FRUIT REGIONS AND VARIETIES OF EASTERN NEW YORK

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<td>Ancient Britton</td>
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<td>Wilder</td>
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<td>Chautauqua</td>
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FRUIT REGIONS AND VARIETIES OF EASTERN NEW YORK

H. B. TUKEY

INTRODUCTION

In the fore-part of the nineteenth century eastern New York was especially interested in fruits. The Prince Nurseries on Long Island, the Downing Nurseries at Newburgh, the pomological interests of Judge Buel at Albany, all helped to fix the Hudson River Valley and Long Island in the minds of those interested in fruits.

With the development of western New York as a fruit region and with the great move towards western agriculture, eastern New York was forgotten and gradually faded into the background until about the beginning of the twentieth century. Since then it has steadily increased in importance, both in the development of present fruit acreages and in the introduction of new orchard enterprises. Accordingly, a performance record of varieties of fruits in eastern New York—many well-known varieties having originated there and having been tested there thru many years—is timely.

Furthermore, success with fruits is more dependent upon the right selection of varieties than upon any other factor. This is especially true in a region such as the Hudson River Valley with its diverse soil types, widely differing climatic conditions within short distances, and market requirements of quite distinct types, so that a discussion of varieties, soils, and regions takes on added importance.

FRUIT REGIONS OF EASTERN NEW YORK

There are three distinct fruit regions in eastern New York, distinguished from each other quite naturally by a combination of soil and climatic differences. These are (a) the Lake Champlain Region, extending roughly from the Canadian Line on the north to Glens Falls on the south; (b) the Hudson River Valley, extending from Glens Falls on the north to New York City on the south; and (c) the Long Island or Coastal Region, reaching from New York City on the west to the tip of Long Island on the east. The Hudson River Valley, some 175 miles north and south, divides itself into three sections, viz., (a) Upper, (b) Middle, and (c) Lower; the first including the area between Glens Falls and Albany, the second reach-
ing from Albany to the Highlands at West Point, and the third including a small area from the Highlands to New York City and the New Jersey line. And then, because the Middle Section is still too varied to be treated as a unit, it must again be divided into Upper, Central, and Lower Divisions, reaching respectively from Albany to Hudson, from Hudson to Poughkeepsie, and from Poughkeepsie to West Point. This arbitrary division for convenience of discussion is plainly indicated on the accompanying map and the following diagram.

**Diagram of Eastern New York Fruit Regions**

<table>
<thead>
<tr>
<th>Regions</th>
<th>Characterized by</th>
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<tbody>
<tr>
<td>1. Champlain Valley Region</td>
<td>McIntosh and Fameuse apples</td>
</tr>
<tr>
<td>(Canadian line to Glens Falls)</td>
<td></td>
</tr>
<tr>
<td>2. Hudson Valley Region</td>
<td>McIntosh and Northern Spy apples</td>
</tr>
<tr>
<td>Upper Section (Glens Falls to Albany)</td>
<td></td>
</tr>
<tr>
<td>Middle Section</td>
<td>Baldwin, Greening, and McIntosh apples; sour</td>
</tr>
<tr>
<td>Upper (Albany to Hudson)</td>
<td>cherries</td>
</tr>
<tr>
<td>Central (Hudson to Poughkeepsie)</td>
<td>Baldwin, Greening, McIntosh, and Newtown</td>
</tr>
<tr>
<td></td>
<td>apples; Bartlett pears; sweet and sour cherries; Concord grapes</td>
</tr>
<tr>
<td>Lower (Poughkeepsie to West Point)</td>
<td>Baldwin, Greening, McIntosh, Rome, and Newton-</td>
</tr>
<tr>
<td></td>
<td>apples; Bartlett and Bosc pears; sweet</td>
</tr>
<tr>
<td></td>
<td>and sour cherries; Concord grapes; and Wilder</td>
</tr>
<tr>
<td></td>
<td>currants</td>
</tr>
<tr>
<td>Lower Section (West Point to New York City)</td>
<td>McIntosh, Rome, and Delicious apples; and Elberta peaches</td>
</tr>
<tr>
<td>3. Long Island or Coastal Region</td>
<td>McIntosh, Rome, and Delicious apples; Elberta peaches; and Bartlett, Bosc, and Kieffer pears</td>
</tr>
</tbody>
</table>

**GENERAL SOIL AND CLIMATIC CONSIDERATIONS**

The soil and climate of eastern New York cover a wide range to which peculiar local conditions give added importance, such as proximity to a body of water, high or low elevation, and nearness of mountain formations providing shelter from cold or causing decreased rainfall. In consequence, the general opinion prevails
FIG. 1.—FRUIT REGIONS OF EASTERN NEW YORK.
that eastern New York is characterized by variable and uncertain soil and climate, and that it is impossible to forecast with any degree of accuracy the desirable and undesirable locations for fruit or the adaptation of varieties.

Fortunately, this impression is not correct. Weather records for many years show rather clearly the general temper of the various regions, while a short time spent in an effort to understand how the soils of eastern New York were formed will show a surprising uniformity in general characteristics for the principal fruit soils, whether the soils be in the Lower Hudson Valley Region or in the Champlain Valley Region to the north. It is not out of place, therefore, to present some of the features which are most noticeable in the more important fruit soils, together with a brief sketch of their formation.

**FORMATION OF EASTERN NEW YORK SOILS**

Geologically, eastern New York is one of the oldest regions known. In both the Adirondack Mountains and the Highlands of the Hudson River Valley (1) some of the oldest rock formations in America are found at the surface, mostly granites, gneisses, and schists, whose disintegration has given rise to some of the soils of nearby regions known as the Gloucester series. These rocks, thrust to the surface by earth disturbances, are looked upon as the original crust of the earth and are designated as pre-Cambrian, belonging to the Grenville series. Thruout the greater part of eastern New York, however, they serve merely as a base upon which during the various times that the region has been under water immense deposits of sandstone, shale, and limestone have been made and from which the soils where they are found are mostly derived.

The resistance of the old hard rocks of the Grenville series to the erosion, glaciation, and reworking that has gone on for great periods of time, together with the relatively rapid disintegration of the sandstone, shale, and limestone areas, is responsible for the main topographic features for which eastern New York is noted, namely, rugged mountainous country in the Adirondack Region to the north, a similar tho smaller area to the south in the vicinity of the Highlands near West Point, and a wide expanse of lower more or less open country between these two points to form the principal farming regions of the Champlain and Hudson River Valleys.

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1Refers to Literature Cited, page 8/
The fruit regions of eastern New York have all had much the same geologic history, accounting for the soils upon which fruit is grown. Very briefly, the entire area has been submerged upon several occasions in ages long before the appearance of the glaciers. During these periods of submergence heavy deposits of sandstone, shale, and limestone were made. The greater part of the region was last covered, during the Ordovician period, with shale materials, and it is these from which the bulk of eastern New York soils, called the Dutchess series, are derived. Following the deposit of the shale-forming materials, the region was never again submerged, but it was subject to long ages of weathering, and finally in more recent geological times, known as the Pleistocene, to the action of glaciers.

The glaciers, pushing down in succeeding waves from the north, affected the topography and soils markedly. Besides wearing down prominent features and softening others, they transported vast quantities of material from north to south, ending in a moraine of transported materials at the farthest point of advance. Long Island is the result largely of glaciation, the two lines of hills that run lengthwise of the island being terminal moraines of two successive ice advances. Long Island is, therefore, closely associated with the Hudson River Valley and the Champlain Valley, since it is composed mostly of worked over materials which the glaciers carried with them from these regions.

As the glaciers retreated (19), the melting ice was responsible for strong stream action in the sorting of sands, gravels, and clays. At one stage, very important in the development of eastern New York soils, the land close to what is now the course of the Hudson River and the bed of Lake Champlain was partly inundated—whether by an influx of sea water following the glacier (5) or whether by the formation of glacial Lakes Albany and Vermont surrounding the melting and retreating glacier (14)—makes no difference. The effect upon soil formation is the same in either case because into this still body of water reaching the length of the Hudson River Valley and the Champlain Valley, and acting as a huge settling tank, ran streams carrying sediment. In the more quiet spots, as the streams slowed down in their movement, were deposited the finer particles of clay and the silt, while on terraces further back were dropped the sands and gravels.

Accordingly, in the low areas bordering the present Hudson River channel and Lake Champlain are deposits of clay to a fairly uniform
height above sea level, giving rise to two important series of soils, the one deposited in the Hudson River Valley being called the Hudson series and the other deposited in the Champlain Valley being called the Vergennes series. These are for the most part heavy clays with some calcareous materials. The stream-laid benches, gravel bars, and terraces further back from the lake and mostly above the clays are designated as Hoosic and Merrimac soils according as they consist of shale and slate materials or of granite, micca, and schist, respectively.

After the deposition of the clays and sands in the Hudson-Champlain area, the entire section was raised at the north end so that the clays are found higher above sea level in the northern part of eastern New York than in the southern section.

At Port Washington, Long Island (5), on the south, for example, there are sand plains at 80 feet above sea level, marking the ancient water level, while at the International Boundary Line north of Lake Champlain the present height of gravel bars of the same ancient water level are at 740 feet. The slope from there southward is fairly uniform, so that at Peru the height is indicated as 680 to 706 feet, at Glens Falls 415 to 440 feet, at Ballston Spa 390 to 400 feet, at East Greenbush near Albany at 320 to 330 feet, at Kinderhook 305 feet, at Hudson 275 feet, at Rhinebeck 215 feet, at Poughkeepsie 180 feet, at Newburgh 150 to 160 feet, at West Point 140 to 160 feet, at Croton Point 120 feet, and finally 80 feet at Port Washington, Long Island.

Since the clays bordering the Hudson-Champlain system were deposited in the waters which left these marks, the height of the shore lines marks the limits beyond which no clays will be found and below which clays will occur. The varied clay deposits of eastern New York thereby take on a logical and orderly arrangement, making it possible to determine definitely the general nature of soils at different localities.

The manner in which the soils of the various regions were derived helps further to differentiate and describe them. The Long Island region, for example, stands alone as made from glacial moraine deposits, the soils belonging largely to the Alton, Sassafras, and Norfolk series; the lower Hudson River Valley soils are derived from the crystalline rocks of the Highlands to the north and are designated as the Gloucester series; the Central and Upper Hudson River Valley soils have been made largely by the decomposition of underlying Hudson Valley slates and shales, giving rise to the Dutchess
series; and the Lake Champlain soils are denoted by the high proportion of lake-laid clays of the Vergennes series. In brief, then, the soils of eastern New York, tho varied and scattered, follow a general organized plan which shows them less complex and more uniform than is commonly appreciated. Furthermore, from their origin and manner of formation they are seen to be acid soils, not high in fertility.

**TEMPERATURE**

*Winter temperature.*—Eastern New York fruit sections are colder than western New York sections of the same latitude (13). For example, the absolute minimum temperature known in the Chautauqua grape belt or the western New York apple belt is $-15^\circ$ F, or at the most $-20^\circ$. On the other hand, in the eastern part of the State only Long Island and the tip of the Lower Hudson Valley have not experienced a temperature of $-20^\circ$ or below.

The most rigorous winters are, of course, in the vicinity of the Adirondack Mountains, temperatures of $-35^\circ$ having been recorded for the Champlain Valley. The Upper Hudson Valley has known $-25^\circ$ to $-30^\circ$, while for the Middle Hudson Valley and most of the Lower Hudson Valley, from Albany to just above New York City, the coldest recorded temperature is between $-20^\circ$ and $-25^\circ$.

The central and upper portions of the Middle Hudson Valley are relatively warmer than the lower part, due possibly to the protection of the Catskill Mountains on the west and to the effect that the Mohawk-Hudson Valley topography may have upon air currents. For example, the prevailing wind in Albany the year round is from the south. On the other hand, the region just to the south of Poughkeepsie on both sides of the river has experienced temperatures of $-25^\circ$ to $-30^\circ$, altho nearly 100 miles directly south of Albany. This difference is further illustrated by the fact that some peaches are grown as far north as Albany. The average January temperature shows the same trend for each of the five main regions, *vis.,* $16^\circ$ for the Champlain Valley; $18^\circ$ to $22^\circ$ for the Upper Hudson Valley; $24^\circ$ to $26^\circ$ for the Lower Hudson Valley; and $30^\circ$ for Long Island.

Not only do winters become more severe, in general, from south to north thruout eastern New York, but they also become more severe as the distance increases east and west from the main Hudson-Champlain Valley. A distance of 10 to 20 miles shows an appreciable difference in temperature.
Date of last killing frost.—Next to minimum temperatures the date of the last killing frost in the spring plays perhaps the most important part in the selection of locations for fruit and in the choice of varieties. For the Champlain Valley the date is May 10, for the Upper Hudson Valley it is May 5 to 10, for the upper part of the Middle Hudson Valley it is likewise May 5 to 10, for the central part of the Middle Hudson Valley it is May 1 to 5, while for the lower part of the Middle Hudson Valley as well as the Lower Hudson Valley it is April 25 to May 1. For Long Island the average date of the last killing frost is April 25.

It is worth while to note in passing that the lower half of Ulster County and the upper portion of Orange County close to the Hudson River seem particularly favored in freedom from late spring frosts, the average date being April 25—a point reflected by the extensive grape industry located in that region.

Length of growing season.—The length of the average growing season is of less importance in fruit growing than in many other lines of agriculture, yet it must not be overlooked, especially for grapes. The growing season for the Champlain Valley and the Upper Hudson Valley is 150 days; for the central part of the Middle Hudson Valley, 160 to 170 days; for the lower part of the Middle Hudson Valley, 170 days; and for Long Island, 170 days to 190 days along the northwest shore and 190 to 200 days over the south shore and east half of the island. The area in lower Ulster and upper Orange Counties, already referred to, is further favored by a growing season of 180 days, altho for the surrounding regions it is only 170 days.

Altitude and proximity to water play a large part in determining both the average date of the last killing frost and the length of the growing season. For example, there is an appreciable effect of the Hudson River 2 or 3 miles back from the main channel, while its effect is noticed to a lesser degree 10 to 15 miles back. Here again the selection of crops indicates these facts, grapes and pears being grown close to the river and apples further back. In fact A. J. Downing wrote many years ago of the beneficial effect of river fogs in preventing frost damage in early spring and late fall. The same observations may be made today.

PRECIPITATION

The annual precipitation is greatest in the area south of Poughkeepsie and on Long Island, where it is 45 inches. Between Poughkeepsie
and Albany it is 40 to 45 inches; and north of Albany it is 35 to 40 inches, with the exception of the north half of the Lake Champlain Region where it declines to 30 to 35 inches.

Summer precipitation, during the months of June, July, and August, is fairly uniform over the entire area of eastern New York. Long Island receives a relatively lighter rainfall of 10 to 11 inches; the area south of Hudson, over 12 inches; the upper Middle Hudson River Valley and the Upper Hudson River Valley, 10 to 11 inches; and the Champlain Valley, 9 to 10 inches. In the fall months of September, October and November, the Champlain Valley receives less than 9 inches; Long Island experiences the driest season of the year with 9 to 10 inches; the upper Middle and Upper Hudson Valley receive 9 to 10 inches; and the area south of Hudson to the Highlands receives 10 to 12 inches.

During the winter months of December, January, and February the rainfall over Long Island is relatively heavy, from 11 to more than 12 inches. The upper Middle Hudson River Valley receives about 9 inches; and the northern Lake Champlain Region receives the smallest amount of any section of the State—less than 5 inches. For the spring months of March, April, and May the rainfall is 11 to 12 inches south of Poughkeepsie and on Long Island; 9 to 10 inches over the Middle and Upper Hudson Valley Regions; and 8 inches over the Champlain Valley Region.

The number of hailstorms that visit eastern New York are above the average for the State. In the Hudson River Valley and on Long Island there are 20 to 30 thunderstorms during the year. In the Champlain Valley Region the number is relatively low—6 to 14. The fall of hail is important in 3 to 4 of the 20 to 30 thunderstorms occurring each year in the Hudson River Valley and Long Island Regions and seems to be especially troublesome in the belt just south of the Catskill Mountains.

THE CHAMPLAIN VALLEY REGION

The region between the International Boundary Line and Glens Falls, characterized by severe winters and the production of McIntosh and Fameuse apples, is included in the Champlain Valley Region. The fruit-producing area is not large and is clustered for the most part about the southern end of Lake Champlain and half way up the west side. The choice of this location is due to a combination of soil and climatic conditions.
SOILS

The principal soil types of the Champlain Valley Region depend for their characteristics upon nearby or underlying rock formations. The granite, gneiss, and schist rocks of the Adirondack Mountains represent some of the oldest rocks known in America of pre-Cambrian origin and are usually considered as the original earth's crust. During the Cambrian age which followed, there were deep deposits of sandstone, and later, during the Ordovician age, the slate- and shale-forming materials were laid down. Following this the land was never again entirely submerged, but underwent a long period of weathering.

More recently, during the ice age, or Pleistocene, following the melting of the glaciers, the waters of Lake Champlain covered a wider area than at the present time. In this ancient body of water, called by some Lake Vermont and considered by others as an arm of the sea, there were deposited clays and silts carried by the streams flowing into the quiet waters. Finally, when eastern New York rose to a higher level, the clay deposits were exposed and weathered into the clay soils found along the east side of Lake Champlain and in the low-lying portions of the west side. Just above these clays, representing old shore lines and stream deposits, are found the sand and gravel formations, grading into the decomposed material from the upland rocks. At the International Boundary the old lake level has left gravel bars at a height of 740 feet above sea level, at Peru the glacial bars are at 680 to 706 feet, and at Glens Falls they are at 400 to 415 feet, representing the more or less uniform slope that exists all the way from the International Boundary Line down to Long Island, and below which the lake-laid materials must of necessity be found.

Based upon these features there are five series of soils represented in the fruit-growing section, namely, Gloucester, Coloma, Dover, Dutchess, and Vergennes, arranged approximately in the order of their appearance from higher to lower altitudes (3, 6, 11, 18).

The Gloucester soils are derived from the mantle of granite, gneiss, and schist of the Adirondack Mountains, and include 13.9 per cent of the area of Clinton County, well back from the lake. They are located at good elevations, are well drained, and are rolling to rough in topography. The surface soil is yellowish-brown to brown with a brownish-yellow to yellow subsoil. Because they occur far back from the large bodies of water, they are not preferred as orchard
sites. Furthermore, this type is likely to be shallow and is low in fertility. Trees on these types are likely to produce ununiform crops of highly colored fruit, but often small in size.

The Coloma soils are formed from sandstones of the region, and compose 38.6 per cent of the area of Clinton County. The surface soils are light-brown to yellowish-brown in color, with yellow to yellowish-brown subsoils. The drainage is excessive in most types and the fertility low, while the topography is rolling to rough and hilly. The series is little used for fruit.

The Dover soils represent some of the best in eastern New York, but they are very limited in area, composing only 1.0 per cent of the area of Washington County and 10.5 per cent of the area of Clinton County. They are the result of decomposition of shales and slates together with limestone materials. Limestone fragments are scattered over the surface and throughout the soil and subsoil. Occurring not far from present water influence, with good drainage and with undulating hilly topography, the soils of this series are well adapted to fruit growing.

The Dutchess soils are more extensive, comprising 24.6 per cent of Washington County. They are the decomposition products of underlying slates and shales without limestone. The surface soils are light or yellowish-brown underlain by soil of lighter or yellowish color. Throughout occur angular pieces of slate and shale to greater or less degree, and often there are outcrops of slate and shale. They are well-drained upland soils of undulating to hilly topography, which at higher levels are likely to be shallow. They represent the most extensive soil type of eastern New York and are much devoted to fruit growing.

The Vergennes series is perhaps the most important in the Champlain Valley Region so far as fruit is concerned. It is found in the lower altitudes close to Lake Champlain where the clays were deposited in the waters that covered the region following the retreat of the glacier. Of the region immediately surrounding the southern half of the Lake it represents 68.3 per cent of the area, while Washington County as a whole includes 17.4 per cent and Clinton County 4.4 per cent. It is described as grayish or light brown in color. The most extensive type is the heavy clay bordering Lake Champlain, and it is likely to be poorly drained. At higher levels the type becomes stony, more loamy, and better drained and is thus more suitable to the production of apples. Because of the moisture-
holding capacity of the Vergennes series, it has been found possible to use the sod mulch system of orcharding, thus helping to produce more highly colored fruits without the difficulty of working such heavy soil types. The soils are adapted to the pear, but low winter temperatures prevent profitable commercial ventures. For home and trial, however, pears should be on well-drained soils of these types. Among apples the Rhode Island Greening and McIntosh seem especially at home.

CLIMATE

The weather records at Burlington, Vermont, represent very well the conditions found in the main fruit sections bordering Lake Champlain. Further inland the temperatures are more severe. The normal annual temperature at Burlington is 47.6°F, and the normal annual precipitation is 33.08 inches. The average winter precipitation for the months of December, January, and February is 5.41 inches; for the three spring months of March, April, and May it is 7.06 inches; for the summer months of June, July, and August it is 11.21 inches; and for the fall months of September, October, and November it is 9.40 inches. At Plattsburgh on Lake Champlain the lowest recorded temperature is —25°, and the absolute maximum 99°, while at Glens Falls, at the southern extreme of the Champlain Valley Region, a temperature as low as —36° has been experienced, illustrating the absence of the tempering effect of Lake Champlain. The growing season for this locality is 152 days.

Winter temperatures preclude the possibility of growing peaches, pears, plums, and sweet cherries and make possible ventures solely in apple growing. Furthermore, only the hardy varieties may be considered, such as Northern Spy, McIntosh, Fameuse, Wealthy, Talman, Delicious, and Rhode Island Greening. At the same time these varieties are among the most profitable commercial kinds whose value is enhanced by the high color and soundness developed in this region. Champlain Valley fruit is known for its excellent color and quality.

VARIETIES

Since heavy soils and severe winters are most characteristic of the Champlain Valley Region, the choice of varieties and cultural methods depends largely upon these factors. Varieties of quality which develop high color make best use of the natural conditions offered.
THE UPPER HUDSON RIVER VALLEY REGION

The region between Glens Falls and Albany, characterized by relatively severe winters and the production of McIntosh and Fameuse apples, is included in the Upper Hudson River Valley Region. For the most part commercial fruit production is confined to the more southerly part and along the course of the Hudson River, tho local market developments adjacent to summer resorts have extended the area. Tho adapted mostly to hardy varieties and those which develop high color, the more tender kinds may be grown in the home orchard or for trial.

