

R.S. NORTHROP
CULTIVATION OF STRAWBERRIES



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THESIS
The Cultivation
of Strawberries
R.S. Northrop,
1901

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T H E S I S .

A SURVEY
OF THE
CULTIVATION
OF
STRAWBERRIES.

By
R. S. Northrop.

Michigan Agricultural College.

1901.

THESIS

A SURVEY OF THE CULTIVATION
OF STRAWBERRIES.

In the origin and study of strawberries one can find considerable of interest. Although the strawberry is comparatively young, there has been a very rapid and diversified evolution in this most popular of small fruits. According to Prof. N. H. Bailey, the first horticultural variety was the *Pressant*, coming from 1680, but although cultivated somewhat at that time the extensive cultivation in a commercial way did not begin until much later.

The real source from which the berry of today was derived is not definitely known, but judging from the character of the berries and what is known of their early cultivation, it is probable that the present commercial strawberry is a descendant of the species *Fragaria chiloensis*, or Chilean strawberry, through the old pine strawberry which was one of the seven classes to which all strawberries were referred in 1824.

Keens Seedling was the first of this class to be particularly worthy of notice, and from this many other varieties were derived, but they were not suited to the American climatic conditions,

and even in 1821 there were no varieties particularly adapted to American culture.

In 1836 the first variety of strawberries of American origin was patented. This was the variety known as Hovey's Seedling; it was derived from those European varieties which contained the most suitable characteristics for American culture. From this time on many new varieties have been appearing, the majority of them, especially the most successful, being descended from the original Hovey Seedling, which was a true pine strawberry.

Permitting the use of a few facts concerning the culture of strawberries, which were gathered by Prof. W. P. Hedrick, it is found that barring synonyms and poorly named varieties, there has been approximately 700 well named varieties of American origin since 1836, all of which are descended from *Fragaria chiloensis*.

There is also another interesting fact concerning this list of American varieties. It is generally believed that the tendency of all fruit is to become unisexual. We find this often expressed in horticultural writings, for instance, in Prof. L. H. Bailey's "Survival of the Unlucky," "The berry grower knows that all strawberries have

stamens or seed bearing matters, while an increase in the number have no pollen." But whether or not this can be taken as truth in regard to other fruit, it is not true of strawberries. From the same table quoted above it is ascertained that from 1874-1870 there were 135 new varieties of this class, (the vines). Of these 96 or 58% were pistillate. From 1870-1880 there were 513 varieties brought out, of which only 156, or 30%, were pistillate. Thus, then, shows that the per cent of pistillate or unisexual varieties has fallen out nearly one-half, and if the entire period of development of strawberries be divided into decades it was found that there was a marked progressive tendency toward bisexuality.

The discovery of this fact bears important relations to the culture of strawberries. Most berry growers, aside from claiming the tendency to unisexuality, claim, also, that the pistillate varieties bear larger and more regular fruit, that they are more productive and less liable to injury by frost. If this is true, it is surely to the advantage of those men to have the pistillate varieties on the increase instead of the staminate kinds. Also it is important that the cause for this unexpected tendency be known, but here, too, the effect must stand alone. It cannot be ascribed

directly to selection, for in three cases out of four the pistillate varieties are the ones favored. Neither can it be explained by the climate or soil on which grown, for correspondence with various Experiment Stations possessing the most varied conditions of these influences, shows that varieties do not change to any appreciable extent from the character possessed at I. A. C. It seems as though the only causes which might be given are the effect of high cultivation, or else probably it is the result of producing new varieties by means of seedlings, which most inherently possess the pistillate character.

The large number of figures given above that the number of varieties being brought forth in America is very large. We all know that many quite old varieties are still very popular. Is this because the new varieties do not improve upon the old ones, or is it because the newer sorts do not become widely enough known before the variety runs out? This question cannot be definitely answered, but for the purpose of bringing the older popular varieties under equal conditions with the newer varieties, many Experiment Stations conduct variety tests, in which most of the promising new sorts are grown along with the standard sorts. These

are then carefully watched and notes taken upon the various characters of plant and berry, which when put into tabular form offer a concise and handy means of comparison.

In this test the varieties were not chosen with any intention of making an extensive comparison. There were generally 25 plants of a variety which during the latter part of May were set every 18", in rows 4 feet apart, care being taken to have each plant set with crown just above the surface. The soil was a clay loam having considerable humus, and being rather dry each plant was then given a good wetting to insure a proper start.

