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PROFESSOR H. L. HUTT, O. A. C., GUELPH.

THE
CANADIAN HORTICULTURIST.

VOL. XXI. TORONTO. 1898. MAY, NO. 5

STRAWBERRY TESTS AT GUELPH.

BOUT a year ago, we gave our readers a sketch of Professor Hutt's work at the Agricultural College, and his preparation for it. We are now enabled to give a fine full page picture of him, and at the same time some extracts from his last report on Strawberries, with the engravings made from photographs, all of which appeared in the last College Report, just sent out by the Department of Agriculture.

TEST OF VARIETIES OF STRAWBERRIES.

For the past two years we have been testing varieties of Strawberries. In last year's report the results are given of a trial of 121 of these. This year we had 150 varieties in fruiting, and have added eighty to our collection to fruit next year. The results with many of these during the past two years have shown them to be of little or no value, and if next season's yields confirm these results such varieties will be placed on our discarded list. On the other hand, a number have made excellent records for both seasons, and if, after repeated trials, these records are maintained, such varieties may with confidence be recommended to intending planters.

The treatment given in these experiments may be briefly outlined as follows: The ground on which the strawberries were planted was cropped the previous season with onions, beets and carrots, during which time it was kept as free as possible of weeds. It was plowed in the fall after the removal of these crops, and top-dressed during the winter with short, barnyard manure. As soon as the land was fit to work in the spring it was

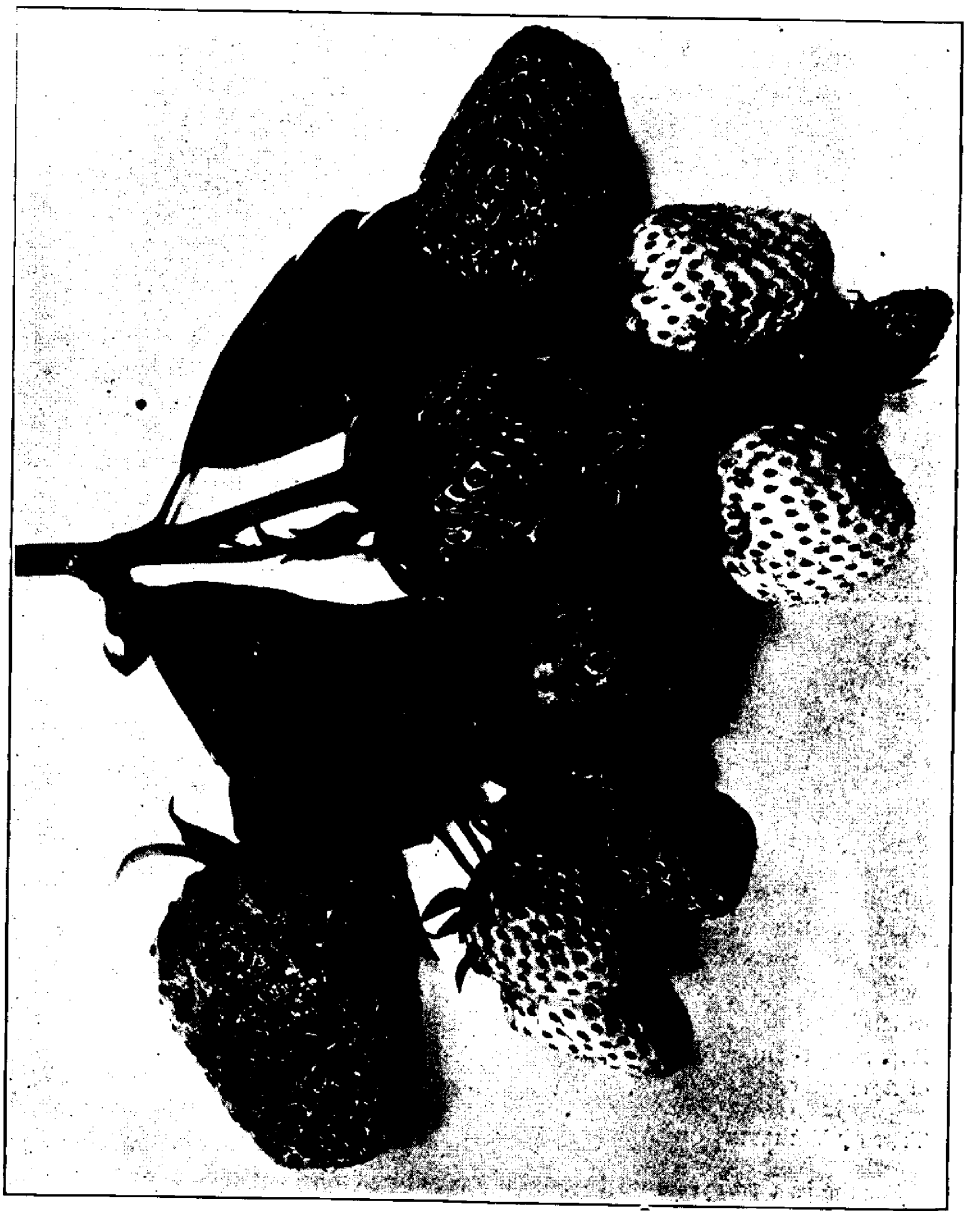


FIG. 1341.—HAVERLAND.

plowed again, and put in as fine condition as possible with the harrow and roller. The rows were then marked out four feet apart, and cross marked with a fifteen-inch hand-marker. Twelve plants of each variety were planted, each variety thus being given fifteen feet of a row. A space of thirty inches was left between the different varieties in the same row, to avoid any mixing of runners.

Those of the plants that were of our own growing were taken from the plantation set out the year before, which had not yet borne fruit. Such plants are much more vigorous and thrifty than plants taken from old plantations which has fruited for one or more seasons.

The planting was done by means of a spade, which was thrust deeply into the ground and then pressed backwards and forwards. Into the cleft thus made the roots were spread out fan-shaped by a quick slapping motion, and the soil packed firmly about them by the feet of the planters. As soon as possible after planting the surface soil was loosened with the horse cultivator and hand hoes, and thorough cultivation was given through the season.

All blossoms were picked off the first season, so that the plants were not allowed to exhaust themselves in the production of fruit. All runners were allowed to set, forming wide matted rows, but each variety was confined to its own fifteen feet of row.

After the ground had frozen hard in the fall it was lightly covered with long strawy manure, which helped to hold the snow, and protected the plants from injury early in the spring by preventing their alternate freezing and thawing. When growth had commenced in the spring, this covering was racked off the plants and left as a mulch between the rows. This not being heavy enough to keep down the weeds and properly conserve the soil moisture, an additional heavy mulch of coarse grass was put on before the fruit began to ripen. This kept the berries clean and retained the soil moisture while the crop was ripening.

Owing to the cold spring the plants came into bloom about two weeks later this year than last; yet, notwithstanding the lateness of the bloom, many of the first blossoms were blackened by the repeated late spring frosts. But this did not so seriously affect the crop as the extremely hot dry weather about the middle of the fruiting season in July. The showers following, however, prolonged the fruiting on those varieties which were hardy enough to withstand the effects of the preceding drought.

In the following tabular statements the varieties under the test are ranked in the order of their yield. In some cases all of the plants set did not live; where only one or two failed, this would not materially alter their yields, particularly in the case of the free running varieties, as their runners filled the fifteen feet of row alloted to them. The greatest number of failures were among the newly added varieties which came from a distance. Many of these will, no doubt, make a better record next year, when their yield will be from plants of our own growing. The number of plants which lived is mentioned for each variety, so that allowance may be made for some good varieties, which, on account of the failure of some of the plants, stand low on the list.

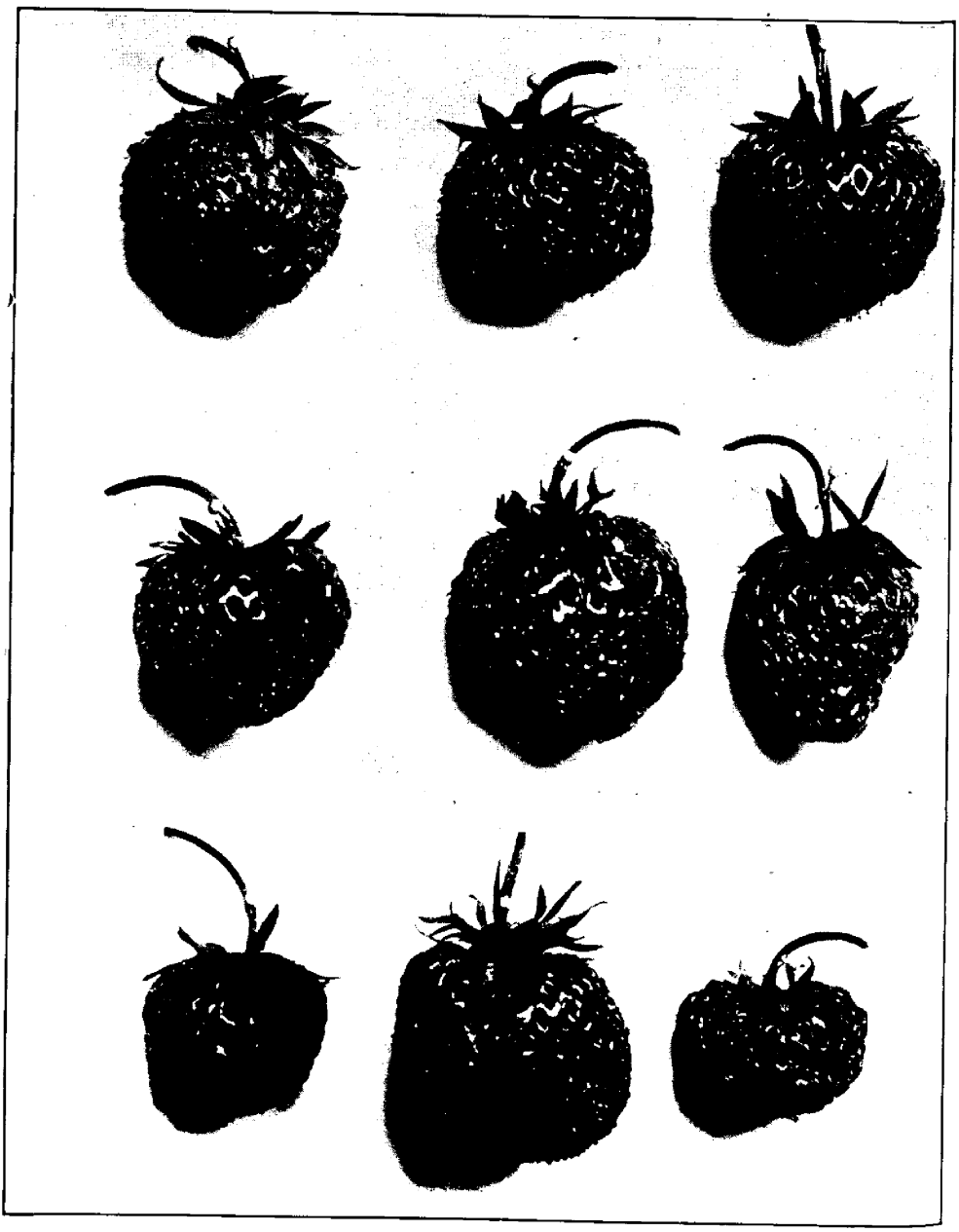


FIG. 1342.— OHIO CENTENIAL. HATCH EXPERIMENTAL STATION. PRINCETON CHIEF. EDGAR QUEEN. MRS. CLEVELAND. NO NAME. AROMA. DR. ARP. KLICKITA.

STRAWBERRY TESTS AT GUELPH.

EXTRACTS FROM PROFESSOR HUTT'S TABULAR STATEMENT.