SOILS

The soils of this region are similar in nature and origin to those of the Champlain Valley Region, differing mainly in the lesser proportion of clay soils and the higher proportion of sandy types. For example, the Gloucester fine sandy loam comprises 20.8 per cent of the area of Saratoga County and the Merrimac fine sand 19.4 per cent, while the Vergennes clays total only 2.1 per cent and the Dutchess series 12.3 per cent (7, 10, 17).

The origin of the Upper Hudson River Valley soils is again dependent largely upon the underlying materials. The oldest granite, gneiss, and schist rocks of pre-Cambrian age have weathered into the Gloucester series of soils with yellowish-brown to brown surface soil and a brownish-yellow to yellow subsoil. They are found at good altitude with rolling to rough topography and good drainage. They are not fertile soils and are likely to be shallow at higher elevations. The Merrimac soils are composed of the same materials as the Gloucester soils but are distinguished by having been carried by water and deposited in benches, bars, and terraces. Consequently, they are not high in fertility.

The next most important series, Dutchess, is formed from the decomposition of the underlying shales and slates laid down at a later period known as the Ordovician period. The soils are light yellowish-brown and the subsoils yellow to grayish-yellow. The heavier phases of this series, namely, the silt loam and the loam, are well adapted to fruit growing; and being well drained and at a good elevation, their value is enhanced. They are not, however, to be considered as overly fertile.

Close to the course of the Hudson River are found the finer sediments deposited in old glacial lakes or marine submergence following
the retreat of the glaciers, giving rise to the Vergennes series of soils—mostly heavy and poorly drained. The surface soils are brown to grayish-brown with subsoils of lighter brown, while the surface is level to only gently undulating. Where these soils are found at sufficient altitude or sufficient slope to give good drainage they are well adapted to fruit. Because of their moisture-holding capacity it has been possible to grow fruit under the sod-mulch system. Northern Spy, McIntosh, Rhode Island Greening, and Northwestern Greening do well.

CLIMATE

The winters of this region, lacking the tempering effect of large bodies of water, are, as a whole, more severe than in favored localities further north. At the northern end of the region at Glens Falls the lowest recorded temperature is \(-36^\circ\)F and the highest \(98^\circ\). The mean temperature for the winter months is \(21^\circ\), for spring \(45^\circ\), for summer \(69^\circ\), for fall \(49^\circ\), and for the year \(46^\circ\). The growing season is 152 days. Further inland at Greenfield Center the growing season is only 132 days and the mean temperatures are lower, with \(20.6^\circ\) for winter, \(44.2^\circ\) for spring, \(67.6^\circ\) for summer, \(49.0^\circ\) for fall, and \(45.4^\circ\) for the year. At the southern end of the region, near Albany, the favoring influence of the Hudson River materially moderates these extremes.

The rainfall for the year is the same over all sections of the region. The Glens Falls records show 40 inches as the mean annual precipitation, 9.4 inches for winter, 9.3 inches for spring, 11.7 inches for summer, and 9.6 inches for fall.

VARIETIES

In this region, again, the main emphasis is placed upon high quality, high color, and hardiness. Rainfall is adequate for fruit production, but low winter temperatures prevent the growing of any but the hardy fruits, except in the southern parts near the Hudson River Valley. In the colder sections the choice lies with the McIntosh, Fameuse, Northern Spy, Wealthy, Oldenburg, and Rhode Island Greening apples, while in the southern part the range is extended to include the Baldwin apple, sour cherries, and plums.

THE MIDDLE HUDSON RIVER VALLEY REGION

Between Albany on the north and the Highlands of the Hudson River, near West Point, to the south, stretches the main floor of the Hudson River Valley in which the bulk of the fruit of eastern New
York is raised. Hardiness becomes less important a factor here than in the two regions to the north, yet it is more of a consideration than in the competing area of western New York. The fruit soils follow the same general arrangement of the northern regions, being likewise low in fertility and mostly acid. Here the river influence is most marked, and the culture of the more tender fruits not only decreases from south to north but also both east and west away from the river. Close to the river will be found the small fruits. Further back are the tree fruits, while well back from the river the apple alone remains.

From north to south the same influence of climate is felt which, in conjunction with soils and topographic features, gives rise to three more or less clearly defined sections within this Middle Hudson River Valley Region, which for convenience are termed the Upper Section (Albany to Hudson), Central Section (Hudson to Poughkeepsie), and Lower Section (Poughkeepsie to the Highlands). The Upper Section is interested primarily in apples, characterized by such varieties as McIntosh, Baldwin, and Rhode Island Greening, with sour cherries becoming of commercial importance. With the Catskill Mountains reaching farthest eastward towards the Hudson River at this point, this section quite naturally cuts itself off somewhat from the sections to the south.

The Central Section, being further moderated, sees the Newtown apple added to Baldwin, McIntosh, and Rhode Island Greening; while Bartlett pears, sweet and sour cherries, and Concord grapes become important. The influence of the Catskill Mountains is felt here, for by their presence on the west bank of the river they confine the fruit growing of this section largely to the eastern side, while the Fishkill Mountains south of Poughkeepsie form a natural southern terminus.

The Lower Section, still further moderated and with longer growing season, is characterized by Baldwin, Rhode Island Greening, McIntosh, Rome Beauty, and Newtown apples; Bosc and Bartlett pears; sweet and sour cherries; Concord grapes; and Wilder currants.

With the Fishkill Mountains interfering with agricultural development on the east bank of the river south of Poughkeepsie and with the Catskill Mountains receding from the west bank of the river to the north, the areas of cultivation switch across the river from the east to the west side, so that the bulk of the Lower Section is situated on the west side of the river diagonally across from the Middle Section to the north and east.
SOILS

Altho at first glance the soils of the Middle Hudson River Valley appear complex and disorganized, a little attention to their origin and organization will show that the fruit soils belong largely to a few main classes and that they follow an organized scheme (4, 8, 9, 12). First of all, the fruit soils are formed for the most part from the decomposition of underlying rocks, so that the underlying material represents the type from which the surface soils have been formed. Since there are relatively few limestone formations and since the rock formations of the region are largely slates and shales, with some granite, gneiss, and schist, it can be understood why the soils are generally acid and why they are not high in fertility.

Beginning at the southern extremity of the Middle Hudson River Valley near the Highlands, are found some of the oldest rocks known which are designated as having been formed during the pre-Cambrian period. Like those of similar type in the Adirondack Mountains far to the north, they are hard materials—mostly granite, gneiss, and schist. The soils that have resulted from the breaking down and disintegration of these rocks are known as the Gloucester series, characterized by yellowish-brown to brown surface soil and a brownish-yellow to yellow subsoil. They are found at good altitude with rolling to rough topography so that drainage is good. Furthermore, they are not fertile soils and are likely to be shallow at the higher elevations.

Materials from this old rock formation which have been carried down by water and deposited in benches, bars, and terraces are known as belonging to the Merrimac series. They, too, must in consequence be low in fertility. Fortunately, the soils of these two series are not extensive in this region, comprising only 3.7 per cent of Dutchess County and 4.4 per cent of Orange County, and appearing for the most part at the higher altitudes back from the river near the granite-flanked Fishkill Mountains on the east side of the river and near the Highlands on the west side, tho some spots will be found near the New England line. It will be recalled that soils of these types are typical of New England. Where fruits are found on them, they develop good color but small size, while yield and tree growth are not large.

The main floor of the valley is made up of shale soils formed from the decomposition of the underlying shales and slates, known as the Dutchess series. Far below this mantle of shale and slate
materials are the old hard rocks that have been forced to the surface in the Adirondack Mountain regions and in the Highlands. Covered deeply as they are by shale and slate-forming materials deposited during the Ordovician age at a much later time, they play no part in the soil building of the main valley floor.

The slate and shale soils of the Dutchess series are extensive, constituting 51.4 per cent of the area of Dutchess County and 48.5 per cent of the area of Orange County. They are light yellowish-brown and the subsoils yellow to grayish-yellow, usually with slate and shale fragments and with outcroppings of rock. Occurring mostly several hundred feet or more above the river, they provide good air drainage as well as water drainage. The higher portions will be found to be shallow and with frequent slate or shale outcroppings, giving rise to phases known as Dutchess stony loam and Dutchess slate loam. These are the typical upland apple soils, usually found 3 to 15 miles back from the river and seldom close to it.

At slightly lower elevations, but still several hundred feet above the river, are found the heavier phases of the Dutchess series, such as the Dutchess silt loam. These constitute some of the better soils of eastern New York, and tho not of high fertility they are relatively strong soils and are well adapted to fruit production. Fruit develops good color, tree growth is good, and there is less danger of drouth. Furthermore, occurring at lower levels and nearer the moderating effect of the river, they are well suited to pears, grapes, dewberries, and other small fruits. It is the higher proportion of this type soil that gives the Lower Section of the Middle Hudson River Valley Region the reputation of consisting of heavy soils, whereas the soils are no different than those of the same type found in other sections, tho to be sure in smaller areas.

Where the Dutchess series of soils have been carried by water and deposited in benches, bars, and terraces they are designated as belonging to the Hoosic series. Their fertility is not high, and since they often contain a high proportion of coarse gravel and sand, they are frequently drouthy. This type is early, quick, and very easily handled. On it, fruit develops good color, tho growth may be interfered with unless good cultural methods are employed. It is due to the preponderance of this type in the Upper Section of the Middle Hudson River Valley Region that has given rise to the statement that soils of this section are “light” and quite unlike those of the
rest of the valley, while as a matter of fact the same type may be found in all sections of the valley, tho usually in less extensive areas. In the vicinity of Kinderhook and north to Albany a type known as the Hoosic sandy loam has been used extensively for fruit growing, primarily apples. It seems well suited to apples, tho this is due in part to the fact that it is found in greatest area several miles back from the river and away from its greatest tempering effect so that more tender fruits do not do well.

A closely related series of similar nature, except that it contains limestone fragments, is the Dover series, of small extent, constituting only 7.3 per cent of Dutchess County. Tho excellently adapted to fruit, the Dover soils are too small in area and often too far from fruit centers to be of any great concern.

A third main series of soils relatively small in extent, but important as fruit soils are those belonging to the Hudson series, which are for the most part heavy clays found close to the Hudson River and comprising 4.3 per cent of Dutchess County. At a more recent time, either when the glaciers were retreating or when a tongue of the sea invaded the land, the present water course of the Hudson River was an inland lake. Into this lake flowed the sediment-carrying streams from surrounding regions. Further back from the lake were deposited the gravels and the coarse sands as the streams slowed up in their course, until finally, when the more quiet waters of the lake were reached, the finer particles of silt and clay settled out. In consequence the clays of the Hudson series are found close to the present water course and at low elevation, usually under 200 feet above sea level because the level of the lake was not above this point.

Because they are heavy and in low positions, the Hudson clays are inclined to be poorly drained and difficult to work. The surface soil is yellowish-brown to brownish-drab, clearly separated from a yellowish drab subsoil, becoming mottled at greater depths and finally dark blue. They contain a small amount of lime material, mostly in the subsoil. These clays are the ones used in the brick industry along the Hudson River. Pears have quite naturally found their way to this type.

To take a cross sectional view from west to east, beginning at the Hudson River, the soils close to the river are frequently a heavy clay or a clay loam belonging to the Hudson series, with occasional appearances of fine sand. Back from the river at higher altitudes
appear ridges of the Dutchess series with heavier soils in the lower places between the ridges. Along old water courses are the Hoosic soils, consisting of coarser materials as the distance becomes greater away from the present Hudson River. Above the 200-foot line no Hudson clays will be found, the Dutchess series gradually dominating the bulk of the area.

To sum up by sections, the fruit soils on the east side of the Hudson River in the upper Section of the Middle Hudson River Valley Region, between Albany and Hudson, are largely of the Dutchess and Hoosic series, so that the soils of this section are considered "light," tho heavy soils may be found here and there, especially close to the river. On the west side of the river limestone soils begin to appear and soils in general are heavier.

In the Central Section, on the east side of the river, between Hudson and Poughkeepsie, all three of the principal series are found, viz., Hudson, Hoosic, and Dutchess, the first close to the river, the second in benches back from the river, and the third at higher elevations, mostly above the 200-foot level. Across the river on the west side the intrusion of the Catskill Mountains limits the cultivated area which, however, contains some lime materials and which consists largely of the heavier types.

In the Lower Section, between Poughkeepsie and the Highlands, fruit growing is confined mostly to the west side of the river because of the intrusion of the Fishkill Mountains on the east side. The soils of this area consist of a high proportion of the heavier types of the Dutchess series, so that the section is known as consisting of heavier soils by contrast with the soils of the Upper Section, east of the river.

CLIMATE

The Middle Hudson River Valley Region has similar seasonal conditions thruout, except for the general changes in temperature and length of growing season that might be expected from north to south. Furthermore, the extremes of temperature are appreciably moderated thruout the entire area, due partly to the influence of the Hudson River, partly to the frequency of southern and southwestern winds, and possibly partly to the sheltering effect of the Catskill Mountains. At Albany, for example, the prevailing wind the year round is from the south and some peaches are grown as far north as Albany, altho not far outside the Middle Hudson River Valley Region to the north, east, and west colder winter tempera-
tures prevent their production commercially. As further indication of the relatively milder climate of the region, it may be noted that the seat of plum culture in eastern America was at one time in the vicinity of Albany.

The lowest temperatures recorded have been $-20^\circ$ to $-30^\circ$, tho oddly enough in a localized area just south of Poughkeepsie a temperature below $-30^\circ$ has been known. The highest temperature for the Valley is $100^\circ$ to $105^\circ$, while the area just south of Poughkeepsie that has known the coldest winter temperature has also known the highest temperature, over $105^\circ$.

The growing season for the Upper Section is 150 to 160 days; for the Central Section, 160 to 170 days; and for the Lower Section, 170 days. The average date of the last killing frost is May 5 to 10 for the Upper Section, May 1 to 5 for the Central Section, and April 25 to May 1 for the Lower Section. It is of interest to note that the Lower Section, close to the Hudson River, seems particularly favored by freedom from late spring frosts, the average date being April 25. It is not surprising, therefore, that the section is devoted largely to grapes.

Rainfall is slightly greater in the Lower Section, followed by the Central Section, and least in the Upper Section. The total rainfall is no heavier anywhere in the State than in the Lower Section. For the spring months of March, April, and May it is 11 to 12 inches south of Poughkeepsie and 9 to 10 inches in the two sections to the north. Summer rainfall is 12 inches for the Central and Middle Sections and 10 to 11 inches for the Upper Section. Fall rainfall is 9 to 10 inches for the Upper Section and 10 to 12 inches for the Central and Lower Sections. There seems to be an area just north of Hudson where rainfall is lighter in a localized area than in the rest of the section, possibly due to the Catskill formation to the southwest.

In addition to the differences in temperature due to northern or southern position in the valley, there is also involved the question of less moderated climate as the distance becomes greater both east and west away from the river. The greatest effect of the river is not felt beyond 3 miles, tho there is some effect as far back as 10 or 15 miles. Close to the river the air drainage and fogs reduce frost hazard even more.
VARIETIES

The chief characteristic of the Middle Hudson River Valley Region is its adaptability to a wide assortment of varieties, so that it is the more common practice to specialize upon fruit growing in general rather than upon any one class of fruit. The adaptability of varieties to this particular region becomes largely a question of local soil, climate, and market requirements, so that attention should be given more especially to personal contact with any given location as well as to the more detailed discussion of varieties included in the following pages.

Apples seem especially well suited to the Dutchess and Dover silt loams, and to the deeper phases of the Dutchess slate and stony loam. Baldwin, Rhode Island Greening, and Yellow Newtown do well on the silt loam types, while McIntosh, Wealthy, Jonathan, and Northern Spy seem to develop higher color on the more upland slate and stony soils. The Hudson and Hoosic loam and sandy loam, too, are best suited to apples, altho other fruits may be grown, both types producing fruit of good color. The Hudson clay loam, on the other hand, seems to be better suited to pears, for while it will produce apples on the better drained parts, it is a wet, cold soil and inclined to give poor color. For grapes and the small fruits Dutchess silt loam close to the river is preferred.

THE LOWER HUDSON RIVER VALLEY REGION

Between the Highlands near West Point and New York City lies a small portion of the Hudson River Valley which has been called the Lower Region. It is as unlike the remainder of the Hudson River Valley as the rugged boundary to the river between New York City and West Point is from the more open valley floor between Newburgh and Albany. It is for this reason that, altho small, this region has been placed by itself. Lying near the extreme southern tip of New York State and influenced somewhat by the ocean, it enjoys a moderate climate so that peaches are added to the selection of McIntosh, Rome Beauty, and Delicious apples. Because of the rugged nature of the land close to the river most fruits are forced back from it several miles.

SOILS

As might be expected from the discussions of other regions in eastern New York, the soils of the Lower Hudson River Valley are
derived largely from the rocks of the Highlands (16). These are pre-Cambrian in origin, which like those of the Adirondacks far to the north, represent some of the oldest rocks known. They are mostly granite, gneiss, and schist, and in their disintegration have given rise to the Gloucester series of soils which form the typical soils of New England and are not overly fertile. The surface soil is light brown to brownish and has a brownish-yellow to yellow upper subsoil, which grades into a pale yellow or yellowish-gray lower subsoil. Occurring at higher elevations, it is well drained, tho inclined to be shallow. It constitutes 63.5 per cent of the area of the region, 39.1 per cent being loam, 18.1 per cent stony loam, and 6.3 per cent fine sandy loam. On the west side of the river there is a considerable area of Gloucester fine sandy loam and fruit is found there to some extent, while on the east side of the river necessity forces fruit to the more upland Gloucester loam.

A second series of soil of not widely different formation than the Gloucester series is that called Wethersfield. Like the Gloucester it is derived from the weathering of the crystalline rocks nearby, but in addition it has an intrusion of red sandstone and shale to give it a reddish-brown surface soil and a reddish-brown to red subsoil. Tho constituting only 3.7 per cent of the region, it seems especially suited to peaches and is used for peach production on both sides of the river.

The soils of the lower Hudson River Valley are less fertile than those of the rest of the valley and are in addition inclined to be shallow and drouthy. Fruit develops good color, while on the fine sandy loams peaches are well suited.

CLIMATE

Tho the weather records at New York City are not widely different than those of the rest of the region, yet the records at Carmel, at 500 feet elevation, may be considered more nearly typical of the fruit regions. At Carmel the highest recorded temperature is 119°F and at New York City 106°F. The lowest temperature on record is —19°F at Carmel and —6°F at New York City.

For the winter months of December, January, and February at Carmel the normal average temperature is 26.0°F; for March, April, and May, 46.9°F; for June, July, and August, 69.9°F; for September, October, and November, 51.3°F; and for the year, 48.6°F. The normal annual precipitation is 11.92 inches for the winter months, 12.95 inches for the spring, 13.69 inches for the summer, 11.89 inches for the fall, and 50.43 inches total for the year.
VARIETIES

The choice of varieties is dependent largely upon unfertile soils and limited areas of tillable land. Yields are not high, tho color is good. A long growing season and freedom from severe winter temperatures makes possible the production of more tender fruits. The final choice must rest with an understanding of particular soil conditions and local market requirements. Any selected list of varieties will be greatly altered by certain local market requirements which play a large part in the fruit growing of this region.

THE LONG ISLAND REGION

Long Island alone makes up the Long Island Region, characterized by McIntosh, Rome, and Delicious apples; Elberta peaches; and Bartlett and Bosc pears. Altho known more as a residential and resort region, it has limited fruit-producing sections and might well have more were it not for this encroachment. The hilly north shore is best adapted to fruit, yet there are isolated localities here and there thruout the island where fruit is successfully grown.

SOILS

Unlike any other section of eastern New York, Long Island soils are not the result of the decomposition of underlying rock formations. Instead, Long Island is in itself a terminal moraine, or rather a series of terminal moraines, pushed up by the advancing glaciers during relatively recent Pleistocene time and left in east and west ridges when the glaciers retreated (2). There are two moraines that feature the island, one running lengthwise along the north shore and the other, which is the older, near the middle of the island and extending somewhat diagonally towards the southeast. At the same time the island floor slopes gently from north to south, presenting the picture of a sloping plain thru which protrudes a range of hills. Because it is formed from erosion products carried down from the north, Long Island has soils of somewhat similar materials to those found in the other parts of eastern New York. For a foundation it consists of clay, upon which are deposits of gravel, sand, and loam to make the surface features.

The plain soils are not different in material from the soils of the hilly ridges, yet they are deposited quite differently, so that their physical make-up becomes the important consideration. The depth of both soil and subsoil does not exceed 36 inches and usually not
more than 24 inches, while beneath this is a layer of closely packed gravel or cobbles which separates the soil from the porous sands and gravels beneath. In consequence plants are shallow rooted and likely to suffer from drouth, and trees do not thrive.

The most extensive soil type of the plain regions is the Sassafras gravelly loam, comprising 17.5 per cent of the soil of the region and described as a yellow or reddish-yellow loam to a depth of 8 inches, with a subsoil to a depth of 2 feet of heavier lemon-yellow or reddish-yellow silt loam, all underlain with coarse gravel. This type is highly developed in Maryland and New Jersey and seems well suited there to peaches, cherries, and plums. Yet on Long Island with a heavy rainfall and water at 20 to 50 feet below the surface, the interior plateau has been largely abandoned, suggesting that climatic factors have been responsible.

The Norfolk sand and the Norfolk coarse sandy loam together make up 27.1 per cent of the island. The latter, described as a reddish-yellow prevailing sandy loam containing gravel and underlain with a gravelly, granular sandy loam, has been used for berries. It is flat and easily cultivated but is shallow, drouthy, and unreliable, tho since water is not far below the surface irrigation has been used with success in overcoming this handicap.

It is the morrainal hills, however, which have provided the best fruit opportunities, not only because of their elevation and better air and water drainage, but because the soils are much thicker and are not underlain with tightly packed gravel. Two soil series characterize the hill soils, namely, the Alton and the Miami. The stony loam types of each of these series are the chosen fruit soils, the Alton stony loam comprising 18.6 per cent of the area of the island and the Miami stony loam 9.6 per cent. The former is a reddish-yellow sandy loam to a depth of 6 to 12 inches underlain with a reddish finer sandy loam to a depth of 30 inches and is found on the north shore, forming the highest elevations on the Island. The Miami stony loam is found in the southern or central range of hills as brown loam 8 to 14 inches underlain to a depth of 30 inches by a sandy yellow loam. Both types have boulders scattered throughout.

