

FILE No. 67

Oregon Agricultural

Experiment Station.



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HORTICULTURE.

GEO. COOTE, Horticulturist.

The following Record and Notes relate to the growth of vegetables tested on our trial grounds during the year under like conditions of soil and treatment, the greater part of them being standard varieties well known to cultivators.

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Test of Tomatoes:

The testing of tomatoes this season was to determine the earliness of varieties, the best manner of treatment and training, and also the effect of pruning. All plants were set out in soil of the same quality and were treated exactly alike. The ground had been well manured the previous fall, the manure plowed in, and allowed to lie all winter. In spring it was again plowed twelve inches deep, and then plowed a second time before the plants were set out. By this thorough cultivation the manure was well mixed with the soil, and by being plowed deeply, the roots of the plants were enabled to penetrate much deeper than they would otherwise have done; consequently, the roots found moisture which caused the plants to make a strong growth all through the dry season. The plants were cultivated between the rows every three weeks from the last of May until the last week in August.

After the fruit had set, six plants of each variety were pruned back to two joints above the fruit. Plants treated in this manner yielded much larger and better fruit, but not earlier, and the plants were comparatively free from small or stunted fruit. Plants that were allowed to grow at will, had a larger number of fruits to the plant, but smaller ones, thus proving that by keeping plants pruned back much better and more even fruit may be secured. But little difference could be noticed between the plants trailing on the ground and those trained to trellises, as the climate of the Willamette valley is dry during the fruiting season. The difference is not enough to pay for the expense of trellises.

Result of Experiment with 55 Varieties of Tomatoes.

