DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

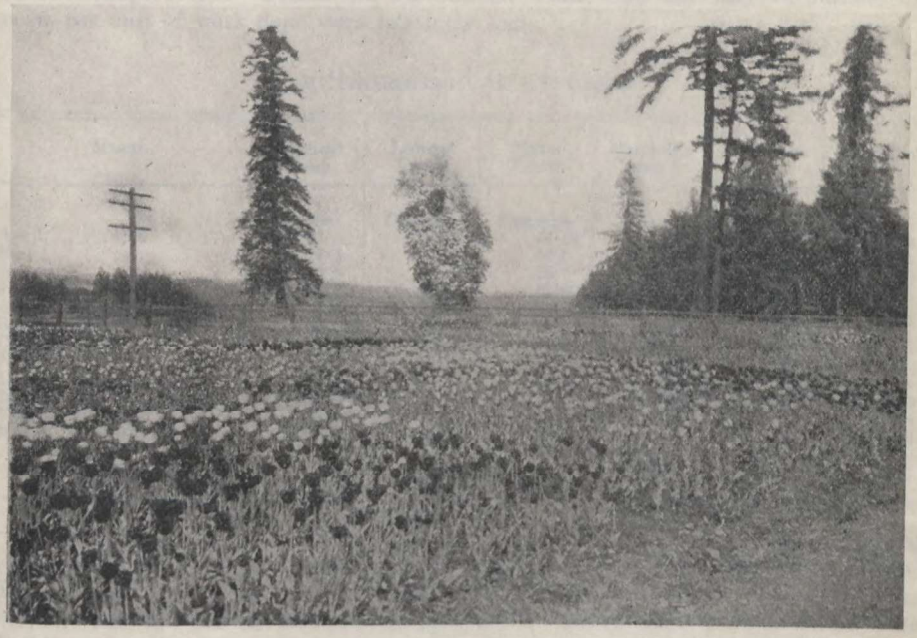
EXPERIMENTAL STATION

SIDNEY, B.C.

INTERIM REPORT OF THE SUPERINTENDENT

LIONEL STEVENSON, B.S.A., M.S.

FOR THE YEAR ENDING MARCH 31, 1921



Park scene looking N.E. toward Sidney.—May, 1921.

Photo by L.S.

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EXPERIMENTAL STATION FOR VANCOUVER ISLAND, SIDNEY, B.C.

INTERIM REPORT OF THE SUPERINTENDENT, L. STEVENSON, B.S.A., M.S.

SEASONAL NOTES

The climatic conditions experienced during the year gave crop yields that compared favourably with any year in the experience of this station. The spring season opened very early to be followed by cool backward weather in late April and May. More rainfall was experienced than usual during the growing period April to October. Rains in September interfered greatly with late harvesting and threshing operations. Continued wet weather made soil conditions such that autumn seeding could not be undertaken in a general way but was confined to high sandy areas. The winter period was characterized by continued wet weather, lack of sunshine and absence of low temperatures. Conditions for outdoor work were not very favourable and costs per unit of work done were relatively high.

METEOROLOGICAL RECORDS.

Month.	Highest Temp.	Lowest Temp.	Mean Temp.	Precipitation.	Sunshine.	Possible.
	Degrees.	Degrees.	Degrees.	Inches.	Hours.	Hours.
April	61·5	30·0	44·24	1·45	215	411
May	71·5	34·0	50·6	1·24	277	473
June	79·5	37·5	56·3	1·17	210	482
July	88·0	46·0	63·0	0·67	335	484
August	86·5	42·0	63·6	2·52	322	444
September	60·9	48·0	54·5	2·96	141	377
October	57·0	35·0	46·6	4·03	83	335
November	56·0	31·0	43·7	3·32	84	276
December	49·5	28·5	40·2	3·68	30	259
January	52·0	30·0	37·6	4·23	43	273
February	55·5	25·0	39·5	3·97	67	286
March	59·0	26·0	41·4	1·67	145	370
Totals	.....	.....	.....	30·91	1,952	4,470

Buildings.—An office building 28 feet x 28 feet on cement basement with two floors above, a laying house 32 feet x 16 feet and a work shed were erected. Repairs were carried out on the original Station barn and house. The dairy barn, one silo and two poultry houses were painted to conform to the colour of the other buildings.

Soil improvement.—Rocks, roots and small stones were removed from the cultivated areas. Ditches were kept open and some tiling done.

Road improvement.—Applications of gravel were made and grading done, where required, to keep the Station roads in good condition.

Exhibitions.—An extensive exhibit of Station material was made at Agricultural Fairs held in the following towns, Saanichton, Victoria, Courtenay, Duncan. A floral exhibit was made at the Saanich flower show and a seed exhibit was prepared for the Provincial Seed Fair.

Meetings attended.—The Superintendent attended in the capacity of either lecturer or judge of exhibits at numerous rural fairs, Farm and Woman's Institute meetings, Growers' and Gardeners' Associations, Stock Breeders' and Dairymen's Associations throughout the year.

Visitors.—Rural organizations visited the Station at various times during the summer period. Picnic parties from urban and rural sections made use of the park during the entire season. The aggregate of all adult visitors for the year was 4,665 people.

ANIMAL HUSBANDRY

The animal husbandry work at this Station is limited to the needs of the district. With bush land held at prices ranging up to $450 per acre, live stock farming is limited to the maintenance of dairy cows to supply the local milk and cream demand and the production of sheep and pork for district consumption. The general lack of good upland pasture and the necessity of importing a large percentage of feed grains are two factors that also limit live stock increase.

The seasonal conditions experienced during the year were more favourable to live stock production than any year during the previous six-year period; a mild winter with some grazing helped out feeding problems considerably.

HORSES

The tillable land of the Station being limited to 100 acres, but four work geldings are required for field work. These horses are kept fairly busy during the winter period teaming. The following ration was fed during the entire year:—One pound crushed oats and one pound of mixed clover and timothy hay per 100 pounds weight of horse with one pound of bran per day during the spring and summer period and three pounds of carrots per day during the winter season. The horses were on pasture from Saturday evening to Monday morning during the period May to October. The horse stable was remodelled and considerably improved.

CATTLE

The Jersey herd has been somewhat reduced in numbers through sales. Of the foundation stock imported from Alberta in November, 1917, but one remains in the herd.

Vetch and wheat ensilage was fed through the year except during the flush of grass. This silage was of excellent flavour, much relished by the stock and gave excellent results. The cream from the herd was sold in Victoria.

REPORT ON INDIVIDUAL JERSEYS

Abbie.—Unregistered seven years old, good type, weight 780 pounds. Consumed 8,560 pounds of wheat ensilage, 2,168 pounds of hay and 1,560 pounds of mixed grain. On pasture for five months. Production 7,280 of milk containing 347 pounds of fat. Feed cost per pound of butter fat 26·53 cents. Total feed cost for year $92.88.

L. E. S. Gem.—5425. Six years old, of good conformation, weight 950 pounds. Consumed 7,680 pounds of silage, 2,025 pounds of hay and 1,058 pounds of grain. On

pasture for 5 months, May 1 to October 1. Produced 4,938 pounds of milk containing 237 pounds of butter fat. Feed cost per pound of butter fat 32·44 cents. Total feed cost $76.90.

V. I. S. Rosalind B.—9646. Three years old, of beefy conformation. Weight 760 pounds. Consumed 7,525 pounds of silage, 1,960 pounds of hay and 1,070 pounds of grain. On pasture for 5 months, May 1 to Otober 1. Produced during the first lactation period, which was completed on November 15, 1920, 268·21 pounds of butter fat. The second lactation period commenced on January 2, 1921, and in 3 months this heifer's production was 2,223 pounds of milk. Total feed cost $85.15.

Buttercup.—Unregistered Jersey, five years old, of good type, weight 835 pounds. Purchased in July, 1920, four months after calving. Quarantined under accredited herd regulations for the required period. Tethered on an area of vetch and permitted to graze at will. Produced during the last three months of her lactation period 34·50 pounds of butter fat. This cow freshened again on October 20, 1920, and produced during the first sixty days of lactation period 77·38 pounds of butter fat.

Three unregistered heifers freshened during the year, one of these proved excellent, one medium and one useless as dairy animals. The following pure-bred Jerseys were disposed of to the butcher during the year: LE. S Wolsley Girl 6,599,, Thelma's Gem 5425, V.I.S. Rosalind A, Lucy of Findon 283683. All had proven unprofitable as dairy cows.

A young bull of excellent conformation was secured as a six-weeks-old calf and is being reared for a herd bull.

The herd being under the accredited system has been tested for tuberculosis twice during the year.

COST OF FEEDING JERSEY HEIFERS

V. I. S. Louise. Calved August 1st, 1918—	
Total cost April 1 to March 31, 1920	$31.32
Total cost April 1 to March 31, 1921	38.75
	$70.07
V. I. S. Violet. Calved August 10th, 1918.	
Total cost April 1 to March 31, 1920	$30.75
Total cost April 1 to March 31, 1921	38.63
	$68.98
V. I. S. Abbies Lass. Calved November 15th, 1918.	
Total cost April 1 to March 31, 1920	$29.06
Total cost April 1 to March 31, 1921	30.29
	$59.35
V. I. S. Gem 2nd. Calved February 8th, 1920.	
Total cost February 8 to March 31, 1920	$ 6.67
Total cost April 1 to March 31, 1921	23.18
Total cost to rear up to 14 months	$29.85

JERSEY VEAL. Two Jersey calves were fed during the year with the following results.

No. of Calf.	Weight at birth.	Pounds of whole milk consumed.	Pounds of skim milk consumed.	Pounds of grain consumed.	Live weight at end of feeding period.	Gain.	Average daily gain.	Total pounds of feed for 1 lb. gain.	Pounds of whole milk for 1 lb. gain.	Pounds of skim milk for 1 lb. gain.	Pounds of grain for 1 lb. gain.
1.....	60	518	.....	14	126	66	1·24	8·0	7·8	.....	0·21
2.....	62	235	278	26	133	71	1·24	7·5	3·3	3·9	0·36

NOTES.—Calf No. 1 was fed for a period of 53 days, while No. 2 was fed for 57 days.
Clean water and a little hay was supplied every day after the 14th day to each calf.
The calf that was fed both whole and skim milk made equal gains and just as good veal as the calf fed entirely on whole milk. Whole milk at 30 cents per gallon is very expensive feed for veal production.

SWINE

One Berkshire sow only was carried through the year, two brood sows were sold to local breeders. A number of young boars and sows were sold at weaning time to farmers of the district. Colony houses 10 x 10 with yards made of portable hurdles were used and found to be very satisfactory.

SHEEP

The Dorset Horned flock was sold in July to a mainland breeder. This flock, in the hands of its new owner, was exhibited at the principal mainland fairs, winning many prizes. A foundation for a Southdown flock was secured from the McEwen flock at London, Ont.