Apples are well adapted to the north shore Alton stony loam, and peaches and apples are found in the center of the island on the Miami stony loam.
CLIMATE

Surrounded by the ocean, Long Island has the climate of the coast. At Willets Point the mean annual temperature is 51.4°. During the winter months of December, January, and February, it is 32.1°; during the spring months of March, April, and May it is 48.2°; during the summer months of June, July, and August it is 71.6°; and during the fall months of September, October, and November it is 54.7°.

The winter rainfall is the heaviest of any part of the State, ranging from 11 to more than 12 inches. Spring rainfall is similar to the Lower Hudson River Valley Region with 11 to 12 inches. Summer rainfall, too, is like that of the Lower Hudson River Valley Region, over 12 inches. Fall rainfall, however, is only 9 to 10 inches, the driest of the year.

The growing season along the northwest shore is 170 to 190 days, while along the south shore and east half of the island it is 190 to 200 days.

One of the most serious handicaps to fruit growing is the high humidity and consequent development of fungous troubles. Along the south shore the southerly winds and frequent fogs are serious.

VARIETIES

Altho all classes of fruits may be grown in the Long Island Region, it is especially adapted to those fruits and varieties with a long growing season. Baldwin, Delicious, Rome Beauty, Yellow Newtown, and possibly McIntosh, do well. Among pears Bosc, Keiffer, Bartlett, and some of the longer season winter pears seem adapted. Peaches are suited to the sandy upland soils, and small fruits may be raised on the plain soils, especially if irrigated.

MAJOR VARIETIES OF FRUITS

A limited number of varieties of fruits is discussed in the following pages. The selection has been made of those that are most likely to be thought of in eastern fruit-growing regions—some old varieties, some new varieties, major commercial varieties, some varieties of purely local interest, and varieties for the home orchard.

Altho the desirable apple varieties for commercial planting could be counted on the fingers of both hands, yet because questions are frequently asked regarding such local productions as “Barringer” or “Pride-of-the-Hudson” and because information is requested about
performance of such new varieties as "Golden Delicious," it has
seemed advisable to include a great many varieties that really have
no place in eastern New York commercial fruit plantings solely
because they are discussed in eastern sections. The guiding principle
has been to include those varieties concerning which it is deemed
questions are most likely to be asked. The inclusion of a variety
in the list must not be taken, therefore, as a recommendation.

APPLES

It is doubtful whether any section of America can boast a greater
number of apple varieties than can eastern New York. The old
horticultural interests of this section saw the introduction of hundreds
of varieties from the Old World, to which have been added the many
varieties of local origin, such as Jonathan, Esopus Spitzenburg,
Barringer, Fishkill, Richard Graft, and Yellow Newtown. Apples
are well adapted to eastern New York and constitute the principal
fruit crop. As commercial enterprise has grown the number of vari-
eties has been steadily reduced until now hardly more than a half-
dozen are considered of first-rate commercial value. Yet because
of the local market features and roadside trade many odd varieties
have proved profitable that could never have survived the competi-
tion of distant standardized markets.

The most important commercial varieties of winter apples listed in
order of estimated importance are Baldwin, Rhode Island Greening,
 McIntosh, Northern Spy, Delicious, Green Newtown, Ben Davis,
and Rome Beauty. Among earlier varieties Wealthy and Oldenburg
stand supreme. The tendency is towards the production of fancy
fruit of high quality with McIntosh leading the trade followed by
Northern Spy and Delicious. Plantings of these three will continue
to increase in the future, while low quality sorts and little-known
kinds will gradually pass from commercial cultivation.

McIntosh has the widest range and most general planting of any
commercial variety unless it be Baldwin. It is found in northern
sections where Baldwin is not grown. In fact McIntosh develops
best in the northern regions. McIntosh and varieties of the McIntosh
type continue to dominate the apple situation. Cortland has met
with favor as a variety to supplement McIntosh, having proved es-
specially adapted to the Middle Hudson River Valley Region.

Rhode Island Greening is a standard sort especially suited to the
heavier soils. Altho Baldwin is still the leading variety so far as
production is concerned and is a recognized standard variety, it is not keeping up its one-time proportionate advantage.

In favored regions in eastern New York, Northern Spy does as well or better than in any other place in the country. It is especially esteemed in the Middle and Upper Hudson River Valley Regions, while in the Champlain Valley Region it is one of the principal varieties. Rome Beauty holds a position in the Lower Hudson River Valley Region similar to Northern Spy in the northern sections. Furthermore, it is gradually working its way northward into the Middle and Upper Hudson River Valley Regions and seems to be worthy of planting there.

Another new arrival, Delicious, together with its several red bud sports and seedling types of various names, is meeting with limited favor in all sections of eastern New York. The hardiness of the tree, dessert qualities of the fruit, and late-picking characters fit it well into the newer systems of orchard management. Yellow Newtown is still found in commercial plantings in the Middle Hudson River Valley Region and south and continues to be profitable, tho new enterprises do not include it. Ben Davis, likewise, has proved profitable, yet it is gradually giving way to varieties of better quality. Wealthy is found in all sections, but is limited in planting by the very fact that its wide adaptation has led to overproduction. Oldenburg is somewhat in the same situation. Both varieties, however, continue to be the leading "filler" varieties in all sections.

With this brief review of the general situation, each variety will be discussed by itself.

Alexander.—Alexander, once highly regarded as a large, attractive, red-striped, early fall apple is gradually being replaced by varieties of better quality. The fruit does not keep well, is apt to split and to drop, and is coarse and of poor quality. Furthermore, the tree is quite subject to blight. In spite of these faults the size and attractiveness of the fruit, together with the hardiness of the tree and its habits of early bearing, make it desirable where these factors are of major importance. Accordingly, it is of greatest interest in the Lake Champlain and Upper Hudson River Valley Regions, altho for use as a filler it may be planted further south. Its season is September to November.

Arkansas.—Arkansas is not at home in New York and is included here merely because odd trees are frequently met with and because growers occasionally inquire concerning it. It is a variety belonging to the Winesap group of southern origin, known frequently by the name "Mammoth Black Twig." The fruit is large to medium in size, roundish-conic to roundish-oblate in shape, greenish-yellow in color covered with dull, dark red with greenish-white firm flesh, sub-acid in flavor, only good in quality, and in season from December to May. It is very
hard at picking time and holds up well in storage, tho somewhat subject to scab and usually developing a greasy appearance. The tree is unproductive, fails to mature its fruit properly in New York, and is altogether unsuited for planting. Because of the general vigor and sturdiness of the tree it would seem desirable for top-working to other sorts.

**Bailey Sweet.**—The tree of this variety is not hardy and not a vigorous grower. The fruit, however, is a bright attractive red in color, of good size, of pleasant sweet flavor, and very good quality. The season is October to January. Bailey Sweet is grown primarily for home use or local trade, and is gradually passing out. Nevertheless, in the Hudson River Valley and on Long Island the appearance and quality of the fruit commend it for consideration where a sweet apple of this type is desired.

**Baldwin.**—Baldwin is still the leading commercial apple of eastern New York with every indication that it will continue to be so for some time to come, altho other varieties are beginning to compete for supremacy. It is desirable for cooking, for dessert, and for home trade, and since eastern New York fruit is usually high in color it finds a place in fancy trade when well grown.

The tree is sturdy, vigorous, long-lived, and a good cropper, altho biennial. The tenderness of the tree has given Baldwin its biggest set back, severe injury having occurred in some winters as far south as the Lower Section of the Middle Hudson River Valley Region. In the Upper Hudson River Valley Region winter injury is recognized as one of the serious handicaps, yet Baldwin is considered one of the most profitable varieties grown thruout the entire Hudson River Valley.

It is found in the Lake Champlain section, but hardier varieties of higher quality are asserting their superiority. On Long Island and in the Lower Hudson River Valley Region, Baldwin approaches its southern limit as a winter apple, there taking on some of the characteristics of a late fall variety. Accordingly, more southern varieties dispute with Baldwin for the lead. It must nevertheless be recommended for planting in all sections of eastern New York and especially for the Middle Hudson River Valley Region.

**Barringer.**—"Pride-of-the-Hudson" is the local name for this old variety which originated in Clermont, Columbia County. It is grown but little commercially, and then only in the neighborhood of its origin, yet it is so frequently met with in eastern New York that it deserves mention.

The fruit is medium to large in size, roundish-conic to oblate-conic in shape, ribbed, attractively striped with red over yellow ground color, mild sub-acid in flavor, very good in quality, and in season from December to March. It is a particularly handsome fruit, resembling Northern Spy in general appearance. The tree is vigorous, upright-spreading, open, and productive. In spite of the fact that it has not been widely grown it may well be considered as a possibility for commercial plantings where the limit of superior varieties has been reached.

**Baxter.**—Baxter is a roundish-conic, large, fair quality, attractive, red apple conspicuously marked with large white dots, belonging to the Blue Pearmain group. It is of importance largely because of the hardiness, vigor, and disease-free characters of the tree. Outside of the Champlain Valley Region and the more rigorous parts of the Upper Hudson River Valley Region it has no place in competition with higher quality varieties.
**Ben Davis.**—Ben Davis is losing ground in eastern New York. Altho there are many old orchards of this variety, there are few if any new plantings. Because of the hardiness, vigor, and productiveness of the tree, together with the symmetrical, attractive, striped red fruits, Ben Davis has been one of the profitable commercial varieties. Year in and year out the low price received for the fruit has been more than balanced by the low cost of production. As the tree gets older, however, the fruit is likely to be undersized, and the trees themselves are neither long-lived nor large-growing.

While Ben Davis is still to be considered for both filler and permanent planting, the low quality of the fruit bars it from any extensive future planting in a region interested largely in dessert varieties. Its adaptability to all sections and to all soil types is one of its assets, tho it does best in the more southern sections. The fruit is in season from January to June.

**Bethel.**—Bethel is another apple of the Blue Pearmain group included here because of its hardiness and possible desirability in northern sections or where severe winters limit the choice of varieties. The fruit is large, conic, somewhat angular, red striped with purplish carmine, conspicuously dotted with yellow, firm flesh, mild sub-acid in flavor, good in quality, and in season from November to March. Altho the fruit is inclined to drop and does not ship well it is profitable for local market and desirable for home use.

**Bietigheimer.**—The fruit of Bietigheimer as grown in eastern New York is remarkably large in size and attractive pinkish-red in color. It is roundish-oblate, flattened at the base, short stemmed, in season during September and October. The serious dropping of the fruit, together with its poor quality, have eliminated it from commercial plantings. Its value lies in the interest which the fruit always arouses.

**Black Ben Davis.**—Black Ben Davis is very similar to Ben Davis in general characters. The fruit differs from Ben Davis in being nearly solid red in color instead of splashed and striped with red. Where Ben Davis does not color well Black Ben Davis has a place, otherwise the darker red of Black Ben Davis is not as attractive as the red stripings and splashings over yellow ground color which characterize highly colored Ben Davis. In the home of Ben Davis types, Ben Davis is preferred.

Gano (page 38) is so similar to Black Davis that the two may be considered identical. They may be grown wherever Ben Davis is grown but their planting is of questionable wisdom.

**Black Gilliflower.**—Here is a variety of interest chiefly because of its long "sheep nose" shape and because it still lingers in the fancies of former generations. Its uniform oblong-conic dark red fruits are pleasing to the eye and the peculiar aroma and mild sweet flavor add a charm to an otherwise dry, rather coarse flesh. The tree is a good grower, healthy, and a regular bearer. It will likely continue to be in limited demand for home use and local roadside trade and may be grown successfully in the Hudson River Valley and south. It is in season from October to February.

**Blue Pearmain.**—Blue Pearmain is one of the oldest varieties grown in America. Its dark bluish or purplish blocky fruits, tough skin, yellowish flesh, and no more than good quality are known in all old orchards. The season is from October to
March. The trees are hardy but unproductive. Blue Pearmain is gradually disappearing from culture.

Boiken.—Boiken, when well grown, is a handsome symmetrical oblate-conic yellow apple of good size with bright red blush, whose brisk subacid flavor is too severe for wide acceptance. The trees are, however, quite hardy, early and regular bearers, and were planted in former years as fillers. In colder northern sections growers consider it a highly profitable variety in spite of its poor quality. It is best suited to the Upper Hudson River Valley and Lake Champlain Regions. The fruit is in season from November to March.

Chenango.—Chenango, or Chenango Strawberry as it is frequently called, still merits a place in every home orchard and in commercial orchards whose fruit is disposed of thru local or roadside markets. In season during August and September, the oblong-conic, symmetrical, shapely, pink-striped fruits are highly prized not only because of their appearance, but also because of their delicate juicy flesh and delightful aromatic flavor. Altho the fruit is too tender to ship, it is profitable whenever it can be gotten to market without bruising. The trees are hardy, healthy, early and regular croppers, and adapted to all sections of eastern New York.

Collamer.—This is a red strain of Twenty Ounce (page 46).

Cortland.—Cortland is a new variety of McIntosh type which is especially promising for commercial planting. It is the result of a cross between Ben Davis and McIntosh made at this Station. The fruit is large in size, roundish-oblate in shape, and dark red, striped with carmine over yellow ground color; with slender stem in a broad, obtuse, russeted cavity, and small calyx in a moderately broad, moderately deep, obtuse basin; with white, crisp, tender, juicy flesh, subacid, aromatic flavor, and very good quality. The season is from two to three weeks later than McIntosh. The tree has characters of both Ben Davis and McIntosh, is an early and regular bearer, and bears much of its first fruit terminally.

From its performance in the Hudson River Valley, where it has been possibly more closely watched than in any other region, the fruit has shown itself to hang to the tree especially well—in some orchards better even than Delicious, Rome, or Ben Davis. This very fact of long hanging has led to abuse of the virtue so that fruits have been allowed to hang beyond maturity, when flavor and character have gone. In addition to its hanging qualities it has shown that it may be handled with less bruising than McIntosh.

In the Hudson River Valley, where fruit develops high color, Cortland develops a rougher, more striped appearance than McIntosh, possibly a deeper color, and has seemed to color more easily. It is clearly a high quality fruit, slightly firmer in flesh than McIntosh, with not quite the bouquet but with a little more character. In numerous instances where fruits of McIntosh and Cortland have been pared and given to individuals so that they did not know which variety they were sampling, as many have preferred Cortland as have preferred McIntosh. What place the variety will hold in commercial plantings 25 years from now, time alone can tell. It has so far shown itself promising wherever McIntosh does well, and can be recommended for planting in commercial orchards which have as large plantings of McIntosh as can be safely handled.
Cranberry Pippin.—Cranberry Pippin is a very old variety which originated near Hudson. It is not grown commercially in eastern New York, altho more recently it has been recommended for planting in Canada for export trade. Because odd trees are frequently met with in eastern New York and because inquiries are made concerning it, a description is here set forth. Fruit medium to above, roundish oblate, yellow shaded and striped with scarlet; stem short and slender in a deep cavity; calyx closed in a broad russeted basin; flesh white, firm, coarse; flavor sub-acid; quality good; season November to February. Tree vigorous, healthy, productive, biennial.

Deacon Jones.—Here is a large, round-conic to oblong-conic apple whose thick skin is washed and striped with pinkish-red and covered with grayish scarf skin, whose flesh is firm and coarse, flavor mild, and quality no more than good, in season from November to March. In the Hudson River Valley the trees bear good crops of well-colored fruits which hang to the tree well. Deacon Jones merits further trial planting for its possibilities as a desirable commercial sort.

Delicious.—Delicious, characterized by its oblong-conic shape, long stem, strongly furrowed or corrugated basin, and crisp, very juicy, coarse flesh with mild aromatic flavor, has been demanding attention in eastern New York. The fruits color better and develop finer texture and firmer flesh than they do in the Pacific Northwest so that they have brought good market prices. Altho young trees bear large fruit and bear early, the size is not large on older trees nor are older trees overly heavy croppers. Furthermore, the European red mite has been especially severe upon the foliage. Delicious nevertheless fits into the orchard where dessert fruits for fancy trade are desired, largely because of its later maturing and its consequent usefulness in rounding out the picking season. It has been grown successfully in all sections of eastern New York, the tree being hardy in every region. The season is from December to March.

Domine.—This is another variety included because it is so often found in old eastern orchards. The trees are not strong and the fruit is small so that the variety is rapidly passing.

The fruit is medium in size, oblate, flattened at the base; stem long, slender in a wide, deep cavity; calyx closed or open in a broad rather shallow furrowed basin; skin yellow or green mottled and striped with red; core open; flesh yellow, coarse, juicy; flavor mild, aromatic; quality good to very good; season November to March.

Duchess of Oldenburg.—See Oldenburg (page 42).

Early Harvest.—Early Harvest is the earliest apple of good quality desirable for both dessert and cooking and deserves a place in all home orchards. The fruit is not large, yellow in color, and bruises easily so that it is only good for home use, local markets, and roadside stands. It is in season during July and August. The tree is healthy and bears early and regularly. It is suggested only for the Hudson River Valley and south.

Early McIntosh.—Early McIntosh is on trial as an early red apple of McIntosh type, having been recently introduced by this Station as a cross between Yellow Transparent and McIntosh. In fruit it is very similar to McIntosh—medium in size, roundish-obl ate in shape, solid red in color, covered with heavy bloom, with clean white, firm, fine, juicy, flesh, sub-acid flavor, pleasing aroma, and very good quality. It ripens a few days after Yellow Transparent. The tree appears
to combine the characters of both parents. It is a very promising introduction, worthy of trial wherever an early red apple of McIntosh type is desired.

**Esopus Spitzenburg.**—This is another eastern New York variety, having originated at Esopus, but is no longer planted in eastern commercial orchards. The fruit is high in quality, oblate-conic, characteristically dotted with many fine dots, firm, attractively colored, bright red, in season from November to February. Unfortunately, the tree is not vigorous, not hardy, blights badly, and is a shy bearer. While it may be grown successfully in all eastern New York regions, it is no longer considered a profitable commercial sort.

**Fallawater.**—Fallawater is no longer a commercial variety in eastern New York, except in parts of Long Island, tho it is frequently met with in old orchards. It is characterized by its large, globular, greenish-yellow fruit blushed with dull brownish red. The flesh is coarse, yellow, mild, only fair in quality, and in season from November to March. The tree is vigorous and hardy but an uncertain bearer.

**Fall Pippin.**—Fall Pippin, altho an old sort which has been somewhat neglected because of its susceptibility to apple scab, continues to be profitable. The fruit is large, round, blocky, golden yellow, with rich, tender, juicy flesh of high quality, suitable for both dessert and culinary purposes, and is in season from September to December. Now that spray practices give satisfactory control of scab, Fall Pippin deserves more consideration. It is recommended for commercial planting in all sections of eastern New York.

**Fameuse.**—Fameuse, or Snow as the variety is often called, is adapted to northern regions, particularly the Champlain Valley where it does very well, provided scab, to which this fruit is very susceptible, can be controlled. In southern sections the fruit is apt to run small and to lack good storage characters. The round-conic, red-striped fruits with clear white flesh are of highest quality and command a good price on the market when of good size and color. The trees are productive, long-lived and hardy.

**Fishkill.**—As the name suggests, this variety is of Hudson River Valley origin, having originated at Fishkill. It is found here and there throughout eastern New York in old orchards. The fruit is large, round to oblate-conic, attractive tho rather dull red, something the type of Tompkins King, with firm, coarse flesh, of only good quality, and in season from November to February. The tree is vigorous, hardy, and an early and regular bearer. Were it not for more desirable sorts Fishkill might find a place in the Upper Hudson River Valley and Lake Champlain Regions.

**Gallia Beauty.**—Gallia Beauty is a new Rome type from southern Ohio. It is said to be similar to Rome in both tree and fruit characters, except that it is more highly colored. It has not yet fruited in eastern New York.

**Gano.**—Gano, which may be considered identical with Black Ben Davis, succeeds wherever Ben Davis does well. It differs from the latter principally in color, developing a dull pink under-color instead of yellow. It is to be preferred to Ben Davis where the variety does not color sufficiently. Ordinarily Ben Davis is sufficiently attractive.

**Golden Delicious.**—This is a relatively new apple, attractive yellow in color and of exceptionally high quality. The trees bear heavily early in life, tho what they may do later cannot be told, of course, until some reach older age.
fruit is oblong-conic, large in size, with long slender stem, and firm, crisp, juicy, sub-acid, rich aromatic flesh, very good to best in quality, and in season from Autumn to May. As fruited in several localities in the Hudson River Valley the fruit averages larger than Grimes Golden in the same region and hangs better to the tree but is frequently russeted. It seems best adapted to a long growing season, much difficulty from shrivelling in storage having been experienced when gathered prematurely. While it deserves thoro trial in all sections of eastern New York, the indications are that it is likely to do best to the south of the Middle Hudson River Valley Region.

Gravenstein.—Gravenstein is a handsome waxen yellow apple striped and splashed with bright red, of good size, with rich juicy, aromatic yellow flesh, very good to best in quality, and in season from September to November. The trees are very hardy, vigorous, and productive, tho the fruit ripens unevenly and does not hang overly well. It is adapted to northern sections doing well from the Middle Hudson River Valley Region north. Further south it becomes a summer apple and colors poorly. The fruit sells well in all markets, a large proportion from eastern New York finding its way abroad.

Grimes.—Grimes, altho a beautiful yellow winter apple of high quality, is not a good commercial variety north of the Lower Hudson River Valley Region. The fruits are undersized and unattractive when grown further north and frequently fail to mature. At their best they are large, round-oblong in shape, flattened at both ends, deep yellow with firm, juicy, aromatic flesh, in season from November to January. The trees are subject to collar-rot and are not long-lived. In the Lower Hudson River Valley Region and on Long Island, Grimes does better, but finds difficulty even there in holding its own against more favored sorts.

