1-1-1898

Strawberries

L. C. Corbett

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WEST VIRGINIA
AGRICULTURAL EXPERIMENT STATION,
MORGANTOWN, W. VA.

BULLETIN 52.

MARCH, 1898.

Strawberries.

BY L. C. CORBETT.

FAIRMONT:
INDEX STEAM PRINTING HOUSE.
1898.

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STRAWBERRIES.

Strawberries and Cream! The very phrase makes one's mouth water. We are coming to realize as a nation, that this berry, counted a delicacy on the millionaire's table, can be had by any owner of a patch of ground, who will spend the little time and labor necessary. Even in the far West, where so many discouragements meet the grower in spite of his rich soil, they count their strawberries a certainty, and what cannot be done in West Virginia? Strawberries possess not only attractive appearance, but a sprightly acid flavor and an aroma which renders them an ideal relish just at a season when our system is adjusting itself to the more active life consequent upon the approach of summer. For this, if for no other reason, this fruit should be found among those making up the list for the general supply.

The ease and readiness with which an abundant supply of strawberries can be obtained should place them at the head of the list of family fruits. There is no other fruit that can be had with so little expenditure of time and money. Plants can always be purchased at a nominal price, and if set in August, they will fruit the succeeding year, thus saving a year.

As a commercial fruit for the local market, the strawberry has no peer. The yield of the standard sorts when good culture is given is large, and the prices are, as a rule, much higher for this than any other small fruit grown. The skilful grower and seller can, by care in grading and assorting his fruit, realize an advance over the general market price of ungraded fruits. In assorting two things should be borne constantly in mind—first, all fruits admitted to the first grade must be clean, large berries; second, they should be of uniform size. In general,

three grades should be made, the second grade to contain all fruits too small to be placed in grade No. 1, yet no soiled fruits should be admitted, whatever their size or form. The third grade should include all fruits not eligible to grades 1 and 2, because of defect, lack of size, or mud stain. The general average of size in this lot may be even better than in grade 2, yet because of being a mixture of sizes, colors and of varying degrees of stain, they must be sold at a less figure than those that are clean and of uniform size.

The aim of the successful cultivator is to grow the best variety in such a manner that it will give the greatest number of first-class and the fewest possible second or third-class fruits.

CULTURAL METHODS.

Success in the cultivation of strawberries depends quite as much upon the methods practiced as upon the soil, exposure, or varieties selected. A careless planter can defeat the whole enterprise. Plants improperly set give but a poor stand, and it is more expensive to care for a poorly than a well-set patch. The loss resulting from carelessness in planting is not only that of the plants, but also the use of the land and the labor expended in preparing for and setting them.

SELECTING OF SOIL.

Strawberries will grow on nearly all sorts of soil, yet a gravelly loam of a quick nature, i. e., one that drains readily both from the surface and by percolation, is best suited to this crop. A point to be remembered in the cultivation of this fruit, is that a few days' difference in the season of ripening is often the measure of profit to be derived from the crop. A variety or an exposure that will give one marketable fruits three to five days in advance of his competitors, is worth more in strawberry growing than any amount of commercial fertilizer. This State being so diverse in its contour, and presenting such varied conditions, is especially well-suited to the cultivation of this fruit, for it is not alone the early crop, but one that is out of season because of its lateness that commands extreme prices.

For the early crop select quick soil, with a southerly or south-easterly exposure. For the late crop, use a well-drained soil, lying upon the northern slope of a hill, and upon as high an elevation as is at command; supplement this by the addition of a heavy mulch, and the ripening period of the fruit may frequently be retarded two weeks.

PREPARATION OF SOIL.

The soil selected for the strawberry patch should be thoroughly subdued, a new and strong soil, free from weeds and briers; one that has been kept clean by hoe-crops, such as potatoes, corn and beans, is best. Do not use sodland, unless it be a new clover sod. Old pastures or meadows are harbors for insects which are destructive to the roots of the strawberry. Such enemies lessen the vitality of the plants, or cause their destruction. After selecting a soil that has had the proper preparatory crops grown upon it, give it a deep, thorough plowing, harrow well, and at the same time work in a dressing of well decomposed stable manure or bone meal.

SETTING THE PLANTS.

Upon the care and thoroughness with which this work is done depends the success of the future berry crop.

For convenience in cultivation, set the plants in rows $3\frac{1}{2}$ or 4 feet apart, and if on level ground, set them in rows both ways, so that during the first season, hill culture can be practiced. If on a hillside, set in rows one way, arranging the rows in such a manner as to prevent washing as much as possible. After the ground is carefully marked, the plants as they come from the nursery should be dipped in a vessel containing water, a little clay added will cause the roots to assume a fusiform shape as they are lifted by the crown out of this mixture. In this condition they will easily slip into a hole made by a sharp stick, but if planted in this manner, good results could hardly be anticipated. Instead of a sharp stick, use a spade. Insert the spade, press it to the front and withdraw it, thus leaving a wedge-shaped opening; spread the roots of the berry plant out

in the form of a fan, and drop them into the opening made with the spade; insert the implement at 4 to 6 inches in front of the original place, and with a backward motion, press the earth firmly against the roots of the plant. This operation is quickly and easily accomplished, and only requires care in two particulars—that the plant is set to proper depth, which is just to the crown, never above, so as to cover the leaves with earth, or so high as to leave a portion of the root axis exposed; and second, to see that the roots are properly spread and the earth firmed above them.