FIELD HUSBANDRY

The weather conditions experienced over the twelve-month period were unusual and had a marked influence on the quantity and quality of marketable field husbandry products. The preceding autumn was one of the driest on record, preventing, in a large measure, the sowing of autumn crops. This resulted in a correspondingly heavy seeding of spring crops, which action was followed by the wettest autumn on record, making threshing difficult and, in some cases, impossible. Forage crops, pastures and meadows were favoured by the early rains and gave good yields.

Area 1. 2.6 acres wheat.

Variety, Bluestem. Spring sown.
Labour charge against crop.

Man labour, 96 hours at 32.5 cents	$31.20
Horse labour, 146 hours at 10 cents	14.60
Machine labour, 73 hours at 5 cents	3.65
	$49.45
Threshing machine costs $5.60, plus $4.40 labour	$10.00
Cost of seed, 200 pounds at $3 per bushel	10.00
Use of land at $10 per acre	26.00
	$95.45

Yield, 4,800 pounds wheat
Value August 30, at time of threshing, $2.50 per bushel.

Grain value	$200.00
Straw value	Nil

Cost per bushel to produce, 94 cents.

Area 2. 2.6 acres. Wheat.

Variety. Sun. Autumn grown.
Labour charge against crop.

Man labour, 59 hours at 32.5 cents	$19.17
Horse labour, 78 hours at 10 cents	7.80
Machine labour, 39 hours at 5 cents	1.95
	$28.92
Threshing machine costs $4.60, plus $3.80 labour	$ 8.40
Cost of seed, 240 pounds at $3 pear bushel	12.20
Use of land, 2.6 acres at $10	26.00
Total charge against crop	$75.52

Yield, 4,955 pounds wheat.
Value August 30 at time of threshing, $2.50 per bushel.

Grain value	$206.46

Cost per bushel to produce, 91.4 cents.

Area 5. 2.6 acres. Wheat and vetch.

Variety, Sun wheat and Common Spring vetch.
Labour charge against crop.

Man labour, 59 hours at 32.5 cents	$19.17
Horse labour, 78 hours at 10 cents	7.80
Machine labour, 39 hours at 5 cents	3.90
Threshing machine costs $5.60, plus labour $4.40	10.00
Cost of seed, 240 pounds at 8 cents per pound	19.20
Use of land, 2.6 acres at $10 per acre	26.00
	$86.07

Yield, 5,160 pounds mixed wheat and vetch.
Value August 30, at time of threshing, 8 cents per pound, $412.80.
The presence of 50 per cent vetch in this crop increased the value of the entire crop nearly 100 per cent, and left the soil in better condition than where wheat alone was grown.

Area 6. 1.7 acres. Wheat, twice sown.

Variety, Bluestem.
Labour charge against crop.

Man labour, 52 hours at 32.5 cents	$16.90
Horse labour, 65 hours at 10 cents	6.50
Machine labour, 36 hours at 5 cents	1.80
Threshing machine costs $1.35, plus $1.25 labour	2.60
Cost of seed, autumn, 180 pounds at $3 per bushel	9.00
Cost of seed, spring, 180 pounds at $3 per bushel	9.00
Use of land at $10 per acre	17.00
	$62.80

Yield, 1,620 pounds wheat.
Value August 30, at time of threshing, $67.50.
Cost per bushel, $2.50.
The high cost per bushel was due to double labour and seed cost. The autumn seeded crop was killed out, making it necessary to reseed in April.

ROTATION 3 YEARS

Area 7. 1.7 acres. Meadow, clover.

Labour charge against crop.

Man labour, 54 hours at 32.5 cents	$17.65
Horse labour, 14 hours at 10 cents	1.40
Machine labour, 10 hours at 5 cents	.50
Use of land, 1.7 acres at $10	17.00
Cost of seed applied previous year	8.00
	$44.55

Yield of dry hay, 6,770 pounds.
Cost per ton in barn, $13.16.

Area 8. 1.7 acres. Meadow, clover.

Labour charge against crop.

Man labour, 52 hours at 32.5 cents	$17.00
Horse labour, 14 hours at 10 cents	1.40
Machine labour, 10 hours at 5 cents	.50
Use of land, 1.7 acres at $10 per acre	17.00
Cost of seed, applied previous year	8.00
	$43.90

Yield of dry hay, 6,430 pounds.
Cost per ton in barn, $13.65.

Area 9. 1.7 acres. Meadow, clover.

Labour charge against the crop.

Man labour, 70 hours at 32.5 cents	$22.75
Horse labour, 20 hours at 10 cents	2.00
Machine labour, 14 hours at 5 cents	.70
Use of land, 1.7 acres at $10 per acre	17.00
Cost of seed, applied previous year	8.00
	$50.45

Yield of dry hay, 8,752 pounds.
Cost per ton in barn, $11.53.
The difference in yield on the three plots, which were side by side, was due to soil conditions. The labour costs were practically the same on all plots. The economy of hay production on good soils is clearly evident.

Areas 14 and 15 in three-year rotation.

Crop, oats. Seeded April 9th. Variety, O.A.C. 72.
Labour charge against the crop.

Man labour, 140 hours at 32.5 cents	$43.50
Horse labour, 171 hours at 10 cents	17.10
Machine labour, 57 hours at 5 cents	2.85
Use of land, 8 acres at $10	80.00
Cost of seed	25.60
Threshing	26.10
Total charge	$195 15

Yield, 522 bushels.
Per acre yield, 65.25 bushels per acre.
Per bushel cost to produce, 37.4 cents.
An excellent stand of red clover was obtained, which was seeded at the time of sowing the oats. The harrow was used after seeding.

Areas 16 and 17 in three-year rotation.

Grazed from May 24th to October 1st.,
Supported 12 Jersey females and 7 Dorset sheep.

The experience to date indicates that the following general farm rotation is best suited to Island conditions:—Grain, clover and grasses, clover and grasses, cultivated crop.

The grain may be wheat, oats or barley, seeded either in spring or autumn according to soil or locality. The grass seeding should be applied when the grain is sown, mixing the grass seed with the wheat or oats. If seeding in the spring the clover seed may also be included. If seeding in the autumn the clover seed should be applied in February or early March. After the hay is removed in the third year of the rotation, the land should be ploughed at once, if at all possible, in preparation for the root, potato, corn or other cultivated crop that is to occupy the land during the fourth year. Heavy clover and grass seeding should be practised, twenty-five pounds per acre at least in the following proportion is recommended: Red Clover 10 pounds, Alsike clover 4 pounds, Meadow fescue 5 pounds, Italian Rye grass 3 pounds, Tall oat grass 3 pounds per acre. The grain varieties recommended are: *Autumn wheat,* Sun; *Spring Wheat,* Blue Stem and Marquis; *Oats,* O.A.C. 72, Banner, or Victory. The cultivated crops recommended are *Corn,* Golden Glow, Longfellow, Comptons Early and King Phillip; *Mangels,* Long Red, Sludstrup, and Yellow Intermediate; *Turnips,* Magnum Bonum and Yellow Aberdeen; *Sunflowers,* Giant Russian; *Potatoes,* Netted Gem, Burbank, Raleigh, Up to Date and Gold Coin; *Carrots,* White Belgian and Ontario Champion.

Ploughing after the hay crop has been removed is very essential to success with the crops following.

HORTICULTURE

The weather conditions experienced in the district were more favourable to the production of horticultural crops than usual. Some difficulty was experienced in harvesting the late ripening vegetable seed crops, due to early autumn rains. The soil was in good condition during February and considerable early garden work was done at that time. Cool, wet weather followed, continuing through April, so but little gain was made by the very early seeding.

ORCHARDS

Apples.—The orchard soil management test was continued through the year, the various areas showing considerable difference.

A. Cultivation from early spring to October, no green growth permitted.—This system gave the greatest wood growth and the largest fruit, for all the varieties under test.

B. Vetch sown in August and ploughed down in May. Clean cultivation until August, then re-seeded with vetch.—This system gave very satisfactory foliage, fruit, wood growth and fruit spur development.

C. Clover mulch.—The clover was cut in early June and piled around the trees, occupying a soil space larger than the branches extend. This method gave a poor foliage, small wood growth and small fruit.

The present indications are that system B. will be most suited to the district, since it aids in keeping up the soil fertility and gives a marketable fruit.

Of the forty-one varieties of apples under test the following are recommended:—King of Tompkins, Grimes Golden, Gravenstein, Wealthy, Charles Ross, Melba, Yellow Transparent.

Pears.—Orchard soil management, the same as quoted for apples, was practised on the pear orchard area. Pears being more drought-resistant than the apple varieties, did not show as great a difference in development as the apples. Some few varieties of pears were sufficiently vigorous under the clover mulch system to produce good yields of marketable fruit, notwithstanding the absence of rain during the growing period. Many of the French varieties of pears have not come up to expectations in quality of fruit. The experience to date indicates that tillage during the period of growth, spraying for thrip control, thinning of fruit, the growing of legume crop September to May to be ploughed in each year, are essential to success.

The following varieties are recommended: Bartlett, Bosc, Diel, Hardy, Crassane, Avranches.

Plums.—The plum orchard was ploughed in the early spring and cultivated up to the harvest period in August. The cool conditions during the bloom season resulted in a light fruit setting for some varieties. Many varieties, especially those with tender foliage, suffered considerably from aphis attack. The hard leaf types of plums and prunes were not attacked. The Black Diamond variety has proven to be the heaviest yielder, fruit of medium quality. The following varieties are recommended: Bradshaw, Washington, Victoria, Shropshire Damson, Ponds, Peach, Italian Prune, Tragedy Prune, Sugar Prune, Early Gold, Greengage, Mallard, Zimmer and Buhlerthal, Pelissier, Elton, Empress Eugenie, Black Republic and Deacon.

Cherries.—The cherry orchards were ploughed during the winter and cultivated up to harvest time in July and August. The acid varieties set and developed an excellent crop of fruit. Many of the sweet varieties yielded splendid crops. Considerable bird injury was experienced with the earlier varieties. Bird attacks generally ceased as soon as the amelanchier berries in the woodland were ripe. Netting of trees was practised in a small way and found to be expensive and not as efficient as desired. Only the later ripening of the sweet cherry varieties are to be recommended, since these alone escape the birds. The acid varieties were disease- and insect-free throughout the year. The sweet varieties were slightly attacked by black aphis during August. Injury from gummosis has been confined to the soft wood varieties. Those varieties of sweets that approach the acid type in form, wood and bark, have remained free from gummosis. From the 39 sweet cherry varieties under test, the following are recommended for the district: Lambert, Royal Anne, Bing, Napoleon, Pelissier, Elton, Empress Eugenie, Black Republic and Deacon.