VARIETIES.	Date of Sowing	Date of Germinating	Per cent of Germination	Date of Pricking out	Date transplanted	Date of Blooming	Date of first ripe fruit	Date of edibility maturity	Date marketable maturity	Wt. of fruit from 12 plants	Diameter of fruit	Length fruit
	Mar.	Mar.		Apr.	May	Jun	Aug	Aug	Aug	lbs oz	in.	in.
Acme-Vaughan.....	16	22	48	6	12	6	Aug 19	Aug 24	Aug 29	196 10	3	2
Advancer-Vau.....	16	22	70	6	6	3	" 18	" 22	" 26	16 11	2	1 7/8
Alpha-Vau.....	16	23	58	6	"	2	" 14	" 17	" 22	135 4	3	1 3/4
Acme-Bowen.....	16	23	36	6	"	6	" 19	" 24	" 30	193 5	3 1/2	1 3/4
Chemin Market-Bow.....	16	24	86	6	"	3	" 13	" 20	" 27	129 9	2 3/4	2 1/4
Canada Victor-Vau.....	16	23	68	7	"	6	" 17	" 21	" 26	130 4	3 1/2	1 7/8
Cardinal-Vau.....	16	22	78	6	"	6	" 17	" 21	" 25	181 14	3	2 1/4
Cardinal-Thorburn.....	16	23	60	7	"	6	" 11	" 19	" 27	181 14	3 1/4	2 1/4
Dwarf Champion-Bow.....	16	23	60	6	"	6	" 12	" 19	" 23	83 4	1 3/4	1 3/4
Early Conqueror-Bow.....	16	22	70	6	"	6	" 14	" 18	" 22	304 4	3	2 1/4
E. King Humb't-Thor.....	16	27	100	7	"	7	" 9	" 15	" 22	125 10	1 3/4	2 1/2
E. Hundred Days-Bow.....	16	23	57	6	"	6	" 28	" 29	Sep 1	100 1/2	3	1 1/2
Early Conqueror-Vau.....	16	22	72	7	"	4	" 11	" 15	Aug 20	280	2 1/2	1 1/2
Favorite-Vau.....	16	23	58	7	"	6	" 14	" 21	Sep 1	120 13	3	2 1/4
Haines No. 64-Vau.....	16	27	74	7	"	5	" 15	" 22	" 25	141 6	3 1/2	2
Hathway Excel.-Vau.....	16	24	68	7	"	6	" 17	" 21	Aug 25	94 12	3	2
Impr. Large Yel.-Vau.....	16	22	18	6	"	3	" 11	" 20	" 26	125 10	2 3/4	1 1/2
Improved Queen-Vau.....	16	23	98	7	"	7	" 14	" 19	" 26	54 10	2 1/2	2
King of Earlies-Vau.....	16	23	86	7	"	3	" 12	" 17	" 23	131 4	2 1/2	1 1/2
Large Round Yel.-Vau.....	16	21	88	7	"	3	" 18	" 19	" 21	138 10	3 1/4	1 3/4
Livingston Beauty-Vau.....	16	22	100	6	"	7	" 17	" 19	" 22	158 2	3	2 1/8
Lorillard-Vau.....	16	23	54	7	"	3	" 19	" 25	Sep 1	91 1	2 1/2	2
Livingston Stone-Vau.....	16	23	60	7	"	3	" 14	" 20	" 25	118 9	3	2 1/4
Large Yellow-Bow.....	16	22	56	6	"	3	" 17	" 20	Aug 23	76	2 3/4	1 1/2
Livingstons Perf.-Bow.....	16	22	58	6	"	6	" 9	" 15	" 20	96 10	3	2
Beauty-Bow.....	16	22	68	6	"	7	" 11	" 17	" 22	33 3	3	2 1/4
Favorite-Bow.....	16	21	80	6	"	7	" 12	" 17	" 22	89 9	2 3/4	2
May Flower-Vau.....	16	22	84	6	"	3	" 14	" 29	Sep 1	95 12	2 1/2	2
New Ignotum-Vau.....	16	24	80	7	"	6	" 19	" 24	Aug 29	113 13	3 1/4	2
Golden Q'n.-Vau.....	16	27	50	6	"	7	" 19	" 29	" 21	88 15	2 1/2	2
Dwarf Chmp.-Vau.....	16	23	94	6	"	7	" 22	" 28	Sep 5	33 9	2 1/2	2
Peach-Vau.....	16	22	100	6	"	6	" 20	" 23	Aug 26	77 12	1 7/8	1 7/8
Jersey-Thor.....	16	23	82	7	14	9	" 15	" 22	Sep 1	69 3	3 1/4	2 1/4
Optimus-Thor.....	16	23	100	7	12	6	" 14	" 18	Aug 26	199 14	3	2 1/4
Optimus-Vau.....	16	21	60	7	"	6	" 17	" 23	" 27	180 3	2 3/4	2 1/4
Perfection-Vau.....	16	23	92	7	"	6	" 23	" 25	Sep 1	53 6	2 3/4	2 1/2
Pear shaped-Vau.....	16	26	66	6	"	6	" 23	" 28	" 1	58 10	2	1 1/2
Potato leaf-Vau.....	16	22	90	6	"	6	" 18	" 23	Aug 27	78	2 7/8	2
Paragon-Vau.....	16	24	40	6	"	6	" 11	" 22	" 25	162 3	2 3/4	2
Puritan-Thor.....	16	23	90	7	"	6	" 16	" 21	" 31	26 9	3 1/4	2
Red Cherry-Vau.....	16	23	90	7	"	7	" 15	" 19	" 26	50 11	1	1
Currant-Vau.....	16	25	68	7	"	3	July 22	July 29	" 3			
Red Pear shape-Bow.....	16	24	72	6	14	3	Aug 12	" 29	Sep 5	45 8	1 7/8	1 5/8
Scovill's Hybrid-Vau.....	16	21	60	6	12	6	" 16	" 23	Aug 26	76 2	2 3/4	2 1/8
Turner's Hybrid-Vau.....	16	23	94	6	"	6	" 15	" 20	Sep 1	268 9	3 1/4	2 1/2
Thor's Ing keepr-Thor.....	16	24	34	7	"	6	" 15	" 20	" 2	17 6	3	2 1/2
Trophy-Vau.....	16	23	44	6	"	5	" 23	" 29	" 5	156 10	3 1/2	2 1/2
Trophy-Bowen.....	16	22	40	6	"	6	" 24	" 29	" 4	153 12	3	2
The Hovey-Vau.....	16	23	100	7	"	8	" 19	" 21	" 29	87 10	2 1/2	1 1/2
Volunteer-Thor.....	16	23	88	7	14	6	" 13	" 20	" 29	156 12	2 1/2	2 1/4
Volunteer-Vau.....	16	23	68	6	12	7	" 17	" 22	" 29	159 13	3	2
Vaughans Earl'st of all.....	16	23	100	6	"	3	" 12	" 16	" 22	69 14	2 3/4	1 1/2
White Apple-Vau.....	16	23	84	7	"	6	" 15	" 21	Sep 1	53 6	1 5/8	1 3/4
Yellow Plum-Vau.....	16	22	96	6	"	6	" 14	" 20	Aug 25	20	3 1/4	7/8
Carter's Seedless-Sta.....	16	23	97	7	"	6	" 23	Sep 2	Sep 9	96	3	2 3/4

NOTE.—One hundred seeds of each variety were used in the experiments.

Description of Foregoing Varieties.