If plants are abundant, a still better plan is to increase the distance between the rows and instead of setting a single line of plants as above described, to set a triple or quadruple row. This results in a matted row the first season, which under other systems could not be had short of the second season. Plants set in this way, in August or September, will give a much greater yield per acre the succeeding spring than plants set in April or May in the single row fashion. The chief objection to this plan is the cost of plants and labor, but where land is valuable, it will repay the extra outlay.

CULTURE.

From the time the young strawberry plants are set in the field until cultivation ceases in the fall, the soil should be kept free from weeds, and only runners enough to make the desired size of hill, allowed to grow. As soon as the ground is frozen sufficiently hard to bear the weight of a horse and cart, the patch should be given a thorough mulch of strawy horse-manure, or of clean wheat straw. The mulch should completely cover the ground, but not be heavy enough to smother the plants or to form a harbor for mice or other vermin. Allow the mulch to remain undisturbed until after fruiting the succeeding spring. The vines will grow up through the material used as a mulch, and the fruit borne, while slightly later than that upon vines not mulched, will be free from mud stains and other blemishes resulting from being in contact with the soil, and a larger percentage of the product will go in as first-class.

As soon as the fruit has been gathered, remove the mulch, give the soil between the rows a thorough cultivation, and allow the runners to take possession of the space between the hills in one direction. Keep down all weeds during the season and mulch in the winter as above described for first season.

RENEWING OLD PATCHES.

After the second crop of fruit has been gathered, give the patch a careful cultivation. Then allow the runners to take possession of the newly cultivated area. As soon as the new plants have become thoroughly established on the new soil, take a one-horse plow or strong cultivator and turn under the original plants and those that formed the fruiting row of the season. In this manner we get a new patch without the work of replanting. Care must be exercised to get a good stand of young plants on the cultivated portion of the patch, and to have a neat row after cultivating out the old plants. By skillfully doing this work, a paying patch of berries can be maintained upon the same soil for from three to five years. For commercial purposes, however, it is better to place dependence on a new bed each year, than upon renewing the old one. For the best results, then, plant a new patch each season.

Renew old ones in the above manner when it seems advisable, but do not depend upon them, as they may prove a failure. I know strawberry-beds maintained for family use exclusively, which have been perpetuated for ten years or more by the system of alternating the rows, but I do not recommend the practice.

HARVESTING.

The strawberry is a delicate fruit, and like other perishable products of its kind, requires quick and constant attention. During unfavorable weather at harvest time, a few hours may be sufficient to so soften the fruit that instead of standing well on the market for from 24 to 48 hours, they will not even bear transportation. If such conditions exist at harvest time, unusual diligence will be necessary, in order to realize full value from the crop.

Because of the habit of growth of the strawberry, and its manner of ripening, picking has to be done by hand. This is the greatest expense connected with berry growing. The usual price paid is two cents per quart. For this reason sufficient help must be within easy reach during the berry season, which makes the industry less attractive to persons living at a distance from a town or centre of population.

For convenience in picking and for the welfare of the fruit, it is not assorted after being gathered, but is graded as the work progresses. Each picker being taught the art of grading, and provided with a stand holding four to six baskets, it becomes an easy matter to drop each fruit as it is plucked from the plant, into the basket containing the grade to which it belongs. Grading the fruit is not only an advantage in selling, but is an aid to the picker, for by placing all large fruits together, more quarts can be made than when both large and small are placed in the same receptacle.

It is best to pick either in the morning, as soon as the dew is off, or in the evening. All soft fruits stand longer if gathered at such times than when gathered during the heat of the day. See that the boxes are well and uniformly filled; use only bright, clean packages, as they give the fruits a better appearance and render it more salable.

As a substitute for the picking stand a sectional crate is used which serves both as picking stand and as crate. This is a patent contrivance, and is very convenient, but whether its convenience is sufficient to counterbalance the extra cost of it over the ordinary style, each grower must decide for himself.

COMPARISON OF VARIETIES.

In June, 1895, a collection of some 48 varieties was set upon a portion of the Station garden. The soil is of a sedentary nature, and largely composed of clay. This having been used for gardening purposes for a series of years, has become well filled with organic matter and has had besides heavy coatings of stable manure, a thorough dressing of lime. So far as care and

cultivation is concerned, the ground has been thoroughly fitted for the plants, but the soil itself is not well suited for the crop.