From the 17 acid cherry varieties under test the following are recommended for the district: Oliver, Morello, Early Richmond, Montmorency, Pleureur, Neuvelle Royale.

To produce acid cherries of large size and high market quality, it has been found that tillage must be practised during May, June and July.

Peaches.—The tender fruits area containing peaches, apricots, nectarines and yakamena, has not been a success as a productive enterprise. Fruits of this class must be planted in a position where more heat is available than is experienced in the open field

Quince.—The quince and medlar varieties have received the same tillage given other orchard areas. Quinces have been troubled considerably with mildew during the past two seasons. Medlars have been resistant to mildew and also more vigorous in growth than the quince. The yields and quality of fruit from quince varieties were not up to the high standard of 1918 and 1919. The quince varieties Bourgeaut, Beriezki and Portugal have a larger, harder foliage and are more resistant to mildew than Pineapple, Orange or Ordinaire.

Figs.—The fig orchard is in a very exposed position, and suffers somewhat from cold winds. Of the 28 varieties that have been under test, the following have proven the most hardy: Col de Signora Pastilier, Japanese Ficus Carica, Wilson's Smyrna. The winter killing has been severe with many varieties. Areas selected for fig culture should possess natural protection from cold winds, be near the sea and comparatively frost free. Fig trees trained as escaliers on buildings or high walls, develop fruit more quickly than those planted in the open.

The foreign economics area contains the Diospyros, Eleagnus, Cudrania, Edgworthia, Camellia, Olea and Eriobotrya varieties continues to thrive and all will prove very useful as ornamental plants should their fruiting habits not indicate commercial possibilities at a later date.

Photo by L.S.

Five year old almond tree.—May, 1921.

NUTS

The filbert has done very well, yields up to 10 pounds per plant from the 1915 orchard were obtained. Two varieties, the Nottingham and Fertile de Coutard,

are the heaviest yielders. The early blossoming varieties have been the most productive. Late bloomers have given very little fruit. A large number of seedlings have been planted; these are doing very well but it is expected that eight years will be required to develop seedlings up to fruiting size.

Walnuts.—The walnut varieties made a very satisfactory growth and are now well established. The trees growing on that portion of the orchard area that has a deep sandy soil have made much more rapid growth than those set farther up the slope, on a clay sub-soil area.

Almonds.—The soft shell almonds made exceptional growth but produced no bloom. The hard shell almonds produced a medium crop of good quality nuts and abundant fruit spurs.

Chestnuts.—Chestnuts, where well established, made good growth. All the nut trees on the Station have been planted since 1915.

VEGETABLES

Cabbage.—Test of varieties. Autumn planting.

The seed was sown in the frames on August 15th and germinated in 10 days. The young plants were set in the field on October 7th. Considerable winter killing was experienced, due to severe weather and wet soil.

Name of variety.	No. of plants set.	No. of plants winter killed.	No. of plants bolted.	Yield pounds.
Copenhagen Market	20	20	.....	.....
Petsai	20	20	.....	.....
Danish Ballhead	20	2	.....	23
Danish Ballhead	20	12	.....	18
Danish Ballhead	20	19	.....	.....
Red Delicatesse	20	10	.....	18·8
Early Red Dutch	20	9	2	33
Early Paris Market	20	11	1	17·8
Early Jersey Wakefield	20	3	2	13·8
Early Jersey Wakefield	20	1	1	23·3
Enkhnizen Glory	20	3	4	22
Fottlers Imp. Brunswick	20	2	.....	32·8
Marblehead Mammoth	20	7	.....	6·8
Savoy Perfection	20	14	.....	19·1
Succession	20	8	1	25·8
The Volga	20	4	1	.....
Wong Bok	20	17	3	.....

CABBAGE SEED GROWING

A block of Early Jersey Wakefield was set on the 10th of November. Winter killing, followed by slug attacks in the early spring, destroyed all the plants.

BROAD BEAN. FOR SEED PRODUCTION.

Name of variety.	Date of sowing.	Date of germination.	Area of plot.	Yield.
				lbs .oz.
Sutton's Exhibition Longpod	Feb. 11th	March 22nd	1/110 acre	36 4
Windsor	Feb. 11th	March 22nd	1/220 acres	31 2

VARIETY TESTS OF VEGETABLES

Name of variety.	Source.	Date of sowing.	Row.	Remarks.
Parsley—Test of varieties.				
Champion Moss Curled	Ewing	March 29	15 feet	The best of the four varieties tested.
Double Curled	Ottawa 9273	"	"	
Extra Curled	Graham	"	"	
Triple Curled	Ewing	"	"	
Spinach—Test of varieties.				
Victoria	Ottawa 8910	"	"	Yield 2 pounds 12 ounces, June 12 and 26.
Viroflay	V.I.S. 2164	"	"	Yield 3 pounds 4 ounces, June 12 and 26.
Peppers—Test of Varieties.				
Harris Early	Summerland	April 14	10 plants	Yield 6 lbs. 9 oz. between Sept. 13 and Oct. 13.
Neapolitan	"	"	"	Yield 7 lbs. 6 ozs. between Sept. 13 and Oct. 13.
Onions—Test of varieties. ¼ oz. of seed used on 66 foot row.				lbs. oz.
Ailsa Craig	Graham	April 20	66 ft.	30
Australian Brown	McDonald	"	"	14
Ex. Early Flat Red	"	"	"	22
Giant Prize Taker	Graham	"	"	22 8
Improved Reading	Reading	"	"	29
Large Red Wethersfield	Ottawa 9518	"	"	21 8
Large Red Wethersfield	V.I.S. 1072	"	"	10 8
Mammoth Silver King	McDonald	"	"	22
Southport Red Globe	Graham	"	"	21
Southport Yellow Globe	Ewing	"	"	18
Southport White Globe	Graham	"	"	14 8
White Bartlitta	McDonald	"	"	6
Yellow Globe Danvers	Graham	"	"	15
Yellow Globe Danvers	Ottawa C.E.F.	"	"	19
Onions. Dutch Sets One variety	Yellow Dutch	Planted April 19		Yield 46 lbs.

VEGETABLES

Name of variety.	Source.	Date planted.	No. of plants.	Yield.
				lbs. oz.
Cucumbers—				
Davis Perfect	McDonald	June 2	2	18 2
Davis Perfect	O.S.	"	2	6 9
Early Russian	Burpee	"	2	1 4
Giant Pera	McDonald	"	2	7 3
Improved Long Green	"	"	2	5 15
Musk Melons—				
Emerald Gem	Burpee	June 12		
Ex Early Hackensack	"	"	No success.	
Paul Rose	"	"	Temperature too low.	
Rocky Ford	"	"		
Pumpkins—				
Connecticut Field	McDonald	June 14	3	81 0
King of the Mammoths	"	"	3	106 0
Small Sugar	"	"	3	59 0
Squash—				
Delicious	"	"	2	42 8
Golden Hubbard	"	"	2	36 8
Hubbard	"	"	2	58 8
Marrow—				
English vegetable	"	"	2	69 12
Long White Bush	"	"	2	38 4

VEGETABLES

Name of variety.	Source.	Date planted.	No. of plants.	Yield.	Weight of yield.
Egg Plant—					lbs. oz.
Black Beauty	McDonald	June 21	20	5 fruits	5 2
New York Imp. Purple	Bruce	"	20	13 fruits	19 14
Lettuce—				lbs. oz.	
All Heart	V.I.S.	April 24	30	12 8	
Romaine	Dupuy and Ferguson	"	30	41 8	
Crisp as Ice	Wills	"	30	12 8	
Early Way Ahead	Dupuy and Ferguson	"	30	12 4	
Grand Rapids	C.E.F. 9512	"	30		
Grand Rapids	O.S.	"	30	22 0	
Hanson	Ewing	"	30	21 0	
Iceberg	Ewing	"	30	21 8	
Salamander	McDonald	"	30	8 0	
Simpson Black seeded	Ewing	"	30	23 0	

VEGETABLES

Variety.	Source.	Date of seeding.	Area.	Yield green beans.
Beans. Green edible pod stage—			foot row.	lbs. oz.
Long Pod Cocoa	V.I.S.	May 8	15	2 8
Masterpiece	C.E.F. 8955	"	15	4 12
Pencil Pod Wax	Coulter	"	15	3 2
Plentiful French	C.E.F. 8957	"	15	3 8
Plentiful French	V.I.S.	"	15	5 0
1200 to 1	V.I.S.	"	15	4 8
V.I.S. No. 3	V.I.S.	"	15	5 8

POTATOES. TEST OF VARIETIES.

Name of variety.	Date of planting.	Area.	Yield of tubers marketable.	Small.	Total yield.	Per acre yield.
		ft. row.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.
Arron Chief	May 17	66	42 0	8 0	50 0	13,200 0
British Queen	"	66	5 8	16 8	22 0	5,808 0
Burbank	"	33	25 0	7 8	32 8	17,160 0
Burpees Extra Early	"	6	7 8	0 12	8 4	23,958 0
Early Ohio	"	6	6 8	1 8	8 0	23,232 0
Early Rose	"	66	61 0	18 0	79 0	21,052 8
Early Surprise	"	6	0 0	0 12	0 12	2,178 0
Eureka	"	66	72 8	16 8	89 0	23,676 0
Green Mountain	"	6	13 12	1 0	14 12	42,834 0
Gold Coin	"	66	48 0	12 0	60 0	15,840 0
Irish Cobbler	"	6	9 0	2 0	11 0	31,944 0
Jersey Royal	"	66	87 8	15 0	102 8	27,060 0
Jones White	"	66	60 8	14 0	74 8	19,668 0
King Edward	"	66	46 8	16 0	62 8	16,500 0
Million Dollar	"	66	37 0	4 0	41 0	10,824 0
Rural New Yorker	"	6	12 8	0 0	12 8	36,300 0
Scottish Triumph	"	66	21 8	11 8	33 0	8,712 0
Sharp Express	"	66	75 0	12 0	87 0	22,968 0
St. George	"	44	31 8	6 0	37 8	14,850 0
The Factor	"	44	58 0	5 0	63 0	24,948 0
V.I.S. No. 1	"	22	*	*	*	*
V.I.S. No. 3	"	11	18 0	3 0	21 0	16,632 0
V.I.S. No. 6	"	11	17 0	2 0	19 0	30,096 0
V.I.S. No. 7	"	11	21 8	4 0	25 8	40,392 0
V.I.S. No. 8	"	11	22 8	1 0	23 8	37,224 0
V.I.S. No. 12	"	11	31 0	1 0	32 0	50,688 0
V.I.S. No. 13	"	11	27 8	1 0	28 8	45,144 0
V.I.S. No. 16	"	11	23 0	1 0	24 0	38,016 0
V.I.S. No. 17	"	11	18 8	2 8	21 0	33,264 0
V.I.S. No. 25	"	11	15 0	2 0	17 8	27,720 0

*No results obtained.