Green Newtown.—In the Middle Hudson River Valley Region and to the south "Newtown," as it is more often called, finds a congenial home in certain localities and is highly profitable. The fruit is roundish-oblate, irregular, medium or above in size, yellow with brownish-pink blush, with rich, crisp, juicy, sprightly, aromatic flesh, and in season from January to May. The tree is a biennial bearer, slow grower, not overly hardy, and fickle in its adaptation to certain areas. Furthermore, the fruit scabs badly. Old orchards are being retained but few new plantings are being made.

Haas.—Trees of Haas are found scattered thruout eastern New York in limited numbers. They are hardy, vigorous, and productive, but the fruit, altho attractive red over yellow, is brisk or astringent in flavor, poor in quality, and not overly large. It is further characterized by its oblate-conic shape, short, thick, reddish stem, white or red-tinged flesh, and small closed calyx. Other varieties are taking its place.

Holland Pippin.—Holland Pippin, altho grown commercially to a limited extent in the Hudson River Valley, is included here mainly because of its confusion with Holland Winter and the more desirable Fall Pippin (page 38). Holland Pippin is earlier in season than Fall Pippin, is brisk sub-acid in flavor, and good for culinary use only, whereas Fall Pippin is excellent in quality for both dessert and cooking. Furthermore, Holland Pippin is roundish in shape, inclined to conic, and has a rather small closed calyx, while Fall Pippin is roundish oblate in shape and has a large open calyx. Holland Winter with which this
variety is also confused is a winter variety in season from December to May and may be easily distinguished on the basis of this alone. Altho the tree of Holland Pippin is fairly hardy, vigorous, and productive, no new plantings are found, so that it seems likely that the variety will gradually pass from cultivation.

Holland Winter.—The Holland Winter grown in the Hudson River Valley is frequently called Holland Pippin. The true Holland Pippin, however, is a fall apple, while Holland Winter is in season from December to May. The fruits are medium in size, round-conic, pale green with faint blush; stem short and thick; calyx small in a shallow wrinkled basin; core open; flesh white, juicy, firm, mild, aromatic; and quality only good. The trees are vigorous and healthy, and tho the fruit keeps better in storage than Rhode Island Greening, the variety is no longer being planted.

Hubbardston.—Hubbardston is generally adapted to the sections where Baldwin is grown, tho its range is neither so far north nor so far south. It does best in the Middle Hudson River Valley Region. The fruit is medium to large size, roundish-ovate, yellow flecked with russet and blushed with brownish red, often marked at the basin end with concentric russet flecks, with firm, yellow, crisp, aromatic flesh of mild flavor, very good to best in quality, and in season from October to January. The tree is an early, regular bearer, tho subject to various cankers, not overly hardy, and fickle in its soil and climatic requirements. It is more highly regarded as a filler in eastern New York than as a permanent tree. Where it does well it is a handsome apple of good size and color and a profitable sort.

Jonathan.—Jonathan is another variety of Hudson River Valley origin, having been first fruited in Ulster County, not far distant from its near relative Esopus Spitzenburg. The fruit is attractive red over clear yellow, round-conic, somewhat flattened at both ends, firm, crisp, juicy, very aromatic, sprightly, very good to best, in season from November to January. Unfortunately, the size is small, and black spots, known as "Jonathan spot," develop in storage. In addition the tree is not overly vigorous, possibly because of the small folded foliage which it depends upon for food. In spite of the fact that the recommendation is frequently made to top-work Jonathan on more vigorous stocks, it has itself proved to be a hardy, vigorous stock for top-working to other free-growing varieties. Because of these faults Jonathan cannot be given a strong recommendation for commercial planting in eastern New York, altho in the lower section of the Middle Hudson River Valley Region and south it does best.

King David.—This variety has much the apperance of Jonathan, but is darker in color, more sprightly in flavor, if anything smaller in size, and in season a month longer. Altho the tree is vigorous, hardy, and healthy, the smallness of the fruit has prevented King David from being accepted for commercial plantings in eastern New York.

Lady Sweet.—Lady Sweet, or "Pommeroy" as it is most often called in eastern New York, originated near Newburgh. It is perhaps the most desirable commercial sweet apple grown in eastern New York, the fruit being of good size and color, in season from November to April, and of highest quality for both cooking and dessert. Furthermore, the tree is an early and regular bearer, tho a slow grower and not overly hardy. The fruit may be recognized by its round-conic to oblong-conic shape, yellowish-green ground color overspread with light red
and splashed with carmine, short stem in a deep narrow cavity, small closed calyx in a narrow, shallow basin, and conspicuous pale dots. It may be grown from the Middle Hudson River Valley Region south.

**Lawver.**—Lawver is one of the handsomest apples grown. It is oblate-conic in shape, entirely covered with bright attractive red in highly colored specimens and scattered with numerous white dots. The stem is long and slender, and the calyx small and closed in a shallow broad basin; the flesh very firm, juicy, brisk sub-acid, only fair in quality, and in season from January to May or June. In the Middle Hudson River Valley Region trees have been shy bearers, and the fruit has not been large. It is better adapted to southern sections.

**Lobo.**—Lobo is a recent acquisition introduced by the Central Experimental Farms, Ottawa, Canada. It is a McIntosh type which is said to ripen its fruit between Wealthy and McIntosh and to hang better than McIntosh. The fruit is firm, crisp, juicy, and of high quality, tho it is said to have not quite the characteristic flavor and aroma of the McIntosh parent. The tree is similar to McIntosh. Lobo is considered promising and deserves thorough trial.

**Lodi.**—Lodi is of the Yellow Transparent type with larger, longer-keeping fruit, and better tree. It has been introduced for trial by this Station and was produced by crossing Montgomery and Yellow Transparent.

**Lowland Raspberry.**—“Liveland” as this variety is frequently called, is a very hardy, attractive, early summer variety. The fruit is round-oblate-conic, waxen white, striped with red, mild, tender, very good in quality, in season in August. It is suggested for home orchards, especially in the northern sections, where it is at its best.

**McIntosh.**—All varieties of apples are judged in eastern New York at the present time in their relation to McIntosh. Such heavy plantings of it have been made in every section that it can be said to be the single outstanding variety throughout the region. The fruit is roundish-oblate, solid red in highly colored specimens, with heavy bloom, and with white, tender, juicy, perfumed, mild sub-acid flesh of very good to best quality, in season from November to January or later. The trees are vigorous, very hardy, strong, long-lived, large, regular, and early bearers, tho they do not hold their fruit well. Both fruit and foliage are very susceptible to scab. McIntosh is at its best in the Lake Champlain Region, while on Long Island it becomes almost a late fall apple and lacks good storage characters. Thruout the Hudson River Valley it does well, but appears to better advantage the farther north it is grown.

**Macoun.**—Macoun is a very promising winter McIntosh produced by this Station from a cross between McIntosh and Jersey Black. In shape the fruit is almost identical to McIntosh. In color it is darker, more solid red, with heavy bloom. The flesh characters are also similar to McIntosh, but the fruit has run a trifle smaller as fruitied under crowded conditions at Geneva. The original tree under these conditions is only medium in size and vigor, but the young trees in the Hudson Valley are very vigorous. It is recommended for trial. It is in season six weeks later than McIntosh.

**Maiden Blush.**—The characteristic oblate, lemon-yellow, attractively blushed fruits of Maiden Blush have been grown wherever apples are grown. They are good for cooking and usually sell well on the market, but are poor for dessert purposes. The trees bear early and are heavy bearers, but mature their fruit...
unevenly and are susceptible to scab. Altho old plantings are being retained, more desirable varieties are taking the place of this old favorite in new orchard enterprises.

**Medina.**—Medina is offered for trial by this Station as the result of crossing Deacon Jones and Delicious. It is very similar to Delicious in shape and flavor, but is larger and more highly colored—desirable characters where Delicious is apt to run small as it is in New York. In addition it keeps a month longer than Delicious. Young trees have shown themselves to be very vigorous.

**Melba.**—Melba is still another McIntosh type originated at the Canadian Central Experimental Farms. It is said to be a red-striped apple ripening during the latter part of the Oldenburg season, resembling McIntosh in aroma, flesh, and flavor, but not in color, shape, and general appearance. It has done well in southern sections and is recommended for trial.

**Melon.**—Melon is roundish-oblative-conic, clear yellow overspread with attractive red, very good in quality, in season from October to January. The trees are productive, early and regular bearers, and the handsome fruit has been found profitable for local markets by growers in the Middle Hudson River Valley Region. Its quality recommends it for home planting at least.

**Milton.**—Milton is the result of a cross between Yellow Transparent and McIntosh made by this Station. It is similar to McIntosh in most characters, but the fruits are sometimes irregular. The season is six weeks before McIntosh. It is recommended only for trial.

**Mother.**—The round-conic, attractive striped fruits of Mother, with small calyx set in shallow basin, and yellow, tender, juicy, aromatic, high quality flesh are known in all apple regions. The trees are neither vigorous nor productive, but the variety is still a favorite in home orchards.

**Northern Spy.**—Northern Spy is of major interest to the Upper Hudson River Valley and Lake Champlain Regions where it is the principal variety in some orchards. Yet it is found growing well thruout eastern New York with no apparent correlation with soil type. Wherever it succeeds it is a profitable sort. In especially severe winters the trees show crotch injury, so that they are not adapted to the coldest sections, yet they are considered fairly hardy and are valued for this character. The large round-conic, striped fruits need no description. They are deservedly rated highest for dessert, cooking, and trade, and agree nicely with the tendency in eastern New York to grow only high quality fancy varieties. They develop high color in most sections, especially in the upper Middle Hudson River Valley Region and north. Northern Spy, in spite of its tardiness in bearing, is rightly considered one of the four leading commercial sorts, the other three being Baldwin, Rhode Island Greening, and McIntosh.

**Northwestern Greening.**—Northwestern Greening is characterized by large, smooth, green, symmetrical, round-conic fruits, with firm, yellow flesh, not more than good in quality, and in season from November to April. The trees are very hardy, vigorous, and productive, but the fruit is already being discriminated against because of its poor quality. It cannot be recommended for future planting.

**Oldenburg.**—Duchess of Oldenburg, as the variety is frequently called, is a hardy, vigorous, early and regular bearing sort, adapted to a wide range, and found in every section of eastern New York. Its round-oblative, red-striped fruits, in season during August and September, are primarily adapted to cooking. It is
one of the standard all-round commercial varieties, perhaps used most often as a filler between permanent trees.

**Oliver.**—In the Lower Hudson River Valley Region, Oliver sometimes develops very high color and sufficient size to be an acceptable market fruit, but because it is apt to run small it cannot be recommended for commercial planting. The fruit is characterized by its strongly oblate shape, broad, shallow basin, conspicuous russet dots, and firm, juicy, mild, pleasantly flavored flesh. It is in season from November to April.

**Opalescent.**—Here is one of the handsomest varieties grown. The fruit is large, round-conic, symmetrical, entirely covered with brilliant red in highly colored specimens, in season from November to February. Unfortunately the flesh is coarse and the quality no more than good. The trees are hardy, vigorous, and productive, and have proved profitable commercially. The tendency of the tree to blight and the poor quality of the fruit have kept Opalescent from extensive planting.

**Orleans.**—Orleans is a cross between Deacon Jones and Delicious made at this Station. It is similar to its sister seedling Medina (page 42) in being a large, high-colored Delicious type but keeps a trifle longer. It is being planted for trial for comparison with Medina.

**Peck Pleasant.**—Because the tree is subject to various cankers and because it is a shy bearer, Peck Pleasant is passing from cultivation. The oblate, waxen-yellow, pink-blushed fruits, of highest quality, in season from October to January, are found in most old eastern orchards but no new plantings are being made.

**Primate.**—The fault of long uneven ripening which seriously handicaps Primate as a commercial variety becomes an asset in the home orchard. The fruit is round-conic, yellow, crisp, very tender, juicy, very good to best in quality, and in season from August thru September. It is one of the best varieties of its season for home orchards and local roadside trade. The trees are hardy and productive and succeed in all sections of eastern New York.

**Pumpkin Sweet.**—Frequently passing under the name of "Pound Sweet," the trees of this old, sweet, yellow apple are found scattered thru all apple sections. The large, round-conic, fruits, with short thick stem in a narrow cavity, often lipped, are further characterized by their firm, juicy, peculiar flavor. They are only good in quality but are esteemed for cooking during their season, October to January. The trees are hardy and productive, tho the fruit is subject to watercore. Pumpkin Sweet may be grown in all sections, but is best adapted to the Middle and Upper Hudson River Valley Regions.

**Rambo.**—Rambo is of interest because of the place it holds in the memories of older generations. It is no longer found in commercial plantings, altho it does fairly well in the Lower Hudson River Valley Region and south. The round-oblolute, dull red-striped fruits are very similar to those of Domine (page 37) and are often confused with them. Rambo is a fall apple of mild flavor, in season from November to December, while Domine is a winter apple of more sprightly flavor. It is very good in quality, crisp, tender, juicy, and aromatic. The trees are not hardy and frequently overload, producing undersized and undercolored fruit.

**Red Astrachan.**—Red Astrachan is the cosmopolitan early red apple. The bright red-colored fruits with whitish bloom, brisk sub-acid flavor, in season from
late July to September, are familiar to all. However, they do not handle well, ripen unevenly, and drop badly. Furthermore, the trees the early and regular bearers are not long-lived. Because of the fact that Astrachan is so generally planted and because its fruit qualities do not permit of other than local disposal, markets are usually over supplied and it is not recommended for commercial planting. It may be grown in all sections of eastern New York.

**Red Gravenstein.**—This is the most highly colored sport of the Gravenstein yet produced and deserves consideration wherever Gravenstein is grown.

**Red Rome.**—There are several sports of Rome Beauty going by the general name of “Red Rome.” They are more highly colored than Rome, but as yet are all on trial.

**Red Spy.**—Red Spy differs from Spy in being more highly colored and in having the red coloring washed on the fruit instead of striped. It has been receiving attention recently as an improvement over its parent.

**Rhode Island Greening.**—Rhode Island Greening is found generally from Long Island to the Canadian line, tho it becomes a fall apple in the south and is somewhat tender to cold in the northern regions. The trees are fairly hardy, productive, vigorous, and long-lived, and the green, round-oblate fruits of high quality and cosmopolitan use find a steady demand. The season is October to March. One of the faults of Rhode Island Greening in the Middle Hudson River Valley Region and south is its tendency to take on a yellowish tinge or a faint blush. Accordingly, the heavier soil types are usually selected for new plantings. Furthermore, since McIntosh has become the favorite apple, Greening is frequently picked with reference to that variety, which means that it is gathered before McIntosh and while still perfectly green. Rhode Island Greening is best adapted to the Middle and Upper Hudson River Valley Regions and is recommended for commercial plantings in these sections especially.

**Richard Graft.**—Outside of the Middle Hudson River Valley Region, where this variety originated, it is little grown. It is an attractive, dark red, striped, roundish-oblate apple, with long stem, and with very tender, juicy, aromatic flesh of very good quality, in season in early September. It is suited only for home use or local trade, yet because of its high quality deserves mention.

**Rome.**—Rome Beauty is to the Lower Hudson River Valley Region what Northern Spy is to the Upper Hudson River Valley and Lake Champlain Regions, and in addition it is finding favor as far north as the Upper Hudson River Valley Region. It is more suited to southern sections, where the fruit attains good size and color. Further north the fruit is apt to run small and to be poor in color. Nevertheless, because of its early and regular bearing habits, it is highly regarded for both filler and permanent planting from the Middle Hudson River Valley Region south. The fruit is large, oblate-conic, red-striped, with long slender stem, set in a characteristically broad, obtuse cavity. The flesh is firm, coarse, mild, only good in quality, in season from November to May. In spite of its low quality, Rome satisfies the demand for a mild, long-season, general purpose fruit.

**Roxbury.**—Roxbury is found in all sections of eastern New York, tho not in recent plantings. This old favorite, with its roundish-oblate, elliptical, russeted, long-keeping, high-quality fruit, is gradually declining as cold storage improvements decrease the value of its keeping asset. On Long Island and in the Lower Hudson River Valley Region the fruit attains large size, while in the Upper
Hudson River Valley Region it is likely to run smaller. The season is from December to May.

St. Lawrence.—St. Lawrence is a hardy, good-sized, oblate-conic variety of the Fameuse type, in season during September and October. It is prized in the severe cold sections, but is no longer planted commercially.

Stark.—The chief fault to find with Stark, namely, poor dull color, is partly offset in the Hudson River Valley on lighter soils, where the fruit colors well. The round-conic or oblong-conic fruit, with short stout stem is sometimes confused with Baldwin, but the mild almost sweet flavor is sufficient identification. The season is November to April and the quality is only good. The trees are exceptionally vigorous, hardy, early croppers, and adapted to diverse conditions. Because of the tree characters Stark is occasionally planted, but the general poor color and low quality have prevented the variety from any great increase in favor.

Starking.—Starking is a new bud-sport of Delicious, apparently differing from that variety only in color, coloring earlier and more completely than Delicious grown under similar conditions.

Stayman.—Stayman has been tried in all sections of eastern New York with the general result that it is not planted outside of the Lower Hudson River Valley and Long Island Regions, and even there sparingly. It is a variety requiring a longer growing season than eastern New York can provide, and even in the southern parts of the region the fruits are likely to be undersized and undercolored. The fruit is round-conic, rounding towards the basin, regular, thick skinned, covered with dull dark red, with firm yellow, juicy, aromatic flesh of very good quality, in season from December to May. The trees are very vigorous and productive.

Sutton.—Lack of size is the defect in the fruit of this variety; otherwise it would be more extensively planted in the Hudson River Valley, for in this section it seems especially at home, producing good crops of highly colored fruit. The trim round or oblong shape, short stem, smooth glassy finish, and firm, juicy, sub-acid flesh of good quality, serve to identify the fruit, which is in season from November to March. On young trees the fruit is all that could be asked, but older trees are inclined to overload alternately and to produce undersized fruit. Furthermore, the trees are susceptible to blight and are slow in coming into bearing. Sutton is a commercial possibility, especially adapted to dessert markets, but the majority of opinion is disregarding it in favor of better varieties.

Swaar.—Swaar, too, is an eastern New York variety, having been originated near Esopus in Ulster County. Its large round-oblate, greenish-yellow fruit, dotted and flecked with russet is esteemed wherever it is known because of its rich, firm, aromatic flesh. It is in season from November to April. Unfortunately, the tree is neither thrifty nor long-lived and is an uncertain bearer. Nevertheless, Swaar continues to be a favorite in home orchards, especially in the Middle Hudson River Valley Region, and it may be grown from there south.

Sweet Bough.—Sweet Bough deserves a place in every home orchard, and is suitable for local and roadside trade. The round oblong-conic fruits are further characterized by a short, thick stem; small calyx in a small, narrow basin; clear, smooth, pale yellow skin often faintly blushed, and by very tender, juicy, sweet, white flesh, in season during August and early September. It may be grown in all but the more northern sections of eastern New York.
Sweet Delicious.—This is a new sweet apple offered for trial by this Station obtained from a cross between Delicious and Deacon Jones. The fruit shows resemblance to both parents, with the aroma of Delicious. It is in season in early winter.

Sweet McIntosh.—Sweet McIntosh was produced by this Station from a cross between Lawver and McIntosh. In appearance it resembles Lawver, but in flesh characters it partakes of McIntosh. It is a late fall apple, very good to best in quality.

Talman Sweet.—Talman finds a commercial home in the Lake Champlain Region. The medium size, roundish, yellow fruits are most readily distinguished by the characteristic suture line that is found running from stem to base on most specimens. The season is November until January and the quality is very good. The tree is the variety’s greatest asset, however. It is healthy, vigorous, very hardy, productive, an early and regular bearer, and long-lived. Accordingly, it makes a desirable stock for top-working, and in addition, it is a good general-purpose pollinizer. Altho the market demand is limited, Talman Sweet is planted generally thruout eastern New York, but it is of greatest value in the colder sections.

Tompkins King.—Profitable orchards of double-worked Tompkins King trees are to be found in the Middle Hudson River Valley Region which is its southern limit for commercial planting. Its northern range is the Upper Hudson River Valley Region. The fruits are large roundish-conic, attractive, red over yellow, with yellow, crisp, juicy, aromatic flesh rating very good to best in quality. The season is October to January. Because of its fine fruit characteristics King commands a premium upon both foreign and domestic markets and is admirably suited to home and local market requirements. The tree, however, is the limiting factor in commercial planting. It is not hardy, subject to collar-rot, short-lived, and not considered a heavy bearer. Where it succeeds, it is a valuable addition to commercial plantings and deserves a place in all home orchards.

Twenty-Ounce.—Twenty Ounce is one of the best fall apples for commercial plantings. On Long Island it becomes a late summer variety. The fruit is large, round-conic, yellowish-green mottled, and striped with red. A roughened surface is one of its identifying characters. The flesh is coarse, sub-acid, only good in quality, but well liked for culinary use. It is in season from September to December. The trees blight and canker easily and are not hardy, tho they are early regular bearers. Commercial planting is limited to the Hudson River Valley and Long Island Regions.

Wagener.—The medium-sized, oblate, “five-sided” fruits of Wagener, with their smooth, bright, red-striped skin, are familiar to all in eastern New York. They are firm, fine-grained, juicy, sub-acid, very good to best in quality, in season from October to February. The tree is a very early bearer, but becomes dwarfish, is not long-lived, and bears undersized fruit. It is ideally suited to filler planting in all sections of eastern New York.

Wealthy.—The chief fault of Wealthy has lain in the fact that its wide popularity and adaptation has led to over-planting and over-production. Its planting in eastern New York is limited by market prices and by the prevalence of the cedar rust fungus, to which it is quite susceptible. The tree is very hardy, productive, and a very early bearer, and succeeds in all sections of eastern New York on all
soil types. It is not a large grower, however, and bears small fruit as it becomes older, a fault which can be largely corrected by methods aimed at renewing vigor. It is extensively planted largely as a filler in permanent orchards. The fruit is round-conic, flattened at the base, striped and splashed with red, with crisp, juicy, white flesh, of pleasing flavor. It is in season from October to January.

**Westchester.**—This variety is the result of a cross between Ben Davis and Green Newtown made by this Station. The fruit is the general shape of Green Newtown, greenish-yellow, mottled, and splashed with bronze-red. The flesh is yellow, coarse, juicy, rich, aromatic, very good in quality, in season from November to February, and retains its excellence from first to last. The tree is vigorous and productive. Westchester is lacking in attractive coloring, but in the Middle Hudson River Valley Region it is highly regarded by those who know its rich, high quality.

