New York Agricultural Experiment Station.

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Varieties of Raspberries and Blackberries, with Cultural Directions

O. M. Taylor.

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BULLETIN No. 278.

VARIETIES OF RASPBERRIES AND BLACK-BERRIES, WITH CULTURAL DIRECTIONS.

O. M. TAYLOR.

SUMMARY.

Only varieties which have been tested on the Station grounds during the past eight years are included in this bulletin.

Among red raspberries Bradley No. 1 and Brilliant have not been fully tested but appear to be of doubtful value. Cline is valuable only on account of earliness. The fruit is small and the plants unproductive. Cuthbert is still the most popular variety throughout the State. Herbert has made a good record and is worthy of testing. King and Royal Church are inclined to crumble. Loudon is desirable but is quite variable in growth of cane. Marlboro canes are rather dwarf but are very productive. Pomona lacks productiveness on some soils. Turner is an old variety, hardy and productive, but the fruit averages too small.

Purple raspberries are superior for canning. Their value for this purpose is not fully appreciated. Columbian and Shaffer are both desirable kinds. Haymaker is productive; has not been fully tested but appears hardly equal in size or quality to varieties already mentioned.

Black raspberry plantations should be frequently renewed on account of injury from anthracnose. Beyer is a new kind ripening its fruit on the current season's growth; requires further testing, as yet does not show many desirable characters. Black Diamond
is variable, being worthless on some soils. Cumberland, Gregg, Mills and Onondaga produce fruit of excellent size and color. Eureka, Mohler and Palmer are among the most desirable early kinds. Ohio is not grown as extensively as formerly, and is used more for evaporating than for market purposes.

The winter injury to blackberries has been severe during the past five years. Many kinds require winter protection. Agawam and Ancient Briton produce large crops of berries, medium to above in size. Chautauqua and Florence are new, and although rather promising, require further testing. Eldorado, Mersereau, and New Rochelle produce fruit large in size. Rathbun is somewhat tender. Snyder is the most cosmopolitan of all the varieties, and although the fruit is small the canes are hardy and very productive.

Cultural directions are not given in detail, as they must vary under the different conditions found on different farms. The most important topics are briefly discussed and suggestions are given in regard to some of the methods followed by successful growers.

INTRODUCTION.

It is eight years since a bulletin has been issued by this Station on raspberries or blackberries, although notes have been taken yearly in regard to the behavior of the many varieties growing in the Station plats. It appears desirable at the present time to publish this information in a condensed form to meet the numerous inquiries regarding these fruits. The following notes describe the varieties and indicate their behavior for a series of years under the conditions in which they have been grown at this Station.
A discussion of insects and diseases infesting raspberries and blackberries is not given in this bulletin as the subject is covered in Bulletin 170 of this Station. It is sufficient at this time to state that anthracnose is one of the most serious diseases of black raspberries and has wrought havoc in many plantations during the past five years. The best treatment appears to be to dig out and burn the infested canes; to frequently set out the new plantations in land that has not grown berries in some time; to select the healthiest stock available; and to give the best of care in order to secure a healthy, vigorous growth well ripened for the winter.

At fruiting time, observations were made in the field in regard to the productiveness of all varieties, and the exact yield was also recorded at each picking. As these figures vary from year to year in different localities, depending on amount of winter injury, insect and fungus troubles, rainfall at harvest time, character of the soil and the attention the plants have received, the figures have been omitted and no attempt has been made to group the varieties in regard to yield. The record of productiveness, however, is given in the description of each variety.

Descriptions are given of many old varieties, together with those of more recent introduction. In the description of varieties, the source of the plants is usually given following the name of the variety. In many cases the plants have been secured from the originator or introducer in order to obtain stock true to name. The value of the variety is summed up with most sorts, in the closing sentence of the description.

It has been thought best to arrange the varieties, as far as possible, in their natural groups. So arranged, similar kinds can be better compared both as to characters and as to behavior in the field. In the main the varieties are grouped in accordance with Card's classification in his Bush Fruits.*

*Published by The MacMillan Co., of New York.
AMERICAN RED RASPBERRIES.

(Rubus strigosus.)

NOTES ON VARIETIES.

Hardiness.—Records have been made each spring in regard to the amount of winter injury. This varied considerably from year to year, depending upon the severity of the winter, and on the condition of the wood when it went into winter quarters, ranging in some cases from 0 to 75 per ct. In the following lists, those varieties not injured over 25 per ct. in any year, and with an average considerably below that number, have been marked as hardy or nearly so, and those injured over 25 per ct. as not hardy.

**Hardy or Nearly Hardy.**

**Bradley No. 1**
- Miller

**Carleton**
- Olathe

**Coutant No. 2**
- Phoenix

**Cuthbert**
- Pomona

**Eaton**
- Royal Church

**Gault**
- Superb

**Herbert**
- Superlative

**Kenyon**
- Thompson

**Koch No. 1**
- Turner

**Loudon**
- Viking

**Marlboro**

**Not Hardy.**

- Brilliant

- Great American

Earliness.—The value of the time of ripening varies in different locations depending on the market, some growers finding the early varieties most profitable while others secure the greatest returns from late-fruited kinds. While the relative time of ripening of varieties may not vary much from year to year, the dates of ripening for any one sort may be quite different depending on local conditions. No clear cut division can be made in regard to season of ripening; some varieties have a very long
season of fruiting, while with other varieties the reverse is true. For several years Giant, Marlboro, and Pomona were among the first to produce ripe fruit while the following varieties were among the latest to produce good pickings:

Bradley No 1  English Giant  Phoenix
Coutant No. 2  Herbert  Royal Church
Cuthbert  Loudon

Desirable kinds.—Many of the varieties tested were found to be worthless in this locality. Some were too tender, or not productive; others produced fruit too small and too soft for shipment, or the color was unattractive, and the flavor and quality inferior. The following list, however, includes those varieties that have made the best showing, and under conditions at the Station are of value commercially and are worthy of testing elsewhere:

Cuthbert  Loudon  Pomona
Herbert  Marlboro  Turner*

DESCRIPTION OF VARIETIES.

Bradley No. 1.—(C. P. Bradley, South Bend, Ind.) A seedling found growing on the farm of Mr. Bradley about the year 1896. Received at this Station for testing in the fall of 1902, fruiting for the first time in 1904. Plants moderately vigorous to vigorous, healthy; appears to be hardy and productive. Fruit above medium to large, resembles Marlboro in shape but is much coarser in general appearance, rather attractive dark red, grains large, inclined to crumble, good in flavor and quality. Requires further testing to fully determine its value, but the large grains give it a coarse appearance, and it seems inclined to crumble.

Brilliant.†—(Meyer & Son, Bridgeville, Del.) Received for testing at this Station in 1901. Plants not very vigorous, not an upright grower, canes rather slender, winter injury from 50 to 75 per ct. during the past three years. On account of this severe injury enough fruit has not been produced for a good

* See description. † Species uncertain.
description. Appears to be too tender for this locality unless protected during the winter.

Carleton.—(J. Craig, Ottawa, Can.) Received for testing at this Station about ten years ago. Plants moderately vigorous, hardy, productive. Fruit medium to below, light red, grains large, inclined to crumble, fair to good in flavor and quality. Not equal to standard varieties.

Coutant No. 2.—(S. L. Quinby, Marlboro, N. Y.) Plants vigorous to very vigorous, upright, winter injury from 0 to 15 per ct. during the past four years, not very productive. Fruit averages above medium to medium in size, light red, moderately firm, sometimes inclined to crumble, fair to good in flavor and quality. Although it holds its size fairly well in late pickings, it lacks somewhat in size and productiveness, and is not equal to standard varieties in flavor and quality.