HATHWAY EXCELSIOR.—*Vaughan*. A medium sized tomato, regular in shape and fairly productive.

NEW PEACH.—*Vau*. A small, pinkish tomato, quite productive, and good for home use, and of excellent flavor.

- PARAGON.—*Vau.* A rather large tomato, some of the fruit is slightly angular, fairly productive, solid.
- EARLY KING HUMBERT.—*Thorburn.* An early variety valuable only for earliness. The fruit is angular and often hollow, color pink.
- SCOVILLE'S HYBRID.—*Vau.* An excellent variety, smooth, and solid, color light red, fairly productive.
- LARGE ROUND YELLOW.—*Vau.* Plant not a strong grower, fruit large, and productive.
- LIVINGSTON'S BEAUTY.—*Vau.* Fruits uniform, smooth, a good variety, color pink.
- TURNER'S HYBRID.—*Vau.* This is a good all round tomato, matures early and lasts well through the season, is hardy and a valuable variety, color pink.
- HOVEY.—*Thor.* Not very productive, fruit medium in size, and smooth, light red.
- ADVANCER.—*Vau.* A handsome fruit, but not productive with us, form angular, color bright red.
- LIVINGSTON'S PERFECTION.—*Vau.* One of the best, fruit solid, not over productive, form regular, round and smooth.
- LORILLARD.—*Vau.* Fruit somewhat ribbed, dark red color, solid, not productive.
- NEW YELLOW PEACH.—*Vau.* An early variety, not productive, egg shaped, plant makes a small growth.
- CARTER'S SEEDLESS.—*Station.* Fruit large, round, solid, with few seeds, highly flavored, not productive, color pink.
- POTATO LEAF.—*Vau.* Fruit of medium size, smooth, plants moderately productive, color pinkish.
- DWARF CHAMPION.—*Bowen.* Plant dwarf growing, leaves rough, stems short jointed, fruit of medium size, firm, smooth and regular, not very productive, color pink.
- PEAR SHAPE.—*Vau.* Fruit pyriform, and not productive, color red.
- TURNER'S HYBRID.—*Station.* Not so good in shape as the plant grown from the seed supplied by Vaughan.
- IGNOTUM.—*Burpee.* Fruit large, solid, smooth, fairly productive, a good variety, color red.
- TROPHY.—*Vau.* Plant a vigorous grower, fruit large, smooth, productive, is subject to rot, color red.

- KING OF THE EARLIES.—*Vau.* Fruit irregular, of medium size, moderately productive.
- MAY FLOWER.—*Vau.* Fruit slightly angular, large, and smooth, not productive.
- HAINES' No. 64.—*Vau.* Resembles Cardinal, fruit large, light red, quite solid, a good variety.
- VOLUNTEER.—*Vau.* Quite productive, of good quality and solid, an excellent variety.
- ACME.—*Bowen.* A very smooth and uniform variety and of good quality, medium in size, red with a pinkish cast.
- VOLUNTEER.—*Thor.* Resembles Paragon, moderately productive, solid, and of good quality, fruit round, color red.
- OPTIMUS.—*Thor.* Plant a strong grower, fruit large, smooth, very showy, color red. A good variety although not quite so productive as some. It is worthy of a place.
- LARGE ROUND YELLOW.—*Bowen.* Plant a moderately strong grower, fruit slightly ribbed and moderately productive.
- EARLY CONQUEROR.—*Bowen.* Very productive, plant of medium growth, fruit large, good quality, slightly ribbed, color red.
- CANADA VICTOR.—*Vau.* An early variety, of medium size, moderately productive, some of the fruit irregular, the majority smooth, color red.
- LIVINGSTON'S FAVORITE.—*Bowen.* Fruits of good size, uniform, smooth, round, cell walls thick and firm, good quality, not very productive, red.
- LIVINGSTON'S BEAUTY.—*Bowen.* A few days earlier than the above, fruit large, of good quality, color red.
- LIVINGSTON.—*Bowen.* Resembles the above in every respect.
- CARDINAL.—*Vau.* A strong grower, fruit slightly ribbed, light red color, a standard variety, productive.
- CHEMIN MARKET.—*Vau.* Not over productive, plant a strong grower, fruit angular, color dark red.
- THORBURN'S LONG KEEPER.—*Thor.* Fruit large, and smooth, fairly productive and of good quality, color red.
- OPTIMUS.—*Vau.* Plant a very strong grower, fruit of average size, smooth, moderately productive, one of the best varieties.
- HUNDRED DAYS.—*Bowen.* Not a very strong growing plant, fruit not of much value, very rough.
- TROPHY.—*Bowen.* Fruit highly flavored, of good form and moderately productive.