**Westfield.**—This high-quality, old-fashioned variety is found in all old orchards, but it is no longer planted commercially because the fruit lacks size and color and because the trees are not heavy bearers. The fruit is characterized by its oblong-conic shape, dull yellow, red-splashed coloring, long slender stem, and small open calyx in a narrow shallow basin. The flesh is firm, juicy, peculiarly aromatic, very good to best in quality, and is in season from October to March.

**Williams.**—Williams can be recommended for planting wherever an early red apple is desired. The fruits are shapely, oblong-conic, bright, deep red, striped, with crisp, mild, aromatic flesh, good in quality, in season in August and September. The trees are healthy and vigorous and succeed thru the Hudson River Valley and on Long Island, commercial plantings being restricted to the Lower Hudson River Valley and Long Island Regions.

**Winesap.**—Winesap is practically unknown in eastern New York. The neat, conical, deep red fruit is further characterized by a small, closed calyx in a narrow basin, and by the very firm, yellow, juicy, sub-acid flesh of high quality, in season from January to April. The fruit averages too small to make Winesap desirable.

**Winter Banana.**—The round-conic, clear yellow, red-blushed fruits of Winter Banana are among the handsomest grown. Further recommendation lies in the firm, crisp, juicy, aromatic flesh of very good quality. Unfortunately, they bruise so easily that their production is limited to home use and local markets, while their mild flavor makes them suitable for only dessert purposes. In addition both fruit and foliage are often severely attacked by the cedar rust fungus, making the fruit unsalable and defoliating the trees. The trees are good growers, hardy, and early and regular bearers. They may be grown in all sections of eastern New York, tho' they seem better adapted to southern regions wherever cedar rust is not severe. The season is November to January.

**Wolf River.**—Much the same type as Alexander (page 33) but with fruits slightly later in season, of perhaps even larger size and of more symmetrical shape, Wolf River has been increasing in favor in the East. It is esteemed as a baking apple, and in spite of its only average quality, has been a good seller at roadside stands because of good size and attractive color. The tree is hardy, vigorous, and moderately productive, tho' inclined to be biennial. This variety has been confused in the past with McIntosh for the reason that Wolf River trees have been sold by mistake for McIntosh, but the trees and the fruit are so distinct that
confusion should no longer exist. It is adapted to all sections, but seems best suited to the Middle Hudson River Valley Region.

**Yellow Newtown.**—See Green Newtown (page 39).

**Yellow Transparent.**—This is the standard yellow apple where earliness is essential. The fruits are large in size only on young trees, and become small on older trees unless carefully thinned. They are characterized by a tender, smooth, waxy, yellowish-white skin, symmetrical roundish-ovate shape, moderately long stem, crisp, tender, white flesh with sprightly sub-acid flavor, ripening in late July and early August. The trees are hardy, not large, and productive. Yellow Transparent is well suited to the home orchard and to the local market, but has not proved profitable in general market competition with early sections to the south. It is at home in all sections of eastern New York.

**York Imperial.**—York Imperial is essentially a southern variety and does not do well in any section of eastern New York. It develops to best advantage in the southern parts, namely, Long Island, the Lower Hudson River Valley Region, and in the Lower Section of the Middle Hudson River Valley Region. There it may attain the high color and good size lacking in fruit further north, but it is not reliable. The fruit is characterized by its lop-sided, roundish-oblulate shape, short stem, and firm, rather coarse flesh, mild subacid flavor, in season from January to March.

**CRAB APPLES**

**Excelsior.**—The fruits of Excelsior are frequently as large as other apples and have less crab apple flavor than most crab apple varieties. They are round-ovate, long-stemmed, yellow splashed with red, crisp, juicy, subacid, very good in quality, in season in early September. The trees are very hardy, vigorous, and productive, and suited to all sections of eastern New York. Yet because of its early season Excelsior is more suited to dessert purposes than to the regular crab apple trade.

**Hyslop.**—Hyslop is the standard variety for general planting. The fruits are medium in size, round-ovate, very dark red over pale yellow, and covered with thick bloom. The flesh is deep yellow, very firm, sub-acid, astringent, in season in late September and October. The trees are very hardy, vigorous, and productive, and succeed in all sections.

**Martha.**—The fruit of Martha is characterized by its strongly oblate shape, good size, and light yellow color blushed with attractive light red. The flesh is yellow, juicy, brisk subacid, good to very good in quality, in season in mid-September. The trees are very hardy and early and regular croppers, so that Martha becomes one of the most desirable varieties. From the Middle Hudson River Valley Region south the fruit matures a trifle early to meet the best crab apple trade and must usually be held until the market opens.

**Transcendent.**—Transcendent is the old standard variety found in eastern New York, but because the fruit is in season so early, late August and early September, later varieties are superceding it. Yet in its season it still stands supreme. The fruit is round-oblong, yellow blushed with bright red, subacid, somewhat astringent, very good in quality. The trees are very hardy, productive, and early bearers.

**Whitney.**—Whitney is another large-fruited crab apple, in season in late August and early September. The fruit is round-conic, light yellow shaded and striped
with red, juicy, mild subacid, very good in quality. The tree is very hardy, productive, and an early bearer, but because of the early season of the fruit Whitney is not useful except for dessert purposes.

PEARS

Blight, thrip, and psylla have decimated the pear orchards of eastern New York until now pear culture is confined to those who are especially favored by conditions and temperament. Bartlett is the leading variety, followed by Kieffer, Clapp, Bosc, and Seckel in about the order named.

The bulk of the crop is grown in the Lower and Central Sections of the Middle Hudson River Valley Region. In the Upper Section of the Region, Kieffer pears have done well but other sorts have not been profitable. The Lower Hudson River Valley and Long Island Regions are adapted to pear growing, but the areas are not large enough to make any great impression upon commercial production.

In the course of the hundreds of years that pears have been grown in eastern New York they have gradually found their way to the heavier soil types, namely, the Hudson clays close to the Hudson River or the heavier phases of the Dutchess soils. The fact that pears seem better suited to heavier soils reflects the European origin of most of our varieties. They were produced largely in the moist soils and equable climate of northern France and Belgium, and it is the heavier soil types which most nearly approximate the original environment. The wide distribution of Kieffer pears upon sandy soils in turn reflects the Oriental blood in this variety.

Pear growing offers good possibilities for any who have the inclination to grow pears and the persistance to fight pests to which the crop is subject.

Anjou.—See Buerré d’Anjou.

Bartlett.—Bartlett is the favorite pear for eastern New York. Its large, uneven surfaced, yellow fruits, oblong-obtuse pyriform in shape, with melting, juicy, characteristically aromatic flesh, are very good in quality and in season in September. The trees are vigorous and early, regular, and heavy bearers, tho they blight easily and are only half-hardy. They are nevertheless grown as far north as the Upper Hudson River Valley Region, commercial production, however, being confined for the most part to the Middle Hudson River Valley Region and south.

Beurré d’Anjou.—Tho having a vigorous spreading tree and one somewhat more hardy and more blight proof than the others, Beurré d’Anjou, or Anjou as it is more commonly known, is not extensively planted. The fruit is of good size, regular in shape, with short thick stem and characteristic open, star-shaped calyx in a shallow, narrow basin, with buttery, juicy flesh of good quality, in
season in November and December—altogether one of the best fall and early winter pears. Yet with all this, the late and unreliable bearing make the variety unprofitable. It may be grown throughout the Hudson River Valley and on Long Island.

Beurré Bosc.—Beurré Bosc is one of the standards in quality, in season in late October and November. Its large size, long tapering shape, long curved stem, beautiful bronze color, and superb quality mark it as one of the finest of pears. The trees are slow to take hold in the orchard and subject to blight, and are not hardy, yet they are regular and heavy bearers once they begin fruiting. Bosc is an old variety, and is meeting with new favor in pear circles. Commercial planting is limited to the Middle Hudson River Valley Region and south with the main plantings in the Central and Lower Sections of the region.

Beurré Clairgeau.—This variety is characterized by a particularly fine tree. It is large, vigorous, upright, with strong, healthy foliage, ordinarily quite free from blight, and bears large crops regularly. But it is not wholly without its faults, for unless the fruit is thinned it is apt to overbear and the fruit does not hang well, especially in dry seasons. The fruit is large in size, roundish-acute-pyriform, pale yellow with pinkish red cheek and a characteristically short, stout, fleshy stem, usually set at an angle. The flesh is rather firm, granular, juicy, sweet, moderately good in quality, in season in late October and November. Clairgeau is one of the standard sorts for late fall and early winter markets. It is grown throughout the entire Hudson River Valley and south, the main plantings are in the Middle Hudson River Valley Region.

Bosc.—See Beurré Bosc.

Boussock.—See Doyenné Boussock.

Cayuga.—Cayuga is still on trial as a large Seck 1-type pear, originated by this Station and selected from more than 2,000 Seckel seedlings. As fruited in the lower Middle Hudson River Valley Region the fruit is larger than Seckel and of the same shape, greenish-yellow with dull blush, very high in quality, and in season about with Seckel. The trees have not yet shown signs of blight either at Geneva or in the Hudson River Valley, and are vigorous and productive but late in coming into bearing. Cayuga deserves further testing in eastern New York.

Clairgeau.—See Beurré Clairgeau.

Clapp Favorite.—Clapp Favorite heralds the commercial pear crop with its large yellow, red-blushed, obovate-pyriform fruit with characteristic fleshy ring about the stems. The flesh is melting, juicy, very good in quality, in season in late August and early September. The tree is vigorous, upright, a strong grower and bears abundantly and regularly. It is so subject to blight that it cannot be grown in many localities, while in others it is unprofitable. If blight can be controlled, it is a desirable sort; otherwise, not.

Dana Hovey.—This little pear with its attractive yellow coloring and sweet, delicious flavor, is rated one of the best of all pears. The fruit is small, obovate-obtuse-pyriform, golden-yellow with thin russet, in season in late October and November. Were it not that the tree is only moderately productive and is prone to blight, Dana Hovey would be more extensively grown. Yet with its faults it should be in every home orchard and in more commercial plantings.

Doyenné Boussock.—If some of the excellent tree characters of this variety could be combined with quality fruit, Doyenné Boussock would be one of the
leading sorts. The tree is large, exceptionally vigorous, upright spreading, a heavy annual bearer, and nearly free from blight. The fruit, too, is healthy, for it is free from most disease and insect troubles. But the pears, altho of good size and appearance, are of only mediocre quality and soon soften at the core. Nevertheless, they are desirable for local market. The fruit, which is characterized by its roundish-ovolate shape, numerous rough dots, and open calyx, is in season in early September.

**Duchess d'Angoulême.**—This variety is more commonly dwarfed by grafting on the quince than any other sort, and possibly it does better as a dwarf than as a standard. The trees are resistant to blight, half-hardy, and productive. The fruit is very large, obovate, knobby, greenish patched with russet, and with short, stout stem. The flesh is firm, juicy, sweet, good in quality, in season during October and November. Duchess d'Angoulême may be found in all old pear orchards in eastern New York, and is still a desirable winter sort.

**Flemish Beauty.**—This variety is perhaps the most easily disfigured by scab in both tree and fruit of all pears. Moreover, the tree, tho large and a vigorous grower, is very susceptible to blight. These qualities have practically eliminated Flemish Beauty from commercial orchards, yet it has a deserving place in pear growing because of the hardiness of the tree and the high quality of the fruit. The fruit is large, obovate-obtuse-pyriiform, dull yellow, blushed with red on the exposed cheek, with rather long, slender, curved stem in a rather deep basin, and with open calyx. The flesh is melting, juicy, sweet, aromatic, in season in late September and early October. Flemish Beauty may be grown thruout eastern New York with the exception of the very cold sections. It is probably the hardest good pear known at the present time.

**Gorham.**—This is a late Bartlett-type pear produced by this Station from a cross between Bartlett and Josephine de Malines and recently offered for trial. The fruits resemble Bartlett in general size, color, and shape, tho somewhat longer and more tapering towards the stem, and from two to four weeks later. The trees appear healthy and productive.

**Kieffer.**—It is doubtful if any pear has been condemned as freely and yet praised as often as the Kieffer. Those who have decried it have compared it with fine dessert sorts, while those who have praised it have considered it from a money-making viewpoint. There is no question that the oval, yellow, granular fruits are poor for dessert; but on the other hand, they are very good for culinary use and for canning. Moreover, the trees are especially vigorous, bear prolifically, resist blight and scale, and endure heat and drouth well. For sections where these factors are most important Kieffer has a place, but where better sorts can be grown it has none. The season is late October to December. On the sandy soils of the Upper Hudson River Valley Region, Kieffer has been largely planted in the past, but is no longer in favor for future plantings. In this section it has blighted badly, been subject to psylla attack, and has produced under-sized fruit in the majority of cases or when the orchards have not been kept in good vigor. It is generally recognized that in favored localities with the trees in good vigor, Kieffer may still be considered a profitable variety for the Hudson River Valley and Long Island.

**Lawrence.**—Lawrence originated at Flushing on Long Island. It is an early winter pear of good quality, now considered of greatest value as a home orchard.
variety, being barred from commercial markets by poor size, poor color, and only
moderate productiveness. The fruits are characterized by their obovate-obtuse-
pyriform shape, flattened at the stem end, and by their firm juicy flesh with rich,
very good flavor. They are lemon yellow in color and are in season during
November and December. The tree is one of the hardiest among pears, only
moderately productive, long-lived, and moderately vigorous. It may be grown
in the entire Hudson River Valley and on Long Island.

Louise Bonne de Jersey.—This variety grows as well or better on the quince
than on the pear and is consequently particularly esteemed by the amateur. It
is an oblong fruit with rather long curved stem, fleshy at both ends, yellow in
color with a red cheek, with fine-grained, juicy, buttery, aromatic flesh of high
quality in season in October. The trees are not very hardy and are subject to
blight, but they are good croppers and vigorous growers, well deserving a place
in the home orchard from the central Middle Hudson River Valley Region south.

Phelps.—Phelps is the product of a cross between Winter Nelis and Russet
Bartlett made at this Station and recently offered for trial. The fruit is similar
to Bartlett in size, shape, and color, but is more blocky, a trifle duller, and in
season in late November and December—more than two months later than
Bartlett. The trees appear healthy and productive.

Pulteney.—Pulteney is also a late Bartlett type originated by this Station
from a cross between Winter Nelis and Russet Bartlett. The fruit is like Bartlett
in size, shape, and color, but is a month to six weeks later in season and duller in
color as grown at Geneva. The trees seem healthy and productive.

Seckel.—Seckel is the standard in quality in America and justly so. The
fruit, tho small, is perhaps the most desirable of all pears, and with its trim
obovate shape and bronze color it is a favorite wherever grown. The tree further
recommends the variety, for it is blight resistant, shapely, easily trained, vigorous,
yet not a rampant grower. It bears early, annually, and profitably where the
ravages of pear thrip and pear psylla have not reduced the vigor of the tree and
interfered with the set of the fruit. It is third in importance in eastern New York
and should be in every orchard whether home or commercial. It seems to do
especially well in the lower Middle Hudson River Valley Region and south
where the fruits obtain better size than they do further north. It is in season
early in October.

Sheldon.—Sheldon is another high quality fruit, characterized by its apple-
like shape, bronze color, and white rich juicy flesh. It matures at or about the
same season as Beurré Bosc, a fact which has had much to do with its apparent
disregard. The tree, a vigorous, upright grower, blights somewhat and bears
irregularly. Still, because of its excellent quality, Sheldon commands attention
for both home and commercial plantings. It has been meeting with favor re-
cently in the lower Middle Hudson River Valley Region to which it seems well
adapted.

Tyson.—Were the fruits of Tyson larger and more attractive they would be
one of the leading kinds seen in the market. They are acute-pyriform, greenish-
yellow, with the flesh drawn up about the long, slender stem. The flesh is tender,
very juicy, aromatic, very good in quality, in season a little earlier and a little
longer than Clapp Favorite, yet it is in tree characters that Tyson excels. The
trees are hardy, vigorous, as blight proof as trees can be, and early and prolific
bearers. One of the oldest and largest trees of this variety in America is to be found in the lower Hudson River Valley, still bearing heavily each year. It may be grown for home use in all but the coldest sections of eastern New York, and finds a place for local and roadside trade from the lower Middle Hudson River Valley Region south.

**Vermont Beauty.**—This is one of the most attractive of pears, with its clear, glossy, brilliant red cheek. The shape is obovate-acute-pyriform. The flesh is folded about the base of the long, slender stem, the dots small russet, numerous, conspicuous, the flesh tender, very juicy, rich, very good in quality, and in season in late October and November. The trees are hardy, vigorous, and productive, and may be grown in all parts of eastern New York, including the more favored parts of the Lake Champlain Region. In spite of the fact that they are somewhat subject to blight they deserve consideration for planting where a late Seckel type is desired.

**Wilder Early.**—Wilder Early might be likened to an early Bartlett in size, color, and shape, tho often more highly colored. It matures early, before Clapp's Favorite, and ships and keeps well for an early pear. The tree is large, vigorous, and a heavy cropper. It would seem that this variety merits greater consideration as an early commercial kind.

**Winter Nelis.**—Size and appearance are against this pear, yet it is perhaps the most esteemed winter variety, and where the market is familiar with it, it is profitable commercially. The fruit is obtuse-obovate-pyriform, russeted, with long, curved stem, tender, buttery and very juicy, aromatic, high quality flesh, in season from November to January. The tree is a poor grower in the nursery, but becomes moderately vigorous in the orchard, becoming characteristically straggling and crooked. It is hardy, and a good, regular bearer, besides being esteemed as a good all-round pollinizer for other varieties. No commercial or home orchard should be without Winter Nelis.

**Worden Seckel.**—Why Worden Seckel has not met with more favor is puzzling, unless it be that it is not yet well enough known or because the trees are not quite as blight-resistant as Seckel and are more fickle in regard to soil and climate. Yet they have done well in all pear sections of eastern New York and deserve wider commercial testing. The fruits are the general shape of Seckel, but have a dull red cheek over bright yellow and are not quite so high in quality. They are in season in late September and October, keeping a little larger than Seckel.

**QUINCES**

The quince is not widely grown. Only seldom is an orchard met with. Blight has been severe in all regions and winter cold prevents culture north of the Middle Hudson River Valley Region. The standard varieties are Champion for the south and Orange for the north.

**Champion.**—Champion is the standard late quince for southern sections, where earlier varieties ripen too early for the quince trade. The fruit is large, distinctly pear-form, greenish-yellow with heavy pubescence, firm in flesh, good in quality, in season in mid-winter. The trees are vigorous, productive, and early in coming
into bearing. Champion is best suited to the Lower Hudson River Valley and Long Island Regions.

Orange.—Orange is the standard quince in eastern New York, adapted to the shorter growing season of the northern sections because of its relatively early ripening. The fruit is large, apple-shaped but with a short neck, golden yellow, of very good quality, in season in late September and October. The tree is vigorous, hardy, fairly productive, and relatively free from blight. Orange is adapted to the Middle Hudson River Valley Region.

Rea.—Rea had its origin at Coxsackie in Greene County. It is a strain of Orange to which it is very similar, Rea, however, being a trifle larger and later. Because the trees are not productive and are not overly hardy, Rea has not become widely planted.

CHERRIES

Both the sweet and sour cherry are widely and profitably grown in eastern New York, a region to which they seem very well adapted. The Duke cherries, which are hybrids between the sweet and sour kinds and intermediate in tree and fruit characters, are grown to only a limited extent and then for home use and local market.

Sweet cherry production is confined to the Central and Lower Sections of the Middle Hudson River Valley Region on the well-drained more fertile soils of the Dutchess series close to the river. To be sure, trees are found throughout the entire Hudson River Valley and on Long Island, but north of the regions mentioned the buds are frequently winterkilled, while to the south brown-rot is severe.

The principal market demand is for dark red or “black” varieties for dessert purposes so that the light-colored or “white” kinds are seldom planted. Windsor is the leading variety because of the hardiness of the tree in both wood and buds, and because of its regular, heavy bearing, and its firm, black, late fruits. Black Tartarian ranks second in importance, followed by Schmidt, Lambert, and Yellow Spanish. A common choice of varieties for commercial plantings in which the season of picking is considered is Black Tartarian, Schmidt, Lambert, and Windsor.

So far as is now known all varieties of the sweet cherry are self-sterile, that is they will not set fruit when pollinated with their own pollen, and there are others which will not pollinate each other, such as Bing, Lambert, and Napoleon. Accordingly, two or more varieties should be planted together to insure fertilization.

The sour cherry is grown commercially over a slightly larger area than the sweet cherry, being found in all three sections of the Middle Hudson River Valley Region. For home use and local trade it is grown in all sections of eastern New York. It is adapted to a wider
range of soil, as well, commercial orchards being found on both light and heavy soils both close to and back from the river.

Montmorency is the main variety, followed by English Morello both in season and production. In recent years Morello has proved the more profitable of the two because of the high prices received on the late season market, and new plantings show a corresponding increasing proportion of this variety. Early Richmond is grown only to a limited extent and is not profitable unless put on the market very early.

Proximity to market, in combination with truck, rail, and boat transportation facilities, has made sour cherry growing a very profitable venture.

Abundance.—Abundance is a new, late, white, firm-fleshed, sweet cherry of the type of Napoleon but one or two weeks later in season. The trees are vigorous and productive. Where a sweet cherry of this type is desired Abundance deserves trial.

Bing.—Altho Bing is highly esteemed in the Pacific Northwest it has not proved adapted to eastern sections. In eastern New York the trees are not overly vigorous and are shy bearers. The fruit is characterized by being large, broadly cordate, very dark red, firm-fleshed. It is a late midseason variety.

Black Tartarian.—Black Tartarian heralds the commercial cherry season. It is grown wherever sweet cherries are grown, and the healthfulness, vigor, and productiveness of its trees are strong reasons for this fact. The fruits are soft-fleshed, purplish-black, cordate, and early in season. The softness of the fruit is its chief fault.

Coe.—Coe's Transparent is a high quality, tender-fleshed, white sweet cherry of early season. Furthermore, the trees are vigorous and productive, tho the fruit is likely to be small and tender. In spite of its poor color it has brought excellent market prices because of its earliness, while its rich sweet flavor make it esteemed for the home orchard.