During the summer of 1909 these plants formed narrow rows which were kept narrow by means of thorough cultivation between. They were also hoed occasionally to keep down the weeds. The season being dry, several irrigations to the extent of 600 barrels per acre were given, with which several applications of Bordeaux mixture kept the plants in very good condition.

At the approach of winter a mulch of clean straw was applied over the entire patch, and early in the spring was raked between the rows to allow the early development of fruit.

Following is the table of notes which were taken during the spring and summer of 1960 on the fruiting plants. These notes are all from personal observation; they were taken with considerable care to make them as exact and definite as possible.

STRAWBERRIES, 1900.

ABBREVIATIONS: Sex—perf., perfect; imp., imperfect. Size—l, large; m, medium; s, small. Form—b, broad; c, conical; r, round; l, long; i, irregular; n, necked; d, depressed. Color—b, bright; s, scarlet; r, red; d, dark; v, very; c, crimson; l, light.

Variety.	Sex.	Date of bloom.	Date first ripe.	Date last ripe.	Vigor.	Hardiness of plants.	Bloom killed by frost, %.	Productiveness.	Size.	Form.	Color.	Quality.	Firmness.	
Anlo.....	Imp.	May 15	June 11	July 2	88	85	6	60	l	bc	bs	72	81	
Anna Kennedy.....	Imp.	" 15	" 7	June 29	80	90	8	80	sm	rc	vbr	64	76	
Arkansas Traveler.....	Perf.	" 15	" 7	July 2	83	95	5	80	m	rc	dr	68	68	
Armstrong.....	Perf.	" 16	" 12	June 27	90	80	5	75	l	bcn	br	77	76	
Arnout.....	Perf.	" 16	" 13	July 4	98	90	5	80	ms	lrc	bs	88	91	
Arrow.....	Imp.	" 15	" 11	June 25	60	80	8	85	s	rc	.....	68	58
Beder Wood.....	Perf.	" 11	" 4	" 30	100	100	2	90	m	rc	dc	72	84	
Big Ben.....	Perf.	" 16	" 14	" 28	80	85	1	80	sm	rc	bdc	72	74	
Big Berry.....	Perf.	" 19	" 14	July 2	94	90	1	85	m	lc	ds	90	81	
Bisel.....	Perf.	" 14	" 9	" 2	85	90	8	85	m	bc	br	89	77	
Bismarck.....	Perf.	" 25	" 13	June 26	56	85	2	75	m	rc	dr	82	82	
Bostonian.....	Perf.	" 18	" 13	" 30	81	90	2	50	l	rc	ble	82	83	
Brandywine.....	Perf.	" 14	" 14	July 5	100	100	5	95	l	bc	br	94	89	
Brownie.....	Perf.	" 18	" 11	" 2	95	100	6	60	m	l	bsr	92	93	
Bryant.....	Perf.	" 14	" 13	" 2	95	100	2	90	l	bc	vbr	92	92	
Bubach.....	Imp.	" 14	" 7	June 30	100	95	2	90	sm	nrc	dr	89	91	
Burnett.....	Perf.	" 15	" 11	July 1	91	95	2	75	l	rc	dc	90	91	
Clarence.....	Perf.	" 21	" 14	" 2	88	85	1	80	m	lci	br	89	86	
