers self-fertile; stamens upright.

Fruit: Clusters very small, less than 100 gms, short conical, shouldered, loose, a few well-filled; peduncle short, medium thick, woody, green, or tinged dull reddish; pedicels short, slender, with small warts; torus small, rough; brush short, tinged light red, some are greenish yellow. Berries very small, variable, 12–15 mm long 11–14 mm wide, spherical, jet black with heavy bloom, adhering weakly. Skin medium thick, tender, not adhering to pulp (slip-skin), slightly foxy. Flesh tough, greenish, translucent, juicy, with the aroma, flavor and quality of Concord.

Season a week or more earlier than Concord.

Seeds small, abortive, 2.8 × 1.6 mm, occasional large hard seed some seasons and locations.
Origin of the Steuben Grape

Muscat Hamburg (vin.) *

Mills *
(W. H. Mills, 1870, Ontario)

Creveling (lab., vin.)
(F. F. Marceron, 1857, Pa.)

Wayne *
(N. Y. 7606)

Winchell (lab., vin., aest.) *
(J. A. Clough, 1850, Vt.)

Ontario *
(N. Y. 95)

Diamond *
(Jacob Moore, 1870, N. Y.)

Concord (lab., vin. ?)
(E. W. Bull, 1849, Mass.)

Stueben
(N. Y. 12696)

Diana *(D. Crehore, 1834, Mass.)

Catawba (lab., vin.)
(John Adlum, 1823, D. C.)

$(\ldots)$

Iona *
(C. W. Grant, 1855, N. Y.)

V. labrusca

Herbert *
(E. S. Rogers, 1855, Mass.)

Black Hamburg (vin.)

Worden *
(S. Worden, 1863, N. Y.)

Concord (lab., vin. ?)

$(\ldots)$

* = varieties used directly as parents in grape breeding program.
**Origin of the Athens Grape**

- **Diana Hamburg**
  - (Jacob Moore, 1860, N. Y.)
  - Concord (lab., vin. ?)
    - (E. W. Bull, 1849, Mass.)
  - Black Hamburg (V. vin.)

- **Diana**
  - (D. Crehore, 1884, Mass.)

- **Catawba (lab., vin.)**
  - (John Adlum, 1828, D. C.)

- **Hubbard**
  - (J. Bachman, 1903, Ark.)

- **Brighton**
  - (Jacob Moore, 1870, N. Y.)

- **Campbell Early**
  - (G. W. Campbell, 1892, Ohio)

- **Champion (lab.)**
  - (1870, N. Y.)

- **Lutie (lab.)**
  - (L. C. Chisholm, 1885, Tenn.)

- **Concord**
  - (J. B. Moore, 1871, Mass.)

- **Moore Early**
  - (J. B. Moore, 1871, Mass.)

- **Concord or Hartford (lab., vin.)**
  - Concord or Hartford (lab., vin.)

- **Belvidere**
  - (L. L. Lake, 1870, Ill.)

- **Muscat Hamburg (vin.)**
  - (L. L. Lake, 1870, Ill.)

*Used as parents in program.*
<table>
<thead>
<tr>
<th>Name</th>
<th>Seedling No.</th>
<th>Parentage</th>
<th>Introduced</th>
<th>Color</th>
<th>Present Status</th>
<th>Special Uses</th>
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<td>1947</td>
<td>W</td>
<td>R</td>
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**DELAWARE SEASON**

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<td>(Goff x Iona) x Sultanina</td>
<td>1992</td>
<td>R</td>
<td>H</td>
<td>S</td>
</tr>
<tr>
<td>Stout Seedless</td>
<td>10918</td>
<td>(Triumph x Dutchess) x Sultanina Rose</td>
<td>1992</td>
<td>W</td>
<td>D</td>
<td>S</td>
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<tr>
<td>Wayne</td>
<td>7606</td>
<td>Mills x Ontario</td>
<td>1992</td>
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<td>D</td>
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</tr>
<tr>
<td>Ripley</td>
<td>98</td>
<td>Winchell x Diamond</td>
<td>1992</td>
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<tr>
<td>Brocton</td>
<td>3345</td>
<td>Brighton x (Winchell x Diamond)</td>
<td>1992</td>
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<tr>
<td>Westfield</td>
<td>Gladwin 200</td>
<td>Herbert x Concord Seedless</td>
<td>1992</td>
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<tr>
<td>Romulus</td>
<td>15291</td>
<td>Ontario x Sultanina</td>
<td>1992</td>
<td>W</td>
<td>R</td>
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**CONCORD SEASON**
<table>
<thead>
<tr>
<th>Variety</th>
<th>Registration Year</th>
<th>Color</th>
<th>Present Status</th>
<th>Special Uses</th>
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<tr>
<td>Steuben</td>
<td>12696</td>
<td>Wayne x Sheridan</td>
<td>1947</td>
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<td>N. Y. 15302</td>
<td>15302</td>
<td>Ontario x Sultanina</td>
<td>1952</td>
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<td>Alden</td>
<td>13085</td>
<td>Ontario x Gros Guillaume</td>
<td>1952</td>
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<td>Canada Muscat</td>
<td>17806</td>
<td>Muscat Hamburg x Hubbard</td>
<td>1961</td>
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<td>Naples</td>
<td>17594</td>
<td>Delaware x (Mills x Iona)</td>
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<td>Pontiac</td>
<td>4265</td>
<td>Herbert x Worden</td>
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<td>Watkins</td>
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<td>Yates</td>
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<td>Mills x Ontario</td>
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<td>Keuka</td>
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<td>Ruby</td>
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<td>Sheridan</td>
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<td>Hanover</td>
<td>1458</td>
<td>Brighton x Niagara</td>
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<td>Urbana</td>
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<td>Governor Ross x Mills</td>
<td>1912</td>
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<td>Golden Muscat</td>
<td>10303</td>
<td>Muscat Hamburg x Diamond</td>
<td>1927</td>
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</tr>
</tbody>
</table>

*Catawba Season*

*At Geneva these standard varieties ripen about September 20, 30 and October 15 respectively.*

Color
- W—White or green grapes
- R—Red grapes
- B—Black and blue-black grapes

Present Status
- D—Discarded varieties no longer available or recommended
- R—Recent introductions, usefulness not fully determined
- L—Local market grapes, of value for roadside stands, and home use
- H—Home use, primarily of value for home use or in some special locations

Special Uses
- W—Wine, variety suitable for wine making
- T—Table use with highest quality, especially for dessert use
- S—Seedless varieties