Downer.—Here is another high-quality cherry suited to the home orchard. The fruit is round-cordate, light red or amber in color, with rich tender flesh, very late in season. The trees are fairly vigorous and productive.

Early Richmond.—This is the earliest of the important commercial sour cherries. The tree is very hardy, productive, and adapted to a wide range of conditions, but the roundish light-colored, tender-fleshed fruits are not overly large. Where it is desired to extend the commercial cherry season, Early Richmond has a place, while it can be recommended for all home orchard and local market enterprises. It has not been profitable on the open market.

Elton.—Elton is primarily a cherry for the home. Its characteristic oblong-heart-shaped, long-stemmed, amber, soft-fleshed, rich sweet fruits are too tender to meet market conditions and in addition they rot badly. The trees are productive, tho not overly hardy. Where an early high-quality sweet cherry is desired, Elton deserves consideration.

English Morello.—This variety has become of increasing importance in eastern New York in recent years, the dark red, almost black, round-cordate fruits with
dark red, strongly acid flesh bringing good prices in late season when other sour cherries have gone. It has long been the standard late sour cherry. The trees are dwarfish, very productive, and hardy.

**Giant.**—Here is a new, late, black, sweet cherry worthy of trial in sweet cherry growing sections. The oblate-cordate fruits of good size are in season just after Lambert. The skin is purple-mottled becoming black, while the flesh is dark red and very firm, and good to very good in quality. The trees are large, vigorous, and very productive. A cherry of these characteristics is desired in eastern New York cherry circles. Giant should receive thorough trial.

**Governor Wood.**—See Wood (page 57).

**Kirtland.**—Kirtland is another light-colored, firm-fleshed, sweet cherry adapted to home use or local trade. The fruit is further characterized by its long stem and its rich, refreshing flavor. It is an early mid-season variety. It is limited by a capricious tree lacking in vigor.

**Knight Early Black.**—This is an old, favorite, black sweet cherry very similar to Black Tartarian in fruit characters, except for smaller size and one-week-earlier ripening. The soft, dark-fleshed, conical fruits are pleasantly flavored. Altho the trees are not sufficiently productive to compete with other standard sorts, they are healthy, long-lived, and regular croppers, well suited to door-yard planting.

**Lambert.**—Lambert has recently proved its worth in eastern New York and is holding its own as a large, dark red, firm-fleshed, mid-season sweet cherry. The trees are vigorous, healthy, and productive, beginning to bear quite early in life.

**Late Duke.**—Here is a representative of the group of varieties known as "Dukes." They are crosses between the sweet and the sour species, partaking of the characters of both, the fruit being neither so acid as the sour kinds nor as sweet as the sweet sorts. Likewise, the trees are intermediate in foliage characters and in hardiness. The fruit of Late Duke is blunt-cordate, dark red, soft, with amber-colored, sprightly subacid flesh, in season from two to four weeks after May Duke. The trees are vigorous, productive, and fairly hardy. It may be grown throughout the Hudson River Valley and on Long Island, tho the soft flesh bars it from more than home or local market trade in competition with sour varieties.

**Louise Phillippe.**—This is another "Duke" cherry, partaking more of the qualities of the sour species than of the sweet. The fruit is round-ovate, dark red, with wine-colored, sprightly flesh. The tree shows Morello characters and is productive and hardy. Like other Duke cherries, however, Louise Phillippe does not show enough superiority over the sour varieties with which it must compete to establish itself strongly commercially.

**Montmorency.**—Montmorency is easily the leading sour cherry. It is so widely grown, so adapted to diverse conditions, so productive, healthy, and regular in fruiting that no other variety of the same season can compete with it for general market purposes. The fruit is roundish-oblate, with pale yellow, sprightly flesh, ripening between Early Richmond and English Morello.

**Napoleon.**—Altho this is regarded the country over as perhaps the most prolific of sweet cherries, adapted to a wide range, with large, rich, handsome, firm-fleshed fruits, the light color of the fruit prevents it from being planted widely in eastern New York where a "black" cherry for dessert trade is desired.
In addition it does not seem as productive here as in other sections of the country, and the fruit cracks and is subject to brown-rot. The fruit is further characterized by its long-cordate shape and red-blushed yellow coloring. It is a mid-season variety.

**Nouvelle Royale.**—Nouvelle Royale is a shy bearer, but the very large, mildly tart, pleasant fruits recommend the variety to any who desire a Duke cherry for home use. The tree is vigorous and fairly hardy, while the fruits are oblate, glossy red, with pale yellow or reddish-tinged, tender flesh. It is a mid-season variety.

**Ox Heart.**—This name is frequently used to designate any firm-fleshed sweet cherry, the expressions “white ox-heart” and “red ox-heart” being quite common. By far the bulk of the “white ox-hearts” are really Yellow Spanish and Napoleon. The “red ox-hearts” are largely Windsor, Schmidt, and Lambert.

**Reine Hortense.**—Here is another “Duke” cherry well suited to home use. The fruit is large, oblong-conic, glossy red, with pale yellow, sprightly subacid, tender flesh. The trees are only moderately productive and are not fast growers. Where a cherry of this type is desired Reine Hortense is recommended. It is a mid-season variety.

**Royal Ann.**—Royal Ann is the western synonym for Napoleon (page 56).

**Royal Duke.**—The medium sized, oblate, glossy red fruits of Royal Duke follow those of May Duke. The flesh is yellowish white, tender, and sprightly. The trees are vigorous but like most Duke varieties, unproductive.

**Schmidt.**—There is no finer-appearing fruit among sweet cherries than that of Schmidt. It is very large, cordate, purplish-black, with firm, purplish-red flesh. It is in season about with Windsor, tho somtimes gathered before fully ripe. The trees are large, vigorous, free growers. Their chief fault lies in tardiness in coming into bearing and in only average productivness in some places. It is one of the main-crop commercial varieties in eastern New York.

**Seneca.**—Seneca has been offered for trial by this Station and was produced from a cross between Early Purple Guigne and an unknown early sweet cherry. The fruits are round-cordate, dark red to purplish-black, with dark red tender flesh of very good quality. The trees have so far proved vigorous and productive. The chief virtue of Seneca is its earliness, ripening as it does two weeks before Black Tartarian. It deserves thorof trial in eastern cherry circles.

**Windsor.**—Windsor is by far the leading sweet cherry in eastern New York. Its virtues lie in the wide adaptation, vigor, and hardiness of the tree and its regular, heavy fruiting, added to which are the firm, rot-resistant, reddish-black fruits well adapted to dessert trade. It is the last of the commercial sweet cherries to be harvested and is considered over a period of years to be the most profitable variety grown. Its greatest fault is its slowness in coming into bearing.

**Wood.**—Odd trees of Wood, or Governor Wood as it is often called, are frequently met with. The fruit is early, roundish-cordate, whitish-yellow with red blush. The flesh is tender, juicy, mild, sweet, and altogether one of the most pleasant of sweet cherries. A large stone is rather characteristic. The trees are vigorous and fairly productive, tho not as hardy as some others. It is profitable for market in a small way because of its earliness.

**Yellow Spanish.**—Yellow Spanish is the leading white-fleshed variety found in eastern New York. Its supremacy is due to the fact that it is an old-established
sort and new plantings of sweet cherries do not include “white” varieties. Furthermore, its newer rival, Napoleon, does not seem superior to it when all points are considered. The fruits are large, cordate, amber-yellow, with reddish blush. The flesh is firm, aromatic, rich, sweet, and very good to best in quality. The trees are vigorous, hardy, and productive. Where a variety of this type is desired, Yellow Spanish is recommended for both home and commercial planting.

PEACHES

The peach is grown in eastern New York largely for local market and home use. The commercial plantings are found for the most part in the Lower Hudson River Valley Region, in the Lower Section of the Middle Hudson River Valley Region, and on Long Island. In the Central and Upper Sections of the Middle Hudson River Valley Region certain favored spots have proved adapted to peaches, but in these sections the bulk of the crop is marketed locally and the peach is not of great importance in comparison with other fruit crops grown there.

In the Lower Hudson River Valley Region peaches have been used as fillers in apple plantings, a practice which is still continued. The location of the orchards has depended more upon topography than soil type. The upland soils of good altitude and air drainage have been chosen and this has meant the stony Gloucester or Dutchess soils almost entirely, both of which are well drained, moderately light, and not overly fertile. Yet in the Lower Hudson River Valley Region, the Wethersfield sandy loam has proved a successful soil as well.

In the Central and Upper Sections of the Middle Hudson River Valley Region the locations have been either close to the river or on favored upland hills of good altitude back from the river. In the vicinity of Albany these locations are at the foot of the Helderberg Mountains, where with the aid of the harder varieties of peaches, plantings are profitable even that far north.

The main variety in all regions is Elberta, with Carman, Rochester, Hiley, Belle, J. H. Hale, and some of the Crawfords adding to the list. Furthermore, because of the large local market interest, a great number of high quality varieties of all types and seasons are met with. In the southern sections, where the peach is of most commercial importance, Elberta is supreme, but further north it gradually gives way to hardier kinds, until in the Upper Section of the Middle Hudson River Valley Region is found a greater proportion of Greensboro, Carman, Rochester, Belle, and Crosby. These varieties
have all proved more reliable croppers than Elberta in sections where hardiness is an important factor. More recently, Rochester has been favorably reported from these colder regions to which it seems especially well adapted, both because of the hardiness of tree and buds and because of the good local market characters of the fruit.

The following are brief descriptions of the varieties of most interest to eastern New York.

**Alexander.**—Alexander is a very early, white, clingstone peach more prized for the earliness of its fruit and the vigor and hardiness of its trees than for any other of its characters. The fruits are neither large nor high in quality and the trees are not overly productive. Alexander is of value only for local markets and home use where an early peach of this type is desired.

**Arp.**—Arp, or Arp Beauty, is a desirable variety where an attractive, early, yellow peach of high quality is desired. The fruit handles and ships well, and the trees are vigorous, hardy, and productive. The chief defects of Arp lie in no more than average size of fruit and in a clingstone. It is, nevertheless, a variety worthy of consideration.

**Belle.**—In spite of the fact that the season of this white variety is but a day or two ahead of Elberta, Belle of Georgia finds a market because of the attractiveness of its fruit which is a shapely roundish-oblate, creamy white, with a red blush. Altho a freestone and good in quality, it is not the best. The trees are hardier than most varieties, productive, and vigorous, tho subject to leaf-curl. Belle of Georgia is one of the standard commercial sorts.

**Carman.**—Carman, which is of the same general type as Belle of Georgia, precedes that variety. It is a medium-sized, white, red-blushed, round-oval, juicy, freestone peach, not high in quality but with an agreeable sweetish flavor. The trees are very productive, hardy and adapted to diverse conditions—altogether making Carman a desirable commercial variety.

**Champion.**—The tenderness of the flesh and only moderate productiveness of the tree prevent Champion from becoming one of the leading commercial kinds. The beautiful roundish, white, red-blushed, freestone fruits are the best of its season and should be found in every home orchard and in plantings for local trade. The trees are remarkably vigorous, but are considered exacting as to soil. In eastern New York the variety seems to do well and is a universal favorite where quality is concerned. The season is early mid-season.

**Chili.**—Hill's Chili is the name by which this old variety has been long known. Its late oblong-conic, heavily pubescent, yellow, dry, freestone fruits are gradually disappearing because of both their unattractiveness and small size. The trees are very hardy, productive, and vigorous.

**Crosby.**—Crosby is a late, roundish, yellow, freestone variety of high quality. Unfortunately, the fruit lacks size, tho its other commonly accepted defect, lack of color, is not an item in eastern New York, where it colors well. The trees are vigorous and productive and the buds are considered especially hardy. Crosby is still grown to a limited extent as a commercial variety, and is found in most home orchards.
Early Crawford.—Like other varieties of the group of which it is the leading member, Early Crawford is a late and uncertain bearer. This fault keeps it from being the leading commercial variety, for it is a well-known, attractive, yellow, freestone, of rich, high flavor. The fruits are further characterized by the round-oval shape with a bulge near the apex. They ripen in early mid-season. Early Crawford is still a favorite for home orchards.

Elberta.—Elberta stands supreme among peaches ripening in mid-season. It has the faults of being only fair in quality and not overly hardy, but the wide adaptation, productiveness, health, and vigor of the tree, together with the large, attractive, roundish-oblong fruit of excellent shipping and canning qualities, far overbalance these defects. It is the principal variety in eastern New York, the north of the Central Section of the Middle Hudson River Valley Region harder varieties compete with it successfully.

Greensboro.—This is the first of the commercial white-fleshed varieties. The fruit is early, oblong-oval, white with red cheek, semi-clinging, and fair in quality. It ships and keeps fairly well, but is best suited in eastern New York to local trade. A characteristic of the variety is the frequent occurrence of cracked pits. The tree is hardy, vigorous, productive, and adapted to a wide range.

Hiley.—Hiley is another early, commercial white peach, ripening just after Greensboro. The fruit is oblong-conic, white with handsome red cheek, freestone, and good in quality. The trees are only moderately vigorous and moderately hardy, but they are quite productive. Hiley has proved profitable for local trade in eastern New York because of its attractiveness and earliness.

Iron Mountain.—Here is a very late, white-fleshed, freestone variety noted for its hardiness in tree and bud. The fruit is oblong-oval, white, only good in quality. The tree is large, vigorous, and only moderately productive. Iron Mountain is grown to a limited extent for late local market, mostly in the Lower Section of the Middle Hudson River Valley Region and south.

J. H. Hale.—No variety has received more attention in recent years than J. H. Hale. It is a relatively new sort, in season a day or two before Elberta. The fruit is very large, round, yellow, freestone, firm, and good in quality. The trees are not considered quite so vigorous as Elberta, not adapted to so wide a range of soil and climate, and perhaps not quite so productive. Yet the fruit, because of its large size, symmetry, and attractive coloring has found favor on the markets. J. H. Hale has received further notoriety because of the fact that it is the first variety of peach found to be self-sterile, a factor which may have been responsible for some of the reports of low yield. The tests that have been made thus far indicate that any of the common varieties will cross-fertilize J. H. Hale.

Late Crawford.—Like Early Crawford, Late Crawford is kept from being a leading commercial variety by its late and uncertain bearing habit. The characteristic round-oval, soft yellow, red-blushed and red-striped, freestone fruits with rich pleasant flavor have been known to at least three generations. Now, however, they are giving way to those of more productive varieties until Late Crawford is seldom found outside of plantings for home use and local market.

Rochester.—Rochester has been receiving attention as an early mid-season, yellow, freestone variety of good quality. It is of the Crawford type, roundish-oblate in shape, often with a bulge at the apex, orange-yellow, blushed and
mottled with red, highly flavored, and very good in quality. The trees have so far proved healthy, vigorous, productive, and hardier than most common sorts. It is meeting with special favor in the Upper Section of the Middle Hudson River Valley Region where it has borne regular crops, while buds of other varieties have failed to survive the winter.

St. John.—St. John, or Yellow St. John as it is often called, is the earliest really good yellow-fleshed freestone peach for home and market, ripening several days before its relative Early Crawford. Shy and irregular bearing alone have prevented it from becoming a great commercial success. It belongs to the Crawford group—round-oval, bulged near the apex, deep yellow blushed and splashed with carmine, highly flavored, and very good in quality. The trees are vigorous and hardy. In spite of its uncertain bearing St. John retains a place in commercial and home plantings.

Salway.—Salway is widely distributed but not grown commercially to any great extent. It is a very late, round-cordate, yellow-fleshed, freestone, the flesh becoming dry with age, tho otherwise pleasant, agreeable, and good in quality. The trees are hardy, healthy, vigorous, and productive, and mature their crop in normal seasons in the peach-growing sections of eastern New York. Salway can be recommended when a peach of this type is desired.

South Haven.—Here is a new early mid-season, yellow, freestone peach which has been favorably received in Michgain because of its season, productivity, and hardiness. It is a peach of medium to large size, deep yellow with red cheek, splashed and streaked with red. In general qualifications and character it is very similar to Rochester, but a few days later, less susceptible to brown-rot, and a brighter color. It merits consideration.

Stevens.—Stevens is a late, round-oval, white, red-cheeked, freestone peach with rather coarse, juicy, pleasantly flavored flesh of good quality. The tree is vigorous, hardy, and productive, but at the season that the fruit ripens white-fleshed peaches find little demand so that Stevens is confined to home or local market plantings.

Wager.—Wager is another hardy variety for the colder sections. Its moderate-sized fruit is ripe in mid-season, oval, pointed, unattractive orange-yellow with occasional mottlings of red. The stone is free and the flesh yellow, meaty, and good in quality. The trees are early and heavy bearers.

Wilma.—Wilma is a candidate for the place of a yellow-fleshed, freestone peach of Elberta type to follow Elberta in season. The fruits are a week later than Elberta, large, round-oval, yellow, mottled, and blushed with dark red, pleasantly flavored, and good in quality. The tree has so far proved hardy in both wood and bud and a regular full bearer. It is recommended for trial.

PLUMS

At one time interest in plums in eastern New York ran high. More recently there has been a great decrease in plum culture, largely because of the poor prices received for the fruit, until the plum is no longer of major importance.

The experience of the old fruit sections of eastern New York has led to the growing of plums in an area a trifle north of the pear regions, showing both the somewhat greater hardiness of the plum
and its preference for a cooler growing season where brown-rot is not so severe. Altho it is found in all sections, it is most at home in the Middle and Upper Hudson River Valley Regions with the greatest plantings in the Upper Section of the Middle Hudson River Valley Region and in the lower part of the Upper Hudson River Valley Region.

The European plums, characterized by Bradshaw, Grand Duke, Lombard, Reine Claude, and Shropshire, have proved hardier than the Japanese sorts, such as Abundance and Burbank. Many varieties are grown, especially since the bulk of the fruit is disposed of locally. The more important commercial sorts are Abundance, Burbank, October, and Red June among the Japanese kinds; Shropshire among the damson plums; and Bradshaw, German Prune, Giant, Grand Duke, Gueii, Italian Prune, Lombard, Monarch, Quackenboss, and Reine Claude among the European or Domestica plums. The native plums are scarcely known. Lombard, Italian or German Prune, and Reine Claude are the most common varieties, being found in almost every plum orchard and in nearly every part of the region.

Fanciers of this fruit have included some of the delicious Mirabelle plums and Golden Drop, Jefferson, Pearl, Washington, and Imperial Epinouse. In fact a surprising number of high quality varieties are found in the district around Albany where plum growing was at one time highly developed.

Plums are very largely self-sterile, that is most varieties will not set fruit when pollinated with their own pollen. This is especially true of the Japanese and native varieties so that at least one other kind should be planted to provide pollination.

**Abundance.**—Abundance and its relative Burbank are the two important commercial varieties of Japanese plums. The fruits of Abundance are early, ripening a week or more ahead of Burbank, round-ovate, bright red over yellow, very juicy, tender, clingstone, and good in quality. The fruits of Burbank, besides being later than those of Abundance, are roundish-conic, orange-yellow, shaded with red, with leather crack marks about the stem end, very juicy, tender, clingstone, and fairly good in quality. The trees of Abundance are upright, fairly hardy, vigorous and very productive. The trees of Burbank are low, spreading, scraggly growers, more hardy than Abundance, tho not quite so vigorous and early and regular bearers. Both varieties are recognized commercially, with Abundance slightly the favorite for home planting and Burbank perhaps a trifle the favorite for commercial planting.

**American Mirabelle.**—This is the result of a cross between Mirabelle and Imperial Epinouse made by this Station and recently offered for trial as a Mirabelle plum with larger fruits than the common European forms. The fruit is
small, roundish-oval, golden yellow, sweet, aromatic, very good in quality, in season the first half of September. The trees are described as vigorous and productive.

Agen.—Agen is a medium-sized, late, violet purple, freestone, high quality plum of the European type which deserves the attention of plum lovers. The obovate, necked fruits are used on the Pacific Coast for drying because of the high percentage of sugar and solids which they contain. The trees are vigorous, hardy, and productive. Thin an old variety, Agen has not been widely planted in eastern New York, yet it merits further trial. For the home orchard it can be recommended because of its high quality fruit.

Arch Duke.—Here is a large, long-oval, necked, dark blue Domestica plum with firm, golden-yellow, pleasantly flavored flesh of good quality. It is a clingstone variety, slightly earlier and slightly smaller than Grand Duke, somewhat better in quality, and not so decidedly necked. The trees are fairly vigorous, hardy, and productive. Arch Duke is one of the leading commercial plums.

Bradshaw.—Bradshaw is another popular Domestica plum. It is recommended by its large-sized, mid-season, reddish-purple fruits with juicy, yellowish flesh of good quality. The oval fruits are easily identified by the fleshy ring about the stem. The trees, the vigorous and productive, are late in coming into bearing.

Burbank.—Burbank is described under the discussion of Abundance (page 62) where these two well-known and widely planted Japanese plums are compared.

Climax.—In spite of its very early, large, handsome, Japanese-type fruits of good quality, Climax has not met with favor because of a tree that is neither overly vigorous nor productive. The fruits are recognized by their one-sided cordate shape and dark red color.

Coe's Golden Drop.—Discussed as "Golden Drop".

Drap d'Or.—Drap d'Or is a small, mid-season, round-oval, golden-yellow plum, with firm, sweet flesh of good quality. The tree is small, hardy, and productive. This variety belongs to the group known as Mirabelle plums, closely related to the damson plums but of delicious sweet, mild, flavor. It should be planted for trial by all plum lovers.

German Prune.—German Prune represents a type more than a variety, for there are several strains of German Prune, all very similar. The fruit is moderate in size, late, oval, purplish black, freestone, with firm yellowish-green flesh of good quality. The trees are large, hardy, vigorous, and productive so that German Prune, tho a very old sort, continues to hold its place as a commercial variety.

Golden Drop.—Here is one of the most delightful plums grown, lacking in productiveness, however, and so suitable mainly for home planting. The fruit is very late, large, oval, short necked, golden yellow, freestone, with juicy, sweet flesh of high quality. The tree, besides being unproductive, is a slow grower and exacting as to soil, tho apparently hardy.