TOMATOES. VARIETY TEST. Season unfavourable.

Name of variety.	Source.	Planted.	No. of plants.	Yield ripe.	Yield green.	Total yield.
				lbs. oz.	lbs. oz.	lbs. oz.
Ailsa Craig	Thorne	May 29	5	20 9	20 0	40 9
Alacrity A 1	C.E.F.	"	5	26 15	10 8	37 7
Alacrity A 201	C.E.F.	"	5	34 6	4 0	38 6
Alacrity	V.I.S. 2243	"	5	25 7	22 0	47 7
Bonny Best	Stokes	"	5	22 13	23 0	45 13
Bonny Best	V.I.S. 2246	"	5	19 9	18 0	37 9
Burbanks Early	C.E.F. 8679	"	5	34 1	4 0	38 1
Chalks Jewel	Carter	"	5	21 0	23 0	44 0
Chalks Jewel	Graham (18)	"	5	22 15	20 0	42 15
Earlibell	Simmers (18)	"	5	26 7	17 0	43 7
Earlibell	Simmers (19)	"	5	28 7	14 0	42 7
Danish Export	C.E.F. 8697	"	5	22 7	16 0	38 7
Danish Export	V.I.S. 2249	"	5	19 13	15 0	34 13
Golden Sunrise	V.I.S. 2251	"	5	18 7	20 0	38 7
John Baer	Carter	"	5	9 8	23 0	32 8
Langdon Earliana	O.S.	"	5	27 11	12 0	39 11
McDearmid & Reed Spec	V.I.S. 2255	"	5	25 10	12 0	37 10
Prosperity	Graham	"	5	27 3	13 0	40 3
Red Head	Langdon & Son	"	5	25 14	18 0	43 14
Sunrise	V.I.S. 1383	"	5	8 1	18 0	26 1
Sunrise	V.I.S. 1998	"	5	8 13	17 0	25 13
V.I.S. No 2	V.I.S. 2261	"	5	23 14	12 0	37 14
V.I.S. No. 3	V.I.S. 2262	"	2	15 2	19 8	34 10
V.I.S. No. 5	V.I.S. 2263	"	2	6 6	7 0	13 7
V.I.S. No. 23	V.I.S. 2264	"	5	11 14	18 8	30 6
V.I.S. No 23	V.I.S. 2264	"	2	Wilt.		

Alacrity A 201, Burbank Early and Earlibell gave the greatest quantity of ripe fruit.

TOMATOES. VARIETY TEST FOR RESISTANCE TO BLACK SPOT FUNGUS.

Variety.	Source.	No. of fruits attacked.	Weight of diseased fruit.
			ozs.
Ailsa Craig		0	0
Alacrity A 1	C.E.F.	0	0
Alacrity A 201	C.E.F.	1	3
Alacrity V.I.S.		5	11
Bonny Best	Stokes	0	0
Bonny Best	V.I.S.	0	0
Burbank Early	C.E.F.	6	21
Chalks Jewel	Carter	9	25
Chalks Jewel	Graham	4	13
Earlibell	Simmers	0	0
Earlibell	Simmers	6	16
Danish Export	C.E.F.	0	0
Danish Export	V.I.S.	0	0
Golden Sunrise	V.I.S.	0	0
John Baer	Carter	10	30
Langdon Earliana	O.S.	3	5
McDiarmid Special	V.I.S.	8	24
Prosperity	Graham	7	24
Red Head	Langdon	1	4
Sunrise 1917	V.I.S.	0	0
Sunrise 1918	V.I.S.	0	0
V.I.S. No. 2	V.I.S.	0	0
V.I.S. No. 3	V.I.S.	0	0
V.I.S. No. 5	V.I.S.	0	0
V.I.S. No. 23	V.I.S.	0	0
V.I.S. No. 25	V.I.S.	0	0

The smooth, solid flesh, hard skin types are freer from the attack of the fungus *Cladosporium lycopersicum* than are the wrinkled, tender skin types.

POTATO TILLAGE.

Shallow v. deep tillage. Dutch hoe used for shallow tillage, and ordinary hoe for deep tillage implement.

Variety.	Date planted.	Area.	Shallow tillage yield.	Area.	Deep tillage yield.	Per acre increase.
		foot row.	lbs. oz.	foot row.	lbs. oz.	lbs.
Arron Chief	May 17	33	35 6	33	28 0	3,128
Early Rose	"	33	39 0	33	25 8	5,737
Eureka	"	33	36 0	33	27 0	3,825
Jones White	"	33	36 0	33	33 0	1,275
King Edward	"	33	32 8	33	18 0	6,162

The shallow tillage practice has given a marked increase each year over deep tillage.

GARDEN PEA SEED GROWING

Name of variety.	Source.	Date seeded.	Date harvested.	Yield per acre.
Pea varieties—				lbs.
Best of all	V.I.S.	March 29	August 6	4,477
Bluebell	V.I.S.	" 26	" 10	2,877
Eight Weeks	Carter	" 29	" 27	2,964
English Wonder	V.I.S.	" 19	" 5	2,380
Heroine	V.I.S.	" 29	" 6	3,630
Juno	V.I.S.	" 29	" 6	6,292
Killarney	V.I.S.	Feb. 25	" 10	1,246
Little Marvel	Graham	March 29	" 3	3,872
Suttons Prolific	V.I.S.	" 29	" 4	3,872
Early Morn	Gregory	April 24	" 14	3,630
Pioneer	Gregory	" 24	" 14	3,388

Spinach.—Viroflay. Seeded March 18 and harvested August 4. Yield 1,260 pounds per acre.

Radish.—Radish E.S.T.W.T. Seeded March 18. Yield 1,160 pounds per acre.

ORNAMENTALS

Bulbs.—The work with flowering bulbs started in 1914 was carried on throughout the year according to the plan adopted. Some new varieties were added to stock and a number were discarded. Station grown bulbs were shipped to Ontario to experimenters to be used in winter forcing and outdoor growing. Reports on all shipments have been received, and in every instance have indicated that bulbs of excellent quality can be grown on Vancouver Island. Cut bloom of Narcissus and Darwin tulip varieties was shipped by mail to various points in Alberta. All reports have been encouraging and indicate that distance to market is not an impregnable barrier to the development of the cut flower trade. The shipping qualities of the various bulb blooms have been noted. Many varieties do not produce a bloom that is firm and durable enough to stand the rough handling of shipment.

Hyacinths.—The hyacinth varieties have generally been satisfactory in bloom production and bulb increase. One variety, the Jacques, an exceptionally fine pink, was added to the stock. Seed taken from the following varieties was sown for the purpose of bulb production, test of hybridization and reproduction capacity of the various varieties: Charles Dickens, Enchantress, Grand Lilas, King of Blues, King

of Yellows, Lady Derby, La Grandesse, La Victoire, Lord Balfour, Lord Derby, Menelik and Moreno.

The hyacinth varieties that have produced seed most abundantly have given light bulb increase.

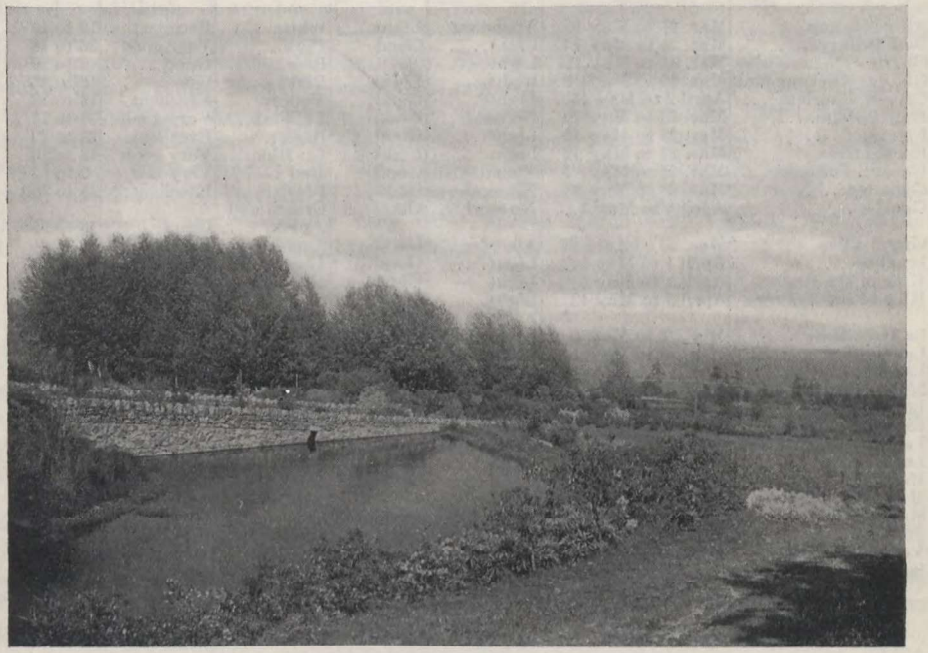


Photo by L.S.

Darwin tulips in bloom.—May, 1921.

Tulips.—The work with tulips during the year 1920 was a continuation of the practice of the previous year. Conditions for bloom development and bulb increase were good. Very satisfactory bulb stock was harvested both from the experimental beds and from offsets planted in 1916. The scooped and scored test, started in 1916, was concluded with encouraging results. The following new varieties were added to the Station stock: Pink Beauty, Columbus, Faust, Phillipe de Commines, William Copland. The following varieties were removed from the experimental plots and planted in the landscape: Dussart, Joost Von Vondel Red, Joost Von Vondel White, L'Immaculee, Maes, Mon Tresor, Primrose Queen, Rose Grisdelin, Viridiflora, Leonardo da Vinci, Raevenhof.

The following list of Darwin tulips have proven very satisfactory: William Copland, Phillipe de Commines, Faust, Anthony Rootzen, Bar de la Tonnaye, Bartigon, Beauty, Clara Butt, Dream, Edmee, Europe, Farncombe Sanders, Galathea, Geefs, Gen. de Cordons, Glow, Isis, King Harold, La Tulipe Noire, Leonardo de Vinci, Loveliness, Margaret, Madame Krelage, Pride of Haarlem, Quida Rambant, Rev. Ewbank, Sultan, Suzon, Whistler, William Pitt, Yellow Perfection. Experimental tests to determine the depth at which tulip bulbs should be set to give maximum results in both bloom and increase, have been carried out. The depth of six inches from base of the bulb to soil surface has given the most satisfactory results.

HYACINTHS.