Cuthbert: Quinby Favorite.—An old variety received from various sources for testing at this Station. A chance seedling found by Thos. Cuthbert in Southeastern New York in 1865. Plants vigorous, healthy, rather erect; foliage rather dark green; usually hardy, productive. Fruit large, slightly conical, attractive red, grains medium to below in size, moderately firm to firm, sweet, good to very good in flavor and quality. This is by far the most popular variety among red raspberries, and seems to be well adapted to many localities. Its season of ripening is not very early but the crop ripens quite evenly through a rather long season.

Eaton.—(A. Garretson, Pendleton, Ind.) Originated and introduced a few years ago by Mr. Garretson. Said to be a hybrid between the Shaffer and the Cuthbert. Plants moderately vigorous, nearly hardy, moderately productive. Fruit averages large, grains large, crumbles badly, moderately firm, fair quality. Although it keeps its size well in late pickings, it is not equal to standard varieties on account of habit of crumbling and low quality.

Gault.—(W. C. Gault, Ruggles, O.) A stray seedling found over ten years ago by Mr. Gault by the roadside near his home. Plants vigorous, nearly hardy, productive. Fruit medium size or below, rather dull red, grains medium in size, moderately firm, inclined to crumble, fair in flavor and quality. Inferior to standard kinds.
Golden Queen.—An old variety received from various sources for testing at this Station. A yellow raspberry supposed to be a seedling of the Cuthbert, and found on the grounds of Ezra Stokes, Camden, N. J., in 1883. Plants vigorous to very vigorous, canes light in color, nearly hardy, productive. Fruit averages above medium, attractive light yellow sometimes tinged with light pink, soft, juicy, resembles Cuthbert in shape, very good in flavor and quality. On account of its color and softness is not valuable commercially.

Great American.—(J. L. Childs, Floral Park, N. Y.) Received for testing in 1896. Plants not vigorous, dwarfish, winter injury from 10 to 50 per ct. during the past four years, moderately productive. Fruit medium to large, fairly good color, rather soft, often inclined to crumble, no more than fair to good in flavor and quality. As fruited here not equal to standard kinds.

Herbert.—(R. B. Whyte, Ottawa, Can.) A chance seedling found about fifteen years ago by Mr. Whyte, and sent out for testing by him as "Whyte No. 17." Received for testing at this Station in 1896. Plants moderately vigorous to rather vigorous, not so tall as Cuthbert, hardy or nearly so, very productive. Fruit above medium to very large, averaging slightly larger than Cuthbert, attractive red, moderately firm to nearly firm, averaging slightly softer than Cuthbert, juicy, good to very good in flavor and quality. This variety appears to be one of the most promising of the newer red raspberries, and is considered worthy of testing for commercial purposes.

Kenyon.—(O. A. Kenyon, McGregor, Ia.) Introduced by Mr. Kenyon who found it growing wild in 1885. Supposed to be a seedling of Shaffer. Plants vigorous, hardy, productive. Fruit medium to above, dark red color, moderately firm, inclined to crumble, fair in flavor and quality. Not equal to standard kinds.

Koch No. 1.—(C. H. Koch, Middlehope, N. Y.) Plants moderately vigorous to vigorous, moderate amount of winter injury, productive. Fruit medium to large, firm, grains large, somewhat inclined to crumble, good flavor and quality. Not equal to standard varieties.

Loudon.—(F. W. Loudon, Janesville, Wis.) Originated by Mr. Loudon, and is supposed to be a seedling of Turner crossed
with Cuthbert. Introduced by Chas. A. Green, Rochester, N. Y. Plants only moderately vigorous, not very tall, stocky, usually hardy, productive to very productive. Fruit averages above medium to large, often slightly larger than Cuthbert, grains rather large, firm or nearly so, attractive red color, moderately sweet, good in flavor and quality. This is a standard commercial variety, which has made an excellent record in many places.

Marlboro.—An old variety received from various sources for testing at this Station. It is said to be a cross of a seedling and the Highland Hardy and originated by Mr. A. J. Caywood, Marlboro, N. Y. Plants only moderately vigorous, almost semidwarf, canes very stocky, usually hardy, productive. Fruit medium to large, attractive red, firm, sometimes inclined to crumble, fair to good in flavor and quality. A standard commercial variety in many localities.

Miller: Miller Woodland.—A rather old variety received from various sources for testing at this Station. A seedling found growing wild at Wilmington, Del. Plants rather weak and semidwarf, suckers freely, mature canes tinged with brown, usually hardy, only moderately productive. Fruit averages medium in size, rather light and dark red, surface of berry sometimes rough and uneven detracting from appearance, very firm, moderately juicy, sometimes inclined to crumble, fair in flavor and quality. Not equal to standard varieties.

Olathe.—(Stayman & Black, Leavenworth, Kan.) Originated by Mr. Stayman and is said to be a seedling of Reliance. A late berry which has been tested for a number of years at this Station. Plants vigorous, with rather slender canes, slightly tinged with red, usually rather hardy, productive. Fruit above medium to large, firm, juicy, attractive rather dark red, grains medium to below, sometimes inclined to crumble considerably, good flavor and quality. Hardly equal to standard varieties, as the fruit too frequently is inclined to crumble.

Phœnix.—(L. J. Farmer, Pulaski, N. Y.) Received at this Station for testing in 1896. Plants vigorous or moderately so, canes rather slender, usually hardy, only moderately productive. Fruit variable in size ranging from below medium to large, firm, rather dark red, grains medium size, sometimes inclined to crum-
ble, fair to good in flavor and quality. Hardly equal in size or quality to standard kinds.

Pomona.—(Wm. Parry, Parry, N. J.) Introduced by Mr. Parry about 1887. Plants moderately vigorous to vigorous, canes stocky, usually quite hardy, moderately productive to productive. Fruit large, attractive light red, firm, nearly sweet, fair to good in flavor and quality. In some places has proved unproductive.

Royal Church.—(Royal Church, Harrisonville, O.) A chance seedling originated by Mr. Church. It has been tested for a number of years at this Station. Plants vigorous, canes slightly tinged with reddish purple, foliage rather dark green, moderate amount of winter injury. Fruit above medium to large, variable in color from light to very dark red, grains above medium to large, inclined to crumble considerably, good in flavor and quality. Hardly equal to the best varieties.

Thompson: *Thompson's Early Prolific.*—(Cleveland Nursery Co., East Rockport, O.) Has been tested for a number of years at this Station. Plants vigorous, upright, canes tinged with red, rather slender, nearly hardy, not very productive. Fruit medium, moderately firm to rather firm, good red color, inclined to crumble, fair to good flavor and quality. Inferior to standard kinds.

Turner.—An old variety received from various sources for testing at this Station. Originated by J. B. Turner, Jacksonville, Ill. Plants vigorous, medium in height, upright, hardy, productive. Foliage rather dark green. Suckers freely. Fruit only medium size, bright attractive red color, juicy, moderately firm, good to very good in flavor and quality. Season of fruiting is earlier than that of Cuthbert. Although the fruit is inferior in size to Cuthbert, Marlboro or Loudon, it is a favorite in some places for home use and for local market where such varieties do not succeed.

Viking.—Plants of this variety were received in 1895 from the originator, Chas. H. Koch, Middlehope, N. Y. Bushes moderately vigorous, with moderate amount of winter injury, unproductive to moderately productive. Fruit averages medium in size, nearly round, attractive red color, good flavor and quality. Hardly equal to standard kinds.
EUROPEAN RED RASPBERRIES.

(Rubus idæus.)

DESCRIPTION OF VARIETIES.

Belle de Fontenay.—Plants from France, received for testing from the Department of Agriculture, Washington, D. C., in 1899. Bushes vigorous, apparently hardy, moderately productive. Fruit medium to large in size, dull red, moderately firm, grains rather large, rather acid, fair quality. Not equal to standard varieties.

Cline.—(G. W. Cline, Winona, Ont.) A chance seedling of unknown parentage found by Mr. Cline over twelve years ago. Plants moderately vigorous, medium in height, healthy, hardy, unproductive, very early. Fruit medium to below, grains medium to rather large, firm, rather sweet, rather dark red, fair to good flavor and quality. The chief value of this variety appears to be in its earliness. It will, however, probably never become of much value commercially as the fruit is small, and the plants are unproductive, the season being extremely short, most of the crop being secured in two or three pickings.