Grand Duke.—Tho the fruits of Grand Duke are only moderately good in quality and the trees slow growers and late bearers, the variety has attractiveness, productiveness, and good shipping qualities so that it is an important late market plum. The fruit is large, elongated-oval, purplish-black, with a wide deep suture and clinging stone. The flesh is firm and mild.
Gueii.—The mid-season, medium-sized, oval, purplish-black, fruits of Gueii are dry and only fair in quality, yet because of the good market characters of the fruit and the hardiness, vigor, and productivity of the tree it is one of the profitable commercial varieties.

Hall.—Hall is the result of a cross between Golden Drop and Grand Duke made by this Station and recently offered for trial. The fruit is large, elongated-oval, reddish-purple, with sweet, mild flesh of very good quality. The stone is semi-clinging. The tree has proved hardy, vigorous, and productive.

Horse.—This variety is included here only for the interest attached to it and because it is frequently met with in eastern New York. It was brought to America by the early Dutch and French settlers and propagated by suckers and by seed so that there are numerous types to be found. The fruit is medium to small in size, oval to long-oval, reddish-purple, freestone, with firm, sweet, dry flesh of poor quality. It is no longer planted, tho during the first half of the nineteenth century it is said to have been well known.

Hudson.—Here is another variety of principal interest to eastern New York, its cultivation being confined entirely to the Hudson River Valley. The fruits are late, only medium in size, long-oval, trees vigorous and productive, thar tardy in coming into bearing. Hudson is being replaced by better sorts.

Imperial Epineuse.—Imperial Epineuse is a variety of western origin which is attracting attention in the East because of its high quality fruit and tree of desirable characters. The fruit is late, medium to large, obovate, purplish-red, clingstone, with tender, sweet, rich flesh of very good quality. The trees are large, very vigorous, hardy, and productive. Imperial Epineuse deserves a place in every home orchard and should receive thorot trial for commercial planting.

Italian Prune.—This variety is as frequently called by its synonym “Fellenberg” as by its recognized name. It is a favorite variety for both home and commercial planting. The fruit is late, medium in size, long-oval, enlarged on the suture side, purplish-black, freestone, with juicy, firm, aromatic flesh of very good quality. The trees are vigorous and hardy, tho sometimes reported as unproductive. Compared with German Prune the fruit of Italian Prune is larger and higher in quality, the tree being less productive and more exacting as to soil and climate.

Jefferson.—Jefferson is a high quality, yellow plum of chief interest for hom plantaing. The fruit is mid-season, medium in size, round-oval, bronze-yellow, semi-freestone, with juicy, tender, sweet flesh of very good quality. The tree is late in coming into bearing, not overly hardy, tho vigorous and moderately productive. Jefferson is one of the finest of the Reine Claude group.

Lombard.—Lombard has been widely planted because of its cosmopolitan habits, but the poor quality of the fruit has reacted against it until it is no longer considered profitable. The fruit is mid-season, medium in size, round-oval, flattened at the apex, purplish-red, semi-freestone, with juicy, firm, mild flesh of inferior quality. The tree is very vigorous, very hardy, and very productive, usually necessitating thinning of the fruit.

Monarch.—Monarch has established itself as one of the commercial plums, and while it is not outstanding in any one character its general average in all are well above most varieties. The fruit is late, of good size, round-oval, dark purplish-red, clingstone, with firm agreeably flavored flesh of good quality. The trees are vigorous, hardy, and early and regular bearers.
October.—The Japanese plums are early in ripening, taken as a group. October Purple is one member which ripens in mid-season, late for a Japanese variety. It is not extensively planted, but a few trees are frequently found in plum orchards. The fruits are round-cordate, dark purplish-red with conspicuous dots, clingstone, with very juicy, mild flesh of good quality. The trees are vigorous, hardy, rather late in coming into bearing and rather uncertain yielders.

Pacific.—Pacific is another western variety which deserves thorough trial in eastern orchards. The fruits are mid-season, large, ovate, bluish with thick bloom, firm-fleshed, freestone, of good quality, an attractive market plum with good shipping qualities. The trees are large, hardy, and productive. Altho little known in the East it has done well wherever tried and merits consideration for both home and commercial planting.

President.—This is a relatively recent introduction which has been well received in California and which should be given trial in eastern orchards. The fruits are very late, large, oval, dark reddish-purple, nearly freestone, with coarse firm flesh of fairly good quality. The trees are large, vigorous, upright, and productive.

Quackenboss.—This is an eastern New York product, having been originated at Schenectady and introduced by Mr. Quackenboss of Greenbush. It is one of the commercial varieties, tho not as highly regarded as some other varieties of its class because the tree is only moderately productive. The fruits are large, late, round-oval, bluish-black, semi-freestone, with rather firm, sweet flesh of good quality. The trees have nearly as many good characters as the fruit, being large, vigorous, and hardy, tho failing in productiveness.

Red June.—Red June is one of the earliest of the Japanese plums, ripening a week or more before Abundance. The fruit is characteristically solid red, cordate, pointed, clingstone, with yellow, moderately firm flesh, fairly good in quality. The trees are hardy, vigorous, and early and abundant bearers. Red June is recommended for both home and commercial planting where a plum of this type is desired.

Reine Claude.—This variety is the principal member of the group of high quality, yellowish-green plums commonly referred to as Green Gage plums. Other varieties of the class, notably Bavay, are called the true Reine Claude by some. As compared with the Reine Claude here described Bavay is not so high in quality of fruit, but the tree is said to be more vigorous and productive. Be that as it may, Reine Claude is one of the most profitable varieties grown, suitable for home or market, cooking or canning, or dessert. The fruit is mid-season, round-oval, yellowish green becoming golden-yellow at maturity, semi-clingstone, firm, sweet, with greenish flesh of very good quality. The trees are slow growers but hardy and productive.

Santa Rosa.—Santa Rosa is another Japanese variety of the general type of the better-known Burbank and Abundance. The fruit is early, oblong-conic, pointed, attractive purplish-crimson, clingstone, firm, juicy, good in quality. The trees are large, vigorous, hardy, and very productive. Santa Rosa merits the attention of those who desire an early commercial plum of this type.

Satsuma.—The blood-red flesh of this variety is its outstanding qualification and is probably responsible for its planting in so many orchards. It is the parent of several other red-fleshed plums, some of which surpass it in different characters. The fruit is late mid-season, round-cordate, flattened at the base, dark red,
clingstone, with purplish-red, juicy, pleasantly flavored flesh of good quality. The trees are vigorous, hardy, and productive. Satsuma is recommended for both home and commercial planting where a variety of this type is desired.

Shiro.—The fruits of Shiro are interesting for their clear yellow color and seeming transparence. They ripen very early and are of good size, round-conic in shape, tender, very juicy, sweet, mild, clingstone, and fairly good in quality. The trees are rather tender but large, vigorous, and productive.

Shropshire.—Here is the common damson plum more often called by the name of the group which it represents than by its correct title. Its small, oval, purplish-black, late-season, tart, clingstone fruits are found in every plum plantation and are valued mostly for their culinary usefulness. The trees are very hardy, vigorous, and very productive, bearing regular full crops. It is perhaps the most satisfactory of the damson plums and is recommended for planting for both home and market.

Washington.—Washington is an old variety of the Green Gage type which was originated at Flushing, Long Island. It is neither sufficiently productive nor a good enough shipper to be profitable commercially, but its large, mid-season, round-oval, greenish yellow, freestone fruits are tender, sweet, and pleasantly flavored and worthy of a place in the home orchard. The trees are large, vigorous, hardy, and moderately productive.

Wickson.—Wickson has not done well in eastern New York. The trees, tho vigorous, are somewhat tender and not sufficiently productive to be commercially profitable. The fruit is the largest of the Japanese plums, early-mid-season, cordate with a prolonged tip, dark red over yellow, clingstone, with juicy, coarse, pleasantly flavored flesh of only average quality. It is an interesting addition to the home orchard because of the size of its fruit, but is otherwise not highly regarded.

Yellow Egg.—This variety has large attractive yellow fruits and a productive tree to make it of value as a commercial sort, but the fruit is subject to brown-rot and so inferior in quality that it cannot be strongly recommended. The plums are late, large, long-oval, golden-yellow, juicy, firm, mild, nearly freestone, scarcely good in quality. The trees are large, vigorous, hardy, and very productive.

GRAPES

The main consideration in eastern grape growing at the present time is yield. Little if any premium is any longer placed upon superior quality, distinctive flavor, attractiveness, or keeping qualities. Accordingly, Concord is the leading sort. No variety yet grown can produce the tonnage of Concord at such a low cost, and against such competition the more delicate and finer varieties of grapes for which the Hudson River Valley has long been known are gradually disappearing, except where they are of use in completing the assortment in roadside stands or at local markets. A discussion of grape growing therefore resolves itself largely into a discussion of the one variety, Concord.
Commercial grape growing is confined to the Central and Lower Sections of the Middle Hudson River Valley Region. South of this region fungous troubles become a factor and to the north only the hardier varieties do well. In fact in the Lower Section of this region the wide assortment of varieties still growing gives evidence of the adaptability of the grape to that section, while to the north these gradually give way to Concord and other hardier and more cosmopolitan kinds.

On the hills 2 or 3 miles back from the river on both sides are found the largest plantings, while the choice of soil has been the heavier phases of the Dutchess stony loams. On the lighter soils grapes do not do so well, while further back from the river danger from frost and winter cold is greater.

Niagara is the variety next in importance to Concord. It seems especially well suited to the Hudson River Valley, often outyielding Concord, but this advantage is lost in the market demand for a black grape. Delaware ranks third with Worden fourth.

Because of the large amateur interest in the different varieties of grapes and because of the odd vines that still linger in home and commercial plantings, a larger number of varieties are discussed in the following pages than the present trend of planting justifies.

**Agawam.**—Altho one of the first good grapes produced in America, Agawam is still grown in a small way commercially. The clusters are large and the berries large, brownish-red, oval, with thick skin and firm, solid flesh, hanging well and keeping in storage until mid-winter. The flavor is somewhat foxy but good. The date of ripening is in mid-season just after Concord. The vines are self-fertile, hardy, very vigorous, but only moderately productive.

**Barry.**—Barry, like Agawam, is a product of the famous early hybridizing work performed by E. S. Rogers, Salem, Massachusetts. It is characterized by its short, broad cluster of large, oval, purplish-black berries, pleasantly favored and good in quality, ripening in mid-season just after Concord. The tough skin permits shipping and long keeping. The vine is vigorous, hardy, and productive, but the flowers are self-sterile and need pollination by other varieties. Barry is more a grape for the fancier than for the commercial grower.

**Brighton.**—The large, long, heavily-shouldered, loose clusters of Brighton are further identified by the large, oval, light red berries with tender, melting flesh, very good in quality, ripening in mid-season. The vines are vigorous, hardy, and productive, but the fruit does not ship well and the flowers are self-sterile, so that while Brighton ranks as a commercial variety it is more suitable to home use and local trade. As a home variety it is indispensable.

**Brilliant.**—Brilliant is primarily an amateur's grape, tho in southern sections it may be of commercial importance. The clusters are cylindrical, very compact,
with round, dark red, firm berries of delicate, sweet flavor and good quality. The vines are vigorous, hardy, and fairly productive.

Caco.—This is a relatively new variety said to be a cross between Catawba and Concord, hence the name. The variety has not proved adapted to northern grape regions, but in southern sections it does fairly well. The fruit is mid-season; clusters cylindrical, loose, and only moderate in size; berries large, round, dull red; flesh firm, mild, sweet; quality good. The vines are self-sterile, fairly vigorous, hardy, and fairly productive.

Campbell Early.—The early, large, long, single-shouldered clusters of this variety with their large, round-oval, purplish-black berries are further identified by the tough skin, firm, meaty flesh, and wine-colored brush. The quality is good. The vines are self-sterile, hardy, vigorous, and productive though seemingly better adapted to southern than northern sections. Campbell is an important market variety.

Catawba.—Catawba is a fine old variety well known on the late market and formerly highly esteemed as a wine grape, but now gradually giving way to other varieties. Its late season of ripening prevents its being grown, except in the more southern grape regions, yet it still has a place for both home and commercial growing wherever it does well. The clusters are large, broad, tapering, double-shouldered, loose, with oval, purplish-red berries of sprightly, rich, delicious flavor, very good in quality. The fruit keeps and ships well. The vines are self-sterile, vigorous, hardy, and productive.

Clinton.—Clinton represents that group of spicy, glossy-black, hardy, vigorous, varieties which show characters of the wild river-grape. The clusters are small, cylindrical, single-shouldered, compact, ripening in mid-season. The berries are small, round-oval, glossy-black, with much wine-colored pigment. The flavor is spicy and sour. The vines are self-sterile, very hardy, very vigorous, and very productive, and are used as a stock upon which other varieties may be grafted.

Concord.—No other variety is grown so widely, is so well known, or is so generally profitable as Concord. The vines are adapted to diverse soil types and climatic conditions and are healthy, vigorous, and very productive. In competition with this variety, higher-quality varieties with a higher cost of production have been driven from the market until a vast majority of consumers are acquainted with no other grape but Concord. The clusters are large, wide, broadly tapering, with large, round, black berries covered with bluish bloom. The flesh is tough, solid, foxy, only good in quality. The berries crack and shell from the cluster, yet because of its numerous good points Concord is the outstanding variety in eastern New York.

Croton.—Croton is included here because of the fact that it originated at Croton Point on the Hudson River and because of its very tender-fleshed, large-clustered, high quality fruit. The clusters are very large, long, slender, heavily shouldered, very loose; the berries medium in size, round-elongated, yellowish green, very juicy, melting, sweet, very good in quality, ripening in mid-summer. The vines are self-fertile, vigorous, productive, but tender. Croton is a grape for the amateur and has never been widely planted.

Delaware.—Delaware is universally acknowledged the finest of the American grapes. It is well known to eastern markets, characterized by early, small, cylindrical, shouldered clusters of small, round, light red berries, with tender,
juicy flesh, and is rated best in quality. The vines are self-sterile, hardy, and productive, tho weak growers. Delaware is well suited to both the home and commercial vineyard, tho special emphasis should be placed upon its desirability for home use.

Diamond.—Diamond is an early, white, high-quality grape, ripening about a week before Concord. The vines are self-fertile, vigorous, hardy, productive, and adapted to sections further north than its rival, Niagara. The clusters are broad, blunt, cylindrical, compact, with large, firm, ovate berries. The flesh is tender, juicy, and melting, the flavor aromatic, sweet, and pleasant; the quality very good. Diamond does not equal Niagara in productiveness and vigor of vine, but it is a worthy variety for both home and commercial planting.

Duchess.—Here is another high quality white grape originated in the Hudson River Valley, having been produced at Marlboro. The clusters are large, long, slender, heavily shouldered; the berries round, medium in size, and yellow to amber in color sprinkled with small dark dots; the flesh tender and juicy; the flavor sweet and pleasant. The vines are self-fertile, vigorous, tender, and irregular bearers. Because of the faults of the vine Duchess has not been widely planted, but where a grape of this type is desired Dutchess merits consideration.

Eclipse.—The fruits of Eclipse are early in season and characterized by medium-sized, broad, compact clusters, with large, oval, dull black berries. The flavor is foxy, sweet, and good. The vines are self-sterile, vigorous, hardy, and productive. Because of good vine characters and earliness of fruit, Eclipse is desirable for home or local market, but because of the small clusters it cannot compete successfully on the open market with other varieties.

Empire State.—Empire State is another white grape of Hudson River Valley origin, having been produced near Newburgh. The clusters are characteristically long and slender, single-shouldered, compact, with long slender stem. The berries are medium in size, light green, round, with tender juicy flesh of good quality, ripening in mid-season. The vines are self-sterile and somewhat tender, tho vigorous and productive. Empire State seems a desirable sort, but has not met with great favor.

Gaertner.—This is another one of Rogers' hybrids. The vine is vigorous and fairly hardy, tho self-sterile, and the fruit, tho high in quality and attractive red in color, ripens unevenly and does not keep as well as some others of its type. The clusters are medium in size, short, cylindrical, single shouldered, ripening in mid-season; the berries large, round-oval; the flesh tough but agreeable in flavor.

Herbert.—Herbert is also one of Rogers' hybrids, probably the best commercial possibility of the group. The berries are large, round-oval, black, thick-skinned, in large, broad, tapering clusters ripening with Concord. The vines are vigorous and productive and the fruit keeps long, carries well, and is very good in quality. Herbert is esteemed where quality is recognized and justly merits consideration where it is not forced to meet the open market competition of the higher-yielding Concord. The flowers are self-sterile.

Janesville.—Janesville is included here only because the extreme hardiness of the vine makes it suitable for northern planting in localities where other varieties do not succeed. The clusters are early, small, short, cylindrical, shouldered, compact, with dull black round berries with dark wine-colored juice and rather acid flavor of only fair quality. The vines are vigorous and very productive,
Keuka.—Here is a new dark red variety approaching the European type produced by this Station from a cross between Chasselas Rose and Mills. The vines are vigorous and productive. The medium-sized, roundish-oval, strongly adherent berries are compact in medium-sized, cylindrical clusters. The skin is tender and adheres somewhat to the tender, meaty flesh. The flavor is sweet and refreshing and the quality is rated very good to best. It is in season midway between Delaware and Catawba. Keuka is recommended for trial where a grape of this type is desired.

Lindley.—Lindley is a desirable red grape, one of Rogers' hybrids, and having in common with its sisters thick skin, long keeping, tender flesh, and very good quality. The clusters are long, broad, and cylindrical; the berries, large, round-oval, dark red; the season, just before Concord. Altho a favorite amateur variety, the self-sterile flowers, uncertain bearing, and fickleness in choice of soil are a serious handicap to commercial production. Because of its earliness, however, it has had some success in roadside and local trade.

Lucile.—Lucile is an early, fair quality, red grape with large, long, cylindrical clusters of large, round berries characterized further by a strong foxy flavor—objectionable to some and agreeable to others. The vines are hardy, vigorous, and very productive. Altho Lucile is desirable because of its attractive fruit and its good vine characters, it has never met with great success because of inferior quality.

Mills.—Mills is included here only because of the interest which surrounds it thru use as a parent of some promising new varieties. In both fruit and vine characters it carries a high percentage of blood of the Old World grape and furthermore seems able to pass on some of its desirable characters to its offspring. While the vines are tender, not vigorous, and not productive, the fruit is high in quality, juicy, meaty, vinous-flavored, with large, long, compact, cylindrical clusters of large, oval, jet black, thick-skinned berries, which ripen in mid-season.

Moore Early.—This is the first black grape of Concord type each season to reach the market in any quantity. There are others earlier but none with the commercial standing of Moore Early unless it be Campbell's Early. The vines are hardy, vigorous, and fairly productive. The berries are large and round, in medium sized, short, rather loose cylindrical clusters, good in quality. A fault of the fruit is its thin skin which makes it a poor shipper and a poor keeper.

Niagara.—This is the leading white grape in eastern New York and second only to Concord among all varieties. Altho neither quite so hardy nor so cosmopolitan as Concord, it seems especially well suited to the grape sections of the central and lower Middle Hudson River Valley where it is a standard kind. The berries are large, oval, in large, tapering, shouldered clusters, with tender flesh and a mild foxy flavor. The quality is good and the season about with Concord.

Ontario.—Ontario is a high quality very early white grape produced by this Station from a cross between Winchell and Diamond. The vines are vigorous, productive, and fairly hardy. The berries are medium in size, roundish, in medium-sized, cylindrical clusters. The flesh is tender and the flavor sweet and refreshing. Ontario is recommended for home plantings and for trial in commercial vineyards where a grape of this type is desired.

Pontiac.—Pontiac is the product of a cross between Herbert and Worden made by this Station and offered for trial as a good quality blue grape of the
same season as Concord. The vines are hardy, vigorous, and productive, and the berries large, roundish oval, in large, thick, compact tapering clusters. The flesh is tender, the flavor mild and pleasant, and the quality good. It is recommended for trial for both home and commercial plantings. The flowers are self-sterile.

Portland.—Portland is an early white grape originated by this Station from a cross between Champion and Lutie. The berries are large, round, in large, somewhat loose, tapering clusters—resembling Niagara in general appearance. With its moderately tender flesh and pleasing flavor it is rated very good in quality. The vines are vigorous, hardy, and productive. Compared with Ontario, Portland is not quite so early and not so high in quality but has firmness and size of berry and vigor and productiveness of vine to make it appear the better commercial variety. Portland is recommended for both home and commercial planting where an early white grape is desired.

Ripley.—Ripley is a mid-season white grape originated at this Station from a cross between Winchell and Diamond. The vines are vigorous, hardy, and very productive. The berries are medium in size, roundish-oval, in medium-sized tapering, moderately compact clusters. The flesh is tender and the flavor mild and pleasant, of very good quality. Where Ripley has been fruited in the Hudson River Valley it promises better than in western New York where it originated, the berries and clusters attaining greater size. Ripley is recommended for trial.

Salem.—Salem does not have productiveness and sufficiently attractive clusters to make it a commercial success, but because of its high quality and pleasing flavor it is recommended for home vineyards. The berries are large, round, dark red with thick skin—long keeping and ripe in mid-season. The clusters are large, broad, short, and tapering. The flowers are self-sterile.

Sheridan.—Sheridan is a new creation, a cross between Herbert and Worden produced at this Station and offered for trial. In its first tests it has proved even more productive than Concord, while the fruit is higher in quality besides standing shipment better. The vines are vigorous and hardy. The berries are large, round, black, in large, compact, cylindrical clusters. The skin is tough and the berries adhere strongly to the pedicels. In season it is a few days later than Concord. It is recommended for thoro testing in eastern New York.

Urbana.—Urbana is a very late, light-red grape produced by this Station from a cross between Ross and Mills. The variety is unusual because of its near approach to the European type grape. The berries are large, round-oval, in long, broad cylindrical clusters. The skin is thick, the flesh firm but tender, the flavor aromatic, and the quality very good to best. The vines, tho productive and moderately vigorous, are none too hardy, being too tender for unprotected sections in the upper Middle Hudson River Valley. Urbana may succeed, however, in sections with a long growing season and moderate winters and is suggested for trial there.