As will be observed from the accompanying tables, the number of plants in each variety is not constant, but all comparisons are based on the average results from an individual plant, for the season of 1896, and upon a unit of length of row in 1897. In this manner a constant basis is arrived at, so that slight differences shown by an individual plant aggregate a great amount per acre, when plants are set in hills 4x4 feet each way, as it requires 2,722 plants to set an acre at that distance.

All the plants recorded in this test were given the same treatment. The soil was kept free from weeds during the season of 1895, and during December a mulch of clean wheat straw was applied to the plants. As growth started in the spring the mulch was carefully removed, where thick enough to interfere with the growth of the plants. In this operation the ground was not made bare, but the mulch was sufficiently loosened and thinned to allow unimpaired growth of the plants. This covering of straw was allowed to remain until after fruiting, when it was removed and the soil was carefully hoed, and was kept free of weeds until the ground was frozen, when a mulch of strawy manure was given.

In the following table I have noted the number of plants in each lot during 1896 and the length of row in '97; the number which bore fruit; and the number and weight of fruit borne by each lot. From this data we can arrive at the comparative productiveness and the size of each variety.

TABLE I.

Record of 1896.														Record of 1897.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
Number.	NAME.	No. Plants in Field.		No. Plants to Fruit.		Weight of Fruits.		Average No. Fruits		Average Size of Individ. Fruits.		In Blossom.		Harvest Began.		Harvest Ended.		No. Days in Fruit.		Length of Matt. Row.		Number of Fruits.		Weight of Fruits.		Average Size of Individ. Fruits.		Harvest Began.		No. Days in Fruit.		REMARKS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		No.	Plants	No.	Plants	sq.	oz.	per Plant.	sq.	oz.	sq.	oz.	sq.	oz.	sq.	oz.	sq.	oz.	sq.	oz.	sq.	oz.	sq.	oz.	sq.	oz.	sq.	oz.	sq.	oz.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

TABLE I—CONTINUED.

Record of 1896.										Record of 1897.										REMARKS.		
NAME.	No. Plants in Field.		No. Plants to Fruit.		No. Fruits.		Weight of Fruits.		Average No. Fruits per Plants.	Average Size of Indiv. Fruits.	In Blossom.	Harvest Began.	Harvest Ended.	No. Days in Fruit.	Length of Mat. Row.	Number of Fruits.	Weight of Fruits.		Average Size of Indiv. Fruits.		Harvest Began.	No. Days in Fruit.
	lbs.	oz.	lbs.	oz.	lbs.	oz.																
33	Great Pacific.....	5	5	90	...	15 ³ / ₄	18.00	.169	5.2	5.23	6.3	11	12	216	1	10 ³ / ₄	.121	6-1	3-1	13	Row not well matted.	
34	Beaderwood.....	1	1	36	...	4	36.00	.111	5.2	5.21	6.3	11	...	...	...	...	...	...	...	...	...	
35	Stayman's No. 1.....	...	...	5	...	1	...	...	5.2	5.23	5.23	1	...	...	...	...	...	...	...	...	...	
36	Crawford.....	...	...	3	...	1	...	...	5.2	5.23	5.23	1	...	...	...	...	...	...	...	...	...	
39	Southern's Beauty.....	21	19	384	3	4 ¹ / ₂	20.21	.136	5.2	5.25	6.5	25	62	964	7	7 ³ / ₄	.124	5-29	5-29	20	Row not matted.	
40	Arrow.....	14	14	344	3	1 ³ / ₄	24.50	.144	5.2	5.21	6.15	25	57	1563	12	8 ¹ / ₂	.123	6-1	6-1	18	Row 15 in. w. quite well mat.	
41	Epping.....	...	...	...	...	...	...	...	5.2	5.25	6.5	11	...	...	...	...	...	...	...	...	not well matted.	
42	Weston.....	3	3	54	...	7 ³ / ₄	18.00	.143	5.6	5.26	6.5	10	25	218	1	8 ³ / ₄	.121	6-5	6-5	15	"	
43	Snowball.....	8	7	122	1	4 ¹ / ₄	17.42	.166	5.2	5.25	6.8	14	29 ¹ / ₂	317	2	13 ¹ / ₄	.134	.106	5-29	20	"	
44	American Queen.....	8	6	87	...	13 ¹ / ₄	14.50	.152	5.2	5.30	6.5	6	60	628	5	9 ¹ / ₂	.132	...	...	20	"	
45	Allen.....	2	2	13	...	2 ³ / ₄	6.50	.211	5.2	5.25	6.8	14	22 ¹ / ₂	72	7 ³ / ₄	.123	.177	6-1	6-1	18	"	

Three columns of dates are given, noting the time of bloom, when harvest began or fruits first ripened, and lastly, when harvest ceased. From these dates we can judge of the relative earliness of the several varieties and the length of season which they represent. From a study of the column of dates of ripening, we learn that a variation of ten days exists between the maturity of what may be classed as extra early and late varieties of strawberries. In general, however, there is but slight variation in the period of ripening, the majority of plants ripening their fruits about the 23d of May, in 1896. The time of ripening, however, does not have more significance for the commercial grower than does the length of fruiting season. When the home supply is the consideration, or when one has extreme exposures, then the question of earliness or lateness in a variety assumes much more importance. In using those varieties which under like conditions show the greatest extremes, one would be justified in expecting more than usual variation when quick, early soil is used to force the early variety and a backward or late soil and heavy mulch is used in growing late varieties.