Rank.	Rank in 1896.	Varieties.	Sex { B. bi-sexual. P. pistillate.	Number of plants lived	Vigor of growth—scale 1-10.	Freedom from rust—scale 1-10.	Date of first bloom.	Date of first picking.	Date of last picking.	Yield.	Firmness.	Color.	Weight of 50 average berries.
									July.	ounces.			ounces
1	33	Tennessee Prolific	B	12	10	9	May 21.	June 26.	17	281.00	F	C	13.00
2	13	Stone's Early	P	12	10	10	" 21.	July 1.	14	263.75	M	S	6.25
3	8	Saunders	B	12	10	6	June 2.	" 1.	20	261.00	F	D C	11.25
5	52	Woolverton	B	12	9	9	May 25.	" 1.	20	240.00	M	C	16.00
6	45	Shuster's Gem	P	12	9	5	" 18.	June 26.	20	234.00	F	D C	10.75
7	....	Wm. Belt	B	12	10	7	" 24.	" 28.	20	232.25	F	D R	13.25
8	10	Haverland	P	12	10	9	" 18.	" 23.	20	232 00	M	L S	12 00
9	....	Ruby	B	11	10	7	" 21.	" 26.	22	229.75	F	D C	14.25
10	40	Isabella	B	12	10	5	" 23.	" 23.	17	228.25	V F	D C	11.25
11	...	Dominion	B	10	10	4	" 21.	July 3.	22	217.75	S	L S	12.00
12	47	Van Deman	B	12	8	6	" 18.	June 23	17	214.50	F	D C	10.00
13	....	Tubbs	B	9	9	7	" 18.	" 23.	20	210.00	F	D R	12.25
14	....	Liddle	B	9	10	9	" 25.	July 1.	20	209.75	M	L	7 50
15	26	Jocunda Improved	B	12	9	7	" 28	June 28.	17	205.00	V F	D C	10.75
16	1	Warfield	P	12	10	7	" 24.	" 26.	20	202 50	V F	D C	9.50
17	62	Aroma	B	12	8	10	" 27.	July 3.	20	193.25	F	D R	10.75
18	7	Barton's Eclipse	P	11	9	5	" 18.	June 26.	20	193 00	F	B C	11.50
19	35	Prince of Berries	B	12	9	5	" 23.	July 3.	22	192.50	M	B S	11 75
20	...	Enormous	P	12	10	8	" 25.	June 26	20	191.75	F	C	13.75
21	37	Northern	B	12	10	5	" 21.	July 1.	20	188.75	F	C	7.50
22	79	Judsonia	B	12	9	5	" 24.	June 26.	14	181 25	F	L S	19.75
23	....	Beebe	B	12	7	5	" 21.	July 1.	20	180.25	S	D R	10.50
24	87	Ona	P	12	10	9	" 18.	June 26.	20	177.75	M	S	9.00
25	58	Princeton Chief	P	12	8	6	" 24.	July 3.	22	173.00	F	C	7.75
26	15	Seedling A	P	11	9	5	" 21.	June 28.	20	173.00	S	L C	7.75
27	38	Enhance	B	12	10	7	" 18.	July 3.	20	171.00	V F	D R	7 75
28	65	Muskingum	B	12	8	8	" 25.	" 3.	20	169.75	S	L C	12.00
29	16	Lovett	B	12	10	6	" 18.	June 23.	17	167.75	F	L S	9.75
30	...	Arrow	P	12	10	9	" 21.	" 26.	14	166 50	M	D C	8.00
31	42	Howard's 41	P	12	9	9	" 25.	July 3.	20	162 50	V F	S	7.75
32	39	Leader	B	12	10	4	" 17.	June 28.	20	162.00	M	D C	8.50
33	5	Prize	P	12	10	6	" 18.	" 26.	20	161.75	M	S	7 75
34	...	Phipen	B	5	9	8	" 24.	" 28.	20	161.50	F	B C	10.25
35	54	Ohio Centenial	B	11	8	9	" 21.	July 3.	22	161.50	M	L S	11.25
36	22	Belle(Crawford's 51)	B	12	10	8	" 23.	" 3.	22	158.50	F	B S	9 25
37	....	Gandy Belle	B	10	8	3	" 18.	June 26.	12	158.25	M	D C	13.50
41	51	Bessie	B	12	7	6	" 24.	" 23.	14	154.75	F	L S	7 50
42	3	Edgar Queen	P	10	10	5	" 25.	July 1.	22	154.50	S	L R	10 75
43	36	Southard	B	12	8	9	" 18.	June 26.	14	152 50	S	C	9.25
44	34	Splendid	B	12	10	7	" 21.	July 1.	20	152.25	F	D R	10.75
45	72	Hatch Expt. Sta. 24	B	12	10	6	" 29.	" 3.	22	151.50	M	D C	12.50
46	31	Williams	B	12	10	6	June 2.	" 1.	22	151 25	F	D C	12.50
48	55	Dayton	B	12	10	6	May 24.	June 26.	12	150.50	S	L S	13.00
53	4	Bisel	P	10	10	7	" 24.	" 28.	20	145.00	F	D C	9 50
56	32	Dr. Arp	P	12	8	4	" 25.	July 3.	22	141.25	F	D R	7.25
57	6	Standard	P	11	10	7	" 24.	" 3.	20	139.25	F	S	6.50
59	43	Rio	B	12	9	8	" 17.	June 23.	12	134.75	F	S	9.25
62	86	Beder Wood	B	9	7	5	" 17.	" 23.	12	132.75	F	B S	9.75
63	48	Michel's Early	B	12	10	6	" 14.	" 23.	12	131.00	S	L R	6.00
65	49	Cyclone	B	11	10	9	" 18.	" 26.	14	127 75	M	S	8.00
67	....	Kansas Prolific	B	12	10	4	" 18.	" 28.	20	126.50	F	L S	5.00
69	19	Gandy	B	11	7	5	" 18.	" 26.	20	125.25	S	B S	11.00
73	67	Marshall	B	12	8	7	" 18.	" 26.	20	122 75	S	D C	11.75
75	23	Gertrude	B	12	9	8	" 18.	" 23.	14	119.75	M	L S	10.50
76	9	Mrs. Cleveland	P	12	9	7	" 24.	July 1.	20	118 00	M	L S	9.75
79	74	Klickita	P	12	10	4	" 24.	" 3.	20	114.75	S	D R	6.00
81	80	Scarlet Ball	P	12	7	5	" 27.	" 5.	22	113.75	S	L R	11.25

FIG. 1343.

RUBY.
GREENVILLE
BARTON'S ECLIPSE.

WM. BELT.
SOUTHARD.
SAUNDERS.

WILLIAMS.
SHUSTER'S GEM.
JOCUNDA IMP.

STRAWBERRY TESTS AT GUELPH.

VARIETIES OF STRAWBERRIES UNDER TEST.—*Continued.*

Rank.	Rank in 1896.	Varieties.	Sex { B. bi-sexual. P. pistillate.	Number of plants lived.	Vigor of growth.—scale 1-10.	Freedom from rust—scale 1-10.	Date of first bloom.	Date of first picking.	Date of last picking.	Yield.	Firmness.	Color.	Weight of 50 average berries.
									July.	ounces.			ounces
85	61	Timbrell	P	12	8	3	May 24...	July 3..	20	110.25	S	G R	11.50
86	106	Anna Forrest	B	12	6	6	" 18.	June 28...	20	108.75	M	G R	13.50
87	....	Gillespie	B	12	7	8	" 21...	" 26...	14	198 25	F	L S	11.75
88	....	Jessie	B	12	8	8	" 21.	" 28.	20	107.25	M	D R	13.50
89	71	Beauty	B	12	6	9	" 18...	" 26...	12	106.50	S	B S	13.50
90	28	Crescent	P	12	10	6	" 18...	" 28...	14	105.50	M	S	6.50
91	73	Gov. Hoard	B	12	7	6	" 21...	2 28...	20	105.25	S	L S	6.00
92	90	Jersey Queen	P	12	7	6	June 3...	July 3...	22	104.25	S	L S	12.50
94	91	Parker Earle	B	11	7	8	May 15...	June 23..	12	103.75	M	D C	8.50
102	89	Oberholtzer's No. 2	P	12	10	7	June 2...	July 7...	22	92.50	F	L R	9.25
104	56	Lady Rusk	P	12	7	5	May 21...	" 1....	17	90 75	F	D C	7.75
105	11	Greenville	P	11	9	8	" 25..	" 3...	14	89.75	M	D R	6 50
108	....	Kossuth	B	12	10	3	" 14...	June 28...	12	83.50	S	D C	9.50

In column two is given the relative positions of those varieties fruited in 1896 which had a full or nearly full stand of plants. The great change in position of many of these shows very clearly how little value should be placed upon the results of but a single test. It is only by the average of a number of trials that we can arrive at a reliable estimate of the value of a variety.

By the term "vigor of growth" is meant the ability of the plant to send out runners and make a full matted row. On ordinary soils the most vigorous varieties, graded ten, might well be planted two feet apart in the row and make a full matted row.

Strawberry rust (*Sphærella fragariæ*) may be prevented or held in check by spraying with the Bordeaux mixture; but in our experimental plots the plants were not treated, our purpose being to find out the susceptibility of the different varieties to the disease. By reference to column 6 it will be seen that many of the most productive varieties are the most susceptible to it.

The date of bloom, as noted in column 8, should be carefully noted by planters who wish to select bisexual varieties to fertilize the bloom of pistillates. The former should, if possible, be a little earlier than the latter, to insure the fertilization of all early blossoms.

The yields are recorded in ounces, this having been found to be the most accurate method of recording results. The yield in boxes may be approximately ascertained by reckoning sixteen ounces to a box.

The abreviations under the heading "*Firmness*" are :—F., firm ; V. F., very firm ; M., medium ; S., soft ; V. S., very soft.

Those under the heading "Color" are : R. red, S. scarlet, C. crimson, and the qualifying adjectives, L. light, D. dark.

The comparative size of the berries of the different varieties can be most accurately recorded by giving the weight of fifty averaged-sized berries. To ascertain the point, the weighing of each variety was made at its midseason for fruiting, that is at its fourth or fifth picking

EARLY VARIETIES.

In the following list is given a few of those varieties giving the largest early yield, ranked according to their yield for the first week ending July 1st.

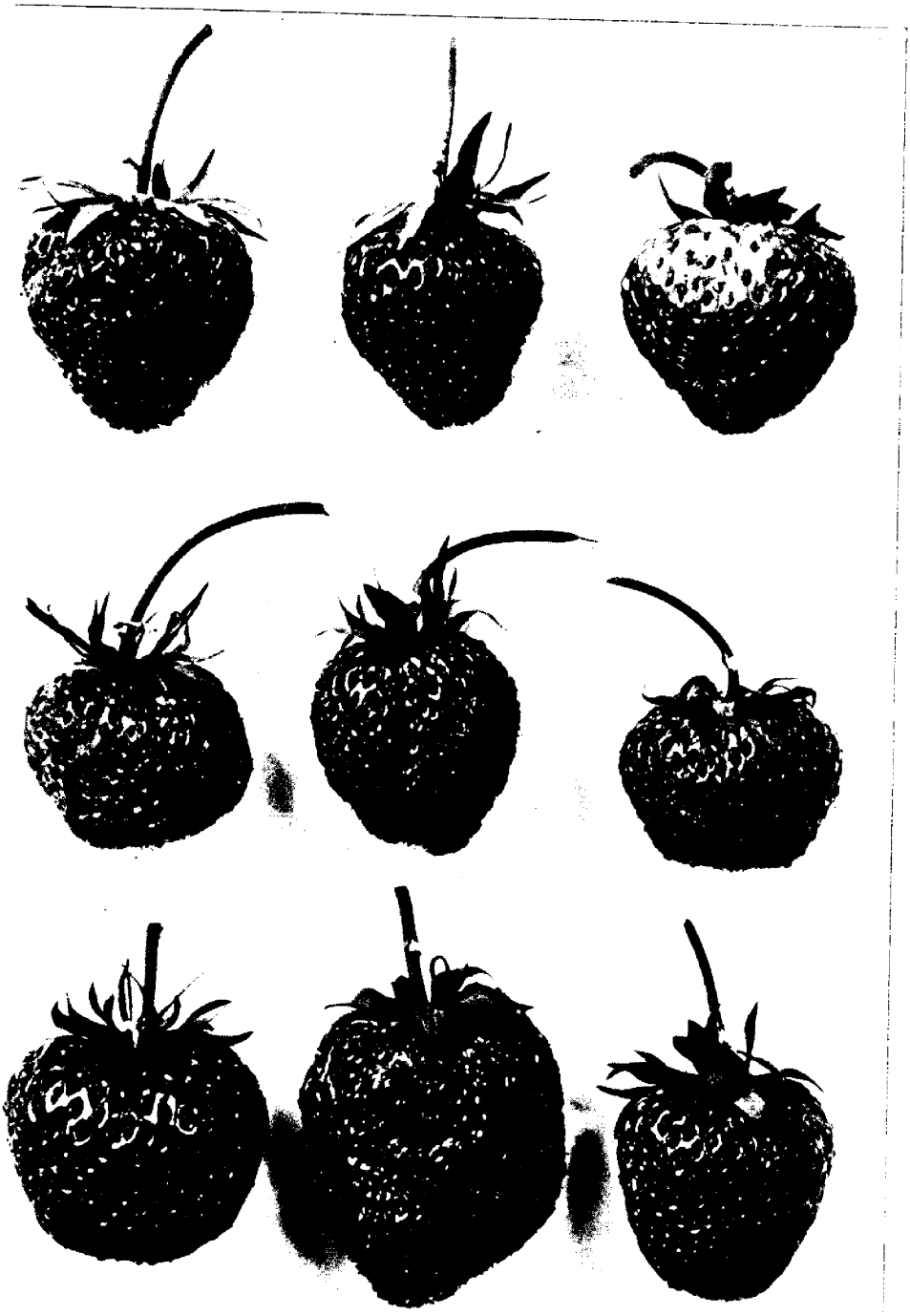


FIG. 1344.

LOVETT.
BEDER WOOD.
MUSKINGUM.

WARFIELD.
TENNESSEE PROLIFIC.
BELLE.

PRINCE OF BERRIES.
ONA.
BISEL.

Rank.	Varieties.	Sex.	Date of first picking.	Yield before July 1st.	Total yield.	Rank for total yield.
				Ounces.	Ounces.	
1	Van Deman	B	June 23	136 75	214.50	12
2	Bessie	B	" 23	73.25	154.75	41
3	Shuster's Gem	P	" 26	68.25	234.00	6
4	Michel's Early	B	" 23	65.75	131.00	63
5	Rio	B	" 23	61.25	134.75	59
6	Haverland	P	" 23	55 50	232.00	8
7	Ona	P	" 26	50.00	177.75	24
8	Smith's Seedling	B	" 26	47.50	93 75	101
9	Beauty	B	" 26	46.50	106.50	89

Late Varieties.

In the following list is given a few of these varieties giving the largest late yield, ranked according to their yield after July 12th.