Name of variety.	Season of bloom.	Seeding habit.	Bulb increase.	Colour.	Remarks.	Ratio bulbs set to bloom.
Alba Maxima	Mar. 27 to May 15	Abundant	Light	White	Excellent	12 to 14
Buff Beauty	Mar. 25 to May 15	Light	Good	Pink	Very good	36 to 74
Charles Dickens blue	Mar. 31 to May 10	Light	.....	Blue	Good	3 to 0
Charles Dickens pink	Mar. 26 to May 10	Light	Light	Pink	Good	10 to 16
City of Haarlem	April 2 to May 15	Light	Good	Yellow	Excellent	13 to 33
Delicatissima	Mar. 28 to May 12	No seed	Good	Lt. Pink	Very good	34 to 74
Electra	Mar. 28 to May 15	Light	Good	Blue	Excellent	22 to 29
Enchantress	Mar. 27 to May 12	Light	Light	Lt. Blue	Very good	16 to 16
General Pellissier	Mar. 25 to May 5	Abundant	Good	Red D.S.	Very fair	9 to 14
Gigantea	Mar. 25 to May 20	No seed	Good	Blush S.	Excellent	48 to 100
Goethe	April 6 to May 1	No seed	Good	Cream and pink	Good	13 to 25
Grand Lilas	Mar. 20 to April 27	Abundant	Good	Azure blue	Excellent	17 to 41
Ivanhoe	April 1 to May 5	Light	Good	Deep blue	Excellent	24 to 37
King of the Blues	April 1 to May 5	Light	Good	Deep blue	Excellent	14 to 19
King of the Yellows	April 5 to May 12	Light	Good	Creamy yellow	Very fair	18 to 24
La Grandesse	Mar. 27 to May 5	Abundant	.....	White	Excellent	6 to 2
La Victoire	Mar. 18 to May 1	Abundant	.....	Red D.S.	Very fair	3 to 3
Lady Derby	Mar. 29 to May 10	Abundant	Fair	Pink	Very good	19 to 27
L'Esperance	April 2 to May 1	Light	.....	Dark purple	Very fair	20 to 14
Leviathan	Mar. 26 to April 26	Abundant	Good	Blush	Excellent	10 to 28
Linneaus	Mar. 20 to April 21	Abundant	Good	Red Pink	Good	6 to 16
Lord Balfour	Mar. 27 to April 30	Abundant	Fair	Violet	Excellent	60 to 54
Lord Derby	Mar. 28 to April 10	Light	Good	Light blue	Excellent	60 to 121
Menelik	Mar. 24 to April 30	Light	Good	Dark blue	Excellent	60 to 105
Miss Nightingale	Mar. 24 to April 30	Light	Good	White	Very good	20 to 48
Moreno	Mar. 21 to April 21	Light	Good	Pink	Excellent	24 to 72
Stanley	Mar. 26 to April 28	Light	Good	Deep pink	Good	15 to 37
Yellow-hammer	Mar. 28 to April 28	Light	Good	Yellow	Very good	14 to 52
Jacques	April 1 to May 10	Light	Fair	Pink	Excellent	24 to 23

NARCISSUS

The narcissus planting was considerably increased through transfer of a large portion of the stock, growing in the landscape area, to the experimental area. The following new varieties were added: Evangeline, Grandis and Incognita. The seasonal conditions were favourable to the production of excellent bloom and bulb increase. The varieties that have proven most desirable at this Station are as follows:—Elvira, Triumph, Glory, Grandiflora, Ornatus, Barri, Conspicuous, Cynosure, Duchess of Westminster, Frank Miles, Lucifer, Sir Watkin, White Lady, Emperor, Empress, Glory of Leiden, Golden Spur, Henry Irving, McCamm, King Alfred, Madame de Graffe, Plemp, Maximus, Van Waverens Giant.

All types of narcissi have done well in bloom, some have reproduced abundantly while others barely maintain numbers.

Scilla Sibirica.—This bulb plant has done exceedingly well and has much to recommend it in landscape work.

Muscari or Grape Hyacinth.—These bulb plants flower freely in the early spring, are very durable, but do not reproduce to the desired extent.

Lilies...Fifteen varieties of *Lilium* were imported from Japan in 1915. These have grown well, bloomed well, but have not made the desired bulb increase. The dry conditions generally experienced during June, July and August have been against the full development of the summer flowering lilies.

Crocus.—The crocus plantings have been entirely destroyed by the English pheasant.

ARBORETUM

The arboretum area remained in sod during the year, excepting an area planted to seedling walnuts and seedling filberts. Many of the deciduous varieties of shrubs have not proven drought resistant enough to be useful under Southern Vancouver Island conditions. A number of native shrubs and trees have done well under domestication. Native plants that have proven valuable in landscape work are: Ribes Sanguineum, Philadelphus Gordoniensis, Spirea ariaefolia, Spirea Menziesii, Cornus occidentalis, Cornus Nuttalli, Arbutus Manchusi, Pinus Monticola, Thuya Gigantea, Acer macrophylla, Acer Douglasii, Acer glabrum, Abies Grandis, Picea Sitchensis, Juniperus scopulorium. Of the imported ornamental plants none has given so much satisfaction as the Buddleias. Eight varieties are now growing on the Station, of these the Buddleia Davidii is to be preferred. The following have proven very desirable plants for winter or very early spring bloom:—Forsthyias, Andromeda, Camellias, Cydonias and Jasminum mudiflorum.

LANDSCAPE GARDENING

The trees, shrubs and herbaceous plants growing in the various borders in the park area made good development during the year. The many foreign plants that are thriving under Vancouver island conditions have been a feature of great interest to the visiting public. Numerous educational organizations used the park premises for their annual outing.

All shrubbery areas were spaded over during the winter period, and the isolated trees were circled or both circled and mulched. Shrub and rose pruning was carried out during February and March. Some alterations were made, the principal of which was the closing of a roadway and the planting of a shrubbery over the bridge area. Lawns have been impossible with no irrigation water available during the dry summer period.

SMALL FRUITS.

YIELDS OF STRAWBERRIES PER ACRE.

Variety.	Yield 1919.		Yield 1920		Total.	
	lbs.	oz.	lbs.	oz.	lbs.	oz.
Glen Mary	8,108	9	5,657	2	13,765	11
Oregon	6,813	12	6,765	0	13,578	12
Marianna	8,226	6	5,115	0	13,341	6
Warfield No. 2	8,886	6	3,653	9	12,539	15
Magoon	6,977	2	5,138	9	12,115	11
Paxton	5,044	6	4,870	4	9,923	10
Royal Sovereign	7,326	0	2,553	0	9,879	0
Dr. Burrill	5,185	11	4,266	6	9,452	1
Cordelia	5,755	0	3,630	0	9,335	0
Valeria	8,886	6	117	13	9,004	3
Sharpless	4,219	4	4,502	2	8,721	6
Virgilia	6,199	4	2,498	9	8,697	13
Senator Dunlap	5,612	0	2,470	8	8,082	8
Magic Gem	4,290	0	3,512	1	7,802	1
Cassandra	4,549	4	3,252	13	7,802	1
Triomphe de Ghent	5,702	0	1,767	13	7,469	13
Julia	4,620	0	2,545	11	7,165	11
Portia	4,007	2	1,956	6	5,963	8
Desdemona	4,808	12	1,107	13	5,916	9
Superb	3,983	9	1,885	11	5,869	4
Premier	3,417	13	2,333	9	5,751	6
Early Ozark	4,048	12	1,654	1	5,702	13
Prize	3,630	0	1,650	0	5,280	0
Brandywine	3,818	9	814	11	4,633	4

STRAWBERRIES. AUTUMN v. SPRING PLANTING.

Four Varieties used in test. Clay loam.

Name of variety.	Planted.	Yield.	Pounds per acre.
Cassandra	Autumn	2 years 19–20	7,590
"	Spring	" 19–20	7,495
Cordelia	Autumn	"	9,570
"	Spring	"	3,770
Paxton	Autumn	"	9,476
"	Spring	"	8,903
Triomphe de Ghent	Autumn	"	7,863
" "	Spring	"	2,970

The *yield is greater for the autumn* set plants, under the conditions that generally prevail on Southern Vancouver Island.

CURRANT VARIETIES.

Name of variety.	Planted.	Yield 1920.	Highest yield in 6 year period.	
		lbs. oz.	lbs. oz.	
Topsy, black	1913	1,815 0	6,140 12	1918
Victoria, black	1913	4,250 2	9,891 2	1916
Eagle, black	1913	2,359 8	5,868 0	1916
Boskoop Giant, black	1913	4,507 4	11,011 0	1919
Eclipse, black	1913	1,694 0	4,840 0	1919
Climax, black	1913	2,662 0	6,564 0	1919
Kerry, black	1913	1,905 12	8,076 0	1916
Clipper, black	1913	2,541 0	8,833 0	1916
Buddenborg, black	1913	5,575 12	10,799 0	1919
Saunders, black	1913	1,981 6	7,139 0	1916
Collins Prolific, black	1913	3,025 0	4,356 0	1917
White Grape, white	1913	9,801 0	15,730 0	1917
Large White, white	1913	10,799 4	10,799 0	1920
Chatauqua, white	1913	4,573 0	5,172 0	1918
White Cherry, white	1913	11,374 0	12,130 0	1919
Greenfield, red	1913	13,915 0	14,096 8	1919
Grape, red	1913	13,930 0	14,187 4	1917
Cherry, red	1913	3,146 0	3,148 0	1919
Perfection, red	1913	8,712 0	11,616 0	1917
Admirable, red	1913	1,291 8	3,751 0	1918
Victoria, red	1913	11,495 0	11,495 0	1920
Red Cross, red	1913	11,737 0	19,118 0	1917
Rankins, red	1913	15,064 8	15,125 0	1918
Cumberland, red	1913	15,730 0	15,730 0	1920
Red Dutch, red	1913	7,741 8	13,358 0	1917
Wilder, red	1913	14,217 8	14,217 0	1920

GOOSEBERRY VARIETIES.

Champion	1913	10,436 4	11,706 12	1919
Industry	1913	3,048 8	3,048 8	1920
Houghton	1913	1,845 4	4,598 0	1916
Whitesmith	1913	3,198 15	3,198 0	1920
Josselyn	1913	4,945 14	4,945 14	1920

RASPBERRY VARIETIES.

		lbs. oz.	lbs. oz.	
Cuthbert	1913	2,003 10	2,583 4	1915
Fillbasket	1913	919 0	1,537 0	1915
Superlative	1913	1,015 5	2,343 14	1916
Golden Queen	1913	1,234 15	3,755 4	1915
St. Regis	1913	1,423 15	2,860 7	1918

BLACKBERRY VARIETIES.

Name of variety.	Planted.	Yield 1920.	Highest yield in 6 year period.	
		lbs. oz.	lbs. oz.	
		lbs. oz.		
Erie	1913	4,158 7	7,510 7	1919
Phenomenal	1913	3,591 7	8,405 4	1916
Snyder	1913	25 0	2,595 14	1915
Mammoth	1913	1,285 10	7,744 0	1916
Loganberry	1913	6,804 13	15,361 5	1916

RHUBARB.