- YELLOW PLUM.—*Vau.* Fruit small, good for preserves, not productive.
- RED CHERRY.—*Vau.* A small growing fruit, is a good variety where small varieties are wanted.
- PURITAN.—*Thor.* An excellent variety, fruit large and very solid, not a heavy producer.
- NEW JERSEY.—*Thor.* This is an excellent variety, smooth, solid, very showy, not over productive.
- RED PEAR SHAPE.—*Bowen.* A small variety, too small for general use.
- NEW IGNOTUM.—*Vau.* Resembles Ignotum of Burpee, is more prolific, evidently well selected.
- FAVORITE.—*Vau.* This variety resembles Ignotum fruit, solid and of good quality, one of the earliest.
- LARGE YELLOW.—*Bowen.* Plant an upright grower, fruit large, solid, few seeds, if yellow fruit is wanted this is a good variety, smooth.
- CARDINAL.—*Thor.* Plant a strong grower, fruit smooth, of good quality, one of the best.
- ACME.—*Vau.* Fruits of even size, slightly ribbed, of good quality.
- WHITE APPLE.—*Vau.* Not a strong growing variety, fruit round, of medium size, not of much value.
- LIVINGSTON'S PERFECTION.—*Bowen.* Fruit large, nearly round in form, of good quality, worthy of cultivation, although not quite so productive as some other varieties.
- EARLY CONQUEROR.—*Vau.* Fruit not large, round, smooth, moderately productive, color red.
- RED CURRANT.—*Vau.* This variety produces its fruit on long bunches like the currant, very handsome but too small for general use, is very productive.
- NEW DWARF CHAMPION.—*Vau.* A stiff, short, jointed variety, fruit of medium size, color pink, smooth, round, quality good, not productive.
- NEW GOLDEN QUEEN.—*Vau.* Fruit medium in size, solid, smooth, color a light yellow, not productive.
- MATCHLESS.—*Burpee.* Fruit large, very irregular, solid, and has a large scar at apex.

The earliest varieties of tomatoes are: Livingston's Perfection, Early King Humbert, Livingston's Beauty, Cardinal, Livingston's Favorite, Alpha, and Large Round Yellow. There are only four days difference in the time of maturity of these, Early King Humbert being the earliest.

Experiment with Tobacco to Prevent the Ravages of Cut-Worms.

At the planting season we were troubled very much with the cut-worm—so much so that of the plants put out in the day we lost 25 per cent. in the night. We tried hand-picking every morning, but with very unsatisfactory results. To wage successful war with the cut-worm we took tobacco stems, cut into half-inch lengths; and after the soil had been cleared away from the stem of the plants to a depth of half an inch, a small quantity of tobacco was taken between the fingers and thumb and placed round the stem of the plants; and the soil replaced over the tobacco to the depth of from $\frac{1}{4}$ to $\frac{1}{2}$ an inch. The juices of the tobacco, saturating the soil, made it very obnoxious to the cut-worm, and thus protected the plants from its ravages. Out of seven hundred plants so tested only one was destroyed by the worm after the tobacco was applied. But wherever the leaf of the plants touched the ground at a distance from the tobacco it was attacked by the cut-worm and cut off. The amount of tobacco placed around each plant was about $\frac{1}{2}$ ounce. The total cost of the experiment on the 768 plants was 50 cents for tobacco and \$4.00 for labor. Altogether the experiment was entirely satisfactory. It will be understood that the treatment was not pursued with a view of destroying the worm, but simply to protect the plants. The method here described is highly recommended.

Cabbage.

Fall Planting of Early Winningstadt Cabbage.

The autumn planting of cabbage is of great importance as a supply for spring and early summer is thus provided. The time of sowing the seed at this station in the fall of 1890 for this purpose was Sept. 25, (would recommend a month earlier). The manner in which the plants were treated is as follows: After the plants had grown large enough to handle, they were pricked out four inches apart each way in a rich bed prepared for them in the following manner. First 6 inches deep of well rotted stable manure was spread to form the bottom of the bed, on this was placed 4 inches of very rich soil, being leveled off and made smooth, in this the plants were pricked out, care being taken to shade them from the bright sunshine for a few days. After which the plants began to make rapid growth, and on the 9th of November they were planted out to their permanent position in the open field, where they grew well and withstood the winter without injury. In the spring, after the soil had dried sufficiently to cultivate, the ground was kept well worked at convenient opportunities, never allowing the soil to become packed around the plants. After cultivation the plants made a much more vigorous growth, which they maintained during the spring. The first cabbage was cut June 18th. The heads were very solid and the average weight was $6\frac{1}{2}$ lbs. per head. In order to obtain good results by this fall planting the soil must be made very rich with manure and by very deep plowing.