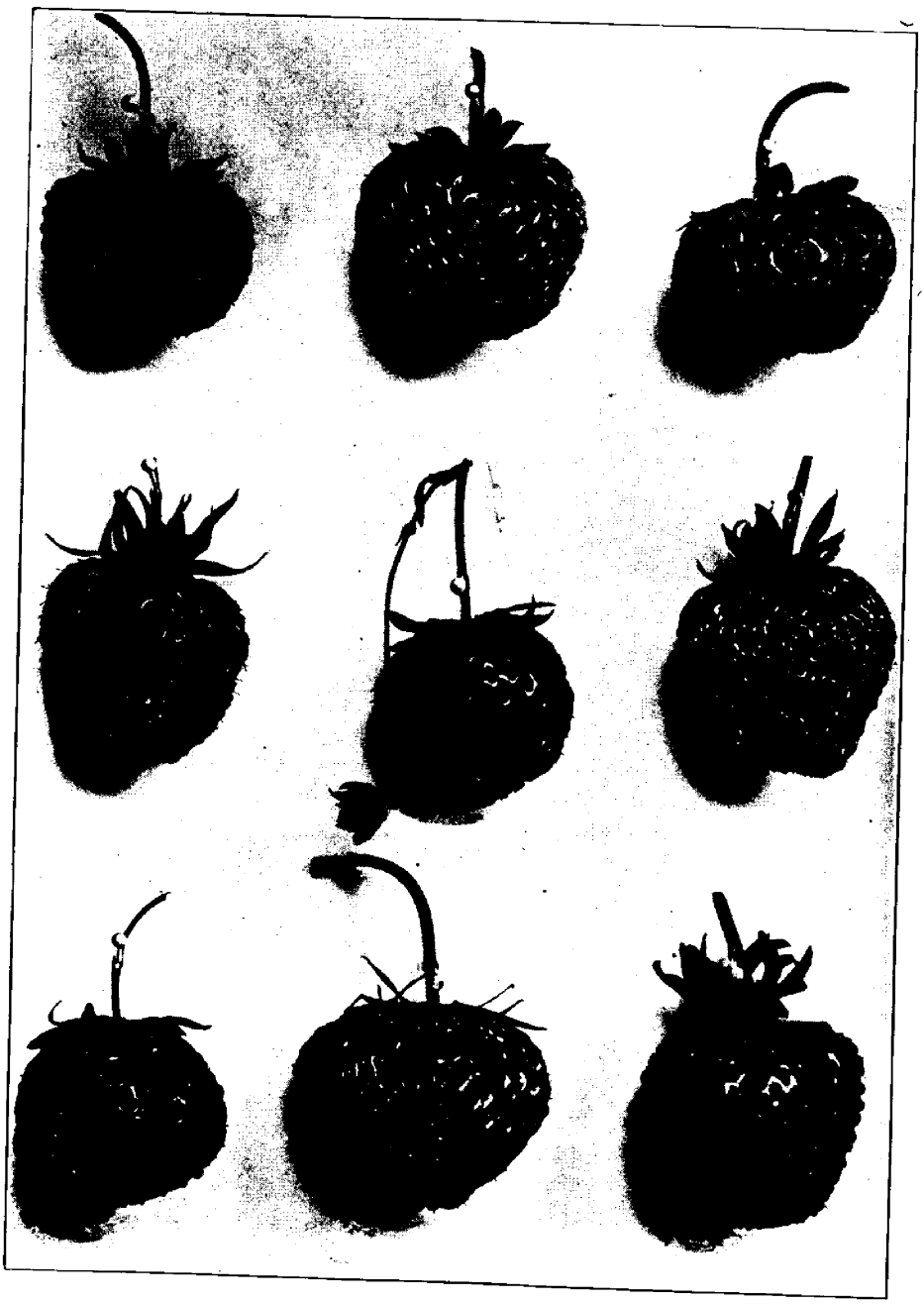
Rank.	Varieties.	Sex.	Date of last packing.	Yield after July 12th.	Total yield.	Rank for total yield.
				Ounces.	Ounces.	
1	Dominion	B	July 22	87.75	217.75	11
2	Equinox	B	" 22	68.00	121.25	74
3	Prince of Berries	B	" 22	55.50	192.50	19
4	Scarlet Ball	P	" 22	51.50	113.75	81
5	Hatch Expt. Stn. 24	B	" 22	47.25	151.50	45
6	Belle (Crawford's 51)	B	" 22	46.75	158.50	36
7	Princeton Chief	P	" 22	45.50	173 00	25
8	Edith	P	" 20	40.50	97.75	97

Large Berries.

In the following list is given a few of these varieties bearing the largest berries, ranked according to the size of the berries.

Rank.	Varieties.	Weight of 50 average berries.	Firmness.	Rank for total yield.
1	Edith	23 50	F	97
2	Wm. Belt	16.75	F	7
3	Woolverton	16.00	M	5
4	Mary	15 50	M	114
5	Ruby	14.50	F	9

The accompanying photographs are all natural size, and are taken in most cases from medium sized berries.



ANNA FOREST.
OBERHOLTZER NO. 2
NORTHERN.

FIG. 1345.—
DOMINION.
STANDARD.
SCARLET BALL.

JERSEY QUEEN.
MARSHALL.
MARY.

BARREL STRAWBERRY CULTURE.

Probably many readers have heard of the plan of raising strawberries on the outside of a barrel. If one has a small city or village lot, or "back yard," the experiment is well worth trying. The accompanying illustration shows one or two wrinkles that may help make the experiment a success. First bore the holes all about the barrel, then put inside a drain pipe made of four strips of board, reaching from the top to the bottom. The joints should not be tight. Now fill in earth about the pipe and set out the strawberry plants in all the holes and over the top. Put the barrel on a bit of plank on the bottom of which wide castors have been screwed. The barrel can then be turned about every fews days to bring the sun to all the plants. An ordinary flour barrel will answer very well for trying this very interesting experiment.—Farm and Home.

FIG. 1346.

NEW STRAWBERRIES.

NEW varieties, superior to the old, are constantly being introduced and growers everywhere are on the lookout to secure the most profitable varieties. What we want is a berry which combines the good points of all, with none of their defects. We have made the greatest advance the last three years that has been made for a quarter of a century. There are to-day three varieties that rank first, namely, *The Clyde*, *Glen Mary* and *Sample*. A rather singular coincidence is that these berries originated one in the West, another in the East and one in the Middle States.

Clyde.—This is the best early variety ever offered the American people.

Glen Mary.—This is the larger berry, ripens later, and on account of its size is equally as profitable.

Sample.—This is the latest variety in existence, two-thirds of its crop ripens after July 1st. It is equal to the Clyde in productiveness and the berries are as large as the Glen Mary.—C. S. PRATT, Reading, Mass.

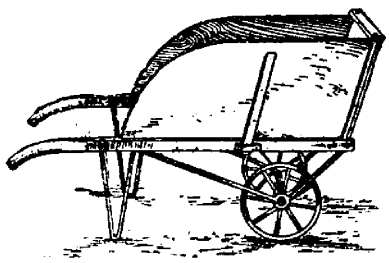


FIG. 1347.

A HANDY GARDEN BARROW.—A great improvement on the ordinary garden wheelbarrow is shown in the cut. The wheels have broad tires, are light and run beneath the body—just in the position to balance the load when the handles are raised. This barrow can be dumped from the side as in the case of the ordinary barrow. It is thus possible to make over one of the old-fashioned wheelbarrows into the style shown, and that, too, at but small trouble and expense.—American Agriculturist.

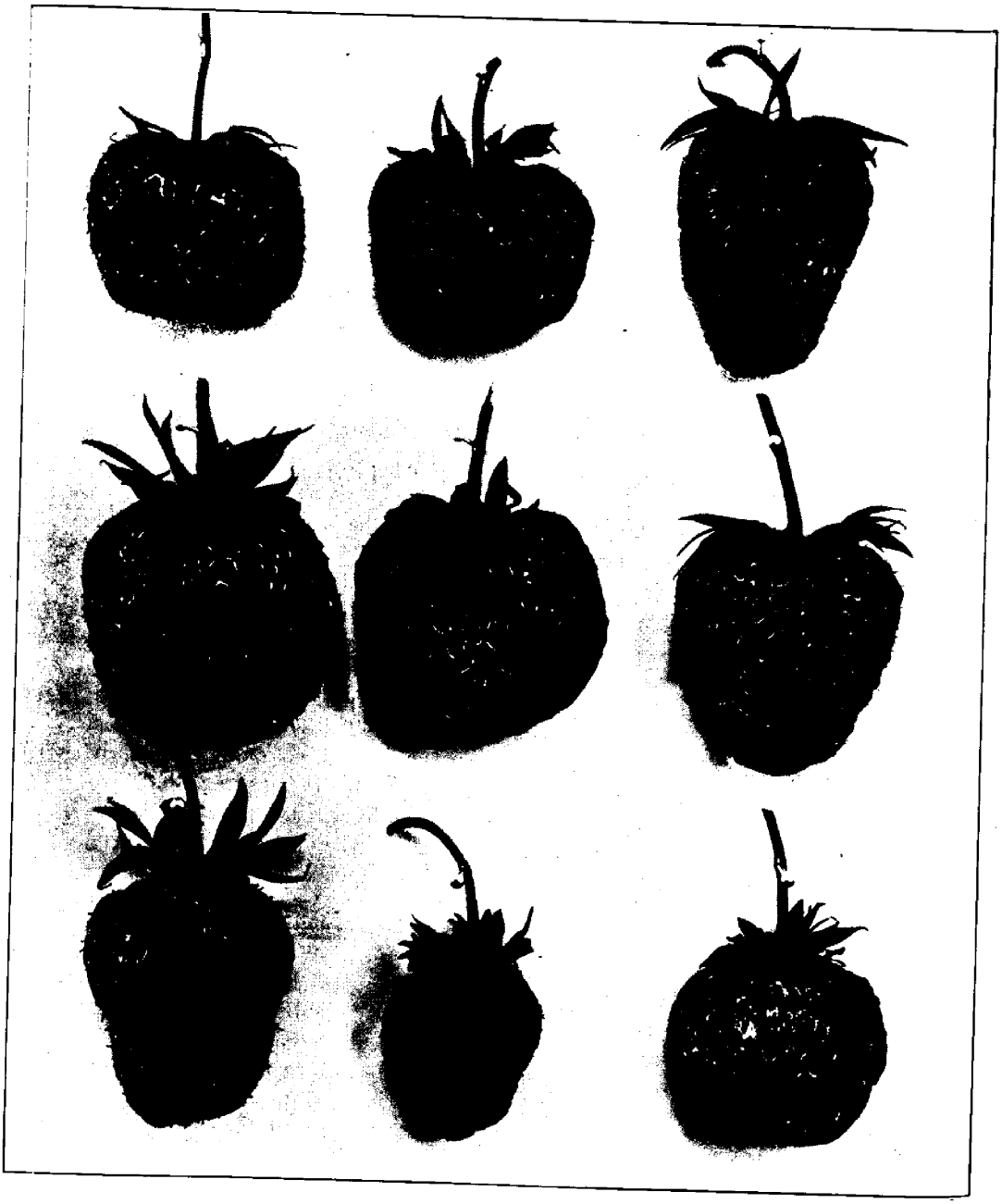


FIG. 1348.

VAN DEMAN.
BEAUTY.
GERTRUDE.

SPLENDID.
BESSIE.
MICHEL'S EARLY.

ARROW.
RIO.
KOSSUTH.

MR. W. T. MACOUN.

FIG. 1349.—MR. W. T. MACOUN.

IN our last issue we gave some notice of the new appointment of Mr. Macoun as Horticulturist, to succeed Mr. John Craig, who resigned last winter. We have pleasure in giving his likeness in this issue, by use of an engraving that appeared in the April number of our worthy agricultural contemporary, the Farmers' Advocate, of London, Ont.

FRUIT GRADER.

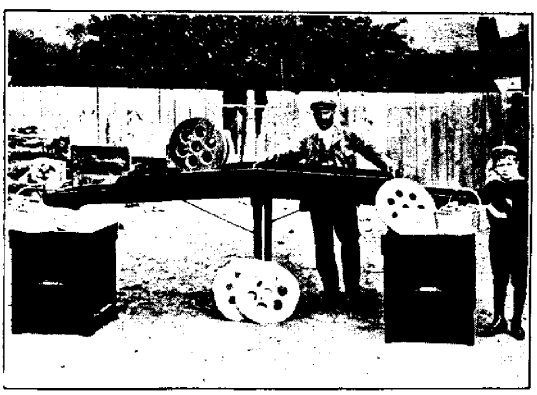


FIG. 1350.—FRUIT GRADER.

MR. E. H. WARTMAN, of Kingston, sends a photo. of a new fruit grader which he has patented, and which he thinkswill be of great use to growers and fruit packers of all kinds of fruit. It is intended to assist them to get fruit more uniform in the packages than it could be done by eye measurement. He writes: "In my first shipment this season I more than doubled my money. They were graded by

my new invention. The platforms of the grader are tight drawn sail cloth. The fruit is run to grading plates or bars, and are caught by a standard separator, either 2, 2½, 3, or 3½ inches in diameter. Smaller fruit is dropped on a linen slide, and carried to the second grader; culls fall in a drawer beneath.

Every package is stamped according to diameter of apple, peach, or pear.

ENTRANCE TO QUEEN VICTORIA PARK.

FIG. 1351.—ENTRANCE TO QUEEN VICTORIA PARK.

SIR,—I send you the inclosed photograph showing the entrance to the Queen Victoria Niagara Falls Park; also showing a bed of hydrangea paniculata grandiflora in full bloom, which has been the admiration of thousands of people during the past four summers; the bed contains 152 plants, and are in four rows, and planted two feet between the plants; they make a grand display, and immense panicles of bloom; the plants are trimmed back to from four to six inches every spring, and only four of the strongest shoots left, all the rest of the wood is cut back to one or two buds, or trimmed on the spur system; the bed is then lightly forked over and a good coat of mulch put on and left alone then to the following spring.

RODERICK CAMERON.

Niagara Falls, March 10th, 1898.

A GOOD WORD FOR THE FAMEUSE APPLE.

FIG. 1352.—MR. R. BRODIE.

Mr. R. Brodie, of St. Henry of Montreal, who has been elected president of the Pomological Society of Quebec for the present year, has been long and favorably known in fruit circles in that province. His grandfather came from the west of Scotland to Canada in 1803, and bought the farm on which Robert now lives. In a letter recently received he writes as follows :—

You will see that I have been brought up in the reign of the Old Fameuse apple, and after trying over 100 varieties I have still to say it is the best for quality and commercially. The McIntosh Red, close allied withthe Fameuse, is a more showy apple, but not as good in quality.

The question was brought up at our La Chute meeting,—Why plant varieties that are subject to fungi, while varieties like Wealthy, Wolf River, and some of the Russians are free from this disease and require no spraying? In my experience I find that varieties like the Wealthy, Duchess and Alexander, are more subject to attacks of the codling moth, plum curculio, than any of the Fameuse family, and before we found the remedy for the apple spot, (Bordeaux mixture), I used to spray the trees with Paris green to kill the insect enemies, with danger of hurting the foliage. Now in adding Paris green to the Bordeaux mixture we can spray without injuring the tree and kill the insect enemies and fungous growth at the same time. The main thing is to get a good pump. Once, in an old Presbyterian church, there was a dispute about getting an organ, they thought they would refer the matter to an old Quaker. The answer was, "If thee mean to praise God with a machine, be sure and get a good one." If you mean to spray your trees be sure and get a good pump, or you will soon get discouraged.

CONVENIENT WEIGHTS.

A quart of water weighs nearly 2 lbs., and is equal to a square box of about 4 x 4 inches and 3½ inches deep.

A gallon of water weighs from 8 to 10 lbs., according to the size of the gallon, and is equal to a box 6 x 6 inches square, and 6 x 7 or 7½ inches deep.

A peck is equal to a box 8 x 8 inches square and 8 inches deep.

A bushel almost fills a box 12 x 12 inches square and 24 inches deep, or 2 cubic feet.

A cubic foot of water weighs nearly 64 lbs. (more correctly, 62½ lbs.), and contains from 7 to 8 gallons according to the kind of gallon used.