King.—(Cleveland Nursery Co., Rio Vista, Va.) An old variety which has fruited for several years at this Station. Plants moderately vigorous to vigorous, rather hardy, productive. Fruit medium to large, moderately firm, inclined to crumble, grains large, attractive bright red color, juicy, fair to good in flavor and quality. Not equal to Cuthbert or Loudon, although it has made a fairly good record in some places.

Merveille Rouge.—Plants from France, received for testing from the Department of Agriculture, Washington, D. C. Plants vigorous, hardy, rather productive. Fruit large to very large, rather dark red, soft, sweet, good in flavor and quality. Too soft for shipping any distance.

Naomi.—(Chas. Carpenter, Kelley Island, O.) Originated in the garden of Governor Wood, Cleveland, Ohio, and introduced by Mr. Carpenter. Plants moderately vigorous to vigorous, producing few suckers, foliage rather dark green, winter injury
from 10 to 75 per ct. for the past five years. Fruit above medium to large, grains rather large, attractive red color, rather soft, nearly sweet when fully ripe, pleasant flavor, fair to good in quality. Inferior to standard varieties.

Orange: Brinckle's Orange.—An old yellow raspberry that has been received from various sources for testing. Plants not vigorous, dwarfish, slender, winter injury from 10 to 80 per ct. for the past four years, usually unproductive on account of winter injury. Fruit above medium to large, slightly lighter in color than Caroline, grains above medium size, very soft, good to very good in flavor and quality. One of the best in quality of the yellow raspberries but too soft for shipping, and requires winter protection in this locality.

Perpetuelle de Billard.—Plants from France, received from the Department of Agriculture, Washington, D. C., for testing. Plants moderately vigorous, hardy, moderately productive. Fruit large to very large, soft, attractive red color, good in flavor and quality. Undesirable.

Pride of Geneva.—(H. Loomis, Geneva, N. Y.) An old variety said to have been brought to this country by an English gardener many years ago. Disseminated by Steele Bros., Geneva, N. Y., under the present name. Plants moderately vigorous, hardy, moderately productive. Fruit medium size, grains coarse, moderately firm, slightly acid, quality fair. Inferior to standard varieties.

Pride of Kent.—(R. S. Edwards, Highland, Colo.) Said to have originated over fifteen years ago by Mr. Fallstaff, of Kent, England. Plants moderately vigorous to vigorous, canes rather large, stocky, winter injury varied from 0 to 75 per ct. for the past five years, only moderately productive. Fruit variable in size ranging from below medium to large, of good red color, moderately firm or rather soft, good in flavor and quality. Not equal to standard varieties and not firm enough for a good commercial kind.

4-Saisons.—Plants from France, received for testing from the Department of Agriculture, Washington, D. C. Plants moderately vigorous, hardy, not very productive. Fruit medium or below in size, firm, rather dark red, fair flavor and quality. Inferior to standard kinds.
Superlative.—(Ellwanger & Barry, Rochester, N. Y.) Plants dwarfish with rather slender canes, winter injury varied from 0 to 75 per ct. during the past six years, not very productive. Fruit above medium to very large, attractive red, rather soft, good to very good in flavor and quality. An old variety of good quality, but the plants are rather tender, unproductive and the fruit too soft for shipping any long distance.

Surpasse Falstaff.—Plants from France, received for testing from the Department of Agriculture, Washington, D. C. Bushes moderately vigorous, hardy, moderately productive. Fruit large, light red, rather soft, lacking in both flavor and quality. Appears to be undesirable.

Surpasse Merveille.—Plants from France, received from the Department of Agriculture, Washington, D. C., for testing. Bushes hardy, vigorous, productive. Fruit medium to above, moderately firm, good in flavor and quality. Fruit drops rapidly in size as the season advances, and does not appear to be equal to standard kinds.

Surprise D'Automne.—Plants from France, received for testing from the Department of Agriculture, Washington, D. C., in 1899. Bushes moderately vigorous, hardy, moderately productive. Berries medium to below in size, moderately firm, only moderately attractive yellowish color. Not equal to standard varieties in flavor or quality.

Talbot.—(M. J. Ellis, Norwood, Mass.) A seedling discovered in the garden of Mr. J. W. Talbot, Norwood, Mass., about 1888. Plants vigorous, healthy, usually hardy, moderately productive to productive. Fruit medium to large, attractive red color; rather soft, grains large, juicy, mildly acid, good in flavor and quality. Inferior to such standard kinds as Cuthbert, Marlboro or Loudon.
PURPLE RASPBERRIES.

(Rubus neglectus.)

Varieties of this type are intermediate in character between red raspberries and black raspberries. They are supposed to be hybrids between these two species. They show all gradations in habit between the two parent types, some being propagated by suckers, others by tips, and still others by either tips or suckers. The color of the fruit is usually a light or dark purple. Of the varieties described, only two, Columbian and Shaffer, at the present time appear to have any commercial value. Haymaker promises to be productive and firm but the fruit does not average as large as that of Columbian or Shaffer.

The purple raspberries are unexcelled for canning purposes, being superior in flavor and quality to the red raspberries, but the unattractive purplish color is a great drawback to their sale and in many markets they are sold only in limited quantities unless their real value is fully known.

DESCRIPTION OF VARIETIES.

Caroline.—An old variety received at this Station for testing from various sources. Originated over twenty-five years ago by S. P. Carpenter, New Rochelle, N. Y., and is supposed to be a seedling of the Orange crossed by a Golden Cap. Plants vigorous, numerous, upright, canes light colored, stocky, covered with very few prickles, foliage rather dark green, hardy, very productive. Fruit medium size, of orange-pink color deepening to salmon tinge when fully ripe, juicy, soft, very good in flavor and quality. One of the best light-colored raspberries. May be propagated either by suckers or by tips. The season of fruiting is somewhat longer than with most varieties. On account of color and softness, is not of much commercial value but ranks so high in flavor and quality that it is a universal favorite for home use where a berry of this type is desired.

Columbian.—(J. T. Thompson, Oneida, N. Y.) This variety was propagated and introduced by Mr. Thompson about twenty
years ago. A seedling of the Cuthbert grown near a Gregg raspberry, and believed to be a hybrid between these two varieties. Plants very vigorous, healthy, canes larger, more vigorous and slightly yellower than those of Shaffer, hardy or nearly so, very productive. Fruit above medium to very large, moderately juicy, firm, nearly sweet, slightly darker purple than Shaffer, good to very good in flavor and quality. The Columbian and Shaffer are two of the best purple varieties grown for commercial purposes, and in some places it has been claimed that they are identical. The two varieties have been grown side by side for a number of years on the Station grounds, and although they have many similar characteristics, they appear to be distinct both in the size and color of the canes and in the average size, color and firmness of the berries. The fruit of Columbian averages slightly smaller than that of Shaffer, is firmer, and hangs to the bushes better than does that variety. The principal objection to this class of fruit for commercial purposes is the unattractive color, although when canned it is superior to the red varieties both in flavor and in quality.

Haymaker.—(A. O. Haymaker, Earlville, O.) Originated and introduced by Mr. Haymaker a few years ago who found it growing on his farm. Received at this Station for testing in 1901. Plants moderately vigorous to vigorous, healthy, winter injury from 5 to 15 per cent. during the past four years, productive. Fruit medium to large, averaging smaller in size than Shaffer or Columbian, resembling a black raspberry in shape, color light and dark purple, presenting a rather unattractive appearance, firm, not equal to Columbian or Shaffer in flavor or quality. Requires further testing to fully determine its value, but up to the present time appears to be rather inferior to either Shaffer or Columbian.