Results of Testing Cabbage Seed in Kerlage Plates and in Sand.

VARIETIES.	KERLAGE PLATES.			SAND.		
	Av. Temp. 50°.			Av. Temp. 65°.		
	Last seeds germinated in days.	Percent of Germination.	Seedsman.	Last seeds germinated in days.	Percent of Germination.	Seedsman.
Bistol Drumhead.....	5	100	Brill	4	100	Brill
Extra Early Etampes.....	5	99	"	4	100	"
Early Jersey Wakefield.....	5	100	"	4	100	"
Potter's Brunswick.....	5	97	"	4	95	"
Large Jersey Wakefield.....	5	100	"	4	98	"
Nonsuch.....	5	98	"	4	91	"
Premium Flat Dutch.....	5	97	"	4	98	"
Improved Late Flat Dutch.....	5	99	"	4	96	"
Perfection Drumhead Savoy.....	5	100	"	4	97	"
Early Summer.....	5	100	"	4	95	"
Newark Early Flat Dutch.....	5	95	"	4	94	"
World Beater.....	5	98	"	4	98	"
Succession.....	5	96	"	4	99	"
Vandergaw.....	5	95	"	4	90	"
Louisville Drumhead.....	5	92	"	4	94	"
Warner's Stone Mason.....	5	95	"	4	100	"
Novelty No. 9 Cauliflower.....	2	100	March	2	100	March
Improved Jersey Wakefield.....	5	85	"	4	93	"
Stone Mason Marblehead.....	5	78	Bowen	8	64	Bowen
German Fildercruat.....	5	57	"	8	56	"
Potter's Drumhead.....	4	92	"	3	100	"
Green Globe Savoy.....	5	44	"	8	18	"
Extra Early Express.....	5	96	"	3	100	"
Early Drumhead.....	5	97	"	4	89	"
Early St. John's Day.....	5	97	"	4	96	"
Excelsior Flat Dutch.....	4	100	"	2	100	"
Drumhead Savoy.....	4	95	"	4	83	"
Early Large York.....	5	84	"	6	72	"
Henderson's Extra Early Summer.....	5	93	"	6	95	"
Premium Flat Dutch.....	4	100	"	3	100	"
Red Dutch.....	5	3	"	6	3	"
All Season.....	5	93	"	4	94	"
Early Dwarf Flat Dutch.....	5	81	"	8	69	"
Marble Mammoth Drumhead.....	5	88	"	4	100	"
Early Winingstadt.....	5	90	"	8	90	"
Improved Large Late Flat Dutch.....	5	97	March	4	100	March

NOTE.—100 seeds of each variety were tested.

For early use the Extra Early Express, Early St. John's Day, Early Large York, and Henderson's Extra Early Summer are recommended. For later varieties the Drumhead Savoy, Late Flat Dutch, Perfection Drumhead Savoy, and Green Globe Savoy are recommended.

The following seeds were received from Brill too late for planting out, but were tested for germination as per above list: Bristol Drumhead, Extra Early Etampes, Extra Early Wakefield, Large Early Wakefield, Early Summer, Succession.

Spring-Sown Cabbage.

Twenty-seven varieties of cabbage were grown for comparative tests. All varieties were sown in cold-frames and all did well except Red Dutch and Fottler's Drumhead, these two varieties being the lowest in per cent. of germination (seeds from Bowen). All varieties were tested in Kerlage plates and also in sand.

Table Showing the Results of Tests with Spring-Sown Cabbage.