A barrel of water almost fills a box 2 x 2 feet square and 1½ feet deep, or 6 cubic feet.

Petroleum barrels contain 40 gallons, or nearly 5 cubic feet.

THE NEW YORK MARKET.

To the Editor of the Horticulturist:

SIR.—This vast, consuming market is being supplied with celery from California. It arrives here in *best* condition. The heads are extraordinarily large and very white. There is very little waste. It retails for 15 cents per head, and taking size, quality and freedom from waste into consideration, it is not very dear. We thought it strange a few years ago to receive celery from the western part of Michigan, and to-day we receive it in better condition from California. Celery is a vegetable that can be shipped in car loads to this market with safety, so that the cost for transportation can be reduced to a very small sum per head. Hundreds of acres of it are raised near Kalamazoo, Michigan, and sent east to the market.

Why can it not be raised most successfully upon the strong fertile lands of Ontario?

I am confident that there is more money in shipping tomatoes to this market from Canada than to Great Britain.

If the fruit growers of Ontario will establish an agency in New York and advertise prime Canadian fruits and vegetables liberally, a permanent and reliable market can be opened for all first-class goods you can send us. California green goods are sold at auction upon arrival for spot cash upon the wharf where they are unloaded, so that there is no expensive warehouse required. They nearly all come by the Erie Railway. For prime products the competition among dealers is very sharp. They are scheduled to arrive upon certain days in the week after midnight, and are unloaded, opened and sold at auction early in the morning. Capital and brains are pushing California to the front as a fruit and vegetable producing country. There is far more good land in Ontario than in California, and it is nearly 3,000 miles nearer the great consuming markets of this nation of feasters. Californians have learned not to send second class goods to this market. Such goods will not return charges, when prime goods will pay handsomely. The combination that is winning in California can do so in Ontario.

FRANCIS WAYLAND GLEN.

New York, March 21st, 1898.

"The following clipping is from the New York Sun:

POMONA, Feb. 28th.—The most conservative estimates of the capital now invested in orange and lemon growing in California put the amount at $43,000,000. In Los Angelos county alone some $12,000,000 is invested in the citrus fruit industry. It is also estimated that some $60,000,000 to $80,000,000 is invested in California in the growing of prunes, peaches, olives, apricots and small fruits. A frost in midwinter, when the orange and lemon trees are in fruition, and again March or April, when the deciduous orchards are blossoming, may, therefore, in a few hours ruin the income from a capital of from $100,000,000 to $120,000,000. Since irrigation has been made a science and a periodical rainfall is not so all important, where insect pests are annihilated by gases and chemical decoctions, and where there is little possibility of damage from tempests, frost is now practically the only menace to fruit growers.

MAIDEN-HAIR FERNS IN THE HOUSE.—There are some people who will not be convinced that it is possible to grow maiden hair ferns in an ordinary dwelling. The other day I saw, in a furnace-heated, gas-lighted house, as pretty a specimen of maiden-hair fern as any one could wish to see. "I grew it just like my other plants," the owner said, "with this exception." Then she lifted the pot from its pretty jardiniere, and I saw that the bottom of the jardiniere contained four or five inches of water, and that the pot rested on a stone placed in the centre that held the bottom of the pot up just above the water.—Vick's Magazine.

AN ICE SCENE AT NIAGARA FALLS.

FIG. 1353.—AN ICE SCENE AT NIAGARA FALLS.

WE have read of the silver trees of Table Mountain, South Africa, which are a great attraction to travellers and sailors at great distances when the sun shines upon them, some of the leaves of which are in my possession, and they must be very beautiful trees, but I question if they can be more beautiful than the picture before us, and we need not go so far to see them, as they grow in Q. V. Niagara Falls Park, and when the sun shines upon them, on a clear, cold frosty day, they are beautiful beyond description, in fact they are called crystal trees by visitors, formed and grown by Niagara Falls and Jack Frost, one quarter mile from the great Horse-shoe Falls.

The tree to the right of the picture is *Tilia Americana*, Lime Tree or Bass-wood. The two trees to the left are *Thuja-Occidentalis*, American Arbor Vite or White Cedar.

This picture was taken by a first class photographer, J. Zybach & Co., Niagara Falls, Ont.

R. CAMERON.

Niagara Falls Park.

WISCONSIN STATE HORTICULTURAL SOCIETY.

THE above Society held its annual winter meeting in the State House at Madison, Feb. 1 to 4. The attendance was fair and the exhibits of fine quality. The apple crop of the State being quite light the past season, the display was not large, being only 95 plates. One of the features of the exhibit was a potato show, in which there were 204 plates and baskets, 158 of which were from the Riverdale Seed Farm, Grand Rapids, Wis., and included a collection of 70 plates of one year old seedlings, the first ever shown. The same parties also made an exhibit of 87 varieties of beans in glass bottles, showing the results of several wonderful crosses and hybridizations. Visitors and delegates were present from Minnesota, Iowa and Illinois.

Mr. Stickney, the largest currant grower in the State, said that he had eight acres of Fays, but had dug them all up but one acre. They required very high culture and too much petting. He considered Long Bunch Holland and Prince Albert the two best for profit. White Grape the best white currant, and he recommended it highly for home use. Wilder quite promising. North Star is a strong thrifty grower, but thought it only little superior to Red Dutch.

Mr. Harding, reporting for trial station under his charge, said that varieties of apples top worked on Whitney are blighting quite badly. Virginia is considered the best stock for top working the tenderer varieties upon.

O. M. Lard, of Minnesota, read a paper on "The Plum as a Fruit for the People of the North-West." Mr. Lard is a plum specialist, and the sample jars of canned plums he had with him showed that he was quite successful in growing them. He named De Soto, Rollingstone and Cheney as the three best American plums; would set 8 x 16 ft., mixing different kinds, so that they would cross fertilize. After thirty years experience, he is convinced that too much good culture cannot be given. Barn-yard manure and ashes are the best fertilizers.

Mr. Ferris, of Iowa, recommended grafting plums upon the Sand cherry, saying that they would bear much quicker and would produce abundantly.

Geo. J. Kellogg said the Miner was of no value unless other varieties were planted with it.

Clarence Wedge, of Minnesota, said that he planted Hawkeye with the Miner, and they fruited all right.

A. L. Hatch opened a discussion on the most economical method to restore exhausted fertility to worn out orchard lands. He thought that a liberal supply of barn-yard manure and wood ashes was the best thing to apply. L. H. Read spoke of the increasing use of Cow peas in orchards through the States of Illinois and Missouri, and also believed that they were adapted to more northern States, especially upon sandy soils. There has been a constant assertion by many that they were not adapted to the north, but we are finding out that this is false. Having tested them in a small way in central Wisconsin the past year, are convinced they are the greatest crop for green manuring that we can grow.

Mr. Stickney said that he had tested several varieties of the Cow pea, and they made a good growth, but required the entire season. He wanted something that he could use, say the last of June, after taking off an early crop, that would then make a growth sufficient to

plow under, and as the field pea did not do well late in the season, he intended to plant some strong growing varieties of beans as an experiment this year.

Mr. Toole, of Baraboo, read a paper on "Horticulture in our Schools," which was followed with a discussion upon the subject, showing that many were in favor of teaching the primary principles of horticulture in our public schools.

Prof. L. H. Bailey said, "I do not believe we can teach agriculture and horticulture in the public schools any more than we can teach medicine or any other profession. But he believed in teaching the child to study nature. The ultimate object of education should be the student rather than his farming. There are two things in agricultural education, theories and practice; but we find that those who claim to be opposed to theories, are the ones most full of theories. To educate the boys on the farm, first have a good farm, and to make a good farm you must first reach the farmer. The one crop farm makes a one crop farmer, a grass farmer makes a grass man. Diversified farming developes the man in many ways."

[This idea was hardly in accord with the belief of many of his hearers, that the only men who succeed in life are those who concentrate their efforts along some special line or lines.—L. H. R.]

Pres. L. G. Kellogg in his annual address said that the planting of the trial station at Wansan was one of the best things the Society had ever done, and recommended the establishing of several more in different parts of the State.

The election of officers resulted in re-electing all of the old officers excepting the Vice-President. Pres., L. G. Kellogg, Ripon; Vice-Pres, Franklin Johnson, Baraboo; Sec., A. J. Phillips, West Salem; Treas., R. J. Coe, Ft. Atkinson; Cor.-Sec., W. J. Moyle, Madison.

Prof Bailey spoke upon "Fruit Buds." He said pruning to shape is a matter of individual taste. Heavy pruning of the top of a plant always tends to a growth of wood. Winter pruning in the North-West permits the freezing and drying out of the sap of the tree. Heading in of strong growth tends to lateral and dormant buds, also tends to develop fruit bearing. Checking growth so long as the plant remains strong and healthy tends to fruitfulness. Pruning, however, is a secondary means for bringing fruit into bearing. Natural methods should first be used. If the tree is growing too rapidly, check its growth by withholding plant food from it, either by growing some crop about it that will tend to exhaust the fertility of the soil, or seed down to grass. When fruit bearing has once been reached, they should be kept bearing the same, as we keep a laying hen laying. A continuous amount of pruning every year should be given rather than a heavier pruning once in two or three years, as a severe pruning tends to upset the growth of a tree. Heavy bearing has the same effect as heavy pruning, it upsets the equilibrium. If they did not get in the habit of over-bearing, they would bear every year. If we are to make a tree bear every year, we must supply a greater food supply, or we must remove a part of the fruit. Removing the fruit affects chiefly the spur upon which it is. The same spur, however, does not as a rule bear every year, one spur bearing one year, and another the next. It would seem, therefore, that the removing of all fruits from some of the spurs would tend to better results in making them bearing spurs the next year.

It seems that it might be best to make a part of the trees bear their crop

in the year when most trees are not bearing. The tendency is where a part of the fruit is removed to annual bearing. Winter pruning tends to produce wood, whereas summer pruning does not.

Dr. Loope asked what time of the year he should prune his young orchard.

The Professor replied: "For my own section of country, I would prune from now to spring, but would not dare to say that it would do in this climate to prune at this season of the year."

E. C. Alsmeyer read a paper entitled "Prospects for Wisconsin Nurserymen," in which he recommended a combination to keep up the prices of nursery stock, as it cost more to grow a six ft tree than they had been selling for.

Mr. Read recommended the education of the farmer to the planting of smaller trees, as they could be produced at a less cost, and would make much better trees in from three to five years from planting.

Mr. Wedge said that he believed in heretical ideas in some things, was a believer in free trade, but when it came to nursery stock believed in protection, the southern and eastern grown trees had been a great damage to the tree business in Minnesota.

Mr. Voris, of Illinois, said he believed in the planting of young trees one to two years old, as they stand transplanting much better than older trees.

Several speakers spoke in favor of large trees, saying that the farmers would take better care of a large tree than they would of a small one.

Sec. Phillips said he had found that he could convert a few by giving them some young trees to set out, and when they come back in a few years they always want the small trees, as they grow much better.

C. Wedge spoke of "The Best Varieties and Best Way to Plant an Orchard." He recommended the Repka Melenka as a very hardy winter variety. Would plant wide between the rows, and close in the row, thirty-five to forty ft. between rows, and twelve ft. apart in the row for Duchess, a little farther for Hibernal, of which we are planting very largely in Minnesota. We recommend in our hardiest list, Duchess, Hibernal, and Peterson's Charlemoff. Secondary list, Wealthy, Longfield, Tetofsky and Melinda. We have a Wealthy fever, and a large number of them are being set. Patten's Greening is very highly regarded with us also. It keeps nearly as well as Wealthy with us in Minnesota. Okabena is very excellent to follow the Duchess. Very hard to tell the fruit apart, but think it will keep about a month longer. Peerless we do not think any hardier than Utter, and do not think we have any use for it. Nearly all of the varieties that we have on our recommended list are either Russian or of Russian origin.

Ques.—In setting, would you set in fall or spring?

Ans.—I think we are all agreed in taking up in fall, and healing in and then set in the spring. It is too much to ask a young tree to stand taking up, and then the exposure of being set in orchard to stand through the winter.

Ques.—Would you set on the slant or not?

Ans.—I am inclined to lean them a little, and to be careful not to prune too much on south side.

F. C. Edwards read an excellent paper on "Small Fruits." As to varieties he said, It will depend much upon your soil, what kinds to plant, but use staple varieties and not run after strange gods, but experiment in a small way with a few of the most promising new kinds. Have your ground so divided

among the different kinds of fruits, so that you can furnish a continuous supply from the time strawberries are ripe until all small fruits are gone. Look first to your local market, for they must be the largest consumers.

F. Johnson said that one thing that everybody ought to grow was asparagus, as it was easy to grow, and one of the best of all the garden crops for home use. In strawberries he called Crescent his best berry, with Haverland second, and Beder Wood for a fertilizer. Had found that Enhance has one good point, the pickers wont eat it, the quality is so poor, for that reason the yield seems larger.

In the discussion of varieties that followed, Mr. Read said that Splendid, Enhance, Brandywine, Lovett's, Beder Wood, Parker Earle, Haverland and Bubach would be the varieties that they intended to set this spring at Riverdale Farm.

L. H. READ.

Grand Rapids, Wis.

DIRECTIONS FOR SPRAYING.

1. APPLE.

TREATMENT for destroying *codling moth, bud moth, tent caterpillar, canker worm, apple spot, leaf blight, pistol case bearer* and *powdery mildew.*

First spraying: Bordeaux mixture and Paris green (4 oz. to the barrel of the mixture) when the buds are swelling.

Second spraying: Bordeaux mixture and Paris green before the blossoms open.

Third spraying: Bordeaux mixture and Paris green when the blossoms have fallen.

Fourth and fifth sprayings: Bordeaux mixture and Paris green at intervals of ten to fifteen days if necessary.

No definite date can be named after which it would be safe to cease spraying for the apple scab. The orchard should be watched after the third or fourth application, and the treatment again applied if scab appears on the fruit or leaves.

Many apple growers who sprayed in 1897 until the end of June, and neglected to watch their orchards afterward, lost heavily. The scab appeared very late in the season last year, and all the experimental orchards were given an extra application in the early part of July, which largely accounts for the splendid results obtained.

2. PEAR.

Leaf blight scab and *codling moth*, the same treatment as for the apple.

3. PLUM.

Curculio, brown rot and *leaf blight.*

First spraying: Bordeaux mixture before the flower buds open.