For these two reasons, therefore, the dates of ripening are brought together, and the variety numbers are used to indicate the group to which each variety belongs. The first group ripening on May 20th, includes Nos. 1, 20, 21, 22 and 31. The second, ripening May 21st, includes No. 7, 34 and 40; lot three, ripening on May 23d, is by far the largest and contains Nos. 3, 8, 10, 11, 12, 13, 14, 16, 18, 19, 23, 26, 30, 33, 35, 36; lot four ripened two days later, May 25th, and contained Nos. 2, 4, 5, 6, 28, 39, 43, 45; of the late varieties there are comparatively few. Those ripening on May 26th are represented by Nos. 9, 24, 42; those ripening on the 27th by Nos. 15, 17, 29; and those on the 30th by 25, 42.

From the above statement it is evident that varieties are quite uniform in their period of ripening. This is shown by those that fall in Lot III, on May 23d, but a far greater variation is shown in the length of season presented by the several vari-

eties. Some kinds last only a few days, while others continue bearing for nearly a month. For home use a long period is an advantage, but in the market patch, a medium period is more desirable, as the patch does not require re-picking so many times.

TABLE II.—SCALE OF POINTS OF SIZE AND PRODUCTIVENESS DURING 1896-7.

Scale, 1-36.	Name-Nos. in Order of Size—1896	Name-Nos. in Order of Size—1897	Name-Nos. in Order of Production. Hills—1896.	Name-Nos. in Order of Pro- duction, Mat- ted Row, 1897
1	7	45	1	1
2	9	30	3	26
3	17	25	2	40
4	45	27	10	22
5	29	8	8	10
6	25	29	15	29, 15, 20
7	6	9	19	11, 19
8	26	44	16	2, 12, 13
9	4	26	12	30, 33
10	20	6	13	14
11	30	12	34	9, 39, 6
12	8	7	11	5
13	11	39	22	21, 24
14	33	40	29	43, 44
15	43	33, 41	14	7, 16, 17, 18, 41
16	5	4	28	4, 42
17	13	18, 22	21	23
18	24	5, 14	6	25
19	44	17, 43	40	31
20	28	15	30	27
21	12, 23	11	26	45
22	22, 40	20	39	28
23	42	23, 24	23	
24	39	1	33, 42	
25	14	10, 13	24	
26	21	21	43	
27	15	20, 31	20	
28	2	19	18	
29	1		17	
30	3, 34		44	
31	19		31	
32	18		9	
33	10		4	
34	16		5	
35	31		7	

The scale of points given on page 98, Table II, well represents the relation existing between the size of individual fruits and productiveness. The left-hand column notes merely the scale ranging from 1 to 36; the middle column the name-numbers, arranged in the order of the average size of the individual fruits borne by the several varieties. The right-hand column gives the name-numbers in the order of the productiveness of the variety. From this it will be seen that, as a rule, the varieties bearing the largest fruits are the ones that are least productive and vice versa. While this is true within certain limits, a more conservative statement would be that *extreme* size is not compatible with the greatest productiveness, while on the other hand, medium sized fruits produce the greatest crop.

By arranging varieties in the order in which they appear on the list given in Table I, see pages 95 and 96, and placing opposite it the numbers corresponding to its rank in size and its rank in productiveness, we get from the sum of these two numbers an aggregate or average from which its standing can be determined. The variety giving the smallest sum in this general aggregate should be placed at the head of the list, for the one standing nearest the head of the list in size and in productiveness, would of necessity give the smaller sum; hence its position in the list of general averages.

Such a list is here given in Table III, and is represented both by name-number and by scale, showing relative rates existing between the several varieties.

The arrangement of the variety numbers presented in Table III places before us in a condensed form the relation each variety bears to the others. The varieties ranging from 1 to 12 on the scale, may all be considered as safe for use in either a home or commercial plantation. In this general consideration, no account has been taken of the form or style of the berry, or the condition of the plants. The conclusions here stated are based exclusively upon the crop report of each sort for the seasons of 1896 and '97.

The line chart which is drawn to a scale represents in a

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1897.