VARIETY.	Name of Seedsman.	Date of Sowing.	Date of Planting Out.	Marketable Maturity.	Av. Weight in Lbs. per Head.	REMARKS.
Excelsior Flat Dutch.....	Bowen	Mar 31	May 14	Aug 27	9½	Large heads, firm, of good quality.
Premium Flat Dutch.....	Brill	Apr 1	" 15	Sep 26	9½	Heads of medium size, resembles the above
Drumhead Savoy.....	Bowen	Mar 30	" 14	Sep 20	8	Good for winter use, leaves netted, a good variety.
Marblehead Mam. Drumhead	"	Apr 1	" 14	Aug 29	19	Very large, solid head, a good late variety.
Newark Flat Dutch.....	Brill	Mar 29	" 14	Oct 30	8	Solid, flat, heads small.
Perfection Drumhead Savoy..	"	Apr 1	" 15	Oct 12	8	A good winter and late fall variety.
Early Large York.....	Bowen	Mar 30	" 14	Aug 24	7½	Heads conical, a second early.
Vandergraw.....	Brill	Apr 1	" 14	Aug 26	8½	Medium, flat head, good quality.
Fottler's Drumhead.....	Bowen	Mar 30	" 14	Sep 10	5½	Medium-size heads, of good quality.
Early St. John's Day.....	March	Mar 30	" 14	Sep 29	10	Solid heads, not large, very large leaves.
Improved Large Late Flat D.	Bowen	Mar 30	" 14	Aug 29	14	A well selected variety with large heads.
World-Beater.....	Brill	Apr 1	" 15	Aug 29	9	Resembles Flat Dutch.
True Early Wakefield.....	"	Mar 29	" 15	" 28	12½	Heads small to medium, one of the early varieties.
Fottler's Brunswick.....	Bowen	Apr 1	" 14	" 27	9	Large heads, resembles Flat Dutch.
Early Winningstadt.....	"	" 1	" 14	" 29	5½	Heads conical, medium in size, good.
Stonemason Marblehead.....	"	" 1	" 14	" 24	14	Heads not large, smooth, not of good quality.
Henderson's Ex. Early Sum.	"	" 1	" 14	" 22	7	A good variety, heads very solid, extra early.
Drumhead Savoy.....	"	" 1	" 14	Oct 14	2	Small variety with conical heads.
Early Express.....	"	Mar 31	" 14	" 25	18%	Heads very solid, of extra quality.
Nonsuch.....	Brill	Apr 1	" 15	" 28	6	Heads conical, small.
German Federalist.....	Bowen	Mar 2	" 14	" 27	8	Heads not true, seed very much mixed.
All Season.....	Brill	Mar 31	" 15	" 29	10	A strong variety, little over the medium size.
Louisville Drumhead.....	"	Apr 1	" 15	" 22	6	An early variety with small round heads.
Early Newark Flat Dutch.....	Bowen	Mar 29	" 15	Sep 6	3	Resembles Drumhead Savoy.
Green Globe Savoy.....	March	Apr 4	" 15	Aug 9	5	No dif. noticed between this and True Ear. Jer. Wakef.
Improved Jersey Wakefield.....	Bowen	Mar 29	" 15	Oct 10	2½	Did very badly in every respect.

Peas.

Autumn-Sown Peas.

On the fourteenth of Nov. 1890 two varieties of peas were sown namely, New Alaska and First and Best. The last named germinated on Nov 28th and the former on Nov 30th.

The plants after growing about two inches out of the ground did not make much growth until the middle of Feb. and by the end of the month had made a growth of 4 inches. On March 1st and 2d the temperature fell to thirteen degrees above zero. This was followed by very bright sunshine each day after the frost, Earliest and Best lost forty five per cent of plants from the effect of the cold. New Alaska withstood the frost without any loss, thus proving itself the hardier of the two varieties. The remaining plants of First and Best had made a growth of 7 inches by March 18th and by April 2d began to show signs of bloom buds. On the latter date the plants were 13 inches high, the 8th of April the first bloom opened, on the 20th the plants were in full bloom, and the peas came to marketable maturity on May 12th. Height of plants 20 inches. Length of pod 3 inches, diameter $\frac{3}{4}$ inch, seven peas in pod.

New Alaska made a growth of 6 inches by March 18th. On April 2d began to show bloom buds also. Height of plants at this date 8 inches. The first bloom opened on the 12th and the plants had attained a height of 12 inches, by April 20th they were in full bloom, and on May 20th the peas came to marketable maturity, height 3 feet, length of pod 3 inches, diameter $\frac{3}{4}$ inch, seven peas in pod. There was but little difference between the two varieties in productiveness. First and Best, was much the best for table use.

Spring-Sown Peas.

All varieties of peas were sown four feet apart receiving good cultivation between the rows. The following varieties require support: Champion, Stratagem, Telephone, Fall Sugar, Fall White, Marrowfat, Anticipation and Improved Dan O'Rook.

Result of Experiments with Peas.