Second spraying: Bordeaux mixture and Paris green as soon as the petals have fallen.

Third spraying: Bordeaux mixture and Paris green in seven to ten days after.

Fourth spraying: Bordeaux mixture in ten to fifteen days after.

4. PEACH.

Brown fruit rot, leaf blight, plum curculio and *peach curl* (*Exoascus sp.*)

First and second spraying: Same as for the treatment of the plum.

Third spraying: Bordeaux mixture in two or three weeks.

Fourth spraying: Ammoniacal copper carbonate, if any danger of disfiguring the fruit with Bordeaux mixture.

5. CHERRY.

Aphis, slug, brown rot, and leaf blight.

First spraying: Bordeaux mixture as the buds are breaking; if the *aphis* appears use kerosene emulsion alone.

Second spraying: Bordeaux mixture and Paris green as soon as the blossoms fall.

Third spraying: Bordeaux mixture and Paris green ten to fifteen days after.

6. GRAPES.

Mildew, black rot, flea beetle and leaf-eating insects.

First spraying: Bordeaux mixture and Paris green when leaves are one inch in diameter.

Second Spraying: Bordeaux mixture and Paris green when flowers have fallen.

Third and fourth sprayings: Bordeaux mixture at intervals of ten to fifteen days.

Paris green alone when the beetle is attacking the buds in the spring.

7. RASPBERRY.

Anthracnose, leaf blight and saw-fly larvæ

First spraying: Bordeaux mixture and Paris green just before growth begins.

Second spraying: Bordeaux mixture and Paris green about when first blossoms open.

Third spraying: Bordeaux mixture when the fruit is gathered.

8. CURRANT AND GOOSEBERRY.

Worms and Mildew.

First spraying: Potassium sulphide, Bordeaux mixture and Paris green as soon as the leaves expand.

Second spraying: The same ten to fifteen days later.

For worms alone, hellebore or Paris green will be effective.

9. TOMATO.

Rot and blight.

Spray with Bordeaux mixture, as soon as rot or blight appears, for three times, if necessary, at intervals of ten to fifteen days.

10. POTATO.

Blight and Beetles.

First spraying: Paris green as soon as the beetles appear (one pound to 100 gallons of water).

Second spraying: Bordeaux mixture and Paris green when plants are six inches high.

Third and fourth sprayings: Bordeaux mixture at intervals of ten to fifteen days, if necessary.

11. CABBAGE.

Pyrethrum applied in solution (one ounce to four gallons of water) or dusted on (one part pyrethrum to seven parts flour) for the cabbage worm.

FORMULA FOR MAKING BORDEAUX MIXTURE.

Copper sulphate.....	4 pounds.
Lime (fresh).....	"
Water	40 gallons.

Suspend the copper sulphate in five gallons of water. This may be done by putting it in a bag of coarse material, and hanging it so as to be covered by the water. Slake the lime in about the same quantity of water. Then mix the two and add the remainder of the 40 gallons of water.

Warm water will dissolve the copper sulphate more readily than cold water. If the lime is at all dirty strain the lime solution.

If the lime is good the above amount is likely to be sufficient. It is an easy matter to know how much lime is required by using what is termed the ferrocyanide of potassium test. This substance can be got at any druggist's, and

very little is required. Take a small bottle (2 oz.) and get it filled with a saturated solution of this compound. If there is not plenty of lime in your mixture, a drop of the test added to it, turns brown. Add more lime and stir. As soon as the test fails to color in coming in contact with your mixture, it indicates there is sufficient lime present to neutralize the effects of the copper sulphate. Use wooden vessels in preparing the Bordeaux mixture.—Special Bulletin on Spraying.

GOOSEBERRIES WITHOUT MILDEW.

I NEVER have any mildew in my garden for the following reason: A piece of ground must be very deep and well filled with good old barnyard manure; it must not be clay and must not be sand, but such as you would prepare for cabbage. Plant in rows 4 feet apart and 3 feet apart in the row; get them in good shape. The third year remove the earth off the roots all round the bush and put three inches of old rotten manure in its place, and cover it over with the earth and tap it down. Then prune severely and put one half pail of wood ashes upon the bush. This I do in October and in the spring, and when the fruit is set I take some fine table salt and sprinkle on the bush, or, what perhaps is better, dissolve a handful in water and sprinkle with sprays and again 3 weeks hence. When the mildew is apt to come, do the same again later. Treated in this way we have successfully grown the Industry, the White Smith and other varieties equally liable to mildew for the past 16 years perfectly free from it. So that heavy, well cultivated land, severe pruning, liberal use of ashes, and the salt as I have described, is all that is needed to keep away mildew in this locality. I have not had it in my garden in 20 years.

JOHN CARNIE.

Paris.

LATEST INFORMATION ABOUT THE CODLING MOTH.—*Carpocapsa pomonella.*

A RECENT Bulletin by Mr. V. Slingerland, entomologist at the Cornell University Agricultural Experiment Station, embodying the results of his personal observations of the habits of this insect, contains much new information. The purpose of this paper is to present only such items of his discoveries as are of practical importance to most of our Canadian fruit growers.

Heretofore we have been told, and the writer when addressing Farmers' Institutes during the last six or seven years, has many times repeated the tale, that the mother moth of the spring brood lays her eggs in the cavity at the blossom end of the apple while that end is upwards, Mr. Slingerland has ascertained that such is not the case. He has found that in about a week after the petals have fallen the calyx segments of the apple blossoms begin to close up and in a few days are "drawn completely together, forming a tight cover over the calyx cavity." On the other hand he discovered "that the majority of the moths do not emerge (from their cocoons) until several days after the petals have fallen," and that for the most part the calyx cavity is tightly covered over before the female moths commence laying. On examining their ovipositor (egg laying instrument) it was found to

be "only adapted for laying eggs on the surface," it being of such a shape that it could neither pierce the calyx lobes nor be inserted in any way into the covered basin. He learned that in fact the eggs are laid "on the smooth surface of the fruit without much choice as to location," that they "may be glued anywhere it happens to the surface of the fruit, to the stem, or even on the adjacent leaves," and says that though he has "seen hundreds of the eggs during the past two years on apples," he had "*never yet seen one on or down in between the calyx lobes.*"

Notwithstanding these facts the worms, to the extent of seventy-five per cent. or more, were found to enter the apples at the blossom end. They began to appear about a fortnight after the trees are out of bloom, and having found their way into the blossom end "spend several days feeding around in the calyx cavity," reaching "the core in about a week." The worm is "from twenty to thirty days of its life feeding inside the fruit," and when nearly full grown "proceeds to eat a passage way, usually by the shortest route, toward the exterior."

We have therefore learned, thanks to Mr. Slingerland, *First*, that though the mother moths do not lay their eggs in the basin of the blossom end as was supposed, yet the tiny worms, not longer than the sixteenth of an inch, to the extent of not less than three fourths of them enter the apple by way of the calyx basin, where they tarry for several days "feeding around."

Second, that in about eight days after the petals fall, the calyx segments are so closed over the basin that it is very difficult or quite impossible to place in the basin a poison that the worm might swallow with its food; a fact that accentuates the necessity of the poison being put there within the few days that elapse between the fall of the petals and closing of the calyx segments.

Third, that somewhere about a fourth of the worms get into the apples by some other way than through the blossom end. Whether any considerable eating of the parenchyma of the leaves is done by the worms that are hatched from the eggs laid on them, has not yet been ascertained. If they do feed on the leaves for a time, we might be able to poison the most of them. Be that as it may, there will be a number for us to kill that we have not been able to poison. If the fruit grower is prompt and thorough he may, by spraying immediately after the fall of the petals, and again before the calyx lobes have closed so much as to exclude the spray, deposit in the basin sufficient poison to make it very probable that the worms in feeding there will eat enough to kill them. The best poison is pure Paris-green; London-purple is both cheaper and lighter, but its strength as a poison cannot be relied upon. One pound of Paris-green in two hundred gallons of water, which is a quarter of a pound in a fifty gallon barrel, is the quantity to be used, first making it into a thin paste with a small quantity of water, and as it is slowly poured into the barrel having the water constantly stirred so that the poison may be evenly distributed. If added to a barrel of Bordeaux mixture it can be used immediately, otherwise it will be necessary to stir in half a pound of freshly slaked lime. In order to make sure of having the calyx basins all well supplied with the Paris-green it will be necessary to spray twice, once as soon as the petals are fallen, again just before the calyx segments interfere with the spray getting into the basin. The almanac is no guide in this matter, but the time must be ascertained each season by watchful observation of

the condition of the trees. The days are few in which the poison can be lodged in the little cavity; once there, if not washed out by rain before the closing of the calyx segments it will be securely protected by them and kept in store for the little worm. If rain should fall after spraying and before the basin is securely covered, it will be necessary to spray again immediately after. Thorough work in spraying, so as to reach every apple every time it is done, is as important as to spray at the right time.

Now, for those worms that fail to get poisoned, be it those that do not enter the apples at the blossom end, or such of those that do, which escape being poisoned. It is evident that we cannot get at them before they will have done their work of injury to the apple crop, all that we can hope to do will be to prevent them from becoming moths that will lay eggs for another generation of worms. It pays well to do even this, for it is not altogether locking the stable after the horse has been stolen.

Usually a considerable number of apples fall prematurely, especially of the early ripening varieties, because of the presence of the worm within, or of the work of one that had been within. The writer has never been able to find half of the fallen apples to contain a worm, although a worm had evidently fed and matured in nine tenths of them; which fact indicates that it will never do to expect to destroy all the unpoisoned worms by feeding the fallen fruit to pigs or sheep, either in the orchard or elsewhere. None the less it is important to destroy even these, for every surviving female moth may lay about a hundred eggs, and when pigs or sheep can not be allowed in the orchard, the fallen apples should be daily gathered and the worms in someway destroyed.

Very many of the worms leave the apples while they are yet on the tree and crawl down to the trunk seeking a hiding place in which to spin their cocoons, and most of those that fall to the ground find their way to the tree and crawl up the trunk on the same errand. Availing ourselves of this habit we can trap a great many of those worms by placing around the trunk and where the branches fork out from it, something that will afford the worm a hiding place. The writer has been in the habit of suggesting a trap made of strips of cheap wrapping paper, five or six of them placed together like leaves of a book, long enough to go around the tree trunk and six or eight inches wide, made fast by a string placed in the middle between the upper and lower edges, and both these roughened up so as to somewhat seperate the leaves of paper, thus affording easy entrance to the worms coming down or crawling up the trunk. These paper strips should be visited every ten days, commencing at four weeks from the falling of the apple blossoms, and continuing until September: at each visit untie the string, carefully take off the band without separating its sheets, run it through a clothes-wringer that will be taken along, replace and fasten with the string and proceed thus through the orchard. Mr. Slingerland advises putting on two such traps, one at a short distance from the ground, the other at a like distance from the branches.

In the old Niagara district this insect produces a full second brood every summer, but the worms cover themselves with a cocoon in the fall, they do not change to the pupa state until the following spring. These second brood worms are found in our late fall and winter apples, rendering less or more of them unfit for market. They go with the fruit into cellars and storerooms, and their cocoons are found in the

crevices of the boxes or barrels in which the fruit is kept, and in many a nice hiding place about the room. Wherever there is a second brood the traps should be left on the tree trunks until a fortnight or more after the apples have all been removed from the orchard, none left even on the ground, when they may be again put through the wringer and put away until another season. About the time the moths appear again in the orchard, the second brood moths may be found in the cellars in which fruit has been kept. The writer has seen large numbers fluttering at the windows of his fruit cellar seeking to get out; if these are prevented from escaping they will ere long perish without doing any further mischief.

The territorial limits of the second brood have not yet been ascertained. Our Dominion entomologist, Mr. Fletcher, says that there is but one brood at Ottawa, and believes that this holds good up to Toronto. Whether there is more than one in the fine apple growing region of the Beaver Valley and of the whole south shore of the Georgian Bay, the writer is not informed, but if only one brood, then the worms that form cocoons in the summer will remain in them until the next spring; whence, after passing a short time in the pupa state, they will emerge as moths.

The sum of the matter is this; the calyx basin of the apple blossom is open for the reception of a poison for only a few days; the moths do not lay their eggs until after the basin is closed and deposit them anywhere on the surface of the apples; these are hatched in a few days and the greater part of the worms work their way into the calyx basin and feed around in it for several days; the fruit grower may, if watchful, improve the opportunity to put into the open basin a poison that will be safely kept by the closing of the calyx segments until the worms in feeding get it; the best poison is Paris-green, which can be put into the basin by timely and thorough spraying; the worms which do not die by the poison may be caught, some in the apples that fall prematurely, and more in paper bands tied on to the trunks of the trees and passed every ten days between the rollers of a clothes-wringer; in those places where there is a second brood, the injury done by that brood will be lessened in proportion to the number of the worms destroyed in the prematurely fallen fruit and by the wringer; and the next year's crop will be benefited by keeping all that may be taken with the fruit into cellar or fruit room securely shut in until they perish.

D. W. BEADLE.

303 Crawford St, Toronto.

ANTIQUITY OF FRUIT.

YES didn't our forefathers know how to relish fruit as much as we do now, and they too enjoyed their simple varieties as much as we do our most choice kinds. Indeed some of the very kinds we cultivate now in our orchards, our ancestors planted, tended and harvested the fruit. See for instance our much valued "Greengage" plum, how was it named, just merely by accident being introduced into England from France by the Earl of Stair, under the name of "Green Spanish." The Gage Family in the last century procured from the monks of the Chartreuse at Paris, a collection of

fruit trees. On arrival in England, the label on a plum tree having been lost, the gardener being ignorant of its name, called it from its color "green" and its employer's name Gage — thus "green-gage."