Chenango.....	Imp.	" 15	" 9	" 2	70	95	2	80	m	l	br	88	76	
Cinda.....	Perf.	" 18	" 13	June 30	67	80	2	60	s	rc	bc	72	80	
Clyde.....	Perf.	" 11	" 6	July 2	100	100	4	90	m	l	rc	bds	89	92
Coblen Queen.....	Imp.	" 15	" 11	" 2	100	100	4	85	l	rde	br	81	75	
Collingwood.....	Perf.	" 21	" 14	" 2	70	90	2	40	m	rci	bc	91	90	
Crescent.....	Imp.	" 11	" 7	" 2	95	95	1	80	s	rc	ds	81	84	
Darling.....	Perf.	" 11	" 6	June 19	98	100	2	35	sm	rc	bs	68	67	
Delaware.....	Perf.	" 17	" 13	July 2	93	95	2	80	l	bc	vbr	71	79	
Dole.....	Imp.	" 21	" 15	" 2	60	95	2	60	m	rc	bls	87	85	
Dollar.....	Perf.	" 17	" 18	June 29	70	90	2	60	m	lbc	bc	73	79	
Drought King.....	Imp.	" 11	" 9	" 30	100	100	1	85	m	bc	dc	89	81	
Echo.....	Perf.	" 17	" 13	July 2	95	100	2	80	m	rc	bs	79	87	
Elba.....	Perf.	" 8	" 5	June 29	100	100	1	75	m	s	rcn	dc	75	78
Emma.....	Perf.	" 14	" 11	July 6	100	95	2	90	m	lrc	vbc	89	87	
Enhance.....	Perf.	" 14	" 9	" 2	55	85	3	95	m	rc	bc	82	91	
Epping.....	Imp.	" 15	" 11	June 30	90	90	8	80	m	l	rc	br	72	76
Evans.....	Perf.	" 11	" 11	" 30	83	90	2	80	m	rc	bls	79	80	
Excelsior.....	Perf.	" 9	" 4	" 28	100	100	4	85	sm	rc	bc	90	88	
Ey. Jack.....	Perf.	" 10	" 9	July 2	90	95	2	85	m	rc	ds	51	50	
Fountain.....	Perf.	" 15	" 12	" 2	100	100	3	90	l	rc	bs	18	71	
Fremont.....	Perf.	" 15	" 14	June 30	100	100	2	70	m	l	rc	dc	74	74
Flash.....	Perf.	" 14	" 11	" 30	98	100	10	60	l	bc	bs	86	87	
Gamage.....	Imp.	" 11	" 11	July 2	93	90	5	90	m	lbc	br	76	77	
Gandy.....	Perf.	" 23	" 9	June 28	88	95	1	80	m	l	rc	bs	87	86
Garringer.....	Perf.	" 15	" 14	July 2	75	90	2	75	l	ic	vbc	70	74	
Gertrude.....	Perf.	" 15	" 11	June 30	90	95	3	30	m	s	nrc	ble	65	76
Giant.....	Perf.	" 15	" 10	July 2	88	85	2	35	m	l	rc	bs	65	67
Gladstone.....	Perf.	" 17	" 12	" 7	100	100	8	.....	m	lbc	bs	81	69
Glauber.....	Imp.	" 11	" 11	" 4	95	95	1	85	m	l	rc	br	86	75
Glen Mary.....	Imp.	May 14	" 7	" 2	100	100	1	95	l	bc	vbr	84	78	
Greenville.....	Imp.	" 15	" 9	June 30	88	95	1	95	m	s	red	dc	91	86
H. and H.....	Imp.	" 18	" 13	July 6	100	95	1	80	m	l	bc	dc	73	76
Haverland.....	Imp.	" 11	" 4	June 30	100	100	.....	95	m	rc	bs	87	80
Heflin No. 3.....	Imp.	" 14	" 6	" 28	98	100	2	95	m	l	rc	bc	85	85
Hersey.....	Perf.	" 22	" 11	" 29	83	85	.....	50	s	lcn	br	75	71
Holland.....	Imp.	" 16	" 9	" 28	93	100	1	60	m	o	dc	51	84	
Homestead.....	Perf.	" 15	" 11	" 30	95	100	2	80	m	rc	bc	69	66	