Morrison Seedling.—(J. P. Morrison, Forestville, N. Y.) Sent to this Station for testing in 1896 by Mr. Morrison, the originator. Plants vigorous, nearly hardy, moderately productive. Fruit small to medium, irregular in size, grains large, rather soft, fair in flavor and quality. Decidedly inferior to Shaffer or Columbian.

Percy.—(J. Craig, Ottawa, Can.) Originated by William
Saunders, London, Ont., as a hybrid between Gregg and Cuthbert. Plants moderately vigorous to vigorous, usually rather hardy, productive. Fruit medium to above, rather darker in color and softer than Shaffer, often inclined to crumble, not equal to Shaffer in flavor or quality. Although earlier than Shaffer or Columbian, is not equal to those varieties for commercial purposes.

Redfield.—(J. Wragg & Son, Waukee, Ia.) Said to be a hybrid which was originated by Wragg & Son, from whom plants were received for testing in 1895. Plants moderately vigorous to vigorous, usually rather hardy, moderately productive. Fruit small to medium, dull unattractive purple, moderately firm, fair to good flavor and quality. Decidedly inferior to Columbian or Shaffer.

Sarah.—(J. Craig, Ottawa, Can.) A seedling of Shaffer originated by William Saunders, London, Ont. Received at this Station for testing in the Spring of 1896. Plants very vigorous, usually hardy, only moderately productive. Fruit medium or above, rather unattractive reddish purple, rather soft, fair to good in flavor and quality. Not equal to Columbian or Shaffer in productiveness, size, or quality.

Shaffer: Shaffer’s Colossal.—An old variety received from various sources for testing at this Station. Originated by Geo. Shaffer, Scottsville, N. Y., about 1871, and introduced by Chas. A. Green, Rochester, N. Y. Plants slightly less vigorous and canes a little darker and smaller than Columbian, hardy or nearly so, productive but not quite so heavy a yielder as Columbian. Fruit averages slightly larger than that of Columbian, slightly softer, with a lighter purple tinge and slightly more acid in flavor, ranking good to very good in flavor and quality. This is one of the best of the purple raspberries, and is highly esteemed for canning.

Superb.—(J. T. Lovett & Co., Little Silver, N. J.) Originated with J. Churchman, Burlington, N. J., over thirty years ago. Plants semi-dwarf or only moderately vigorous, usually hardy, not very productive. Fruit medium to large, moderately firm, rather dark red, grains above medium, good in flavor and quality. Too variable in size and not productive enough for a good commercial sort.
Teletaugh.—(J. F. Street, West Middleton, Ind.) Originated with Mr. Street, who states that it is a hybrid produced by crossing Shaffer with Gregg. Plants moderately vigorous, moderate amount of winter injury, moderately productive. Fruit medium to below, grains large, moderately firm, rather unattractive dark purple, often inclined to crumble, fair in flavor and quality. Not equal to Shaffer.

Wallace.—(T. G. Wallace, Atlantic, Ia.) Originated with Mr. Wallace. Received for testing in 1898. Plants moderately vigorous to vigorous, winter injury from 0 to 25 per ct. for three years, productive. Fruit below medium to above medium, rather unattractive dull reddish purple, only moderately firm, more acid than Columbian or Shaffer, fair flavor and quality. So far as tested at this Station is not equal to standard purple varieties.
BLACK RASPBERRIES.
(Rubus occidentalis.)

NOTES ON VARIETIES.

Hardiness.—During the past five years the winter injury to most of the varieties was not due so much to their lack of hardiness as it was to the weakened condition caused by the destructive work of the fungus disease, anthracnose, already referred to on page 113. For this reason lists are not given although the average rating in regard to winter injury is in most cases recorded in the description of each variety.

Earliness.—The season of black raspberries is considerably shorter than that of the red varieties, a larger percentage of the crop being usually secured at each picking. The following lists indicate the varieties which begin to ripen early and those which give good yields late in the season.

**EARLY.**  **LATE.**

Eureka  Mills
Hopkins  Onondaga
Mohler  Palmer *
Palmer *  Pioneer

*Poscharsky No. 9*

Desirable kinds.—The following list includes the varieties which have made a good record at this Station for several years and which can be recommended for trial where they have not already been tested. During some years, however, the best of these kinds were severely injured by anthracnose. It appears desirable to depend upon new plantations, as already indicated, rather than to look for anthracnose-proof kinds, although such varieties would be a great boon to the fruit grower, and possibly by careful selection and breeding, sorts immune to anthracnose may be developed.

Black Diamond**  Hilborn  Mohler
Cumberland  Lawrence  Onondaga
Eureka  Livingston  Palmer
Gregg  Mills

*Unusually long season.

**See description.
DESCRIPTION OF VARIETIES.

Beyer.—(Hugo Beyer, New London, Ia.) This is an Iowa seedling introduced by Mr. Beyer, and received for testing at this Station in 1904, fruiting for the first time in 1905. Plants moderately vigorous, apparently healthy although the foliage is rather light green or faintly tinged with yellow. Blossoms clustered at the ends of the shoots, and also for some distance towards the base of the shoots. Ripe berries and blossoms found on the same canes. Fruit below medium to medium, firm, seedy, not very juicy, rather acid, possibly good in flavor and quality. The claim is made that all of the canes should be cut down at the close of each season, the fruit being borne on the current year's growth. Requires further testing to fully determine its value but up to the present time has shown very few desirable characters.

Bishop.—(B. F. Smith, Lawrence, Kan.) Received at this Station for testing in 1897. Plants vigorous, healthy, nearly hardy, not very productive. Fruit averages medium to above, firm, rather dull unattractive color, covered with considerable bloom, rather seedy, moderately juicy, fair to good in flavor and quality. Not equal to standard varieties.

Black Diamond.—(C. W. Stuart & Co., Newark, N. Y.) Introduced by Stuart & Co., about ten years ago. Plants vigorous, nearly hardy, productive. Fruit variable in size, below medium to large, moderately firm, nearly sweet, good black color, fair quality. During the past few years this variety has made a poor showing at this Station. As it has made a very good record in other localities in Western New York, it appears to be worthy of further testing before being discarded.

Cumberland.—(Ellwanger & Barry, Rochester, N. Y.) Originated a number of years ago by David Miller, Harrisburg, Pa. Origin doubtful but supposed to be a seedling of Gregg. Plants vigorous, only a moderate amount of winter injury during the past four years, usually productive. Fruit medium to large, attractive black color, juicy, rather sweet when fully ripe, firm, good to very good in flavor and quality. One of the most desirable kinds for commercial purposes.

Eureka.—(W. N. Scarff, New Carlyle, O.) Said to have been found growing wild on the farm of Jacob Smith, Miami Co., Ohio.
Plants moderately vigorous, winter injury varied from 15 to 25 per ct. during the past three years, usually productive. Fruit medium to very large, attractive black color, grains medium size, firm, sweet, mild, fair to good in flavor and quality. This is a standard variety in many localities, and is one of the early fruiting desirable kinds for commercial purposes.

Gregg.—An old variety received from various sources for testing at this Station. Found growing wild on the Gregg farm, Ohio Co., Ind., in 1866. Plants vigorous, moderately hardy, moderately productive to productive. Fruit above medium to very large, attractive black color, firm, rather sweet when fully ripe, good to very good in flavor and quality. An old standard sort valuable on account of its size and quality, although not as productive as some other varieties.

Hallock No. 1.—(N. Hallock, Queens, N. Y.) Received for testing in 1898. Plants rather weak growers, canes slender, moderate amount of winter injury. Fruit medium or below, moderately firm, slightly acid, fair quality. Not equal to standard kinds.

Hilborn.—(F. R. Palmer & Son, Mansfield, O.) A chance seedling originating on the grounds of W. W. Hilborn over twenty-five years ago. Plants vigorous to very vigorous, healthy, nearly hardy, productive. Fruit medium to large, firm, sweet good to very good in flavor and quality. Has many qualities that commend it for commercial planting.