45
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in Table I

nt in com-
ls and in

1 Crescent.....	==
2 J arker Earle...	==
3 Warfield No. 2..	==
4 Sharpless.....	==
5 Princess	==
6 Brandywine	==
7 Bubach No. 5 ...	==
8 Wolverton.....	==
9 Belle.	==
10 Cyclone	==
11 Greenville.. ...	==
12 Enchance.....	==
13 Enormous	==
14 Shuckless.....	==
15 inceton Chief	==
16 Wilson.... .	==
17 Mary.....	==
18 Leader.	==
19 Arrow.....	==
20 Rio	==
21 Lovett	==
22 Haverland	==
23 Ivanhoe.....	==
24 Muskingum .. .	==
25 Trimbell	==
26 Ponderosa.....	==
27 Salzer's Earliest	==
28 Margaret	==
29 Eureka.. . . .	==
30 Cumberland	==
31 Michell's Early.	==
33 Great Pacific ..	==
34 Beader Wood...	==
39 Sout'n's Beauty	==
40 Arrow.	==
41 Eping.....	==
42 Weston.	==
43 Snowball	==
44 American Queen	==
45 Allen	==

TABLE III.—NAME-NOS. IN ORDER OF GENERAL AVERAGE.

Scale.	Name-Nos. Arranged according to General Average for 1896.	Name-Nos. Arranged according to General Average for 1897.
1	8	8
2	29	26, 30
3	6	29
4	11, 13	40
5	26	9
6	1, 12	12
7	2	6, 25
8	3, 17, 30	22, 44, 45
9	15	27, 33, 39
10	9	1
11	22	7, 15
12	7, 28	14, 20, 11
13	10, 20	41
14	19, 33	5
15	14, 45	4, 18
16	34, 40, 43	10, 42
17	16, 4	43
18	2, 21, 24, 25	17
19	23	13
20	39	24
21	42, 44	2, 19
22	5	23
23	18	21
24	31	16
25	00	31

graphic way, the relative ability of the several sorts of strawberries under consideration, to adapt themselves to the heavy clay soil of the Station plat. The black lines indicate the general average of each variety during 1896. The red lines not only show the general average of the same plants for 1897, but at the same time indicate the relative power of the variety to form matted rows. The note under head of remarks in Table I will aid by giving this more in detail.

Again the line chart serves as a basis of judgment in comparing the general average of the varieties in hills and in

matted rows. Only one sort gave the same rating under both systems that, as will be seen, was No. 8,—Wolverton. Some others improved the second season, while others fell off decidedly in their general average. The varieties making a gain under the matted row system are represented in those showing a *red* line of greater length than the accompanying black line.

The general form of fruit can be adjudged from the accompanying cuts Plates I and II made from typical specimens of the fruit, as grown on the Station grounds. The notes on varieties which are here used to supplement and amplify the tabulated results are for the purpose of aiding the grower in the selection of fruits of good style, flavor, and shipping qualities, as well as the choice of vigorous, blight-resisting varieties. In this connection it is not to state that probably no variety of strawberries is entirely exempt from attacks of the blight, but some varieties, because of superior vigor or hardiness, are less injured by this disease than others. The notes given on this point are of necessity based on judgment or comparison, and what is true of a variety here during the seasons of 1896 and '97, may not be of it in other portions of the state. However, these notes and observations are deemed of sufficient importance to warrant their publication at this time.

NOTES ON VARIETIES.

1. *Crescent*, a strong growing variety; plants of medium size; reproduces itself from runners rapidly; foliage abundant, showing markedly the injury of the leaf-spot but to a degree less than that of the average for the whole patch. In fact, this variety is placed fifth on the list of varieties showing least injury from the leaf-spot.

Fruit is regular in form, broadly conical.

Calyx small, closely set; color, dark scarlet; seeds many, dark; in flavor it is regarded as an acid strawberry; flesh firm, and in the comparative test of keeping qualities, stood four days in a second story room in a brick building, no artificial cold being used, the curtain was drawn to exclude the sunlight.

PLATE 1.

1. Crescent.
2. Parker Earle.
3. Warfield No. 2.
4. Sharpless.
5. Princess.
6. Brandywine.

7. Bubach No. 5.
8. Wolverton.
9. Belle.
10. Cyclone.
11. Greenville.
12. Enhance.

13. Enormous.
14. Shuckless.
15. Princeton Chief.
16. Wilson.
17. Mary.
18. Leader.

PLATE II.

19. Arrow.
20. Rio.
21. Lovett.
22. Haverland.
23. Ivanhoe.
24. Muskingum.

25. Trimbell.
26. Ponderosa.
28. Margaret.
29. Eureka.
30. Cumberland.
31. Mitchell's Early.

33. Great Pacific.
34. Beader Wood.
39. Southern's Beauty.
40. Arrow.
42. Weston.
43. Snowball.

All fruits were tested under the same conditions and during the same period, the range of the thermometer during this time being: May 28, 70; May 29, 70; May 30, 70; May 31, 70; June 1, 75; June 2, 73.

2. *Parker Earle*. Plants suffered to a great extent from leaf blight, 50 to 70% of foliage destroyed when notes were taken on October 6, '96; young plants, formed from runners, of moderate vigor, and as a plant maker it is not above average.

Fruit is uniform in shape and size.

Hulls large, set well up, many pull off in picking.

Color, a light scarlet, lighter in the shade; causing the fruits to ripen unevenly; seeds numerous, large, dark; flavor a sub-acid which is agreeable; flesh firm and stands well on the market, remaining four days on test table.