Wilder.—Because of good vine characters, Wilder is a favorite black grape for early mid-season and mid-season market, yet it is not as productive as its near-rival, Concord. The vines are vigorous, hardy, and productive. The berries are large, oval, purplish-black, thick-skinned, in short broad clusters. The flavor is rich and pleasant and the quality very good. The flowers are self-sterile.
Winchell.—Known among fruit growers for the name of its origin as "Green Mountain," Winchell is a popular early grape. It is recommended by a hardy, fairly vigorous, productive vine with long, heavily shouldered, compact clusters, tho the roundish berries are apt to be small and subject to cracking. Winchell is gradually being replaced by newer kinds.

Worden.—When Worden was introduced it was as an improved Concord type. It has most of the good vine characters of its rival and higher quality and more attractive fruit in addition. But to offset these advantages the fruit of Worden cracks badly and does not handle well. Nevertheless, it is a standard commercial sort and one especially esteemed for home planting. The berries are large, round, dark purplish-black, compact in large, long, broad, tapering clusters. The vines are hardy, vigorous, and productive.

RED AND PURPLE RASPBERRIES

Because of the nearness of large consuming centers and the ease of transportation, the red raspberry industry has been until recently one of the major fruit activities of eastern New York. Production has centered chiefly in the Lower Section of the Middle Hudson River Valley Region, altho it has extended north thruout the entire Middle Hudson River Valley Region. A disease known as mosaic has now all but wiped out the industry in these sections. Its re-establishment, as history has shown, is largely dependent upon new varieties either resistant to, or free from mosaic. The variety question is, therefore, closely allied to mosaic control, and the grower of raspberries should become thoroly familiar with the principles involved (15). Some varieties, such as Ontario, may be so affected immediately they are attacked as to fail to mature a crop. Quite by contrast a badly diseased variety like Perfection may bring its crop thru to maturity in spite of disease.

Aside from its relation to mosaic, selection of varieties depends upon local market requirements. The long conic berries of Cuthbert have become so familiar on the market as a standard of quality that "Cuthbert-shape" becomes a factor for consideration. For New England markets and for roadside trade, the darker colored, softer Herbert is adapted, while other markets prefer the firmer, brighter red berries of such varieties as Donboro. No small share of the popularity of June, Ontario, Donboro, and Latham has been due to the attractive red berries which retain their shape and their bright appearance on distant markets, whereas such dull, soft berries as Herbert are not overly popular in spite of very heavy production.

Brant.—Brant is a newcomer among purple raspberries. It is recommended for trial by vigorous, disease-resistant plants, and firm, round-conic berries of good quality. The fruit ripens late, about with Columbian.
Cayuga.—This is another new red sort which is suggested for trial as an earlier, more productive Cuthbert type. The season of ripening is between June and Cuthbert. Unfortunately, in the Lower Section of the Middle Hudson River Valley Region this variety has not withstood the ravages of mosaic.

Columbian.—Columbian is the standard purple-cane raspberry. Compared with its rival Shaffer, the fruit is smaller, darker, sweeter, higher in quality, later in season, and firmer. The plants of Shaffer, tho more hardy, are less vigorous and less productive, so that Columbian maintains a lead in commercial esteem.

Cuthbert.—Cuthbert is still the standard of quality among commercial red raspberry varieties, so much so that other varieties having the pointed, conic Cuthbert-shape fruit are considered to have an advantage over other sorts. In spite of plants that are only moderately productive, and which do not withstand mosaic, the excellent fruit characters, plus vigorous plants, make Cuthbert one of the best varieties grown. The fruit is late in season of ripening.

Donboro.—Donboro is similar to one of its parents, Marlboro (page 74), in fruit characters. The fruit is large, roundish-oval, firm, of only good quality, and bright red. The plants are susceptible to mosaic but seem able to grow and develop fruit in spite of attacks so that Donboro is still grown, seeming to do especially well on the sandy loam soils in the Upper Section of the Middle Hudson River Valley Region.

Golden Queen.—Golden Queen is included as a good variety of yellow raspberry. The fruit is similar to Cuthbert, tho somewhat more tender. The plant is quite susceptible to mosaic.

Herbert.—Herbert is a heavy producer, yielding two to four times as much fruit as Cuthbert. Furthermore, the plants are hardy and resistant to mosaic so that the variety comes well recommended by plant characters. Unfortunately, the berries, altho large and good in quality, are dark red and are soft so that they are wet and mold quickly. For home planting, for local markets, and for sections in which mosaic is a problem, Herbert is strongly recommended, but where more attractive sorts can be grown it is not the best. The fruit ripens in mid-season.

June.—Because of its earliness, long picking season, vigor, productiveness, and firm, bright attractive berries, June has become a popular and profitable variety. The fruit is only fair in quality, large, roundish, rather coarse, but holds and ships well. The plants are moderately susceptible to mosaic.

Latham.—This is a new variety that has attained commercial rank quickly because of its hardiness, great vigor, productiveness, and ability to withstand mosaic. The fruit, moreover, satisfies market demands with large, hemispherical, firm, bright red berries which stand long and appear attractive. The season is late and the quality good.

Lloyd George.—This is a new English berry recently introduced to America which is phenomenal for the size of its oblong-conic fruits and which is considered very promising. The plants are vigorous. The quality of fruit is rated good.

Loudon.—This variety of red raspberry is recommended for the colder regions of eastern New York and is still grown to some extent in all sections. Tho once a standard variety, Loudon is being displaced by higher quality and more productive kinds. The fruit, which is medium in size, conic, firm, and attractive red, ripens in mid-season and extends over a long season.
Marlboro.—Originating in the Hudson River Valley, Marlboro is still grown there. The plants are hardy, vigorous, and productive, and the fruits are early, large, round-conic, bright red, and firm—altogether good market qualities. The fruit, however, is not above good in quality and the plants succumb to mosaic so that it is being replaced by other sorts.

Newman.—This is another new red variety of recent origin, recommended by mosaic resistance and high productiveness. The fruit ripens in mid-season and is firm, large, roundish-conic, bright red, tho only fair in quality. It is recommended for trial especially where mosaic is a factor.

Ontario.—This variety was highly regarded until mosaic became severe, since then, because of its inability to withstand attack, it has been losing favor. By contrast with some other varieties it is less susceptible to mosaic, but affected plants seem unable to mature their fruit in the Middle Hudson River Valley Region. The plants are vigorous, hardy, and very productive. The fruit is early, large, firm, bright red, broad-conic, and very good in quality.

Perfection.—Perfection, long the standard red raspberry of the Hudson River Valley, has been doomed by mosaic. No disease-free plants are known, yet because diseased plants will produce fruit, it is still grown to a limited extent. The plants are productive, vigorous, and hardy. The fruit is early mid-season, medium in size, hemispherical, bright red, fair to good in quality, and only moderately firm.

Ranere.—St. Regis, as this red raspberry is often called, is one of the best fall-bearing varieties where a variety of this type is desired. The fruit is very early, medium in size, hemispherical, bright red, rather crumbly, and not high in quality. The plants are moderately vigorous, hardy, only moderately productive, but withstand mosaic especially well.

Seneca.—This is another new variety, very similar to Cayuga, the fruit ripening between Cayuga and Cuthbert, and suggested as a variety for trial to replace Cuthbert. Unfortunately the plants are not much better in withstanding mosaic than are those of Cuthbert, while the fruit is dull red in color and not overly firm.

Shaffer.—Shaffer is the older of the two standard purple-cane raspberries grown in eastern New York, the other being Columbian. The fruits of Shaffer are earlier in ripening and larger than those of Columbian, but they are softer, not so good in quality, a little earlier in season of ripening, and do not hold to the plants so well. The plants are less vigorous and less productive than those of Columbian, tho more hardy. All in all, Columbian is superior and is taking the place of Shaffer.

Viking.—This new variety of Canadian origin has conical Cuthbert shape, good quality, firmness, bright red color, and a season of ripening several days ahead of Cuthbert. In addition, the plants are very strong, vigorous, withstand mosaic well, and carry the fruit near the ends of the canes for easy harvesting. Viking deserves thorough trial by commercial growers.

Webster.—This is a new purple-cane which is said to be both resistant to mosaic and also able to withstand its attack. The plants are dwarfish but productive and disease-resistant, while the fruit is large, early, and of good quality.
BLACK RASPBERRIES

The black raspberry plays only a minor rôle in the fruit industry of eastern New York, production being largely for home use and for particular local markets.

Black Pearl.—Altho a newcomer, Black Pearl, has become a standard sort, recommended by vigorous, hardy, productive plants, which seem able to adapt themselves to a wide range of conditions. The fruit is early, with firm, large, hemispherical, glossy black berries, which are very good in quality and which stand shipment well.

Cumberland.—The plants of Cumberland are very hardy, productive, and vigorous but yield to several serious black raspberry diseases. In consequence, altho still a leading standard kind, it is losing ground. The fruit ripens in early mid-season, is large in size, attractive black, firm, and good in quality.

Dundee.—Dundee is a promising new sort suggested for trial and recommended by high quality and attractive appearance of fruit, and vigor and disease resistance of plant.

Gregg.—The fruit of Gregg is late, large, broadly hemispherical, deep black, good in quality, and moderately firm. Unfortunately, the plants are not adapted to a wide range and they are susceptible to several serious black raspberry troubles, so that Gregg is found only in those localities where it seems particularly at home.

Kansas.—The fruits of Kansas are medium in size, broadly hemispherical, variable, glossy black, firm, not overly juicy, but good in quality, ripening in early mid-season. The plants, altho very productive are tender to cold and are, therefore, not widely adapted.

Plum Farmer.—This variety is recommended as the one most suitable for general planting. The fruits are large, attractive, firm, ripening in early mid-season. The plants are vigorous, hardy, and very productive, and stand up well against raspberry ailments.

BLACKBERRIES

The blackberry is not widely grown in eastern New York, commercial production being limited to the lower section of the Middle Hudson River Valley Region. The dewberry, because of its earliness, is considered the more profitable crop. The preferred soils are the Dutchess silt loam close to the river.

Agawam.—Agawam is a standard sort recommended by productive, hardy plants, and early, attractive, black fruit of very good quality. Unfortunately, the fruit is inclined to be soft, requires a long season of picking, and is not large in size, so that better sorts are taking its place.

Ancient Britton.—This variety is especially esteemed where winterhardiness is a factor. The fruit ripens in late mid-season and is attractive black and good in quality. The plants are moderately vigorous and productive.

Eldorado.—Eldorado is the leading variety where blackberries are grown in eastern New York. The plants are vigorous, productive, disease-resistant, and hardy, while the fruit ripens in early mid-season and is large, jet black, firm, and good in quality, altogether good characters for a standard sort.
Erie.—The fruit of Erie is very large, broadly cylindrical, glossy black, somewhat soft, good in quality, ripening in mid-season. The plants are vigorous, fairly hardy, productive, and disease resistant. Tho Erie has not been widely planted, it deserves consideration, especially in those sections where winter-hardiness is not a necessity.

Kittatiny.—Kittatiny was for long the standard blackberry in eastern New York, but its susceptibility to disease, tenderness to cold, and variable fruit have resulted in its decline in popularity. The fruit ripens in early mid-season, is large in size, and very good to best in quality.

Snyder.—This is another old standard sort which has been retained because of excellent plant characters in spite of small size, reddish black, average-quality fruit. The plants are vigorous, productive, and very hardy. The fruit ripens in late mid-season. Where better sorts can be grown, Snyder should be discarded.

DEWBERRIES

The dewberry, which is really a trailing blackberry, is very successfully grown in the Central Section of the Middle Hudson River Valley Region and constitutes a profitable crop. Its culture is confined largely to the better drained slopes of Dutchess silt loam close to the river, thus combining the virtues of a water-holding soil and freedom from frost and winter injury.

Lucretia.—The standard variety is Lucretia, long the standard variety in eastern dewberry circles and still supreme. The fruit is early, large, attractive black, firm, and very good in quality. The plants are trailing, very productive, and healthy. They require winter protection, tho in the Central Section of the Middle Hudson River Valley Region natural weed growth is sufficient.

CURRANTS

More than 90 per cent of the commercial currant production of New York State centers in the Lower Section of the Middle Hudson River Valley Region on Dutchess silt loam soils near the river. The important varieties are Wilder and Perfection, little of any other variety being grown for commercial production.

Cherry.—This is one of the standard varieties of red currant, characterized by small clusters of very large berries, ripening early in the season. The plants are moderately vigorous and productive. The quality of the fruit is good.

Diploma.—The berries of Diploma are nearly as large as those of Cherry, higher in quality, and in longer clusters. The fruit is further characterized by a high degree of transparency and by ripening in mid-season. The plants are vigorous, upright-spreading, productive, and healthy.

Fay.—Fay is recommended by large berries, large clusters, and high quality, but falls short in productiveness. In spite of this fault, Fay is a standard variety. The plants are only medium in size, and sprawling in habit. The fruit ripens in early mid-season.
Perfection.—This is one of the leading currants in the currant sections of eastern New York. The plants are moderately large, vigorous, healthy, and very productive. The fruit is characterized by long clusters of good size berries, high quality, and ease of picking. The season of ripening is early mid-season.

Prince Albert.—The chief virtue of Prince Albert is in extending the season of picking, ripening as it does very late. The berries are medium in size, good in quality, in long clusters which hang on unusually well. The plants are vigorous, productive, and healthy.

Red Cross.—Red Cross was at one time one of the leading currants in the Hudson River Valley. The berries are medium to large in medium size clusters, of good quality, ripening in mid-season. Altho the plants are large, healthy, and productive, and the fruit easily picked, the berries crack easily so that better sorts are taking its place.

Versailles.—Versailles is another large-fruit ed currant, not unlike Cherry, which was at one time extensively grown in eastern New York but which has been largely replaced by better sorts. The fruit is further characterized by short, loose clusters of medium size berries, of good quality, ripening in early mid-season. The plants are vigorous and healthy but only moderately productive.

White Grape.—There are several white currants of which this is one. The plants are moderately vigorous, productive, and healthy. The berries are large, in long clusters, of good quality, mid-season.

Wilder.—Wilder is by far the leading commercial variety in eastern New York. The plant characters are excellent, the plants being large, vigorous, healthy, and very productive. The berries are firm, medium in size, in long, compact clusters, easily picked. The fruit ripens in late mid-season and hangs long after picking.

GOOSEBERRIES

The gooseberry is little grown in eastern New York, except for home and local markets. Even then, because of the white pine blister rust, gooseberries are prohibited in all but a few regions.

Chautauqua.—This is a European-type gooseberry with large, roundish-oval, silvery green fruits, of good quality, ripening in mid-season. The plants are vigorous, productive, and relatively free from the mildew which so seriously interferes with the cultivation of European varieties.

Downing.—Downing is an American-type gooseberry with fruit below medium in size, roundish, silvery green, very good in quality, ripening in mid-season. The plants are vigorous, very productive, and healthy. In addition, Downing is easily propagated and is, therefore, well supported by nurserymen, so that it is perhaps the leading variety today.

Fredonia.—Fredonia is suggested for trial as a superior European-type gooseberry which holds its foliage rather better than other better-known varieties of this type. The fruit is late, large, roundish oval, and good in quality. The plants are vigorous and productive.

Houghton.—Houghton is an American-type berry and the next most popular variety after Downing. The fruit is very small, roundish, green becoming dull dark red at maturity, very good in quality, ripening in mid-season. The plants are large, productive, hardy, and adapted to a wide range of conditions.
Industry.—Industry is the red companion variety to Chautauqua, being of European type, with large, roundish oval, dark red fruit, of very good quality, ripening early in the season. The plants are medium in size, vigorous, and relatively free from the mildew to which the European varieties are subject.

Poorman.—Altho a relatively new comer among gooseberries, Poorman is the most promising variety now grown in eastern New York. The berries are above medium in size, roundish oval, pinkish red, very good in quality, ripening in early mid-season. Added to this, the plants are very large, very vigorous, productive, and almost entirely free from disease. When other varieties have lost their foliage from mildew and have lost their fruit from sunscorch, Poorman has regularly retained its foliage and produced good fruit in the Hudson River Valley.

STRAWBERRIES

Strawberries are a standard feature of the diversified fruit-grower's enterprise in eastern New York, especially in the Middle and Lower Hudson River Valley Regions. In most localities the choice of varieties depends upon local market considerations, and since the New York City market becomes a local one so far as the Middle and Lower Hudson River Valley Regions are concerned, the choice of varieties there depends largely upon the demands of the New York market. In consequence, the important varieties are those which are early and those which are late, emphasis also being placed upon an attractive, bright, glossy red appearance. For earliness Howard (Premier) is preferred, while for the late crop the choice is Glen Mary, followed by Gandy and Stevens Late. The preferred soil in the Lower Section of the Middle Hudson River Valley Region is Dutchess silt loam, close to the river. Berries that are adapted to the heavier soils are therefore desired. In the Central Section of the Middle Hudson River Valley Region there are many plantings on the Hudson sandy loam and the Hoosic coarse sand, mainly of early varieties. In some seasons drought makes culture unprofitable on these lighter soils.

It must be remembered that some varieties of strawberries are "imperfect;" that is, they will set no fruit unless provided with pollen from a "perfect" variety. In case, therefore, any variety is chosen which is listed below as imperfect, this point must be considered. Perfect varieties set fruit with their own pollen.

Aroma.—Aroma is a standard commercial mid-season to late variety. The plants are numerous, vigorous, healthy, productive, and adapted to silt and clay soils. The fruit is large, chunky, wedge-shaped, glossy, light red, firm, of good quality, and altogether well adapted to commercial purposes. The flowers are perfect.
Beacon.—This is a new berry which ripens early in the season so that it becomes a competitor of Howard (Premier). The plants are numerous, healthy, and productive. The berries are large, blunt wedge-shaped, dark glossy red, good in quality. The flowers are perfect.

Belt.—William Belt, as this variety is more commonly known, is an old sort adapted primarily to the home garden and to local markets. Gradually better sorts are taking its place. The berries, which ripen late, are large, round-conic, glossy dark red, very good in quality. The plants are numerous, variable, uncertain in bearing, and susceptible to leaf-spot. The flowers are perfect.

Bliss.—Bliss is another recent acquisition recommended as a late mid-summer variety for both home and market. The berries are large, blunt-conic, glossy bright red, very good in quality. The plants are medium to numerous, vigorous, healthy, and productive. The flowers are perfect.

Boquet.—Boquet was introduced in 1923. The berries are very large, blunt wedge-shape, light glossy red, good in quality, ripening in early mid-season. The plants are vigorous and healthy, altho only moderately numerous and moderately productive. The flowers are perfect.

Brandywine.—This variety, tho being replaced by newer and better sorts, is still found in the Hudson River Valley, mostly in the home garden. The fruits are large, wedge-shape, dark red, very good in quality, ripening late in the season. The plants are medium in number, vigorous, and productive, but subject to leaf-spot. The flowers are perfect.

Bubach.—Because of its late season of ripening and adaptability to heavy soils, Bubach is still found in eastern New York strawberry sections in spite of poor plant making. The berries are large, irregular, round-conic, attractive, glossy red, rather soft, good in quality, ripening in mid-summer. The flowers are imperfect, and the plants vigorous, healthy, and productive.

Chesapeake.—With vigorous, healthy, productive plants, and high quality, attractive, glossy, scarlet berries, Chesapeake is a good commercial berry, barring the fault of making few plants. The fruit is large, regular round-conic, ripening in mid-summer or later. The flowers are perfect.

Dr. Burrill.—Altho one of the standard varieties for the Middle West, Dr. Burrill has not met with favor in eastern New York. The plants are numerous, healthy, and productive; the berries, large, conic, dark glossy red, fair in quality, ripening in mid-season. The flowers are perfect.

Dunlap.—Also of Mid-west origin, this standard variety has done fairly well in eastern New York as an early mid-season berry, but is now being replaced by Howard (Premier). The berries are medium to large, round-conic, attractive glossy red, and good in quality. The flowers are perfect.

Gandy.—Because it is one of the latest berries grown and because it is adapted to heavy soils, Gandy is one of the leading commercial varieties in eastern New York, especially in the Lower Section of the Middle Hudson River Valley Region. The fruits are large, round-conic, dull red, very firm, and good in quality. The flowers are perfect and the plants numerous, vigorous, productive, and moderately healthy.

Glen Mary.—Altho one of the older varieties, Glen Mary is perhaps the most important commercial variety in eastern New York in spite of dull red color and only average quality. The berries are large, irregular round-conic, dull red, firm, but ripening over a long period, beginning in early mid-season and extending until
late. The plants are productive, but rather small and only moderately healthy, while the flowers are semi-perfect.

**Howard.**—Premier, as this variety is more commonly known, is becoming the standard berry for early markets, recommended by numerous, vigorous, healthy, productive plants and large, long-conic, attractive glossy red, good quality berries. To add to the market appearance of the fruit the calyx or "cap" remains bright green after picking. Howard seems well adapted to the sandy loam soils of eastern New York. The flowers are perfect.

**Joe.**—Joe is a standard commercial late mid-season variety of very good quality which, on account of tenderness to winter cold, is best suited to the favored sections of eastern New York. The fruits are large, blunt, round-conic, dark glossy red. The plants are few, vigorous, healthy, and productive; and the flowers perfect.

**Late Stevens.**—This is another variety found in commercial strawberry sections of eastern New York and grown largely because of its very late season of ripening. The berries are large, irregular, coxcomb to wedge-shape, attractive light red, good in quality. The plants are tall, vigorous, moderately productive, and moderately healthy. The flowers are semi-perfect to perfect.

**Marshall.**—Marshall is the standard of quality among strawberries, prevented from being more widely grown by weakness of the plants. It is, nevertheless, well suited for local markets and the home garden. The fruit is large, irregularly round-conic, deep glossy red, ripening in mid-season. The plants are medium in number, large, susceptible to leaf-spot, and variable in productivity. The flowers are perfect.

**Mastodon.**—Mastodon is now being recommended as an everbearing variety. The berries are medium to large, conic, medium red, good in quality, ripening in early mid-season, and fruiting in the autumn. The plants are numerous for an everbearer, vigorous, very productive, but somewhat susceptible to leaf-spot. The flowers are perfect.

**Premier.**—See Howard.

**Progressive.**—Progressive has been the standard recommendation for an ever-bearing variety until the appearance of Mastodon to challenge its supremacy. The berries are variable in size from large to small, blunt wedge-shaped, glossy dark red, good in quality, ripening early in the season and fruiting in the autumn. The plants are medium in number, vigorous, healthy, and productive.

**Stevens.**—See Late Stevens.

**William Belt.**—See Belt (page 79).
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