Name of variety.	Crop.	Yield.
		Pounds per acre.
Holidays Giant	April 23 to June 12	12,796
Monarque	April 23 to June 12	15,246
Prima Donna	April 23 to June 12	13,340
Linnaeus	April 23 to June 12	17,151
Early Raspberry	April 23 to June 12	19,330

CEREAL HUSBANDRY

The weather conditions experienced in the district served by this Station were not favourable to big yields. The very dry summer conditions of 1919 continued throughout the autumn, making soil preparation impossible in some instances and very difficult in others. Autumn seeding for the 1920 crop was done between November 20 and December 15. Periods of favourable weather were experienced during the winter of 1920 proving a sufficient aid to the late seeding to make such a success. The spring opened with fine weather early, to be followed later by cold backward conditions in April and early May. Spring seeding was completed on April 24. Variety tests were conducted under the customary methods. Some selection work was done, but no hybridizing. A number of promising autumn wheat types have been isolated. Conditions during the threshing season were very unfavourable. Wet weather prevented the autumn of 1920 seeding of cereal plots. The result of plot tests is given in the following tables.

RYE—VARIETY TEST.

Name of Variety.	Date of Sowing.	Date of Ripening.	No. of Days Maturing.	Average Length of Straw, including head.	Strength of straw on a scale of 10 points.	Average Length of Head.	Yield of Grain per Acre.
				Inches.		Inches.	Lbs.
Thousand Fold.....	Nov. 25...	July 30....	247	84	10·	6·2	982

VETCH—VARIETY TEST.

Spring.....	April 25..	Aug. 22...	117	42·5	.....	2	685
Pearl.....	April 25..	Aug. 18...	113	40·2	.....	2	642
Golden.....	April 25..	Aug. 18...	113	38·6	.....	2	894

BARLEY—VARIETY TEST.

Winter—							
Tapp.....	Nov. 25..	July 2..	217	38·5	10	3·2	1,465
Success.....	Nov. 25..	July 2..	217	36·2	7	3·0	1,292
White Hulless...	Nov. 25..	July 2..	217	33·0	5	2·7	1,076
Blue Hulless.....	Nov. 25..	July 2..	217	34·5	5	2·7	1,184
Spring—							
Odessa.....	April 13..	Aug. 13..	122	34·6	6	3·0	1,698
Hannchen.....	April 13..	Aug. 13..	122	32·2	6	2·7	1,745
Albert, Ottawa 54.....	April 13..	Aug. 13..	122	35·2	6	2·5	1,860
Duckbill, Ottawa 57.....	April 13..	Aug. 13..	122	31·4	6	2·5	1,828
Oderbruch.....	April 13..	Aug. 13..	122	33·8	5	2·5	1,760
Success.....	April 13..	Aug. 2..	111	31·6	5	2·5	1,572
Blue Hulless.....	April 13..	Aug. 2..	111	32·3	5	2·5	1,390

WHEAT—VARIETY TEST.

Name of variety.	Date of Sowing.	Date of Ripening.	No. of days Maturing.	Average length of Straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of Grain per acre.	Weight per measured bushel after cleaning.
				Inches.		Inches.	Lbs.	Lbs.
Autumn, Sun.....	Nov. 25..	Aug. 6..	254	43·0	10	3·0	2,150	60
Autumn, Bluestem....	Nov. 25..	Aug. 6..	254	46·0	10	3·5	2,010	60
Spring, Bluestem.....	April 25..	Aug. 18..	115	43·5	10	3·2	1,885	60
Autumn, Marquis.....	Nov. 25..	July 26..	254	42·0	10	3·0	1,990	61
Spring, Marquis.....	April 25..	July 18..	115	44·5	10	3·2	1,912	61
Autumn, Kitchener....	Nov. 25..	July 28..	246	45·5	10	3·2	2,045	61
Spring, Kitchener.....	April 25..	Aug. 19..	116	46·0	10	3·2	2,195	61
Spring, Red Fife.....	April 25..	Aug. 21..	118	43·5	10	3·2	2,036	60
Spring, Red Bobs.....	April 25..	Aug. 21..	118	42·5	10	3·0	1,895	
Autumn, Burbank Super.....	Nov. 25..	July 25..	235	40·5	9	3·7	2,055	
Autumn, Prelude.....	Nov. 25..	July 15..	225	37·0	7	2·5	1,465	
Autumn, Pioneer.....	Nov. 25..	July 18..	228	39·5	8	2·5	1,580	
Autumn, Benefactor...	Nov. 25..	Aug. 6..	246	46·5	10	3·0	1,995	
Autumn, Ruby.....	Nov. 25..	July 18..	228	38·0	8	2·7	1,624	
Autumn, Red Rock...	Nov. 25..	July 20..	230	46·2	9	3·5	2,356	Undesirable.
Autumn, Kinghead....	Nov. 25..	Aug. 6..	254	54·0	7	3·2	2,005	"
Spring, Early Baart...	April 25..	Aug. 5..	253	38·5	4	2·7	1,165	"
Spring, Emmer.....	April 25..	Aug. 8..	255	34.0	4	2·7	1,082	"

OATS—VARIETY TEST.

Name of variety.	Date of Sowing.	Date of Ripening.	No. of days maturing.	Average length of Straw including head.	Strength of straw on a scale of 10 points.	Average length of Head.	Yield of Grain per acre.
				Inches.		Inches.	
Spring—							
O.A.C. No. 72	April 25	Aug. 7	104	48·5	10	11·5	2,025
Banner	April 25	Aug. 7	104	46·5	10	10·0	1,918
Tartar King	April 25	Aug. 8	105	44·0	9·5	9·5	1,762
Swedish Select	April 25	Aug. 9	106	45·0	9	9·0	1,685
Victory	April 25	Aug. 7	104	47·5	10	11·0	1,996
Eclipse	April 25	Aug. 4	103	45·5	9	10·5	1,698
Senator	April 25	Aug. 1	97	42·5	8	8·5	1,466
Gold Rain	April 25	Aug. 8	105	44·0	9	9·5	1,778
Liberty (Hulless)	April 25	July 30	95	41·5	10	9·0	1,022
Autumn—							
Banner	Nov. 25	July 13	230	47·0	10	10·5	1,455
Garton's No. 22	Nov. 25	July 13	230	46·5	10	10·25	1,396
Victory	Nov. 25	July 13	230	47·5	10	11·5	1,522
O.A.C. No. 72	Nov. 25	July 13	230	47·5	10	11·5	1,576
Liberty	Nov. 25	July 10	227	44·5	10	10·0	1,124

FLAX—VARIETY TEST.

Name of variety.	Date of Sowing.	Date of Ripening.	Number of Days Maturing.	Average Length of Plants.	Actual yield of Seed per acre.	Remarks.
				Inches.	lbs.	
Premost	May 1	Aug. 18	110	18	310	The dry conditions existing from April to September are very much against the possible commercial success of the flax plant on Vancouver Island.

PEAS—VARIETY TEST.

Name	Date of Sowing.	Date of Ripening.	Number of days Maturing.	Average length of Straw	Average length of Pod.	Actual yield of Grain per acre.	Per cent Stand	Weight per measured bushel after cleaning	Remarks.
				Inches.	Inches.	lbs.		lbs.	
Arthur	Nov. 25	July 15	232	34	3·0	2,280	95	60	30 pods per plant, 6 peas per pod; plants not as large as autumn sown.
Arthur	April 20	Aug. 1	102	28	2·7	1,655	100	60	
Solo	Nov. 25	July 18	235	50	3·2	2,395	98	60	4 to 6 peas per pod.
Solo	April 20	Aug. 1	102	42	3·0	1,715	100	60	4 to 6 peas per pod.

The experience of the period 1915 to 1921 indicates that all upland areas intended for the production of grain should, if possible, be seeded between the 15th of September and the 15th of October. The following varieties of cereals have been most successful over a six-year period.

Six year average of the three highest yielding varieties.

Autumn wheats	26.6 bushels per acre
Spring wheats	17.4 " " "
Peas	38.5 " " "
Oats	33.4 " " "
Barley	22.9 " " "

Heaviest yielding varieties.

Autumn wheat	Sun, Dawson's Golden Chaff, Red Rock.
Spring wheat	Marquis, Kitchener, Bluestem.
Peas	Solo, Arthur, Maple.
Oats	O.A.C. 72, Banner, Victory.
Barley	O.A.C. 21, A bert, Duckbill.

Winter oats have given lower average yields than spring sown oats, winter killing of oats frequently 50 per cent. Only safe when used in a mixture of wheat, oats and vetch.

Hulless Barley has not produced a satisfactory average yield over the six-year period. Autumn seedings have been more satisfactory than spring seedings.

Vetch varieties have all been successful, with Common vetch, Golden Tares and Scotch Tares giving the highest average yields of seed and fodder.

Rates of seeding.—The most satisfactory rates of seeding for the various classes have been as follows:—

Winter wheat	125 pounds per acre.
Spring wheat	100 " " "
Winter oats	90 " " "
Spring oats	65 " " "
Winter barley	110 " " "
Spring barley	100 " " "
Winter rye	90 " " "
Spring rye	90 " " "
Winter peas	180 " " "
Spring peas	120 " " "

Mixed seed for fodder or grain, pounds per acre.

Autumn sown	A. Wheat 60. Oats 30. Vetch 30.
	B. Rye 60. Vetch 35.
	C. Wheat 60. Horse beans 60. Vetch 40.
Spring sown	D. Oats 40. Peas 60. Vetch 30.
	E. Oats 40. Horse beans 60. Vetch 40.
	F. Oats 60. Vetch 40.

FORAGE CROPS

The seasonal conditions experienced during the period of growth in 1920 were more favourable than usual to forage crop development. Late August and September rains helped the mangels, carrots, and the meadows and pasture areas. The spring opening was delayed by cool weather in April and May.

CLOVERS—VARIETY TEST.

Name.	Plot sown.	Development.	Yields per acre pounds of dry hay.
			lbs.
Red Clover	April, 1919	Good. Some heaving	3,470
Alsike Clover	"	" "	3,185
White Clover	"	" "	1,842
White Sweet Clover	"	" "	3,724

ALFALFA—VARIETY TEST.

PLOTS HARVESTED JUNE 25TH AND SEPTEMBER 30TH.

Grimm	April, 1918	Good; Twice cut; no heaving	7,925
Ontario Variegated	"	" "	8,132
Marlboro	"	" "	8,165
Hunter River	"	" "	8,285
Cossack	"	" "	4,935
Cherno	"	" "	4,178

GRASSES—VARIETY TEST.