But what our ancestors boasted of and what they were proudest of, were cherries. We even read that cherries were planted in England one hundred years before Christ, whilst in 1540 an orchard of 32 trees produced 1,000 quarts which were sold strung along sticks and peddled from house to house. The Court of James I. amused themselves, having matches who could eat the most cherries, one would imagine a doctor would be needed after one of the Court ladies managing to gorge 20 lbs., beating her opponent by 2½ lbs., with a serious illnesss as the result. Grapes also were planted and tended with care the clergy being most clever in managing vineyards. The Bishop of Hereford in 1289 excelled in wine-making, making from his vineyard 7 pipes—882 gallons of white wine and 1 pipe of serjuice. Adulteration was a severe crime; Henry VI having ordered in 1427, 16,200 gallons of wine which was adulterated to be poured into the street and the culprit to suffer the loss of his hands. A severe frost damaged the fruit in 1257, the English having a great scare thinking there would be none. One good deed of Henry III. before his death, was to order 2,000 chestnuts to be planted in his park. A yearly item of fruit for the table of Edward I. being £21 14s. 1½d—$108.53. In his reign we first read of the orange being introduced, seven being brought from Spain in 1290. But its use being very different from ours now, for Cardinal Wolsey having removed the flesh inside substituted a sponge soaked in aromatic vinegar as a precaution against pestilential airs. Thus we, who devote our whole time to fruit culture, only follow in the footsteps of those who have pursued the same lines, with the exception only—having much more improved varieties and improved methods

NIGEL KEEP.

Winona.

JAPAN PLUM—SPRAYING WITH LYE, ETC.

I HAVE tried a number of Japan plums and Russian apricots; some of each winter-killed, while others have made a fine growth, but although four years planted have not blossomed yet. There are some blossom buds on them now and possibly there may be some result from them next season. For bark louse I have sprayed my trees with kerosene emulsion, with not very satisfactory results although tried persistently for several seasons, choosing the time when the young lice are moving on the young branches. My brother has used instead lye from hard wood ashes diluted to 1 part lye and 2 parts water—with most satisfactory results. Some of his trees (15 years old) were so badly infested that they were almost dead and altogether unfruitful, but under the lye spraying treatment are quite revived and have nice clean bark. I am so convinced of the superiority of lye as a spray that I will use it instead of kerosene emulsion in future.

D. S. MCDONALD,

Glendyer Mills, Mabou, C. B., Nova Scotia.

HOW TO GROW SWEET POTATOES IN CANADA.

THERE are a large number of people who have the impression that the sweet potato cannot be grown in this climate; that they are an article peculiar to the South.

As I have for a number of years experimented in growing them in order to find the variety best suited to this climate, I have at last succeeded (to my own satisfaction at least). I have planted all known standard as well as all fancy varieties that I could obtain. Last year I heard of a new kind called the Golden Coin, for which I sent a fabulous price, but the person to whom I sent the money obtained the Coin while I obtained a fine lot of tops with tubers like lead pencils.

I have been frequently asked how do I raise such fine potatoes? My answer is, Can you raise cucumbers? They look at me in amazement, and seem to think I am losing my reason, but it is even so. If you can raise cucumbers you can raise sweet potatoes You would not think of raising the cucumber without first preparing the ground and using plenty of manure if you want them early and good.

If you want good potatoes the greater part of the work is done before the the plants are set out.

Obtain your plants as early as possible, (from May 1st to June 1st,) set them out in fruit boxes, four plants in each box, then put them in a cold frame, or hot-bed with gentle heat, ventilate well through the day, protect well at night especially if the weather is cold. Do not give too much water or they will rot, better too dry than too wet. About the first week in June have your ground good and mellow, mark it off into rows about 2 ft. 6 in. or 3 ft. each way. Now at every corner place a forkful of well rotted manure, do not use fresh manure as the results are much better from that which is well rotted.

After placing the manure in position, take your hoe and chop it up mixing the soil with it, then form it into a nice hill with the prepared soil in the centre. When you have thus prepared your ground you are now ready to set out the plants as soon as you feel safe from frost. Do not be in too great a hurry to get them out, the plants do not like cold weather, they will stand hot and dry, much better than cold and wet. After the ground has settled and you feel safe to set out, take the plants from boxes the same as you would re-pot any flower, by striking the box on its side, and place the ball in the centre of the hill prepared for it by making a hole for it, press the dirt well up to it, and so on, until you have set them all out. Stir the ground often to keep down the weeds and keep the plants well hilled up. As soon as the vines begin to run nicely, stop working for the ground should be clean by this time. Now wait for results. You will have no trouble with potato bugs or insects, for I have yet to find an enemy to destroy either vine or tuber. If you follow the above directions I am sure you will be well rewarded for your trouble.

W. E. LEADBEATER.

Woodstock, Ont.

ARSENITE OF SODA A SUBSTITUTE FOR PARIS GREEN.

THE Ohio Experimental Station at Worcester, has published a bulletin advising the use of soluble arsenic in place of Paris green. As shown in the following selection, Paris green is a good insecticide, but is somewhat troublesome to use in liquid form, as it does not dissolve readily, and needs constant agitation to keep it from settling.

If allowed to settle at all the distribution is not uniform, and injury is likely to result to the foliage of some plants, while the insects on other plants escape. Moreover, it is unduly expensive, whether used dry or in the form of a spray.

White arsenic, in soluble form, costs about one-third as much as Paris green and gives no trouble in the way of settling.

Dissolve two pounds of commercial white arsenic and four pounds of carbonate of soda (washing soda) in two gallons of water and use one and one-half pints to a barrel of Bordeaux mixture (50 gallons).

The easiest way to make the solution is to put both the white arsenic and carbonate of soda in a gallon of boiling water and keep boiling about fifteen minutes, or until a clear liquid is formed, and then dilute to two gallons.

One and one-half pints of this solution to each barrel of Bordeaux mixture is sufficient to use when spraying for potato blight and potato bugs, for apple scab and apple worms, or for any other purpose where a combination mixture for fungi and insects is required.

This combination has been fully tested at the Ohio Experiment Station and found to be quite as effective as the Paris green and Bordeaux mixture combination, and for the reasons given above is much to be preferred

This arsenic and soda solution, or arsenite of soda, is more safely used in combination with Bordeaux mixture than alone, as when in combination it will not injure the foliage, but alone it is liable to burn the leaves. The same objection holds good, however, with reference to Paris green and London purple.

It is better, however, in almost every case, to use the combination mixture as fungi are nearly always present and unless they are kept in check there is but little use of fighting insects.

Specific directions for making and using Bordeaux mixture, as well as how to control various insect pests, can be found in a spray calendar issued by the Ohio Experiment Station.

The arsenite of soda may be prepared in any quantity desired, but being almost a clear liquid is somewhat dangerous to keep on hand. The danger may be obviated, to some extent, by coloring the liquid with some cheap aniline dye, using enough of the latter simply to give sufficient color so that no one would mistake the solution for an inoffensive drink.

It takes but a short time, however, to prepare sufficient for a day's spraying, which is, perhaps, the least dangerous method. It is a rank poison and should be properly labeled and carefully guarded, the same as all other poisons. Insects may be the means of spreading fungous diseases and fungi may so enfeeble plants as to make them an easy prey to insects.

COAL ASHES AS A FERTILIZER.

SIR.—I have frequently noticed the statement, that coal ashes are of no value as a fertilizer. If so, can you explain my experience?

In the spring of '96 I put, at the east end of the woodshed, the ashes from five tons of coal, making a bank about six feet by three feet, and about one foot deep. I threw over this less than an inch of clay soil. There grew up a curious crop of weeds, among other things a tomato plant. As it was late in the season it did not give much fruit, but the uncommon growth led me to try an experiment. So last spring I put on the same bank the ashes from eight tons of coal. On this, with about a gallon of soil in each hill, I set eight tomato plants. They grew to an enormous size, some branches trained against the wall reaching over seven feet. The fruit was abundant, uniform in size, smooth and firm. They seemed more acid than usual. I think it was the Acme variety.

I shall try again without putting earth in hill. There was certainly not earth enough within reach of the plants to account for the growth, besides the soil was very poor, as I put three plants from the same lot in the soil at the edge of the ash bed, and they were not worth cultivating.

From my experience I know tomatoes and weeds grow well on coal ashes, and I don't see why they might not be used for something better than the roadway.

C. H. LOWRY.

Hagersville, March 28th.

CULTURE OF ASPARAGUS.

IN all applications of fertilizers, it should be remembered that the roots store up during the summer for the following year's crop, and fertilizers applied late in the fall will have little effect on the crop the following spring. Nitrate of soda or a similar quick-acting agent applied at cutting-time will produce a noticeable improvement, but we would recommend a heavy coat of stable-manure applied each fall, winter or early spring, in order to feed the roots during summer growth for the following year's crop.

In the spring take a cutaway or disc harrow and work in thoroughly the manure and dead Asparagus tops. This will leave the bed in fine condition for cutting, as, to start with, the bed should be about level. Some growers object to turning under the dead Asparagus tops with the manure, claiming that the seed will grow and make a mass of worthless, small Asparagus, to ruin the bed. This would, no doubt, be the case where beds are allowed to run wild and take care of themselves from cutting time to cutting time again; but where a bed receives proper care and cultivation there will be no trouble from this source. After the bed has been cut a few times, and weeds start, plow up to it lightly with a one-horse plow, and go over it with a light harrow or Universal weeder, to smooth the surface a little. Repeat the operation of plowing up to and harrowing down each week during the cutting season or as soon as the weeds start. These plowings will gradually work good ridges above the rows by the end of the cutting season.—American Agriculturist.

THE PAST AND PRESENT OF CANADIAN HORTICULTURE.

To the Editor of THE HORTICULTURIST.

SIR,—In the year 1852 I entered the employ of Messrs. Bissell & Hooker, proprietors of the Commercial Nurseries at Rochester, N. Y., as Superintendent. I was not 16 years of age when I assumed the position. For some years previous I had worked in the nurseries of John J. Thomas, of Macedon, N. Y. Mr. Thomas was for many years editor of the Country Gentleman.

In the fall of 1853 I first visited Canada, to take charge of a large delivery of trees at Dunville, Cayuga, Paris, Brantford and St. Thomas. Messrs. Bissell & Hooker at that time had a large trade in Canada, from Fort Erie to Southampton. In 1855 I purchased the interest of Mr. Bissill in the commercial nurseries, and with Mr. Henry E. Hooker organized the firm of H. E. Hooker & Co. In this way I became early interested in the growth and progress of fruit culture in Canada.

About 1855 I made the acquaintance of Dr. Beadle, who had given up a large law practice in New York to take charge of his father's nursery at St. Catharines. Few men have been more sincerely devoted to horticulture than Dr. Beadle. He was a frequent and always most welcome visitor at our home in Rochester. In 1861 I went to Oshawa to reside, not long after the Canadian Fruit Growers' Association was organized, and I became a life-member. I well remember the first number of THE HORTICULTURIST. It was a modest monthly, for the field then was small and new. It has steadily and persistently done its full share in enlarging the field, and I rejoice that its work has been effective from the beginning. It is now what one of my friends calls a "meaty" journal. It is full of practical matter. It aids the fruit grower to attain success from the time he plants the tree until the fruit is marketed. In my family it is always a welcome guest.

In the winter of 1859 I visited Nova Scotia. I sailed from St. John, N. B. to Annapolis, got in a pilot boat in January, and then drove up through the Annapolis Valley to Kentville, Windsor, Amherst, Truro, and on to Halifax. I went to see if there was any considerable demand for fruit trees. The Treaty of Reciprocity was in force, and the potato was king. Fruit growing there was in the infant stage. With free access to the market of the New England States, the Annapolis Valley would be one vast garden for choice fruits and vegetables. Cold storage has almost annihilated distance in the shipment of green fruits. We now get fine fresh-looking strawberries in January, from Florida. They should come in from the Annapolis Vallep in July, and command a large price. The intelligent American fruit culturist, with the aid of scientists, cold storage, railways and fast steamships, will have the whole world for a market in the near future, if he will only remember that quality and condition are prime factors in securing a liberal demand for his labor and skill. Prime Patrick Barry and Easter Beurre pears from California, are still to be had at from 6 to 10 cents each. They are well worth the money if one can afford the luxury.

FRANCIS WAYLAND GLEN.

Brooklyn.

CALIFORNIA LETTER.

SIR,--The February number of the CANADIAN HORTICULTURIST is received, for which, please accept thanks. You must have a very enterprising class of people to have such a large and flourishing Horticultural Association. I judge from your magazine that much interest is shown in flowers, plants and trees in your locality, and wish that other places would follow your good example. It shows a great refinement where the people desire to beautify their homes with Nature's choicest gifts.

It always gives me pleasure to read of such work being done, for I am an ardent flower lover, and can thoroughly appreciate the pleasure and happiness a community must take who work in harmony to beautify their homes and the town or city in which they live.

I see you give considerable space to cactus, a class of plants in which I take great interest. The more one becomes acquainted with them the more fascinating they become and the greater is the desire to make a collection.

I trust that your society will continue to prosper and, you certainly have my best wishes and congratulations.

THEODOSIA B. SHEPHERD.

Ventura, Cal.

THE MOST EXTRAORDINARY OF MEN.

The gardener is the most extraordinary man in the world because no man has no business upon thyme, is master of the mint, and raises his celery every year. And it is a bad year indeed that does not produce a plum. He meets with more boughs than a minister of state. He makes raking his business more than his diversion, as many fine gentlemen do, but he makes it an advantage both to his health and fortune, which is the case with few others. He indulges in his own pleasures, and though he is plain in his own dress with his bachelor's buttons, yet he encourages his cox combs with princes feathers, greatly admires the pride of London, and with pleasure observes his love lie a bleeding under a weeping willow. His wife, notwithstanding, has as much of lad's love and heart's ease as she can desire and never wishes for weeds. Distempers fatal to others, never hurt him, for he walks the better for the gravel and thrives most with a consumption. He is nature's assistant and is as famous for his balm of Gilead, female balsams, and genuine drops as an apothecary, and his thrift abounds by his honesty. He is a great antiquary, having in his possession, Adam's needle, the tree of life, Jacob's ladder, Solomon's seal, the holy thorn, Venus' looking glass, the arms of France and crown imperial. He is well acquainted with the globes, and has crossed the line oftener than any mariner in Great Britain. He is the king of spades, and is happy with his queen, has more laurels than Alexander the Great, and more bleeding hearts than your beautiful Queen Mary. He can boast ladyship, but his greatest pride, and this world's envy is that he can have yew whenever he pleases.— New London Magazine, Oct. 1785. Furnished by R. CAMERON, NIAGARA FALLS.

HARDY GRAPES.