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STRAWBERRIES.—Continued.

Variety.	Sex.	Date of bloom.	Date first ripe.	Date last ripe.	Vigor.	Hardiness of plants.	Bloom killed by frost. %	Productiveness.	Size.	Form.	Color.	Quality.	Firmness.	
Hood River	Perf.	May 21	June 13	June 29	80	95	3	4	5	m	r	bc	63	73
Hoosier	Perf.	" 15	" 14	" 25	90	95	3	4	5	m	r	bc	62	73
Hunn	Perf.	" 21	" 18	July 8	80	95	3	4	5	m	l	bc	61	71
Ideal	Perf.	" 23	" 12	June 28	80	95	3	4	5	m	l	bc	65	75
Imp.	Imp.	" 15	" 14	July 2	90	95	3	4	5	m	s	re	62	72
Johnson Early	Perf.	" 14	" 9	June 29	100	100	1	1	5	m	r	bc	69	77
Kansas Prolific	Perf.	" 14	" 11	July 1	95	90	1	1	5	m	r	bc	62	72
Keyitta Best	Perf.	" 21	" 13	" 22	85	95	1	1	5	m	l	bc	64	74
King Worthy	Perf.	" 17	" 13	June 30	83	95	1	1	5	m	l	bc	65	75
Kossuth	Perf.	" 14	" 9	July 2	80	85	1	1	5	m	r	bc	66	76
Lady Franklin	Imp.	" 15	" 11	June 30	95	90	1	1	5	m	l	bc	69	79
Lady Thompson	Imp.	" 14	" 5	July 12	100	100	4	4	5	m	r	bc	66	76
Lanah	Perf.	" 21	" 12	" 22	100	100	1	1	5	m	r	bc	66	76
Lehman No. 2	Perf.	" 15	" 11	June 29	60	90	1	1	5	m	l	bc	62	72
Little No. 7	Perf.	" 12	" 13	July 2	88	90	1	1	5	m	s	re	64	74
Little No. 8	Perf.	" 17	" 14	" 22	100	100	1	1	5	m	s	re	62	72
Little No. 40	Perf.	" 22	" 14	" 23	73	90	1	1	5	m	r	bc	65	75
Lovett	Imp.	" 11	" 13	" 22	100	100	1	1	5	m	r	bc	67	77
Magoon	Perf.	" 21	" 13	June 30	78	80	1	1	5	m	l	bc	62	72
Manwell	Perf.	" 21	June 11	July 1	68	75	1	1	5	m	l	bc	61	71
Margaret	Perf.	" 18	" 12	June 29	88	95	1	1	5	m	l	bc	67	77
Marshall	Perf.	" 17	" 11	July 1	70	90	2	2	5	m	r	bc	66	76
Marston	Imp.	" 16	" 5	June 29	83	95	3	3	5	m	r	bc	68	78
McKinley	Perf.	" 12	" 12	" 30	80	80	2	2	5	m	l	bc	62	72
Maximus	Perf.	" 21	" 14	" 29	75	90	2	2	5	m	l	bc	66	76
Mayflower	Perf.	" 8	" 2	" 29	100	100	3	3	5	m	l	bc	69	79
Mele	Imp.	" 16	" 12	" 30	73	95	1	1	5	m	l	bc	62	72
Michigan	Perf.	" 18	" 14	" 30	73	85	5	5	5	m	l	bc	64	74
Milton	Perf.	" 15	" 13	" 30	78	90	3	3	5	m	l	bc	69	79
Morgan Favorite	Perf.	" 14	" 10	" 30	100	100	4	4	5	m	l	bc	69	79
Nick Omer	Perf.	" 15	" 13	" 29	78	85	1	1	5	m	l	bc	65	75
Nina	Perf.	" 15	" 11	July 2	98	95	5	5	5	m	r	bc	64	74
No. 7	Imp.	" 11	" 9	June 30	90	95	5	5	5	m	r	bc	62	72
Ona	Imp.	" 15	" 7	" 29	90	85	1	1	5	m	l	bc	66	76
Orewiler	Perf.	" 14	" 4	" 30	100	90	1	1	5	m	l	bc	64	74
Oriole	Imp.	" 15	" 14	" 29	68	90	1	1	5	m	r	bc	63	73
Parker Earle	Perf.	" 11	" 12	July 6	65	95	3	3	5	m	l	bc	66	76
Parker Earle Imp.	Perf.	" 16	" 14	" 2	90	95	3	3	5	m	l	bc	65	75
Parker Earle Jr.	Perf.	" 17	" 14	June 30	60	80	3	3	5	m	r	bc	61	71
Peabody	Perf.	" 9	" 4	" 29	98	100	3	3	5	m	r	bc	62	72
Phoenix	Perf.	" 16	" 7	" 27	85	90	1	1	5	m	l	bc	61	71
Portage	Perf.	" 14	" 13	" 30	93	95	1	1	5	m	l	bc	60	70
Purdue	Imp.	" 11	" 5	" 30	100	95	1	1	5	m	l	bc	60	70
Pride of Cumberland	Perf.	" 14	" 12	June 29	93	95	1	1	5	m	l	bc	62	72
Pride of Ohio	Perf.	" 11	" 5	" 30	90	80	1	1	5	m	s	bc	62	72
Reed Prolific	Perf.	" 12	" 11	" 25	90	90	5	5	5	m	s	bc	65	75
Repeater	Perf.	" 9	" 4	" 29	100	95	5	5	5	m	r	bc	67	77
Ridgeway	Perf.	" 14	" 8	" 22	93	85	1	1	5	m	l	bc	62	72
Riehl 25-28	Perf.	" 14	" 7	" 30	100	100	4	4	5	m	l	bc	64	74
Riehl 29-32	Perf.	" 12	" 7	" 30	78	85	4	4	5	m	l	bc	60	70
Rio	Perf.	" 11	" 5	" 27	95	100	4	4	5	m	r	bc	62	72
Ruby	Imp.	" 14	" 9	" 27	80	80	1	1	5	m	r	bc	64	74
Roblin Earliest	Perf.	" 11	" 4	" 27	75	80	3	3	5	m	s	bc	62	72
Sample	Imp.	" 11	" 10	" 30	100	100	2	2	5	m	r	bc	63	73
Satisfaction	Perf.	" 12	" 9	" 29	90	90	2	2	5	m	s	bc	63	73
Seriver	Perf.	" 14	" 7	" 25	82	80	1	1	5	m	l	bc	65	75
See No. 1	Perf.	" 12	" 5	" 28	90	90	1	1	5	m	r	bc	65	75
See No. 2	Imp.	" 16	" 7	" 27	80	90	1	1	5	m	r	bc	62	72
See No. 3	Imp.	" 16	" 9	" 30	100	95	1	1	5	m	r	bc	65	75
See No. 4	Imp.	" 14	" 2	" 27	80	90	1	1	5	m	r	bc	63	73