Name.	Plot seeded.	Development.	Height.	Yield per acre dry hay.	Remarks.
			inches.	lbs.	
Timothy	April, 1917	Fair	29	1,922	Upland too dry.
Orchard Grass	"	Vigorous and early	52	3,775	Heaviest yielder.
Tall Oat Grass	"	Vigorous	56	3,692	One of the best.
Phlaris	"	Fair	47	2,514	Good hay and grazing.
Sudan Grass	April, 1920	Good	42	1,560	Fair quality hay.
Sweet Vernal	"	Fair	5	Not cut.	Of little use.
Western Rye	"	Vigorous drought resistant	31	1,485	Coarse hay.
Red Top	"	Good heavy turf	7	1,680	Excellent grazing.
Crested Dogs Tail	"	"	9	1,255	"
Meadow Fescue	"	"	8	1,860	"
Brome	"	Vigorous drought resistant	27	1,670	Coarse hay.
Chess	"	" "	29	1,455	"

NOTE.—Western Rye, Brome, Chess and Sudan grass under favourable seasonal and soil conditions can be established and produce some hay or grazing six months after seeding.

Orchard Grass, Tail Oat Grass, Meadow Fescue, Red Top and English Rye Grass are the most valued for local conditions tested to date.

MISCELLANEOUS FORAGE PLANTS

Russian Sunflower.—Sown April 13, harvested August 20.
Size of plot 960 square feet.
Number of plants, 275.
Largest head 8 inches in diameter.
Number of single bloom stalks, 251.
Number of multiple blooms stalks, 24.
Tallest plant 86 inches.
Largest stalk diameter 1½ inches.
Heaviest plant 6 lbs. 2 oz.
Average plant 3 lbs. 4 oz.
Yielded green weight per acre, 20 tons 77 pounds.

Australian Artichoke.—Tubers set in June, 1918. The second-year yield exceeded the yield obtained in 1919. Crop harvested when plants were in full bloom and gave a green weight per acre of 22,360 pounds. The plants stood from 3 to 6 inches apart, and grew to a height of fifty-five inches.

This forage crop is palatable to all live stock and is a very useful crop on land where frequent ploughing is not easily possible.

INDIAN CORN FOR ENSILAGE—VARIETY TEST.

Corn for ensilage. Area of plot 1-100 acre. Soil—Black loam. Fertilizer—20 tons stable manure

Name.	Source.	Planted.	Development and general observations.		Yields.
				Height inches.	lbs. per acre.
Golden Giant	Ottawa	May 8	Fair	52	10,400
Palisade	V.I.S.	"	"	81	14,466
N.W. Dent	Ottawa	"	"	73	11,800
Longfellow	"	"	"	71	12,800
Twitchells Pride	"	"	"	54	6,400
McConnell	"	"	"	68	10,266
Wisconsin 7	"	"	"	78	15,200
N. Dakota	"	"	"	75	13,670
Comptons Early	"	"	"	84	18,430
Leaming	"	"	"	81	15,870
White Cap Yellow Dent.	"	"	"	76	15,075
Bailey	"	"	"	82	14,330

Comptons Early gave the greatest yield. The season was the most adverse for corn of any experienced.

CARROT AND SUGAR BEET—VARIETY TEST.

Area of plot 1-100 acre. Soil—black loam. Fertilizer—20 tons stable manure.

Name.	Source.	Planted.	Development and general observations.	Yields.
				lbs. per acre.
Danish Champion	Ottawa	May 8	Germination good, development good	48,600
White Intermediate	"	"	"	25,300
Sugar Beet, B.C. seed	"	"	" development fair	25,000
Sugar Beet, Chatham seed	"	"	" "	21,000

SUGAR BEETS for seed production. Two acres were grown during the season. Fertilizer experiments were also carried on. Three cross sections were harvested to determine root development. The greater part of the area was left to produce seed in 1921.

MANGELS—VARIETY TEST.

Area of plot 1-100 acre. Soil—Black loam. Fertilizer—20 tons stable manure.

Name.	Source.	Planted.	Development and general observation.	Yields.
				lbs. per acre.
Yellow Globe	H.G.	May 8	Germination good, development good	22,700
Yellow Intermediate	Ottawa	"	" "	27,670
Selelt Intermediate	Charlottetown	"	" "	25,340
Select Intermediate	Charlottetown	"	" "	25,140
Golden Tankard	B. & K.	"	" "	19,070
Long Red	B. & K.	"	" "	27,800
Yellow Leviathan	Agassiz	"	" "	22,700
Half sugar white	Charlottetown	"	" "	26,155
Danish Sludstrup	Summerland	"	" "	21,015
Danish Sludstrup	Kentville	"	" "	23,735

VARIETIES AND PRACTICES THAT HAVE GIVEN THE BEST RESULTS DURING THE PAST FIVE YEARS

Corn and sunflowers have done best on clover sod that was ploughed as soon as the hay had been removed, stable manure applied in the autumn, land ploughed again in the early spring and worked weekly until ready to plant. Planting dates 10th to 24th of May, field marked in squares of 36 inches so that horse cultivation could be practised both ways, shallow cultivation practised until the plants were 48 inches high. Corn varieties that have proven the most desirable:—Longfellow, Golden Glow, King Phillip, McConnel, Comptons Early, N.W. Dent and Wisconsin 7. *Sunflower,* Russian Giant.

Mangels.—The soil preparation as given for corn has also proven most satisfactory for mangel culture. The varieties of mangels that have given the largest yields of desirable roots are Long Red, Danish Sludstrup, Yellow Intermediate and Golden Tankard. The deep rooting types have withstood the dry conditions generally experienced much better than the globe types. The most satisfactory seed sowing date for mangels has been the first week in May. Seed that was subjected to twelve hours' soaking before planting has always given more uniform germination than dry seed. Seeded rows that were pressed firm after seeding have always given more uniform crops than the rows sown and left unpressed. The distance of singling that has given the largest yield is 12 inches. Growing on the flat surface has given larger yields with less labour than the practice of growing on ridged land.

Turnips.—The soil preparation and culture as given for corn and mangels have been most satisfactory for turnips. The varieties recommended are Magnum Bonum, New Century, Canadian Gem, Hazards Improved, Purple Top, Durham and Hartleys Bronze Top.

Carrots.—The soil prepared as given for corn and the use of a garden rake, for singling, are the main practices that gave the best results in carrot production. Varieties recommended, Improved Belgian, Ontario Champion, Giant White Vosges and Mammoth White Intermediate.

Grasses.—The grass varieties that have proven most useful during the past six years are as follows—Cocksfoot, Tall Oat Grass, Meadow Fescue; English, Italian and Perennial Rye grasses. The most successful seeding has followed the practice of mixing the grass seed with the seed oats or wheat and sowing, not too deep, with an ordinary disc drill.

Millets.—Sorghums and allied plants, requiring a warm or humid climate, have not been sufficiently successful to warrant their use on the southern part of Vancouver Island.

Clovers.—The Common Red, Mammoth Red, Alsike and White clovers have all been very successful and easy to grow under Island conditions. Alfalfas have done well under tillage and special treatment. Sweet clovers have not been a success under field conditions but yields have been satisfactory when grown in plots or rows. Crimson clover has not been a field success.

Vetches have all been successful. The common or spring vetch is to be recommended over all others.

Sainfoin has not been successful under field conditions.

Lupins and Horse Beans have succeeded in both autumn and spring planting, under both broadcast and tillage systems.

POULTRY HUSBANDRY

Climatic conditions affecting poultry husbandry were more adverse during the year 1920 than those experienced at any time during the past five years. A cold backward spring, with more rain and cloudy weather than usual, made brooding and rearing difficult. The work of the year was largely a continuation of the breeding and feeding for production plan started in 1916. Success has attended the efforts of the Station poultryman to improve the production of the flocks. The ten best pullets averaged 264·7 eggs, which was an average of 18·3 eggs over the record for 1916-17. The highest individual record for the year was 289 eggs. Feed costs were high during the year and consequently production costs were also high. Prices for products were excellent up to February, when a sharp decline was experienced in the egg market. The demand for pedigree cockerels was good; 163 of these birds were shipped to other Stations or sold to breeders. Crate feeding was practised during the season; all birds that did not come up to the standard of excellence went into the feeding crates. Excellent prices were obtained for crate-fed, dressed poultry. Some loss was experienced with the half-grown young stock through a roup attack. This trouble was traced to the infection having been carried in by a neighbour from a nearby farm.

Breeding pens, White Wyandottes.

The breeding pens for 1920-21 were made up in January; not more than ten females were alloted to each male. Two laying houses were erected during the summer period. These were fitted with the modern trapnest cabinets. One of the older laying houses was converted into a brooder house to provide the space required for increased production. Two Queen coal-burning colony brooder stoves were installed in this house. The original brooder house was fitted up for electric heating, and two electric hovers, with a rated capacity of 500 chicks each, were installed. It is planned to start the chicks under the electric hovers and then transfer to the coal heated brooder house.

The incubation for 1919-20 was very successful, a number of machines being used. To provide for increased demand in 1920-21 an oil-heated, hot water Buckeye incubator of 2,400 egg capacity was installed. Winter laying, a feature that has received special attention in our selection and breeding work, has been very satisfactory; a number of individual records of over 90 eggs for the four winter months were made. In the autumn of 1919 two hundred pullets were put into laying quarters, of these eighty-two laid 200 eggs or over, and twenty-nine laid from 175 to 199. Twelve of these made records of over 250 eggs. The average of this pullet flock from November 1, 1919, to October 31, 1920, was 195.97 eggs.

The number of birds crate-fattened during the year was 267, these gave a dressed weight of 1,135½ pounds. The ration used in feeding was made up of equal parts of white middlings and ground oats, from which the hulls had been sifted. Under the prices prevailing in the district this ration cost $3.82 per hundred pounds.

The housing of laying stock has been simplified as much as possible. A very satisfactory house has been evolved, blue prints of which have been made available to the public.

MONTHLY PRODUCTION OF EGGS FROM PULLETS AND HENS.

NOVEMBER TO OCTOBER, 1919-1920.

Month.	Hens.			Pullets.			Remarks.
	No. of birds.	No. of eggs laid.	Average per bird.	No. of birds.	No. of eggs laid.	Average per bird.	
November	83	144	1·73	153	1,296	8·72	
December	83	183	2·20	197	2,388	12·12	44 late hatched pullets added to flock.
January	75	210	2·80	194	2,943	15·17	
February	67	590	8·80	194	3,487	17·97	
March	67	924	13·79	190	3,996	21·03	
April	42	715	17·02	178	3,538	20·43	
May	39	526	13·54	161	2,984	18·53	
June	37	404	10·90	150	2,347	15·64	
July	35	256	7·31	136	2,482	18·25	
August	33	274	8·30	131	2,307	17·61	
September	33	209	6·33	122	2,035	16·68	
October	36	238	6·61	108	1,493	13·82	
Yearly totals	.....	4,673	99·33	.....	31,396	195·97	

NOTE.—All culling took place at the end of each month. Total number of eggs laid for the year ending October 31, 1920: 36,069.