AT the meeting of the Massachusetts Horticultural Society, for discussion, Dr. Jabez Fisher of Fitchburg read a paper on "Hardy Grapes," of which the following is a summary:

Dr. Fisher purchased his first grape vine, a Concord, forty years ago. His first stimulating success was in 1865, when, with a dry, favorable season, the crop was enormous—four and a half tons upon three-fourths of an acre—which were well ripened and brought a high price; but he has never been able to equal this again. Since 1871 large crops have generally, though not always, alternated with small, but through judicious thinning the quality has been satisfactory. In his whole experience there have been three total failures—in 1860, 1875 and 1888.

In considering the outlook for the future, Dr. Fisher said that the expediency of any person's taking up grape-growing depended on circumstances. He would not advise a novice to start in the business, but if a person has a vineyard well situated and in good condition, he thought it wise to attempt growing the best possible quality of product.

To attain the quality that commands the highest price calls only for a few conditions, but they are imperative and as important to the amateur with his few vines as to the extensive cultivator. His experience, coupled with extensive observation, had taught him that the best soil is a strong one, inclining to clay, but not too heavy, and well drained, either naturally or artificially. A gentle southern or south-eastern slope, near to but not on the summit of elevated land, is desirable. Shelter of land, buildings or trees is useful. No especial preparation of the soil is necessary. A field in fit condition for corn is also suitable for grapevines. Two-year-old plants, if they have been transplanted at one year and the roots shortened in, may be best, but otherwise he would choose one-year-olds. Spring is the preferable time for planting, and the earlier the better, provided that the soil is friable. Cultivation should take place as soon after every packing rain as the surface will work mellow. No training is necessary the first year. as soon as the leaves fall the vines should be cut down, leaving two or three buds only.

The second year a temporary stake should be used to support the growing vine which needs no other training and no pruning, except that a single cane only is allowed to grow. The autumn pruning is like that of the first year.

At the beginning of the third season a permanent support should be provided, according to the system of training that is to be adopted, whether trellis, stakes or otherwise. The object in view during the season is to grow from this cane for fruitage the subsequent year. When the length of six feet is attained this cane should be stopped by pinching off the point. All laterals that grow from this cane should be pinched so close that they may not divert growth from it, but otherwise there should be full freedom of development. If the growth should be satisfactory, i. e., if it makes a cane from five to six-sixteenths of an inch in diameter, it will be safe to allow it to fruit for half its length, and it should be cut back to that point at the fall pruning. If less vigorous, the whole should be cut away as in previous years. Nothing so injures a young vine as to allow it to carry a crop of fruit beyond its capacity; it is like putting a boy of fifteen or sixteen to perform a man's labor.

The essayist was confident that more failures and discouragements arise from this mistaken policy than is generally believed.

The system of pruning described is what is known as the renewal system, the vine being, so to say, renewed each year, and thus kept perpetually young. As the fruiting wood is cut away at the annual pruning there is no doubt that the particular roots which have supported it mostly die, while the new, vigorous ones, corresponding to the new cane, remain to carry the crop at the next fruitage; thus in reality only the trunk of the vine is permanent, whatever its age. This mode of treatment insures larger clusters, and if the fertility be ample and the fruitage not too heavy, the berries will also be large with a heavy bloom, which is at once attractive in market and an evidence of high quality.

If the land is in good heart, and no other crops are grown upon it, no fertilization will be required before third year, but otherwise it should be supplied from the commencement. Barnyard manure has always been looked upon as a complete fertilizer. It consists largely of hay, with more or less grain, ground fine by the animal, which through digestion, withdraws a small percentage of nutriment from it and excretes the remainder. If all the liquid and solid matters are saved they constitute a very complete fertilizer. The solid portion alone, however, is incomplete or one-sided in composition, as is also the liquid, which is the other side. Barnyard manure, like all organic substances, is available only after its decomposition, which requires two or more years for its completion, but it is a serious economical question whether it be best to apply costly materials on which dividends are necessarily postponed. Chemistry shows that the more valuable constituents of barnyard manure can be supplied in commercial substances in better forms, at a cheaper rate and with surer results. The average composition of fruit trees and vines, together with their fruits, as shown by many analysis, led the essayist to adopt a fertilizer composed according to the following formula:

225	pounds	high grade sulphate of potash.
100	"	sulphate of ammonia.
200	"	nitrate of soda.
200	"	South Carolina floats.
80	"	Sulphate of magnesia.
75	"	plaster.

Total, 850 pounds for each acre annually.

These ingredients are nearly all quite soluble and the vines are able to appropriate them as required through the growing season. They should cost $16 or more, according to the quantity required and the facilities for obtaining them.

The essayist stated that his experience in growing grapes for the market had been limited to the Concord. As a final word he emphasized and insisted upon the two indispensable conditions of the highest success, which also apply to the growing of all the larger tree fruits as well as grapes. One is the necessity of ample annual fertilization, and the other is the severe thinning by which quality of product and consequently high price are to be realized and maintained.

GROWING POTATOES—PREVENTING DISEASES.

THE abundant crops of 1895 and '96, with an overstocked market and low prices, had the influence on many growers of becoming indifferent in caring for the crop of 1897, the result of which is a light yield of poor quality.

The heavier soils are not capable of producing the best quality of potatoes at any time.

The lighter and more suitable soils did not give a satisfactory yield and quality in 1897 from the plants being killed by blight long before completing their growth.

The writer invites the indulgence of the reader in giving our experience on the subject briefly.

No attempt will be made in this short paper to describe the diseases of the potatoe, for this is done in a very practical way in the Farmer's Bulletin, No. 23, of the Central Experimental Farm, Ottawa, by Prof. John Craig.

Rotation.—We practice a three year rotation as nearly as possible on all our land except what is down to pasture and fruit, and depend on medium red clover to keep up the fertility.

It may be said that we go through our rotation backwards, or the opposite way from the common practice.

Most people apply manure to the land before the hoed crop. We top dress in the fall and winter after the corn, potatoes or whatever crop we use, hauling and spreading direct from the stables whenever the ground is frozen enough to bear a team. Our object is to mulch and fertilize all we can to insure a good catch and growth of clover which is sown with the grain crop.

All corn is cut for the silo and all straw used for feed or bedding is cut so there is no clogging of implements in working the manure in the surface soil with harrow and cultivator where it remains two seasons.

Cultivation is commenced by ploughing the clover sod late in the fall, and harrow, cultivate and gang in the spring, and when ready to plant in May, strike out and plough in wide lands dropping fresh cut seed 15 x 36 inches in every third furrow, six inches deep.

Two good hands will cut with a curved knife and drop the seed as fast as the ground can be ploughed with one team.

Harrow cross-wise and length-wise every few days up to the time the plants are three or four inches above ground.

If the work has been well done up to this time there will be little need of a hoe in the field.

Scuffle on the level, for the more ridging is done the surface will be exposed to be dried out by sun and wind, and the greater amount of soil moisture will be lost.

We scuffle once a week or as soon as the soil is fit to work after every shower up to the time the plants shade the ground, deep at first, finishing at an inch and a half.

If from drenching rain or any cause the soil gets so firm that the tubers are showing above the surface, we use the hillers on the scuffler covering the row enough to keep them from being sun burned as the common phrase goes, but it does not require the sun to make a potato look green, the light from a small cellar window will destroy the quality of the best potatoes. To prevent this we keep the bins covered with a mat or anything that will exclude the light, and the quality will compare favorably with the ideal way of wintering in pits.

(*To be continued.*)

Doings of Other Societies.

WATERLOO.—Considering the many counter attractions, the audience gathered in the Town Hall here, last Thursday evening, to listen to Mr. Gammage's lecture to the Waterloo Horticultural Society, may be considered satisfactory. The lecturer, a practical florist, in plain language that was listened to with marked attention, gave a clear statement of facts. Commencing with house plants he showed how to obviate and evercome the dry air of our dwellings, which is so injurious to plant life, the different classes of plants in use, the rapidly increasing taste for ornamental and foliage plants, palms, ferns, feius, dracaenas, etc., plants for vases and hanging baskets, bulbs for winter blooming, garden plants, annuals, seed sowing, transplanting, and how to secure the best results with herbaceous perennials, cultivation and pruning of flowering shrubs, roses, etc., plants for shady places, the best and most easily grown climbers, fertilizers and their application, watering, prevention of, and remedy for insect pests, were all in turn discussed and explained. The audience showed their appreciation and interest in plying the lecturer with questions at the close, all of which were answered satisfactorily.

ORANGEVILLE.—The lecture by Mr. Wm. Bacon, of Orillia, on "Indoor and outdoor flowering plants," was much appreciated by the members of the local society and the public generally. The lecturer occupied about an hour, and afterward a large number of questions were handed in and answered to the satisfaction of all concerned. The platform was well decorated with greenhouse plants, which were made use of by the lecturer in illustration of his subject.

KINCARDINE.—The number of our membership has now reached 96. We expect to get 4 more, but they will be too late to share in your plant distribution, but they will get a big dollar's worth without it. Mr. Bacon's lecture was much appreciated. A vote of thanks was tendered the Ontario Fruit Grower's Association for their liberality in sending the lecturer, and the plants for distribution. —JOSEPH BOOKER, Secretary.

PICTON.—SIR,—Thinking you will be interested in the Spring distribution of our Horticultural Society, I enclose you a packet of seeds we had put up in Germany, and send you as well a list comprising all that was included in the distribution, the wholesale price being about $1. Eight papers seed, 8 papers sweet peas, 1 single begonia bulb, 1 double begonia bulb, 1 gloxonia bulb.—WALTER T. ROSS.

A Lecture Tour Among the Societies.

SIR,—I thought it quite possible that you might be pleased to receive some short notice of the meetings assigned to me under the auspices of your association, and, therefore, select the following from my note-book :

It is only just to remark that in every place your representative was shewn the utmost courtesy and kindness and many expressions were heard of the high appreciation of the Horticultural Societies at the very generous action of the executive of O.F.G.A. in providing lectures on such liberal terms, and thus encouraging an increased knowledge of the many plants, bulbs and flowers. It is the varieties, nature and requirements of very noteworthy that in such gatherings assembled you have the very cream of the communities as to refinement and intelligence—therefore the meetings are full of interest and mental activity, and always most pleasurable and elevating in their character.

THORNBURY.—On March 22nd I visited Thornbury and Clarksburg and met many old friends and a live membership of the Horticultural Society. There are here, to the population, perhaps, more ardent lovers of the beautiful in plants and flowers than any other place of its size in Ontario, and some of its citizens have beautiful specimens in ferns, palms, gloxinia, begonias, geranium, etc., and others less practiced are very eager to learn the secret of their fellow-members' success. Attendance very good, and interest keen as indicated by the pertinent questions asked concerning the many kinds spoken of, their treatment, etc. Insect pests were widely dealt with. We bespeak for this Society an increased membership, with the full determination to attain the greatest success in floriculture.

I might say, also, that this people make bright and cheerful the "place of the dead" in a very creditable and marked degree, as we know from past experience. In summer they make the cemetery their special charge. In this it would be well for many larger places to follow their example.

MEAFORD.—March 23rd, I reached Meaford in good time, and making the acquaintance of directors and members, was glad to find a very much interested people on the subject of floriculture in this beautifully situated town. The formation of the Horticultural Society has done much to awaken an interest in plants for the house, garden and park The Secretary, President and Directors, are a most courteous group of gentlemen and will report new members right along. Mr. Cleland, Ex-M.P.P., made, in an opening address, some timely remarks anent the beautifying of the public park and enlisted the sympathy of the Society and their aid for this object. We had a capital meeting and I believe much satisfaction was felt at hearing of best proved methods of growing, renewing, watering and pruning of the many different kinds of plants and bulbs. By the way, there

will be an increased planting in this department hereabouts, I am sure, from evidences in the gathering.

OWEN SOUND was the next place to visit. In this picturesquely situated and fast growing town your Society's membership, though not large, has a deep, intelligent interest in the work of the society and the meeting was, I believe, profitable to all. Ven. Archdeacon McMuller occupied the chair and opened the meeting in good spirit. For nearly two hours of address and answering of queries a lively interest was displayed in the subject of floriculture, as they sought guidance for the watering, care, propagation, growing from seed, pruning and keeping of their plants from season to season. Many lovers of the great families of bulbous plants are here, and we believe that in this locality many hardy border plants and gorgeous flowering lilies may be successfully grown. Perpetual Roses should find a congenial clime and soil. We forecast a great future for Horticultural Society and town.

ORANGEVILLE.—We closed the first week's work, March 25th, at Orangeville. Arriving in good time I had an opportunity of making the acquaintance of a number of citizens and the officers of the Horticultural Society. This being the second annual meeting a good deal of enthusiam prevailed, and very nice preparations were made for the evening. The local greenhouse men, Messrs. Maun and Nicholson, furnished plants as specimens, and there did not seem to be a director that was not a worker and willing to give time and material to decorate the Town Hall, hence a full house of several hundred people. Music furnished by the orchestra in good style, also the gramophone. Mr. Walsh made a first-rate chairman, with a strong and pleasing personality and happy address. The various officers seem to be well and wisely chosen; gentlemen eminently fitted by their ability and natural love of the objects of the Society and with a set purpose to attain the best ends before it. They advertised their meeting well and systematically—first by local papers, lastly by hand-bills—then announcing it in every school. Result: a large house thoroughly interested and willingly listening for about two hours to address and replies to questions, the subject being almost inexhaustible to enthusiastic lovers of nature. Here! Mr. Woolverton, I am of opinion is one of the best organized, successful and most aggressive Horticultural Societies in Ontario. W. E Judge, Sec, John McLaren, Pres., and Mr. Walsh, Vice-Pres., are in their right place and deserve the sincere thanks of the community for their earnest efforts. The ladies evinced an intelligent acquaintance with many varieties of plants and their requirements. Success to Orangeville.

NIAGARA FALLS.—Had a full afternoon to make acquaintance with the refined and kindly people of this historic place. Evidence of the love of the many beautiful varieties of plants now to be had was to be seen in almost every home. The directors are a live lot of men, full of push and faith, and do things in a business-like way excepting, perhaps, a little more hand-bill advertizing might make for the better. The meeting, though not large, was very select. The Rev. Canon Bull occupied the chair, and very gracefully put the objects of the gathering forward and gave a right tone to the evening. There were really some very nice specimens of Genista, Abutilon Geranium and other plants, grown by Mr. G. Pyper, who well understands the art. Also cut flowers, by Mr. Cameron of the park, lovely trusses of geraniums, heliotropes, gorgeous spikes of cannas in many colors, etc. They here heard gladly what we had to say and elicited by questioning much information and volunteered freely their own experience.