STRAWBERRIES.—*Concluded.*

Variety.	Sex.	Date of bloom.	Date first ripe.	Date last ripe.	Vigor.	Hardiness of plants.	Bloom killed by frost, %	Productiveness.	Size.	Form.	Color.	Quality.	Firmness.	
Seek-no-Farther.....	Perf.	May 15	June 9	June 29	93	100	...	35	m	r	c	b s	75	
Seneca Chief.....	Perf.	" 12	" 9	" 29	60	100	...	30	m	r	c	b s	69	
Snowball.....	Perf.	" 18	" 9	" 29	80	100	...	35	m	r	c	b s	73	
Sparta.....	Perf.	" 14	" 10	" 30	70	100	...	35	m	r	c	b s	75	
Splendid.....	Perf.	" 18	" 9	" 29	70	100	...	35	m	r	c	b s	75	
Star.....	Perf.	" 14	" 14	" 29	60	80	...	30	m	b	c	b s	69	
Stevenson.....	Perf.	" 15	" 8	" 20	70	85	...	30	m	s	r	c	b s	75
Stone Early.....	Imp.	" 11	" 4	" 28	100	100	...	100	m	s	r	c	b s	75
Stouffer.....	Perf.	" 11	" 9	" 28	98	100	...	32	m	r	c	b s	75	
Success.....	Perf.	" 15	" 4	" 29	95	100	...	32	m	r	c	b s	75	
Stahelin.....	Perf.	" 14	" 5	" 29	90	90	...	35	m	r	c	b s	74	
Surprise.....	Perf.	" 16	" 4	" 30	100	100	...	35	m	r	c	b s	74	
Thompson 103.....	Perf.	" 16	" 12	" 28	85	100	...	35	m	r	c	b s	74	
Timbrell.....	Imp.	" 16	" 10	July 2	100	95	...	35	m	r	c	b s	75	
Unnamed.....	Perf.	" 14	" 9	" 29	100	100	...	35	m	r	c	b s	78	
Vandervort 2.....	Perf.	" 15	" 11	.....	88	85	...	35	m	r	c	b s	83
Vandervort 3.....	Perf.	" 15	" 10	June 29	80	75	...	30	m	r	c	b s	61	
Vera.....	Imp.	" 16	" 7	" 24	78	100	...	30	m	r	c	b s	70	
Vories.....	Perf.	" 14	" 6	" 29	100	100	...	35	m	r	c	b s	72	
Warfield.....	Perf.	" 11	" 5	" 29	100	100	...	30	m	r	c	b s	81	
Weston.....	Imp.	" 16	" 7	" 25	85	85	...	35	m	r	c	b s	78	
Wetzel.....	Perf.	" 16	" 9	" 25	90	90	...	35	m	r	c	b s	76	
Whitney.....	Perf.	" 21	" 14	" 29	50	70	...	35	m	r	c	b s	78	
Wm. Belt.....	Perf.	" 14	" 11	July 2	90	90	...	40	m	r	c	b s	78	
Woolverton.....	Perf.	" 16	" 7	June 29	78	90	...	40	m	r	c	b s	80	
Wonderful.....	Imp.	" 16	" 7	" 25	58	90	...	35	m	r	c	b s	68	
Wool.....	Imp.	" 14	" 5	" 29	75	95	...	45	m	r	c	b s	76	
World Champion.....	Imp.	" 16	" 12	" 25	80	80	...	40	m	r	c	b s	76	
Zula.....	Perf.	" 21	" 9	" 25	68	90	...	29	m	s	r	c	68	