3. *Warfield No. 2*. Plants vigorous, showing a good growth for the season, with foliage indicating only average injury from blight; a strong and profuse plant maker.

Fruit is regular and constant in form, resembling that of the Crescent; of medium to small size; calyx is medium to large; lobes long; seeds not numerous, but quite conspicuous, yellow; color, rich crimson; flavor, sour; flesh moderately firm, juicy; stood up three days on test table.

4. *Sharpless*. Plants vigorous, and at close of growing season show bright, healthy foliage, nearly free from rust; as a plant maker it ranks well, all young plants showing a vigorous, healthy condition; leaves are large, deeply serrated, and borne upon strong petioles.

Fruit variable in shape, ranging from conical to irregular wedge-shape; calyx large, long, and set well up on regular fruits; in color it is also variable, changing from bright scarlet in the sun, to lighter shades in the shade. Seeds numerous, small, yellow. Flavor, sweet and agreeable. Stood three days in test.

5. *Princess*. Plants vigorous and almost blight free; runners numerous, strong; at the close of the season, Oct. 6th, this variety presents as good an appearance as any on the grounds.

Fruits are globular or irregular globose in form; color uniform dark crimson; hull large to medium large, set well up on all regular fruits; seeds numerous, yellow; turning dark on full maturity; flavor sweet; flesh firm.

Standing four days in test room.

6. *Brandywine*. Plants large, vigorous; largest of any in the collection; young plants numerous and strong growing; foliage showing about an average amount of injury from rust.

Fruits constant, broadly conical, approaching the sphere in form; calyx large, long lobed, closely and firmly set upon the fruits; color, dark crimson, when fully ripe; flavor pleasant sub-acid; flesh firm; stood four days in test room.

7. *Bubach No. 5*. Plants of moderate vigor; foliage medium to small, giving the plants a close and compact habit; there is a small percentage of blight injury shown, in comparison to the majority of plants in the patch.

Fruit is constant in form, being of a broad, short wedge-shape, approaching the sphere in the more regular specimens; calyx small, short, closely and often deeply set and clasped by the fruit; seeds few, large, deeply set; color bright, attractive scarlet; flavor sweet and undecided; flesh firm; stood three days in competitive trial.

8. *Wolverton*. Plants present a condition below the general average of the whole patch, although a few plants are as good as the best; young plants numerous and of moderate vigor.

Fruit is constant in form, being broadly conical, with a blunt point; calyx large, long lobed, closely set, often clasped by the fruit; seeds numerous, small, yellow; color is uniform and an attractive scarlet.

Flavor sweet or sub-acid, not decided; flesh firm; stood four days on show stand in test room.

9. *Belle*. Plants large strong growers showing about an average injury from blight; young plants numerous, but not inclined to be small.

Fruit is irregular in form, having an inclination to double; calyx large, long, set deeply in a close and confined cup; color

dark scarlet; seeds numerous, yellow; flavor sub-acid; flesh medium to soft; many of the double berries hollow; stood two days only in test room.

10. *Cyclone*. Plants unusually bright and clean; foliage light green with noticeable red petioles; growth vigorous and freed from blight.

Fruit constant in form, being fusiform and regular, small; calyx small, closely set and with long narrow lobes; seeds normal; color light scarlet and green in the shade, ripening unevenly; flavor pleasant, having the characteristics of a good wild berry; flesh is firm and dry; stood four days on test.

11. *Greenville*. Plants strong growing, of an open habit; leaves borne on long petioles; free from blight; of a light green color.

Fruit irregular, broadly and roughly conical and broad wedge shape; hull large, broad lobed, set close on regular fruits and imbedded on double ones: color when ripe bright crimson, but as it does not ripen uniformly, there are many fruits showing light spots; seeds few, yellow, set well up; flavor acid, pleasant; flesh quite soft, but stood four days on test tables.

12. *Enhance*. Plants medium to large, with dark foliage and a compact habit of growth; the injury from blight quite pronounced, but upon the whole there is less than the average injury shown by the whole patch; young plants strong and vigorous.

Fruit variable in size and irregular in shape; calyx large, long lobed, set well up on regular fruits, and clasped by deformed ones; seeds numerous, large, making the fruits seedy looking, many of the fruits have hard unripe seedy tips; color dark; flavor sweet; flesh firm; standing three days in test room.

13. *Enormous*. Plants below average size and vigor; foliage small, giving the plants a compact habit of growth; practically free from blight, although showing a mature condition as if having completed the season's growth.

Fruit is quite irregular in size and form, varying from long conical to broad wedge-shape; variable in color, being lighter near calyx, in the sun it shows a glossy crimson; calyx

medium, set well up except on irregular fruits; seeds few, yellow, growing darker as fruits mature.

Flavor pleasant, sub-acid or sweet; flesh firm, standing four days in test.

14. *Shuckless*. Plants large, foliage large, but showing more than average amount of blight; runners numerous but considerably blighted.