KINCARDINE.—On March 31st, the annual meeting was held. Our visit was very pleasant and the people seemed to enjoy much what was done. The officers are aggressive as will be seen from the fact that they now have a membership of 98. This has been accomplished by energy and perseverance on the part of the directors. There are here those who are determined to succeed. Much intelligence was displayed in the discussion of plant life, etc. They were very sincere and hearty in their expression of thankfulness to the Ontario Fruit Growers' Association for the generous extension of help to their Society. The Society will accomplish much in this vicinity to awaken a deep interest in gardening and plant culture. It is a pleasure to meet a people like this.

MIDLAND.—At Midland we had a large and enthusiastic gathering It was to be regretted that several of the officers were indisposed. However, Miss M. Tully the Secretary, is a host in herself, and Mr. Cook, Vice-president, filled well the chair. The meeting was opened by songs well rendered by Mr. Hunter, and at intervals by two ladies whose names (unpardonably) I have let slip, who were in "good voice" and evidently favorites. There was a keen interest taken in the direction of finding out the secret of plant culture in the house, specially, after that from the address delivered they discovered that they had fallen into the error of giving plants too large a pot, etc. Many came to express their pleasure and satisfaction with this information so generously given by the O. F. G. Association and hoped for future visits—especially as this evening was spent almost exclusively among the family of bulbs at their request. The Midland people have the elements of a large and prosperous Horticultural Society.

WM. BACON, *Orillia.*

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

Notes and Comments.

NOT EIGHTY PER CENT. AMERICAN STOCK.—Dr. Fletcher wishes to correct statement on page 109 that "80 per cent. of our fruit trees were imported from the United States." What he said was that "80 per cent. of the surplus stock of American Nurseries was shipped into Canada."

MR. R. B. WHYTE, our director at Ottawa, has won the gold medal, the first prize at the Ottawa Camera Club exhibition. We hope to have many samples of Mr. Whyte's work as illustrations for our journal this summer.

THE GRAPE was the subject of an address before the Goderich Society by Mr. W. Warnock. He gave an interesting history of the grape vine, and explained the extreme importance of this fruit as an article of diet.

ANNUALS FOR THE AMATEUR'S GARDEN.—This is the title of an excellent paper, written by Mr. R. B. Whyte, of Ottawa, and read by him at the Annual Meeting of our Association. Two or three selections only will be given here, and will serve to cause our readers to take up our Annual Report, and read the whole.

"For the best display from July to November, we cannot do without some of the summer bulbs, such as Tigridias, Gladioli, Cannas, Dahlias, etc., and a selection of the Herbaceous perennials, but our main dependence for the gorgeous show of Color that is possible during that month is upon the Annuals.

There is no half dozen perennials that can be named that will give us one quarter the show of bloom, that we can get from the Dianthi, Poppies, Sweet Peas, Phlox Drummondi, Asters, and Scabiosa.

Plant as large a variety as your space will allow. There are some old favorites that we want every year, but in addition to these it adds greatly to the interest of our gardens to try some new sorts each season, even though they do not come up to the highest standard. I would not like to be without Dianthus, Escholtzia, Poppy, Candytuft, Mignonette, Phlox Drummodi, Schizanthus, Stock, Sweet Pea, Snap Dragon, Salpiglossis, Aster, Scabiosa, Nasturtium, and Pansy. If I were limited to fifteen kinds, these are what I would grow; they are all quite hardy, and will give a great profusion of bloom all summer and fall, from seed planted in the open air, without the assistance of the hotbed or greenhouse.

GINSENG.—Bull. 27, Dept. of Agric., Pa., is devoted to the cultivation of this plant. This is encouraged because such quantities are annually shipped to China, It grows wild in many places, and may be cultivated quite easily. Not like our fruits, its value is advancing instead of declining, for in 1858 it was only counted worth 52c. a lb., while in 1896 it had reached a value of $3.86 per pound.

Ginseng has no medicinal value here, but the Chinese regard it as a panacea for all weakness of mind or body.

THE LONDON EXHIBITIONS LIMITED, is the title of the managers of the Greater Britain Exhibition, to be held in London, Eng., from May to October, 1899. The affair is an effort to encourage commercial intercourse between the Colonies and the Mother Country. All such means of encouraging commerce should be turned to the best account possible, and should this project be worthy, we trust our authorities will earnestly cooperate in its success.

THE WICKSON PLUM.—In his Bulletin 139, Prof. Bailey says: "I am impressed with the Wickson, and expect to find it an acquisition. The fruit is very large, deep maroon red, firm and long keeping, with an aromatic almond-like quality, and deep dull yellow meaty flesh. It has the habit of the Prunus Simoni, being the narrowest grower of all the Japanese plums we have tested.

POTASSIUM SULPHIDE is recommended in Bulletin 133, N. Y. Expert. Station, as the best remedy for gooseberry mildew. Very early treatments were found to give the best results. Such treatment with weak solution, 1 oz. to 3 gals. of potassium sulphide prevented mildew on all but 5 per cent. of the fruit, while the later treatments gave two or three times as much mildew. With the stronger solution, 1 oz. to 2 gallons, the early treatment reduced the mildewed fruit to 66 per cent., while with later applications the injury was nearly twice as much. The cost of this article is 18 cents a pound, and it should be first applied very early just as the buds are swelling, at the rate of 1 ounce in 2 or 3 gallons of water, and the treatment repeated every ten days or two weeks.

AN INSPECTION FEE has been imposed by the Horticultural Board of British Columbia, on all Nursery stock; on consignments of 100 trees the fee is $2.50; 100 to 250 trees, $3.50; 250 to 500 trees, $4.50. If found infected, a charge of 50 per cent. is added for disinfection. On fruit the minimum fee is $1.00 on any sum up to $33.00, and 3 per cent. on any sum over $33.00 in value.

THE CANADIAN HORTICULTURAL MAGAZINE of Montreal for March has

just come to hand. It contains an illustrated article on the Gardens of Montreal, another on Our Native Orchids, and other articles. "Chance Cosmopolitan Flowers" is the subject of the opening article by Mrs. Robert Jack, whose contributions are always bright and interesting. From the latter we quote the following regarding the Peony.

"Would an old fashioned garden deserve its name lacking a Peony? How wonderfully that plant has changed, I will not say improved, for that would be to libel the dear old red Peony we all know so well. But the beautiful shades that have been revealed by cultivation are a delight to the æsthetic taste. The name is from "Paion" a Greek name for Apollo, the god of medicine, as the roots were considered to be antispasmodic. The white Peony is a native of Central Asia, and the Mongolians use the root in their soups and grind the seeds to put in tea. There is a true Peony in the same old-fashioned garden. It is expected every spring that it will have succumbed to the severity of the winter, but even last season, so hard on many things, it came out uninjured."

FRUIT IN CALIFORNIA.—A friend of Mr. Nigel Keep, writes him as follows: —The prospects for the entire state of California this year are very poor indeed. In consequence of lack of sufficient rain, and the very heavy late frost, the fruit crop of nearly every county is a failure, from the county of Syskigon to Santiago, a very unusual occurrence. The peach crop is entirely swept away over the whole state; apricots, prunes, pears have shared the same fate. There may be some apples. On our farm the destruction is complete—there is nothing left. Last year we had plenty of strawberries in April, but this year there are none. They may bloom again and probably we will have berries in May."

DR. BEADLE has sent us an interesting article on "New Creations in Fruits and Flowers," for June No. and one on "A New Profitable Canadian Industry" for July No. It will be remembered that Dr. Beadle was the first editor of this Journal and his writings on horticultural topics are always full of value.

MR. A. E. MICKLE has contributed an interesting article on "Rambles Around Toronto," illustrated, and another on "Thinning Fruits."

PHENOLOGICAL OBSERVATIONS AT NIAGARA FALLS.

DATES OF SAME.

	When First Seen.
Alder Alnus incana shedding pollen	16-4-96
" " " " "	3-4-97
" " " " "	16 3-98
Red Maple Acer Rubrum in flower	20-4-96
" " " " "	8-4-97
Snowdrops in bloom	30-3-96
" "	7-3 98
MIGRATION OF BIRDS	**Going North.**
Wild Swans	26-3-96
" "	1-3-98
Wild Geese, first birds	27-3-96
" " " "	9-3-98
Wild Ducks, first birds going north	28-3 96
" " " " " "	15-3-97
" " " " " "	6-3-98
Red Winged Black Bird, Agelaius Phœniceus	28 3 96
" " " " " "	12-3-98
American Robin, Merula Migratorius	28-3-96
" " " "	15 3-97
" " " "	8-3-98
Song Sparrow, melospiza fasciata	28-3 96
" " " "	18-3 97
" " " "	1-3-98
The piping of Frogs first heard	20-3-97
" " " "	7-3-98

The above will show the difference in the past three springs.

R. CAMERON.

Niagara Falls Park.

Question Drawer.

We shall be glad to answer all questions relative to Horticulture, Floriculture, and Forestry, in these columns, but cannot undertake to send answers to such questions by mail.

The following questions 1001 to 1010 were asked by some of our Horticultural Societies, and answered by Prof. H. L. Hutt, O.A C., Guelph.

Umbrella Plant.

1001. What care does it need in respect to light, heat, moisture, repotting, etc?

Umbrella plant, or cyperus, like many other plants with inconspicuous or no flowers, may be grown quite successfully in a north window when room cannot be spared for it in southern windows. It does well in the ordinary temperature of a living room, from 60—70 during the day, and 10—15 less at night. It requires plenty of moisture, and is the better of being given plenty of room in the pot.

Rex Begonia.

1002. What is the cause of its dying in spite of close attention?

It should not be forgotten that this plant, like most others, requires a period of rest after its season of vigorous growth. During the winter months it should be rested by keeping it in a cool place, and giving it no more water than is necessary to keep it alive. After resting it should be repotted, put in a warmer place, and given water enough to sustain vigorous growth. New plants should be propagated from time to time, that the older ones may be thrown away after they have been grown two years.

Primula.

1003. What should be done with it after its flowering season?

Throw away old plants after they have flowered, and sow fresh seed this month (March) for plants to bloom next winter.

Hypericum Moserianum.

1004. Does it require shade, or will it do better in full sunshine? What protection does it need in winter?

We have not grown this variety, but judging from those we have grown, we would give it full sunshine and a covering of straw or long manure for protection in the winter.

Tree Peonies.

1005. Are they good for house plants in pots?

These are sometimes grown under glass in the Old Country, but we have never heard of their being so grown in this country. After being forced into bloom in the house they are useless for a similar purpose for two or three years afterwards.

Fritillarias.

1006. Are they good for culture in pots? How many in a six inch pot? Is F. recurva the best.

Fritillarias may be forced for winter bloom the same as hyacinths or tulips, but they are more satisfactory for outside culture. Fritillaria aurea and meleagris are recommended as suitable for pot culture. One bulb is sufficient in a six inch pot.

Plumbago.

1007. Will Plumbago Capensis and P. O. Flore Pleno make good window plants, or house plants for the winter?

The Plumbagos mentioned make very satisfactory house plants when properly handled. As the flowers are always produced on the new growth, the plants should be cut back every two or three months to induce the formation of new growths.

Cocos Weddeliana.

1008. Would this palm make a desirable centre piece for the dining-room table? To what height does it grow?

Cocos Weddeliana is one of the handsomest and most desirable palms for table decoration. It may attain a height of four or five feet, although we seldom see specimens over two or three feet.

Kentia Belmoreana.

1009. Is this a good palm for general house culture? Would be a suitable one for a society collection?

Kentia Belmoreana is an excellent palm for general house culture, and would do honor to any collection.

Palms From Seed.

1010.—Can palms be grown from seed? Are the Kentias the best class to grow?

Palms are grown from seed, but they are slow to germinate and require a higher temperature than the amateur would likely be able to give them. On this account I am inclined to think the majority of amateurs would likely loose interest in them before the plants amounted to much. The Date Palms, however, may be easily grown from the seeds of the dates of commerce.

The Kentias are among the best palms for general culture. Other desirable ones are Areca lutescens, Cocos Weddeliana, Latania Borbonica, Phoenix, and Seaforthia elegans.

Open Letters.

Mr. Forbes' Garden, Orillia.

SIR,—Mr. Blackstone of The Times, I understand, has sent you the cut you asked me for. Reading last summer in the Magazine, your request for photographs, I had laid aside three, intending to send them to you, but in the mean time Mr. Blackstone asked me for one of my house. I gave him the three intended for you, on looking for others to replace them, I could only find the two I sent you, the third might perhaps have been suitable for a vignette, cedar hedge and trees. The house is very much hidden by the trees. You will notice a little to the right, a Weeping Elm. I planted a pair in 1882, but one of them grew too much upwards and spreading, so I cut it down, since the photo was taken.

My taste inclines rather to Nature than art, consequently I have cultivated trees and lawn more than flower beds, not having room for both; maple, spruce, cedar, Cut-leafed Horse chestnuts, maple, Cut-leafed Birch, Mountain Ash, I tried the Kilmarnock Willow but they died. I have quite a number of shrubs which came from you, but unfortunately did not keep note of their names. I have also a fine white grape vine which I got from you about fifteen years ago.

W. J. FORBES.

Orillia, Feb. 15th, 1898.

Foliage for Bouquets.

SIR,—I noticed in the February number of your journal, you have an article entitled "Foliage For Bouquets." No doubt there are hundreds who are continually worrying themselves almost to death over this vexed question. I, myself, for a long time was bothered as to what would look well in a bouquet of flowers. I think I solved this problem, however, and for the last two seasons I planted a five cent package of Cosmos each spring. This is ornamental as well as useful, furnishing us not only with an abundance of the most beautiful green foliage, but it also gives us very beautiful dahlia-like flowers (single) for the bouquet. If any is desirous of a beautiful foliage there is nothing easier to grow, and nothing cheaper, or more beautiful than cosmos. I trust that any reader who really want something pretty in this line will get a 5 cent package of the mixed which grows very readily, and I am sure that they will not be sorry for having done so.

There is another plant which can be very easily raised from seed and which is also very ornamental and will furnish us with bushels of beautiful foliage for bouquets. I refer to eschscholtzia. This can also be bought for 5 cents a package and is simply grand to mix in with flowers.

C. HIRSCHMILLER,
23 Simcoe St. N., Hamilton.