Hopkins.—(A. M. Purdy, Palmyra, N. Y.) A seedling found near Kansas City, Mo., in 1872 and introduced by Frank Hol-singer, Rosedale, Kan. Plants moderately vigorous, usually rather hardy, moderately productive. Fruit above medium to very large, nearly firm, grains medium size, attractive black color, sweet, good in flavor and quality. An old variety which has made a fair showing in some parts of the State, but is not as productive as some other varieties.

Kansas.—(A. H. Griesa, Lawrence, Kan.) A chance seedling originated by Mr. Griesa in 1884. Plants moderately vigorous, winter injury varied from 5 to 25 per ct. during the past five years, productive. Berries variable in size, medium to very large, good black color, grains medium size, sometimes inclined
to crumble, rather seedy, moderately juicy, firm, mild, good flavor and quality. Has been tested for a number of years at this Station but has not made as good a record as some of the other black raspberries.

Lawrence.—(A. H. Griesa, Lawrence, Kan.) Originated by Mr. Griesa. Plants vigorous, nearly hardy, productive. Fruit above medium to large, moderately firm, attractive black color, fair to good in flavor and quality. Has many points that commend it for commercial purposes but is slightly lacking in quality.

Livingston.—(C. W. Middleton, Utica, Mo.) A seedling that is supposed to be a cross between Gregg and Tyler. Plants vigorous to very vigorous, winter injury from 10 to 15 per ct. during the last three years, productive. Fruit medium to large, grains medium size, attractive black color, firm, mild, good in flavor and quality. The variety has made a good showing at this Station and appears to be worthy of more extended trial.

Lovett.—(J. T. Lovett, Little Silver, N. J.) Originated by Mr. Ezra Wood, Jefferson County, Ind., and introduced in 1891 by Lovett & Co. Plants moderately vigorous, canes rather slender, slight amount of winter injury, moderately productive to rather productive. Fruit medium to large, attractive black color, moderately firm, sweet, fair to good flavor and quality. Although this variety has many desirable qualities, it does not appear to be any improvement on standard kinds.

Manwaring No. 1.—(C. H. Manwaring, Lawrence, Kan.) A seedling of unknown parentage originated by Mr. Manwaring. Plants moderately vigorous, canes rather slender, dwarfish, usually hardy, moderately productive. Fruit small to medium, attractive black color, moderately firm, mild subacid, lacking in flavor and quality. Does not appear to be desirable.

Mills.—(Charles Mills, Fairmount, N. Y.) A seedling of Gregg crossed by Tyler, originating with Mr. Mills. Plants vigorous to very vigorous, winter injury from 0 to 15 per ct. for the past four years, productive. Fruit above medium to large, firm, rather dull black with considerable bloom; good flavor and quality. A desirable kind for commercial purposes.

Mohler.—(D. M. Mohler & Co., New Paris, O.) Originated as a seedling of Eureka by Mr. Mohler. This variety was quite
fully described in the annual reports of this Station for 1894 and 1895, and appeared at that time to be worthy of extended trial on account of its size and productiveness. It has continued to make a good record at this station, and is considered worthy of testing where it has not yet been tried. It ranks among the earliest ripening varieties.

Ohio.—An old well known variety received from various sources for testing at this Station. Fifteen years ago this was one of the most popular of commerical varieties, but it is being superseded by better kinds. It is still being grown, however, in certain parts of the State for drying purposes.

Older.—An old variety received from various sources for testing at this Station. Found growing wild in the garden of Mr. Older, Independence, Ia., in 1872, and introduced by L. K. Ballard, Warren, Ill. Plants vigorous, moderate amount of winter injury, moderately productive. Fruit variable in size, ranging from medium to large, moderately firm, moderately juicy, slightly acid, good flavor and quality. Hardy equal to such varieties as Mills or Cumberland.

Onondaga.—(Charles Mills, Fairmount, N. Y.) A seedling of Gregg crossed by Tyler, originating in 1884 with Mr. Mills. Plants vigorous to very vigorous, winter injury from 0 to 15 per ct. during the past five years, productive to moderately productive. Fruit large, of attractive black color, firm or nearly so, good flavor and quality. This variety has many good points which commend it for commerical purposes.

Palmer.—This variety has been received from various sources for testing at this Station during the past twelve years. Originated by F. L. Palmer, Mansfield, Ohio, and introduced in 1888. Plants moderately vigorous to vigorous, winter injury from 0 to 50 per ct. during the past five years, moderately productive. Fruit medium to above, rather dull black, firm, grains medium to below, nearly sweet, good in flavor and quality. Although the berries lack somewhat in size, and the plants in productiveness, it is nevertheless considered valuable in many localities on account of its earliness. It is one of the first of the black raspberries to ripen.

Perpetual King.—(Columbian Grape Co., Kingston, O.) Received for testing at this Station in 1897. Plants not vigorous,
dwarfish, canes thickly covered with prickles and often covered with bluish bloom, rather tender, not productive. Fruit medium to large, rather unattractive black, moderately firm, slightly acid, fair quality. Undesirable.

*Poscharsky No. 9.*—(F. W. Poscharsky, Princeton, Ill.) This seedling which originated with Mr. Poscharsky, has been tested here for a number of years. Plants moderately vigorous, rather weak canes, rather hardy, moderately productive. Fruit variable in size, ranging from small to nearly large, grains small and compact, moderately firm, good black color, rather acid, fair to good in quality. Undesirable.

*Rowena.*—(J. P. Stahelin, Bridgman, Mich.) An accidental seedling found by Mr. Stahelin, from whom the plants were received in 1897. Plants vigorous to very vigorous, usually rather hardy, rather productive. Fruit below medium to nearly large, rather dull black with considerable bloom, firm, grains medium size, fair to good flavor and quality. Inferior to standard kinds.

*Townsend No. 2.*—(G. Townsend, Gordon, O.) Originated from seed of Gregg by Mr. Townsend. Plants vigorous to very vigorous, usually hardy, rather productive. Fruit medium to large, not particularly attractive in color on account of heavy bloom, grains medium to above, firm, sometimes inclined to crumble, somewhat seedy, sweet, good flavor and quality. Inferior to standard kinds.
BLACKBERRIES.
NOTES ON VARIETIES.

Hardiness.—Blackberry culture is of comparatively little importance in New York. Blackberry growing largely resolves itself into an effort to grow only those kinds fairly hardy under New York conditions. It is probable that in a few sections of the State winter protection of a few desirable kinds would prove profitable, as several most excellent sorts are somewhat tender. The following is a list of the hardy and tender sorts. Observations were made for several years; the list of hardy sorts includes those not injured over 25 per ct; the list of tender ones, those injured severely, in some cases as high as 90 per ct.

### Hardy or Nearly so.  
<table>
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<tr>
<th>Name</th>
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<tr>
<td>Agawam</td>
<td>Allen</td>
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<td>Ancient Britou</td>
<td>Black Chief</td>
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<td>Chautauqua</td>
<td>Bow Cane</td>
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<td>Eldorado</td>
<td>Childs Tree</td>
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<tr>
<td>Fruitland</td>
<td>Clark</td>
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<td>New Rochelle</td>
<td>Clifton</td>
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<td>Ohmer</td>
<td>Dorchester</td>
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<td>Snyder</td>
<td>Early Harvest</td>
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<td>Stone Hardy</td>
<td>Early King</td>
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<tr>
<td>Taylor</td>
<td>Early Mammoth</td>
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<td>Tyler</td>
<td>Wachusett</td>
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### Not Hardy.  
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<tr>
<td>Florence</td>
<td>Ida</td>
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<td>Kittatinny</td>
<td>Lovett</td>
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<tr>
<td>Mersereau</td>
<td>Minnewaski</td>
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<td>Rathbun</td>
<td>Reyner</td>
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<td>Success</td>
<td>Wilson Jr.</td>
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Earliness.—The time of fruiting varies so much that no very satisfactory list as to season can be given. Some varieties have a long season, others ripen early or late, depending on character of soil and exposure. The following is a list of those varieties from which fruit was picked early in the season and those giving good yields near the close of the season.
**Desirable kinds.**—Not all of the varieties in the following list are hardy nor is the fruit of some of the kinds very large. The varieties, however, have made good records for several years in some parts of the State and are worthy of consideration although it cannot be expected that very many of them will be entirely satisfactory in the same locality.