Fruits present the form of a depressed cone, varying to almost globular; quite regular in size; calyx large, long lobed set close, but many hulls pull off in packing; color is a bright scarlet; seeds numerous, large; flavor sweet with a peculiarity of its own that to be appreciated must be tasted; flesh soft; stood three days on test table.

15. *Princeton*. Plants large, strong, thrifty growers, but blight badly; young plants numerous; fruits irregular in form, broad, wedge-shaped, varying to conical; color crimson with light spots on shaded side; calyx long, set closely, and on the more irregular fruits set in a depression; flavor acid (sour) but agreeable; flesh soft, inclined to be hollow, but stood four days on test.

16. *Wilson*. Plants are small, weak, and badly blighted; runners few; fruit regular in form and constant in size; broadly conical, with an acute apex. Calyx large, broadly lobed; set close, but easily removed; color, dark; seeds numerous, large, yellow; flavor sour; flesh firm; stood three days in test.

17. *Mary*. As a lot the plants are below the average in vitality, a few being of good size and of average health. Fruit irregular in form; inclined to double and inclose or imbed the calyx; hull large, long, closely set; color light scarlet; seeds few, reddish; set deeply; flavor acid; flesh soft; slightly pithy; stood three days on test table.

18. *Leader*. Plants of average vigor; not strong growers; Leaves broad, short and growing in a compact manner; runners few, of moderate size; fruits variable in form; calyx small; lobes broad, closely set; seeds few; color rich scarlet and

uniform ; flavor sweet or sub-acid ; agreeable ; flesh soft, juicy ; stood three days in test.

19. *Arrow*. Plants of good growth, and an average plant maker ; badly blighted, standing only one grade better in this respect than No. 2 ; fruit is regular in form, but of small size ; long conical shape ; calyx large, lobes long ; set well up ; color dark scarlet ; seeds medium to few, yellow ; flavor sweet, sub-acid ; flesh firm ; standing four days in close room.

20. *Rio*. An average plant in all respects, good growth, abundant foliage, but with a large percentage of blight. Fruit constant in size ; regular, globular, or shortened and depressed, conical form ; calyx medium to small ; lobes narrow, closely set, but not in a cavity ; seeds few, not conspicuous ; flavor sour or acid, agreeable ; flesh moderately firm but juicy ; stood four days.

21. *Lovett*. Plants small ; foliage medium small, of a strong and compact habit ; runners few ; fruits regular in form, inclined to be fusiform ; calyx small, lobes slender, set well up yet close ; seeds numerous, conspicuous, yellow, prominent ; color dark ; approaching that of the Wilson ; flavor sweet, agreeable ; flesh soft but dry. Stood four days after harvesting.

22. *Haverland*. Plants somewhat above the average ; foliage large, glossy and with less than an average amount of blight injury ; runners abundant and thrifty. Fruits are constant in shape, being of a long fusiform, although not sharply and often broadly pointed form ; calyx large, set well up on a long neck ; color light, bright scarlet, a very attractive fruit in appearance ; seeds few, large, yellow, ornamental ; flavor a pleasant sub-acid ; flesh firm, standing five days.

23. *Ivanhoe*. Plants feeble and badly affected with blight ; fruits short, conical and slightly irregular in shape ; color deep, rich, red ; calyx lobes medium in length ; set closely to berry in a slight depression ; seeds numerous of medium size ; flavor agreeable, sub-acid ; flesh firm ; stood up four days.

24. *Muskingum*. Plants not quite up to the average of the

collection in vigor, but show comparatively little injury from blight ; fruit regular ; globular in form and uniform in size ; color bright waxy scarlet ; calyx medium ; set close ; often in a cavity ; seeds, few, large, dark ; flavor pleasant, acid ; flesh soft, standing four days.

25. *Trimbell*. Plants weak and unworthy of further mention.

26. *Ponderosa*. Plants strong, large, thrifty second to none in the collection in this respect ; foliage almost entirely free from blight ; young plants numerous and thrifty ; fruit uniform in shape and size, being bluntly conical in form ; calyx medium large, closely set, but adhering only moderately ; color dark scarlet ; seeds numerous, medium in size, becoming dark at full maturity ; flavor sweet ; flesh firm ; stood three days.

28. *Margarete*. Plants weak and badly blighted.

29. *Eureka*. Plants are not uniform in appearance, a portion being strong and robust, while the remainder are below the average in appearance ; fruits are irregular in form ; not attractive because of doubling and of the large green seedy points ; calyx large, long, closely set, color not uniform while in the shade, and with many green tips ; seeds large, numerous, and on some of the more irregular fruits making a dirty appearance ; flavor sweet and agreeable ; flesh firm ; standing three days in test.

30. *Cumberland*. Plants robust ; broad oval foliage and numerous strong young ones ; the old foliage shows less than an average degree of blight ; fruit has a short, broadly conical form. Calyx long, set well up. Seeds not numerous ; flavor pleasant sub-acid ; flesh melting, soft ; standing in competitive test, four days.