Notes on Varieties.

Fig Pen- Has a perfect flower and vines of weak growth; are not very productive, berries being scattering, but have good color and flavor. In form are round conical, with bright dark crimson color, medium to small in size.

Big Berry- Perfect flower. Vines are very strong growers, foliage rank and thrifty, of good color and quite healthy. Runners numerous. Fruit stems are few and are thinly set with berries. The fruit is large and of good flavor, irregular conical in form and dark scarlet color. The variety has considerable merit, but lacks in productiveness.

Puoy- Vines are small weak growers with but few runners. The foliage is large and coarse, subject to blight. Fruit stems few and poorly filled. Berries are large, dark red, rather soft and of good flavor. Of no value.

Ginda- Perfect flower. Vines very susceptible to leaf blight. Are small, weak growers, with few runners and fruit stems. Berries are smooth, of dark color and good form, but lack in flavor.

Clarence- Perfect flower. Vines are strong and thrifty growers, with numerous runners. Are slightly affected by blight. The fruit stems are few and poorly filled with berries. Fruit is of

medium size, irregular, long conical and with a long neck. Color dark red. Quality quite good. This variety is a good grower but lacks in productivity.

Collingwood- Perfect flower. Plants lack vigor. Foliage is rather small and light colored. Runners are numerous but the fruit stems few. These, however, are well set with berries. Fruit is rough and irregular in shape, showing poor fertilization. Color is a bright crimson. Quality very good. The variety is too unproductive to be of value.

Delaware- Perfect flower. Vines are strong growers and hardy, quite low and short. Runners are numerous as are also the fruit stems, which are quite thickly set with berries. Fruit is of good size, broad conical in shape and bright red color; is thickly covered with seed. Quality rather poor.

Dole- Imperfect flower. Vines lack in hardiness. They seem to be weak and strong but winter kill badly. Foliage large and coarse. Practically free from rust. Fruit stems and runners are not very numerous. Stems were thinly set with berries, which were rather small and irregular; color quite dark. Fleasore did not set well and productivity very poor. Is not desirable.

Echo- Perfect flower. Vines very thrifty, strong growers and hardy, quite well set with runners and fruit stems. Prolific bearers. Berries are medium to large in size, round conical in form, light colored, firm and of a pleasant flavor. A promising variety.

Elba- Perfect flower. Quite early. Seems to be hardy and vigorous, with sufficient runners but shy of fruit stems and berries. Fruit is round conical in shape, having a neck of medium length. Color is bright but the quality is inferior. Not of special value.

Fra- Perfect flower. Very strong, thrifty growers. Hardy, with large, rank and dark colored foliage. Runners and fruit stems are numerous, but the stems are not well set with berries. Fruit is of medium size, good form, color and quality, quite firm and solid. This variety shows considerable promise.

Garage- Imperfect flower. Plants vigorous and hardy, with dark colored, healthy foliage. Runners and fruit stems not sufficiently numerous. Stems well filled with berries, which are of good size, somewhat irregular in shape and bright red in color. Quality and firmness fair. A promising variety.

Gladstone- Perfect flower. Vines thin and hardy. Foliage well colored and seems to be resistant to disease. Bunches and fruit stems numerous. Berries did not set well, were large, light colored and of irregular form, mostly broad and flat. Of fair quality but somewhat soft.

Glauer- Imperfect flower. Vines are fairly vigorous, although not as strong growers as some. Bunches and fruit stems numerous, and very well set with berries, making a very prolific variety. Berries are round conical, firm and a little acid. Is worthy of trial.