VARIETIES.	Seeds From.	Date of Sowing.	Date of Germinating.	Date of Blooming.	Date of Edible Maturity.	Date of Marketable Maturity.	Date of Ripening.	Leng. of Pod in In.	No. Peas in Pod.	Lbs. to 100 Plants.	No. Lbs. to Rod.
American Wonder.....	O. A. C.	Apr 7	Apr 18	May 27	Jun 13	July 11	July 17	2½	7	5½	10
Blue Peter.....	Bowen	" 7	" 18	" 23	Jun 17	Jun 24	" 9	2½	7	1¾	7
Black-Eyed Marrowfat	"	" 7	" 20	" 20	" 17	" 20	" 31	3	8	5½	22½
Champion of England..	O. A. C.	" 8	" 18	" 23	July 8	" 16	Jun 30	3	3	3½	19
Dwarf Sugar Edible Pod	Bowen	" 7	" 20	Jun 6	" 9	July 21	Jul 30	2½	8	4½	13¾
Champion of England..	"	" 7	" 18	" 23	" 28	" 15	July 29	3½	8	4½	18
Everbearing.....	O. A. C.	" 8	" 18	" 6	" 6	" 14	" 27	6	6	1¾	12
Extra Early.....	Bowen	" 7	" 20	May 25	Jun 13	Jun 17	" 4	2½	7	2¾	9
Earliest of All.....	"	" 7	" 20	" 25	" 12	" 18	" 9	3	7	3¾	16
Eugene.....	O. A. C.	" 8	" 20	Jun 23	July 6	July 20	" 29	2½	6	2¾	24¾
Improved D. O. Rook...	Bowen	" 7	" 18	" 25	" 11	Jun 17	" 7	2	7	1¾	8
Laxton's Alpha.....	"	" 7	" 20	May 24	Jun 13	Jun 19	" 9	2½	7	3¾	16½
McLeane's Ear. Adv'cer	"	" 7	" 20	" 24	" 13	" 19	" 10	3	7	3¾	16
McLeane's Advancer...	O. A. C.	" 8	" 20	" 25	" 15	July 15	" 21	3½	6	2¾	20
New Alaska.....	"	" 8	" 20	" 21	" 17	" 12	" 27	2	7	2¾	13¾
Stratagem.....	"	" 8	" 23	Jun 24	July 9	" 21	" 30	4½	7	1¾	13½
Tom Thumb.....	"	" 8	" 18	May 25	Jun 10	Jun 16	" 7	2.	8	1¾	10
Telephone.....	"	" 8	" 20	" 27	" 18	July 13	" 20	4	8	2¾	18¾
Fall Sugar.....	Bowen	" 7	" 20	Jun 28	July 10	" 15	" 20	4	8	4¾	20
Fall White Marrowfat.	"	" 7	" 20	" 25	" 13	" 21	" 30	4	8	5	22
Anticipation.....	O. A. C.	" 8	" 23	" 17	" 8	" 17	" 29	4¾	7	1¾	24
Premium Gem.....	Bowen	" 7	" 20	May 23	Jun 11	Jun 18	" 11	2½	6	¾	18¾
Yorkshire Hero.....	"	" 7	" 20	Jun 25	July 6	July 15	" 29	3½	7	5	20
Veitche's Perfection....	O. A. C.	" 8	" 23	" 24	July 9	July 21	" 30	3	6	4¾	5

Lettuce.

The seed was sown in drills in the open field on April 14. All varieties germinated well. After the plants were large enough to handle, they were thinned out to 8 inches apart in the row. The rows were set out 4 feet apart and the ground was kept well cultivated during the season of growth. On the soil which had received the largest proportions of manure, the plants made a much larger growth; which demonstrates that the lettuce needs abundant food.

By this heavy application of manure the season is prolonged and the plants do not run to seed so quickly.

VARIETIES.

GIANT WHITE CROSS.—Made a very strong growth, large dark green outside leaves, head loose, becoming more solid as the season advances.

SAN FRANCISCO MARKET.—Compact grower, early.

WHITE PARIS CROSS.—More compact heads than Giant White, leaves folding in over each other so that they form a large solid head, very crisp and sweet, a valuable variety, long season.

LONGSTANDING.—Head round, moderately firm, does not run to seed very readily.

HANSON.—This is a long season variety with compact heads, leaves curly, color light green.

PRIZE HEAD.—Medium size heads with curled leaves.

PHILADELPHIA BUTTER.—Heads open, yellowish green, leaves plain, runs to seed very quickly.

TENNIS BALL.—A very valuable variety with small solid heads, sweet and tender.

GOLDEN HEARTED.—Heads resemble Prize Head.

EARLY TENNIS BALL.—Similar to Tennis Ball in every respect.

PARAGON.—Very compact head, valuable variety.

LARGE DRUMHEAD.—Made a large growth, with very loose heads.

DEACON.—Small, firm, round heads, leaves smooth.

SIMPSONS' EARLY CURLED.—Heads round and solid, color light green.