31. *Mitchell's Early*. Plants strong, sending out numerous runners which show but slight injury from blight either in old or new.

33. *Great Pacific*. Plants somewhat below the normal average of the several varieties of the patch in vigor and injury from

blight ; fruit constant in shape and size, being conical with a long taper point ; calyx large, with long lobes, loosely set ; seeds few, moderately large ; color light scarlet ; green or white in the shade ; flavor sweet ; flesh soft ; stood up three days.

34. *Bederwood*. Plants of average vigor, but of small size.

39. *Southern's Beauty*. Plants of average growth and freedom from blight ; young plants more numerous than in any other variety on the grounds ; fruit broadly conical, with blunt apex, constant in size and shape ; calyx large, long lobed, loosely set on fruit ; seeds numerous, medium to small ; not conspicuous ; color light in shade but rich scarlet in sun ; flavor sweet with the peculiarity of wild fruits ; flesh firm ; stood four days in test.

40. *Arrow*. Plants quite as good as the best of the patch, strong and vigorous, an abundant growth of young plants and less than an average injury from blight ; fruits are many of them double but not irregular ; calyx medium large, lobes broad, short, set well up on regular berries, but often clasped in double berries, easily removed ; color light, bright and attractive ; seeds few, large, dark, set moderately deep ; flavor sweet ; flesh firm ; stood three days in test.

41. *Weston*. Average plant medium too large size ; fruits are conical in form, having a broad base and a sharp taper point ; calyx medium, lobes short, lanceolate pointed, closely and deeply set ; color light, bright and attractive ; seeds few of medium size ; flavor sweet, reminding one of the wild fruits ; flesh firm, juicy ; stood four days in test.

43. *Snowball*. Plants not uniform in habit of growth, a portion are vigorous while the remainder are below the general average ; old foliage badly injured by blight ; fruit conical, inclined to be fusiform and constant in shape and size ; calyx large, loose, long lobed, set well up ; seeds small, quite numerous ; color light bright scarlet ; flavor sub-acid, pleasing ; flesh quite firm, but juicy ; stood three days in test room.

44. *American Queen*. Plants are strong, vigorous growers, large foliage, and less than an average amount of blight ;

fruit variable in size and irregular in shape; calyx large, with long lobes, loosely set on fruit; seeds large, quite numerous; color bright light scarlet in sun, white in shade; flavor sweet; flesh soft and rather dry; stood three days in test.

45. *Allen*. Plants of good habit, large foliage, almost free from blight, new plants not abundant but of average number and of healthy growth; fruit conical, tending towards the fusiform shape large; calyx small, lobes taper pointed, set closely but well up; seeds few, prominent in cups of moderate depth; color light bright scarlet; flavor sweet, with the attributes of the wild fruit; flesh soft, juicy.

PARAGRAPHS.

No land owner should be without a strawberry patch.

No fruit will return a greater income for time and money expended than the strawberry.

Pistillate plants usually bear the largest fruits, but perfect flowering sorts must be planted close by to insure perfect pollination and a crop of fruit.

It is the remarkably *early* and remarkably *late* crops that return the profit in strawberry culture.

Care in grading the fruit pays better with the strawberries than with any other crop. Make three grades in price and in quality of fruit. The results will be gratifying.

Use only neat, clean packages of full size.

Crop failures are less frequent with strawberries than with any other small fruit.

Good plants, carefully set, well tended, and the fruits marketed in attractive packages are sure to return the grower satisfaction.

For general plantations, select only well tried sorts. Varieties are local. Hence, failure is more likely to result from dabbling largely in novelties than from any other single cause.

Test the novelties in a small way. Do not venture a year's return upon an untried sort.

The best berry is that which possesses attractive appearance

with shipping qualities, good size, productiveness, and general vigor of plant.

The following names from the list of varieties on page 100, stood the highest in a two years test at the Station:—

Wolverton, Eureka, Ponderosa, Cumberland, Brandywine, Greenville, Enormous, Arrow, Belle, Crescent, Enhance, Parker Earle, Trimbell, Warfield No. 2, Mary, American Queen, Allen.

The following names are those of the ten sorts bearing largest fruits in 1896 :

Bubach No. 5, Belle, Mary, Allen, Eureka, Trimbell, Brandywine, Ponderosa, Sharpless, Rio; in 1897, the list was as follows: Allen Trimbell, Salser's Earliest, Wolverton, Eureka, Belle, American Queen, Ponderosa, Brandywine, Enhance.

In productiveness the sorts range as follows :

In 1896, Crescent, Warfield No. 2, Sharpless, Cyclone, Wolverton, Princeton Chief, Anon, Wilson, Enhance, Enormous. In 1897, the varieties ranked as follows: Crescent, Ponderosa Arrow, Haviland, Cyclone, Eureka, Princeton Chief, Rio, Greenville, Anon.

Southern exposures with quick soil and light mulch, if any, for early crop.

A north hillside and heavy mulch for the late crop.

Never use old sod land for a strawberry patch.

L. C. CORBETT.