<table>
<thead>
<tr>
<th>Early.</th>
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<tr>
<td>Agawam*</td>
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<tr>
<td>Allen</td>
<td>Ancient Briton</td>
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<td>Early Harvest</td>
<td>Chautauqua</td>
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<td>Early King</td>
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<td>Eldorado</td>
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<td>Rathbun</td>
<td>Ohmer</td>
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<td>Wilson Jr.</td>
<td>Success</td>
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<td>Taylor</td>
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<td>Tyler</td>
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</tbody>
</table>

Agawam               Minnewaski
Ancient Briton       New Rochelle
Chautauqua           Ohmer
Early Harvest        Rathbun
Eldorado             Snyder
Kittatinny           Success
Mersereau

*Long season.
THE LONG-CLUSTER BLACKBERRIES.

(Rubus nigrobaccus.)

DESCRIPTION OF VARIETIES.

Allen.—(W. B. K. Johnson, Allentown, Pa.) Received at this Station for testing in 1900. Plants moderately vigorous, rather dwarf, winter injury varying from 5 per ct. to 75 per ct. during the past four years, rather productive. Fruit rather small, elongated, good attractive black color, firm, mild in flavor when fully ripe, good quality. In appearance the fruit closely resembles Early Harvest and is fully as early in its season of ripening. So far as tested at this Station does not appear to be very hardy, and on account of dwarf habit of growth is not as productive as some of the taller-growing standard varieties.

Ancient Briton.—(Ellwanger & Barry, Rochester, N. Y.) An old, well-known variety which was first brought to notice in Wisconsin. It is said to have been brought to this country from Great Britain about fifty years ago. Plants moderately vigorous to vigorous, stocky, with an abundance of large prickles, winter injury from 0 to 25 per ct. during the past five years, productive to very productive. Fruit medium to above, possibly averaging slightly below Agawam but larger than Snyder, slightly elongated, good black color, mild when fully ripe, good to very good in flavor and quality. Somewhat resembles the Agawam in size, color and quality and is considered a standard berry for commercial purposes.

Chautauqua.—(K. E. Downer, Forestville, N. Y.) Plants of this variety were received for testing in the spring of 1903, fruiting for the first time in 1905. Winter injury from 5 to 10 per ct. during the past two years. Plants vigorous, stocky, rather productive. Fruit large, inclined to roundish, attractive black color, grains large, rather agreeable acid when fully ripe, good flavor and quality. Has not yet been sufficiently tested to determine its value but appears to be promising.

Clark.—(M. Crawford Co., Cuyahoga Falls, O.) Received at this Station for testing in the spring of 1897. Plants vigorous,
making a very satisfactory growth; winter injury from 0 to 50 per ct. during the past five years, moderately productive to rather productive. Fruit late in ripening, below medium to above medium in size, nearly round to slightly elongated, moderately acid, rather soft, no more than good in flavor and quality. Does not appear to be as valuable as standard varieties like Agawam, Mersereau, etc., as the fruit is variable both in size and shape while the color is rather unattractive dull black.

**Eldorado** — (Birdseye & Son, Stanley, N. Y.) A chance seedling found near Eldorado, Ohio, and introduced about 1882. Plants have been received from various places for testing. Moderately vigorous to vigorous with numerous large prickles, moderately productive to productive. Appears to be one of the hardiest at this Station averaging in 6 years from 5 to 25 per ct. winter injury with no injury during four years. Fruit medium to large, roundish to slightly elongated, sweet, juicy, good color, mild when fully ripe, fair to good in flavor and quality. Has made a good record in many parts of the State as a commercial variety.

**Florence.** — (G. E. Goldsmith, Unionville, N. Y.) A seedling of unknown parentage found by Mr. Goldsmith in 1895. Received at this Station for testing in the spring of 1902, fruiting for the first time in 1904. Growth rather vigorous, winter injury varied from 15 to 75 per ct. during the past two years, appears rather productive. Fruit variable in size, medium to very large, usually roundish, sometimes slightly elongated, rather attractive color, grains rather large, juicy, not a mild berry even when fully ripe, possibly good but not high in flavor or quality. Has not yet been sufficiently tested at this Station to determine its value but appears to be rather tender in this locality.

**Ohmer.** — (N. H. Albaugh, Tadmore, O.) Introduced over ten years ago by E. Y. Teas, Irvington, Ind. Plants moderately vigorous, canes rather large with but few prickles, winter injury from 10 to 20 per ct. during the past three years, moderately productive. Fruit above medium, roundish, grains large, juicy, rather acid even when fully ripe, good flavor and quality. Although not as productive as some varieties, has made a fairly good record at this Station.

**Reynier.** — (S. R. Alexander, Bellefontaine, O.) Plants vigorous,
healthy, canes large, tinged with green, covered with few prickles, winter injury from 10 to 30 per ct. during the past three years, not very productive. Fruit medium to above, roundish or slightly elongated, grains large, rather sweet when fully ripe, good flavor and quality. As fruited at this Station, hardly productive enough to be a good commercial variety.

Taylor.—An old variety received from several sources for testing at this Station. Said to have originated in Indiana over twenty years ago. Plants vigorous to very vigorous, canes pale green with slight tinge of red and covered with numerous slender prickles, usually hardy, not very productive. Fruit small to medium, usually slightly elongated, rather sweet when fully ripe, very good flavor and quality. Ripens about two weeks later than Snyder. Although of excellent quality and hardy, is not as productive as Snyder and does not appear to be as desirable for this locality as some of the other well known varieties.

Wachusett.—An old variety which has never become very popular in this State. Said to be one of the most hardy varieties; found growing wild on Mt. Wachusett. Plants moderately vigorous, canes medium size, purplish red when fully mature, covered with small scattering prickles, hardy, usually not productive. Fruit small to medium, roundish or slightly elongated, juicy, sweet, good flavor and quality. Is not productive enough to be of much value in this section.
THE SHORT CLUSTER BLACKBERRIES.
(Rubus nigrobaccus, var. sativus.)

DESCRIPTION OF VARIETIES.

Agawam.—(From bed in Station grounds.) A wilding found in a pasture between 1865 and 1870 by John Perkins, Ipswich, Mass. Plants vigorous to very vigorous, above medium to tall, stout, numerous, prickles comparatively few and small, winter injury from 0 to 25 per ct. during the past five years, very productive. Fruit above medium to medium, usually slightly elongated, attractive bright black color, mild when fully ripe, good to very good in flavor and quality. This is a well known standard variety which has made a good record commercially in many places. Although the fruit is not of the largest size it is of excellent color, desirable flavor and quality, averages larger than Synder, is very productive and ships well.

Black Chief.—(J. H. Haynes, Delphi, Ind.) Plants very vigorous, greenish, with numerous small prickles, unproductive; winter injury varying from 10 to 85 per ct. during the past five years. Fruit medium size, roundish, grains medium, very mild, sweet when fully ripe, good flavor and quality. Appears to have but little value in this section as the canes are not hardy and the plants are rather unproductive.

Fruitland.—(W. N. Scarff, New Carlyle, O.) Plants vigorous to very vigorous, upright, canes tinged with greenish red, with moderately numerous prickles; winter injury varied from 10 to 25 per ct. for the past three years, not productive. Fruit medium, roundish, grains medium, rather sweet, good to very good flavor and quality. Not equal to standard varieties.