H. and H.- Imperfect flower. Vines seem to be hardy and are vigorous growers, well set with fruit stems filled with berries. The fruit is of good size, quite firm, a little irregular in form; color is a dark crimson. Has a very decided flavor, but is a little acid. Well worthy of trial.

Johnson Early- Perfect flower. Vines very vigorous and hardy. Bunches and fruit stems are numerous. Berries are of medium size, rather dark colored and a little irregular, but approaching round conical in form. The flesh is of soft texture and has a core, is bright red in color and of good flavor. Is a good early berry.



Kovitt Best-Perfect flower. A small weak grower and lacking in productiveness. Berries light colored, small and acid. Of no value.

Lehman No.2- Perfect flower. Vines not very vigorous or hardy, but healthy and only moderately productive. Berries somewhat imperfect and of but fair quality.

No. 7- Imperfect flower. Vines fairly strong and vigorous. Fruit stems numerous, very strong and upright, but poorly filled with fruit. Runners strong. Berries light red, medium in size, round and regular in form and somewhat lacking in flavor.

Parker Parle Improved- Perfect flower. No great improvement noticeable. Vines are slightly lacking in vigor, but are very prolific. Berries are long, round conical, color is dark crimson, quality is rather acid. Almost too prolific for ordinary care. The plants need high cultivation to develop the large number of fruits.

Reed Prolific- Perfect flower. Vines slightly lacking in vigor and hardiness and subject to blight. Runners very numerous. Fruit stems small, slender and scattering. Berries small to medium, irregular, sour and seedy. Of no value.

Repeater- Perfect flower. Vines hardy and vigorous, with healthy dark foliage. Fruit stems and runners numerous. Fairly productive. Berries

are medium in size, round conical form, bright crimson in color, quite firm and of very good quality, although a little acid.

Robbins Earliest- Perfect flower. A small grower, vines neither vigorous nor hardy. Fruit stems are scattering, but well filled with small, dark, sweet berries. Not very promising.

Stouffer- Perfect flower. One of the most vigorous growers, free from blight. Runners a little shy; fruit stems numerous, but not well filled. Fruit large, irregular, round or long conical, dark colored, sweet and of good flavor. A promising sort.

Vera- Imperfect flower. Plants quite weak. Fruit stems plentiful but the berries did not fill well. Fruit dark colored, round conical, somewhat irregular and of very good flavor. This variety was grown under unfavorable conditions, and this undoubtedly had much to do with the poor showing made by it.

Vories- Perfect flower. Plants vigorous although somewhat subject to blight. Runners and fruit stems are numerous, but the fruit stems are not well filled with berries. Fruit is dark colored, broad conical in form, and of a sweet pleasant flavor. Of less value.

Wonderful- Imperfect flower. Plants seem to lack hardiness as but few plants grew. Poor showing was probably due to the location.

Wocll- Imperfect flower. This variety grew under very unfavorable conditions, which must be considered in connection with the accompanying table. Vines are strong growers, dark colored and seem to be a little susceptible to blight. The berries are dark colored, irregular round conical, solid and of good quality. Quite promising.

The following are some of the older sorts which have been grown for two or more seasons and proved themselves of value.

Brandywine- Perfect flower. Vines are vigorous. Fruit is of good size and appearance. Under favorable conditions this is one of the most desirable of the large varieties for general use. Season medium to late.

Beder Wood- Perfect flower. This variety is much used to fertilize pistillate sorts. Vines are vigorous but somewhat subject to blight. Berries are numerous, a little soft and light colored. Quality good.

Bismarck- Perfect flower. Plants are of small, low growth. Berries are large in size, dark red in color and of good form. Quality of flesh is very



good, firmness medium, a very good variety to grow under high cultivation.

Bryant- Perfect flower. Plants are strong, healthy growers and quite prolific. Berries are large, broad, conical, of very bright dark crimson color. Flesh is light colored, firm in texture, but lacking some in quality. The general attractiveness of the fruit makes this a desirable market variety.

Rubach- Plants are vigorous and hardy, especially adapted to strong soils. Berries are good in size, form, color and quality.

Clyde- Perfect flower. Plants are vigorous and hardy, a little light in color. A very profitable sort on soils not easily affected by drought. Berries are light red, color extending through the berry. Are but moderately firm. Excellent to fertilize pistillate varieties.