SIMPSON'S EARLY BLACK SEEDED.—Much like the above, but a few days earlier, inclined to rot.

Seeds of the following varieties were planted April 14, 1891:

NAME.	Source.	Date of Planting.	Date of Germinating.	Date of Edible Maturity.	Date of Marketable Maturity.
Deacon.....	Bowen	Apr. 23	Apr. 23	June 21	June 27
Early Paris.....	"	" 23	" 23	" 23	" 8
Early Tennis Ball.....	Station	" 14	" 23	" 19	" 23
Early Curled Silesia.....	Bowen	"	"	"	"
Golden Hearted.....	Station	Apr. 14	" 28	" 20	" 25
Grant White.....	Bowen	" 14	" 23	" 29	" 33
Hanson.....	"	" 14	" 24	" 30	" 8
Large Drumhead.....	Station	" 14	" 28	July 2	July 9
Long Standing.....	"	" 14	" 29	" 10	" 18
Paragon.....	"	" 14	" 23	" 10	" 16
Prize Head.....	Bowen	" 14	" 23	" 14	" 19
Philadelphia Butter.....	"	" 14	" 23	" 13	" 17
Simpson's Early Curled.....	"	" 16	" 23	" 10	" 16
Simpson's Black Seeded.....	"	" 14	" 28	" 6	" 16
Golden Ball.....	N.B.G*	" 15	" 28	" 6	" 12

*Northrup, Breslau, Goodwin & Co.

Radish.

NAME.	Source.	Date of Planting.	Date of Germinating.	Date of Edible Maturity.	Date of Marketable Maturity.	Length in In.	Diam. in In.
Charteris.....	Station	Apr. 15	Apr. 23	June 2	June 8	12	1½
Improved Charteris.....	Bowen	" 15	" 23	" 6	" 11	9	1¾
Olive Rose.....	Station	" 15	" 23	" 8	" 13	3½	2
Mammoth California.....	Bowen	" 15	" 23	" 6	" 8	12	¾
Long Scarlet.....	"	" 15	" 23	" 3	" 8	12	¾
Golden Globe.....	Station	" 15	" 28	" 6	" 10	6	2½
Chinese Rose.....	Bowen	" 15	" 23	" 9	" 15		
French Breakfast.....	"	" 15	" 23	" 9	" 16	3½	2

REMARKS.

CHARTERIS.—Of excellent quality.

IMPROVED CHARTERIS.—Identical with the above.

OLIVE ROSE.—Good for table.

MAMMOTH CALIFORNIA.—Made strong top growth but no bottom.

LONG SCARLET.—Very mild and of good quality.

GOLDEN GLOBE.—Very tender—very much like a turnip.

FRENCH BREAKFAST.—Wrongly named. Resembles Olive Rose.

Of the above list of radishes the Charteris is the most valuable. Average length of roots, 12 inches, 1½ inches in diameter, and of excellent quality. There was not enough difference between Improved Charteris and Charteris to distinguish them.

Cauliflower.

VARIETIES.	Name of Seedsman.	Date of Sowing.	Date of Germination.	Date of Edible Maturity.	Date of Marketable Maturity.	Av. No. Lbs. Per Head.
American Erfert.....	Brill	Mar 20	Mar 24	July 19	July 22	4½
Early Snowball.....	Bowen	" 20	" 25	" 19	" 22	6
Early White French.....	"	" 20	" 23	" 21	" 23	6½
Extra Early Dwarf.....	"	" 20	" 23	" 30	" 24	5
Novelty No. 9.....	March	" 20	" 23	" 19	" 22	6
Carter's Extra Early Autumn Giant.	Carter	" 25	" 29	Oct. 13	Oct. 18	2½

Remarks on Cauliflower.

- EARLY SNOWBALL.—*Bowen*. The heads were loose, with a yellowish color, short stem, does not produce many leaves.
- EARLY WHITE FRENCH.—*Bow*. Heads globular and quite compact, with large leaves. The heads are perfectly white. Good.
- EXTRA EARLY DWARF.—*Bow*. The plants did not resemble the variety, as they were long-stemmed, with rather loose heads, quite white.
- AMERICAN ERFERT.—*Brill*. Beautiful, compact heads, quite white, with very short stems. Very good.
- NOVELTY No. 9.—*March*. This variety was grown from seed received from H. A. March, Fidalgo, Washington. The heads were very compact and of excellent quality.
- LE NORMAND.—Short-stem variety with compact heads.
- CARTER'S EXTRA EARLY AUTUMN GIANT.—*Carter*. A valuable autumn variety, coming into use after all others are out of season. Good.