Kittatinny.—(Slaymaker & Son, Dover, Del.) Said to be a seedling found in the Kittatinny Mountains, Warren Co., N. J. Plants moderately vigorous to rather vigorous, canes reddish color when mature, covered with many large prickles, winter injury varied from 5 to 40 per ct. during the past four years, usually only moderately productive on account of winter injury to canes. Frequently attacked by orange rust. Fruit above medium to
large, usually slightly elongated, attractive black color, juicy, agreeably mild when fully ripe, good to very good in flavor and quality. One of the oldest varieties, and of considerable value commercially in sections where it is not injured by the winter and when not attacked by orange rust. Is not considered very hardy in Western New York.

Lovett.—(J. T. Lovett, Little Silver, N. J.) Plants vigorous to very vigorous, canes upright, covered with numerous, rather large prickers, winter injury varied from 0 to 50 per ct. during the past four years, unproductive. Fruit small to medium, nearly sweet when fully ripe, grains variable, good flavor and quality. Not equal to standard varieties.

Mersereau.—(J. W. Mersereau, Cayuga, N. Y.) Said to be a seedling of Snyder found by Mr. Mersereau, growing among his Snyder bushes over twelve years ago. Plants vigorous to very vigorous, healthy, canes medium size, with moderate amount of prickers, winter injury varied from 5 to 50 per ct. during the past five years, averaging only 5 per ct., however, for three years; productive. Fruit usually above medium to large, roundish to slightly elongated, attractive black color, medium sized grains, juicy, mildly sweet when fully ripe, rather sprightly, good flavor and quality. Has made a good record in many parts of the State and is already being grown commercially in many places. Generally considered one of the most desirable kinds, and is certainly worthy of trial where it has not yet been tested.

Minnewaski.—Plants have been received and tested from various sources. Originated over twenty-two years ago by A. J. Caywood & Son, Marlboro, N. Y., and is a cross of Kittatinny and a wild blackberry. Plants moderately vigorous to rather vigorous, canes usually slightly tinged with red, with numerous branches and thickly covered with prickers; winter injury varied from 15 to 50 per ct. during the past five years; usually moderately productive when not injured by the winter. Fruit above medium to large, roundish to slightly elongated, sweet and juicy when fully ripe, good in flavor and quality. It is rather tender and largely on this account has never become very popular as a commercial variety.

New Rochelle.—(Ellwanger & Barry, Rochester, N. Y.) This
variety is known in some places as the Lawton. Said to be a wilding found by the roadside and introduced into the gardens of New Rochelle, N. Y. Described by E. P. Roe, New York, in 1875, as an old and well known variety. Plants vigorous, canes stocky, covered with numerous rather large prickles; winter injury varied from 10 to 25 per cent. during the past five years; moderately productive to productive. Fruit large to medium, usually slightly elongated, attractive black color, juicy, nearly sweet when fully ripe, good in flavor and quality. In some localities it is reported as rather tender, but has made a good record at this Station, the average winter injury for three years in succession being only 10 per cent.

Snyder.—An old variety, plants of which have been received from various sources for testing. A wilding found in Northern Indiana over fifty years ago. Plants vigorous to very vigorous, healthy, canes large, upright, covered with numerous large prickles, very little if any winter injury during the past five years, productive. Fruit medium to small, roundish, color often inclined to become unattractive unless berries are fully mature before picking, juicy, pleasant flavored, good quality. A valuable standard commercial variety grown in many places on account of its hardiness, although the berries are inclined to run rather small, and under unfavorable conditions the color becomes a dull brownish red.

Stone Hardy.—(S. E. Hall, Cherry Valley, Ill.) Said to be a chance seedling found in Illinois, and introduced over twenty years ago. Plants moderately vigorous to rather vigorous, canes rather slender, upright, covered with numerous long prickles, hardy, productive. Fruit small to medium, averaging about the same as Snyder, roundish, juicy, nearly sweet, good in flavor and quality. Does not appear to be as popular as Snyder which variety it resembles in many respects.

Success.—(L. W. Carr & Co., Erie, Pa.) Plants moderately vigorous, canes tinged with green and covered with numerous prickles, winter injury varied from 0 to 50 per cent. for the past five years, moderately productive to productive. Fruit variable in size, averaging above medium, grains medium size, roundish, juicy, good color, good in flavor and quality. Appears to be
quite hardy when the canes are properly ripened, the average winter injury for three years being only 4 per ct.

Tyler.—(Birdseye & Son, Stanley, N. Y.) Plants vigorous to very vigorous, nearly hardy, the winter injury varying from 0 to 5 per ct. for the past six years, moderately productive to productive. Fruit above medium to small, usually slightly elongated, variable both in size and shape, nearly sweet, fair to good in flavor and quality. In general appearance is not equal to such varieties as Agawam, Ancient Briton or Eldorado. It is, however, one of the hardiest varieties, but does not equal Snyder in productiveness.

Clifton.*—(L. J. Clifton, Memphis, N. Y.) Plants received at this Station for testing in the spring of 1898. Moderately vigorous to vigorous, winter injury 0 to 50 per ct. during the past five years, rather productive. Fruit varies in size from small to large, attractive black color, roundish to slightly elongated, agreeable acid, good flavor and quality. Appears to be worthy of testing if it will endure ordinary winter exposure, but it seems to be rather tender, as the average winter injury for the past two years was 50 per ct.

*Species in doubt.
THE LEAFY-CLUSTER BLACKBERRIES.

(Rubus argutus.)

DESCRIPTION OF VARIETIES.

Dorchester.—(Ellwanger & Barry, Rochester, N. Y.) An old well known variety originating in Dorchester, Mass., and introduced in 1850. Plants moderately vigorous to vigorous, upright, with numerous small prickles, winter injury from 10 to 50 per ct. during the past five years, productive. Fruit medium size, elongated, attractive black color, moderately sweet, good in flavor and quality but hardly equal to Agawam in flavor or productiveness.

Early Harvest.—(Slaymaker & Son, Dover, Del.) This old variety is said to have originated in Southern Illinois. Plants moderately vigorous, tinged with red, covered with comparatively few, small prickles, winter injury varied from 0 to 75 per ct. for the past six years, moderately productive to rather productive. Fruit medium size, usually slightly elongated, good color, mild when fully ripe, very juicy, fair to good in flavor and quality. One of the earliest to ripen and is valuable only for this reason.

Early King.—(Ellwanger & Barry, Rochester, N. Y.) Fruit ed at this Station for a number of years. Plants moderately vigorous to vigorous, purplish when mature, canes of medium size, prickles long, numerous. Ripening about a week earlier than most varieties but rather unproductive as is usual with early varieties. Winter injury from 5 to 80 per ct. during the past five years. Fruit medium size, roundish or slightly oblong, usually attractive color, only fair to good in flavor and quality.

Ida.—Received for testing at this Station in 1898 from Thompson Sons, Rio Vista, Va. A seedling of Early Harvest. Plants moderately vigorous, semi-dwarf, unproductive to rather productive, winter injury from 0 to 75 per ct. for the past four years. Fruit medium size, elongated, rather dull black, not particularly attractive, juicy, fair in flavor and quality. So far as tested, is inferior to standard varieties at this Station.
THE LOOSE-CLUSTER BLACKBERRIES.

(*Rubus nigrobaccus x villosus.*)

DESCRIPTION OF VARIETIES.

Bow Cane*.—(Broome Bros., McLoud, Okla.) Plants received at this Station for testing in 1900. Moderately vigorous, very dwarfish or trailing somewhat like a dewberry, winter injury varied from 10 to 90 per ct. during the past four years, unproductive. Fruit medium in size, unattractive in color, roundish to slightly elongated, grains large, rather acid, fair to good in flavor and quality. So far as tested at this Station does not appear to be valuable on account of unproductiveness, inferior quality and tendency to severe winter injury.

Early Mammoth.—(Cleveland Nursery Co., Rio Vista, Va.) Said to be a hybrid between the blackberry and dewberry, and much resembles Wilson Jr. in habit of growth. Plants moderately vigorous, tinged with red, covered with numerous slender prickles, winter injury varied from 20 to 50 per ct. during the past three years, productive when not injured by winter. Fruit variable in size, ranging from small to very large, often imperfectly developed, attractive bright color, usually slightly elongated, grains large, very juicy, rather tart when fully ripe, fair to good in flavor and quality. Appears to be too tender to be grown in this locality without winter protection.