Excelsior- Perfect flower. The plants are very vigorous, hardy, healthy and productive. Runners and fruit stems abundant. The fruit is of medium size, quite firm, dark colored and of good form. Quality is good but acid. One of the best early sorts.

Flash- Imperfect flower. The vines as grown this year were quite vigorous, with dark foliage somewhat blighted. Runners numerous. Fruit stems slightly lacking in number, but well filled with berries. Fruit is large, of good color and very good quality and texture. Although somewhat lacking in productiveness, it is a valuable variety.

Fountain- Perfect flower. Tall vigorous plants. Berries are of good size, form and color, and this with its high quality and firmness make it a very good variety.

Gandy- Vines are fairly vigorous and hardy. Fruit is large, of high quality and firmness. Season late. Only moderately productive, but the variety holds out well.

Glen Hary- Plants of good growth and healthy. Fruit is borne in abundance, is of large size, of good quality and firmness. One of the best market varieties under high culture.

Greenville- Plants good in vigor of growth and productiveness. Berries are large in size but not of sufficient firmness. In other points is very good.

Haverland- This variety is vigorous, hardy and prolific. One of the most profitable for general use. Fruit is of good size and quality. Medium in firmness. Its fine appearance makes it a good

market variety, and it is well adapted to the home garden.

Knight- Vines grow tall but lack in vigor. Foliage is somewhat subject to blight. Berries are of good form, color, quality and texture. This variety seems to be falling off in vigor and productivity.

Lady Franklin- Plants are very strong and healthy. Berry is medium to large and of very good color. This variety has very good plants and the fruit is of good quality and appearance, but is lacking in firmness. This makes it undesirable as a market sort, but a very good sort for home use.

Marshall- This variety is a strong grower and quite prolific. Berries large, dark red and uniform. Quality and texture are very good. Except on strong soil the foliage is slightly subject to blight. This is one of the best large berries upon moist, rich soils.

Morgan Favorite- Perfect flower. Plants are strong and have very good foliage. Fruit ranks high in size, form and color. The flesh is bright, juicy of high quality and firmness. The productivity and uniformity of this variety make it valuable for home or market use.

Hick Ohmer- Perfect flower. This variety was in a poor location and for this reason lacked somewhat in vigor and productivity. Berries are large, of good form and of fine appearance, which, with their high quality and firm texture, should rate it a valuable sort.

Ponderosa- Perfect flowers. Plants of medium growth and quite productive. Berries are large and roundish, very good in color, quality and firmness, making it valuable for market and home use.

Pidgeway- Perfect flower. This variety has very good plant qualities. Fruit is large, of good form and color. The attractive appearance and high quality and firmness make this a very useful variety.

Ruby- Vines are of medium vigor and healthy in foliage. Fruit stems lacking in number, but well filled with berries. Fruit is medium in size, and very good in form, color, quality and firmness. Excellent for home use.

Sarple- Imperfect flower. Plants are strong, vigorous growers and productive; have stout fruit stalks and large healthy leaves. Berries are of large size, very regular in form, bright dark crimson in color and of high quality and texture. This variety has proved itself valuable during the two seasons grown here. Well worthy of trial.

Timbrell- Vines are vigorous and of medium productivity. Berries are large, of good quality, but a little soft. Color is dull crimson, not desirable as a market sort but very good for home use.

Warfield- Vines are strong vigorous growers and quite productive. Berries are medium in size, of good texture, lacking a little in flavor, but the bright appearance of the berries and their adaptation for canning, make it a very good market variety.

William Belt- Plant are good growers and productive. Berries are large and of good form; quality and texture are high; color is bright red. This variety was in a poor location which must be considered in connection with the table. A valuable variety.

Several varieties that have stood at the head of the list for a number of years, still maintain their position. Excelsior, Haverland, Warfield, Clyde, Fubach, and Grandwire can be relied upon to give good crops under mainly favorable conditions, although the best results cannot be secured with the last three varieties except in rich moist soils. Glen, Mary, Wm. Belt, Marshall, and Nick Ober, also, are quite satisfactory under high culture.

Sample in plant and fruit compares well with any other variety. Morgan, Ponderosa, Ridgeway and

Ruby have also been quite satisfactory.

Of the newer sorts that fruited in 1900,
W. and H., Echo, Pina, Gavage, Gladstone, Stouffer,
Johnson Parly, and Wooll are most promising.

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