Rathbun.—(Slaymaker & Son, Dover, Del.) Plants received at this Station for testing in 1896. Bushes only moderately vigorous, only medium height, winter injury varied from 10 to 90 per ct. for the past six years, moderately productive when not severely injured by winter. Fruit medium to very large, usually slightly elongated, attractive black color, rather mild when fully ripe, fair to good in flavor and quality. Although the fruit is very desirable in size, the bushes are rather small and the amount of winter injury has been very severe in some years. Does not appear to be hardy enough for this locality.

*Species in doubt.
Wilson Jr.—(Birdseye & Son, Stanley, N. Y.) This old variety has been fruited for a number of years at this Station. It was originated by William Parry, Parry, N. J., in 1875, and is said to be a seedling of Wilson Early. Plants intermediate between dewberries and blackberries with low habit of growth, moderately vigorous, canes with slight tinge of red, winter injury varied from 0 to 50 per ct. for the past five years, only moderately productive when not injured by the winter. Fruit variable in size, medium to very large, roundish to slightly elongated, grains large, sometimes imperfectly developed, very juicy, rather acid even when fully ripe, good to very good in flavor and quality. The habit of growth is not very desirable and the canes need winter protection in this locality.

THE SAND BLACKBERRY.

(Rubus cuneifolius.)

DESCRIPTION OF VARIETY.

Childs Tree.—(J. L. Childs, Floral Park, N. Y.) Plants numerous, rather slender, very dwarf, covered with many prickles, not productive, winter injury from 10 to 90 per ct. during the past four years. Fruit not uniform in size, ranging from small to above medium, roundish to slightly elongated, rather acid, not equal to standard kinds in flavor or quality. Plants have been tested at this Station since 1894 and appear to have no value in this locality.
CULTURAL DIRECTIONS.

Introduction.—In discussing the growing of these fruits the work is not taken up in detail to give full and explicit directions, but attention is briefly called to some of the most important subjects connected with the successful growing of the crop. The details will vary to suit the different conditions under which the plants may be grown.

Soil.—Raspberries and blackberries are nearly as cosmopolitan as strawberries in regard to adaptation to soils. Deep moderately sandy loams or clay loams containing an abundance of humus usually give best results with raspberries, while blackberries are often at their best on a slightly heavier soil. It is important that the soil be not too wet as this condition often increases the amount of winter injury.

Fertilizers.—There is no one brand of fertilizers best suited to raspberries and blackberries under all conditions. The kind of plant food to use depends largely on the amount and kind already in the soil and also somewhat on its physical condition. Some soils lack nitrogen, others potash, or phosphoric acid and many are deficient in humus which not only supplies plant food but also aids greatly in the retention of moisture. Stable manure and cover crops are available for supplying humus. Care must be used in making applications of nitrogenous fertilizers or the resulting growth will not mature, a condition which may cause severe winter injury. If the soil is already rich in humus, it would appear desirable in some cases to avoid the use of stable manure, using commercial fertilizers in its place. Wood ashes, muriate of potash, acid phosphate, etc., are valuable where needed. The best way to determine the kind and amount to use is by trial, leaving check rows for comparison.

Preparation of land.—Raspberries and blackberries, unlike strawberries, occupy the soil for a number of years, and for this reason the preparation should be very thorough. If too wet the land should be underdrained. If for one or two years preceding, hoed crops have been used, there will be fewer weeds to fight. The land should be well plowed and thoroughly fitted to receive the plants.
Selection of varieties.—Plant mainly only those kinds that appear to succeed in the immediate locality, testing newer ones in a small way. The varieties best suited for one set of conditions may be failures elsewhere. In another part of this bulletin are given lists of varieties found desirable in many parts of the State, but it cannot be expected that all will do equally well in the same locality.

Propagation and selection of plants.—Red raspberries are usually propagated by transplanting the numerous suckers which come up freely around the original hills. Black raspberries are increased by rooting the tips of the nearly mature canes in late August or early September. The ends of the canes are covered lightly with earth, and by late fall a large mass of fibrous roots will be formed with a well developed crown. Varieties of purple raspberries are hybrids, produced by crossing red and black raspberries, and some of them may be propagated either by using suckers or by rooting the tips of the canes. Blackberries do not sucker as freely as the red raspberries. These suckers have but few fibrous roots and as a rule do not make such good plants as those started from cuttings of the blackberry roots. The roots may be dug in the fall, cut into two or three inch lengths, stratified over winter and sown in nursery rows in the spring and most excellent plants are usually obtained after one season's growth. Only strong healthy plants should be selected, and it is often an advantage to choose these from a younger plantation rather than from an old bed the plants of which may have deteriorated in vigor and may be infested with various insects and diseases.

Setting the plants.—Blackberries and red raspberries may be set either in the fall or in the early spring. If set in late October or early November the rows should be plowed up to, making a back furrow along each row of plants. This will be a great protection against winter injury. The earth should be taken away from the hills as soon as the ground is in working order in early spring. Such plants, as a rule, start into growth earlier than those set in the spring. These plants should be set as deep,
or slightly deeper, than they were in the original beds. Black raspberry plants and the purple kinds rooted from the cane tips should be set in the spring instead of the fall, not covering the crown too deeply, and spreading the roots in a circle about the center of the crown. It is an advantage to set the plants in the bottom of a shallow furrow, filling in as the plants develop. Under these conditions they withstand drought better and the canes are not so easily blown over by the wind.

The distance apart of rows and of plants depends on the system of cultivation, the varieties, the natural richness of the ground and the location. In general the plants should not be crowded. Red raspberries may be set closer than black raspberries and blackberries should be set the farthest apart. These distances may vary from three by six feet to four by eight feet depending on conditions.

Subsequent treatment.—The ground should be kept well cultivated and the plants hoed as occasion requires. In young plantations, if the plants have been set properly, cultivation may be given both ways thus reducing the expense of keeping down the weeds. The cultivation should be shallow as the roots lie near the surface. On heavy clay soils it may sometimes be desirable in some seasons to plow early in spring, following with the cultivator till fruiting time. During the picking of the fruit there is little opportunity to cultivate, but the ground should be thoroughly stirred as soon as the harvest is over. If desirable a cover crop may be sown in late August or early September.

During the first two years it is not always necessary to give the land solely to the berry plants. Potatoes, cabbages, strawberries, etc., are often grown with advantage between the rows so that a considerable income from this source may be obtained before the berry plants fully occupy the ground.

Pruning.—Summer pruning of red raspberries is not generally practiced but may often be done with advantage to black raspberries and blackberries. It consists in pinching or cutting off the tender ends or tips of the new shoots at a height that may vary from eighteen inches to twenty-four or even thirty, the blackberries usually being pinched somewhat lower than the
black raspberries. The result of this pruning is the formation of rather low stocky plants with numerous lateral branches which will not require a trellis. As the young plants do not all develop at the same time it is necessary to go over the plantation several times in order to pinch the growth at the proper height.

The canes growing one summer, bear fruit the next season and then die, while new canes develop each year for the succeeding year's crop. Frequently the canes which have fruited are allowed to remain until the following spring before removal, but better results are usually secured by cutting them out and burning as soon as the berry crop is harvested. By this method the insects and fungus diseases frequently infesting those canes may be destroyed, and the young canes have more room to develop. Each spring the plants should be gone over, cutting off the weak ends of the canes and thinning out some of the smaller ones where the growth is too dense. From three to five canes per hill are usually preferable to a larger number.

Winter protection.—The winter protection of the plants is largely confined to the colder climates, only those kinds being grown in this State commercially that withstand fairly well New York conditions. Blackberries are usually much more tender than raspberries. Winter protection consists in laying down the canes and covering them with a thin mulch of straw and earth.
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