MARCH HATCHED PULLETS, 1919-1920.

Pounds of feed consumed, cost of feed, average egg production, average value of eggs and profit over cost of feed per bird per month.

Month.	No. of birds.	Total eggs for month.	Pounds of feed consumed per bird.	Cost of feed per bird.	Average number of eggs laid per bird.	Value of eggs laid per bird.	Profit over cost of feed per bird.	Remarks.
				cts.		$ cts.	cts.	
November	50	705	6·7	28	14·1	1 12	84	
December	50	695	8·6	32	13·9	1 04	72	1 died and 2 culled out.
January	47	705	11·9	41	15·0	0 75	34	
February	47	775	11·0	34	16·5	0 87	53	2 culled out.
March	45	954—	13·3	47	21·2	0 79	32	2 culled out.
April	43	907	10·5	38	21·1	0 96	58	2 culled out.
May	41	688	8·8	34	16·8	0 72	38	1 died and 1 culled out.
June	39	581	6·9	30	14·9	0 67	37	3 culled out.
July	36	594	8·8	37	16·5	0 74	37	
August	36—	518	11·4	33	14·4	0 79	46	1 died and 4 culled out.
September	31	421	14·0	39	13·6	0 88	49	11 shipped to Ottawa.
October	20	200—	11·5	24	10·0	0 75	51	Transferred to pen 1 A
Totals		7,743	124·4	4·17	188	10 08	5·91	

NOTE.—All culling took place on the last day of the month, no bird being culled while she was laying. All culls were fattened and sold for eating. 21 of the original birds made a record of over 200 eggs for their pullet year, 12 laying over 225 eggs, the three highest records being 250 and 2 at 254.

APRIL HATCHED PULLETS, 1919-1920.

Pounds of feed consumed, cost of feed, average egg production, average value of eggs and profit over cost of feed per bird per month.

Month	No. of birds.	Total eggs for month.	Pounds of feed consumed per bird.	Cost of feed per bird.	Average number of eggs laid per bird.	Value of eggs laid per bird.	Profit over cost of feed per bird.	Remarks.
				cts.		$ cts.	cts.	
November	50	358	5·8	21	7·1	0 56	35	
December	50	599	7·3	27	11·9—	89	62	
January	50	771	10·2	37	15·4	0 77	40	
February	50	807	9·2	25	16·1—	0 84	59	2 died, 1 transferred to hatchery.
March	47	895	11·4	40	19·0	0 71	31	1 transferred to hatchery 1 culled.
April	45	859	9·9	34	19·0	0 91	56	3 culled out.
May	42	828	8·9	34	19·7	0 83	49	4 culled out.
June	38	660	9·1	38	15·3	0 69	31	1 died, 4 culled out.
July	33	660	9·3	39	20·0	0 90	51	
August	33	626	11·4	33	18·9	1 01	68	1 culled out.
September	32	564	12·5	34	17·6—	1 14	80	4 culled out.
October	28	437	11·2	28	15·6	1 17	89	
Totals for year		8,009	126·2	$3 90	195·6	10 42	$6 52	

NOTE.—By the end of October 19 of the original 50 birds laid over 200 eggs, 10 over 225, 1 laid 256 and one 253 eggs. Birds transferred to hatchery were broodies, afterwards fattened and killed for eating. During August, September and October an increased supply of green food and skim milk was given.

MAY HATCHED PULLETS, 1919-1920.

Pounds of feed consumed, cost of feed, average egg production, average value of eggs and profit over cost of feed per bird per month.

Month	No. of birds.	Total eggs for month.	Pounds of feed consumed per bird.	Cost of feed per bird.	Average number of eggs laid per bird.	Value of eggs laid per bird.	Profit over cost of feed per bird.	Loss per bird.	Remarks.
				cts.		$ cts.	cts.	cts.	
November	50	22	6·0	25	0·4	0 03	.....	20	Loss 20c.
December	50	468	7·7	29	9·3	0 69	40		
January	50	757	10·6—	37	15·1	0 77	40	.....	1 culled out.
February	49	1,020	9·5	30	20·8	1 09	79		
March	49	1,108—	13·5	50	22·6	0 84	34		3 transferred to hatchery.
April	46	986	10·3	36	21·4	0 95	59	.....	1 died, 2 culled, 3 to hatchery.
May	40	792	9·8	37	19·8	0 84	47	.....	3 culled out.
June	37	622	8·9	37	16·8	0 75	38		
July	37	722	9·2	37	19·5	0 87	50	.....	4 culled out.
August	33	655	10·2	35	19·8	1 09	74	.....	2 culled out.
September	31	582	13·4	33	18·7	1 22	89		
October	31	516	12·3	30	16·6	1 24	94		
Total for year	.....	8,250	121·4	$4 14	201·8	$10 38	$6 44	20	

NOTE.—Of the original 50 birds 24 laid ovsr 200 eggs by the end of October, 4 laid over 225, one 263 and 1 laid 275. None of the birds in this pen had completed its year by October 31st. Birds transferred to hatchery were broodies with poor records, they were afterwards fattened and killed for eating.

COST OF PRODUCING FLOCK I. MARCH HATCHED CHICKS, 1920.

First week.—584 chicks—

5 pounds chick food at 6 cents per pound	.30
21 eggs at 54 cents per dozen	.94
7 pounds milk at ½ cent per pound	.03½
4 pounds grit at 2 cents	.08
6 logs charcoal at 2 cents	.12
11 pounds rolled oats at 8¼ cents per pound	.90
Total	$2.37½

Second week.—493 chicks—

13 pounds chick food at 6 cents	.78
38 pounds milk at ½ cent per pound	.19
2 pounds grit at 2 cents	.04
2 logs charcoal at 2 cents	.04
23 pounds dry mash at 3½ cents per pound	.84
5 pounds rolled oats at 8¼ cents	.41
Total	$2.30

Third week.—431 chicks—

23 pounds of chick food at 6 cents per pound	$1.33
52 pounds milk, at ½ cent per pound	0.26
1 pound grit at 2 cents	.02
1 log charcoal at 2 cents	.02
36 pounds dry mash at 3½ cents	1.32
4 pounds rolled oats at 8¼ cents	.33
Total	$3.38

COST OF PRODUCING FLOCK I. MARCH HATCHED CHICKENS—*Continued*

Fourth week.—372 chicks—

36 pounds chick food at 6 cents per pound	$2.16
52 pounds milk at ½ cent	.26
1 pound grit at 2 cents	.02
1 log charcoal at 2 cents	.02
44 pounds dry mash at 3⅛ cents	1.61
Total	$4.07

Fifth week.—355 chicks—

48 pounds chick food at 6 cents	$2.88
42 pounds of milk at ½ cent	.21
½ pound grit at 2 cents	.01
1 log charcoal at 2 cents	.02
66½ pounds dry mash at 3⅛ cents per pound	2.43
Total	$5.55

Sixth week.—345 chicks—

48 pounds chick food at 6 cents	$2.88
42 pounds of milk at ½ cent	.21
79 pounds dry mash at 3⅛ cents	2.89
Total	$5.98

Seventh week.—344 chicks—

34 pounds chick food at 6 cents	$2.04
42 pounds of milk at ½ cent	.21
127 pounds dry mash at 3⅛ cents	4.65
22 pounds wheat at 5 cents per pound	1.10
Total	$8.00

Eighth week.—344 chicks—

27 pounds chick food at 6 cents	1.62
42 pounds milk at ½ cent	.21
194 pounds dry mash at 3⅛ cents	7.11
45 pounds wheat at 5 cents	2.25
Total	$11.19
Total for eight weeks	42.80

COST OF FEEDING FLOCK 2. APRIL HATCHED CHICKS, 1920.

First week.—600 chicks—

5½ pounds chick food at 6 cents per pound	.33
18 eggs at 54 cents per dozen	.81
7 pounds milk at ½ cent	.03½
4 pounds grit at 2 cents	.08
6 logs charcoal at 2 cents	.12
10 pounds rolled oats at 8½ cents	.82½
Total	$2.20

Second week.—567 chicks—

Chick food, 29 pounds at 6 cents per pound	$1.74
Milk, 26 pounds at ½ cent per pound	.13
Charcoal, 1 log, at 4 cents	.04
Mash, 20 pounds at 3⅝ cents per pound	.73
Rolled oats, 1½ pounds at 8½ cents per pound	.12
Total	$2.76

Third week.—464 chicks—

Chick food, 31 pounds at 6 cents per pound	$1.86
Milk, 32 pounds at ½ cent per pound	.16
Mash, 41½ pounds at 3⅝ cents per pound	1.51
Total	$3.53

COST OF PRODUCING FLOCK I. MARCH HATCHED CHICKENS—*Concluded*

Fourth week.—394 chicks—

Chick food, 37 pounds at 6 cents per pound	$2.22
Mash, 35½ pounds at 3⅝ cents per pound	2.03
Wheat, 3½ pounds at 5 cents per pound	.18
Total	$4.43

Fifth week.—359 chicks—

Chick food, 24 pounds at 6 cents per pound	$1.44
Milk, 18 pounds at ½ cent per pound	.09
Charcoal, 2 logs at 4 cents	.08
Mash, 58½ pounds at 2⅝ cents per pound	2.15
Wheat, 34½ pounds at 5 cents per pound	1.73
Total	$5.49

Sixth week.—336 chicks—

Chick food, 18 pounds at 6 cents per pound	$1.08
Milk, 18 pounds at ½ cent per pound	.09
Charcoal, 1 log at 4 cents	.04
Mash, 103 pounds at 4 cents per pound	4.12
Wheat, 42 pounds at 5 cents	2.10
Grit, 1 pound at 2 cents per pound	.02
Total	$7.45

Seventh week.—326 chicks—

Chick food, 17½ pounds at 6 cents	$1.05
Milk, 10 pounds at 2 cents	.05
Mash, 156 pounds, at 4 cents	6.24
Wheat, 42 pounds at 5 cents	2.10
Grit, ½ pound at 2 cents	.01
Total	9.45

Eighth week.—319 chicks—

Chick food, 54 pounds at 6 cents per pound	$3.24
Milk, 18 pounds at ½ cent per pound	.09
Mash, 120 pounds at 4 cents per pound	4.80
Wheat, 36 pounds at 5 cents per pound	1.80
Grit, ½ pound at 2 cents	.01
Total	$9.94
Total for 8 weeks	$45.25

FEED COST OF EGGS BY MONTHS, 1919-20.

FIFTY BIRDS

November, 1919	Pen	laid	649	eggs	at a	per	dozen	cost	of	19.2 cents
December, 1919	"	"	655	"	"	"	"	"	"	27.6 "
January, 1920	"	"	757	"	"	"	"	"	"	27.8 "
February, 1920	"	"	1,020	"	"	"	"	"	"	19.0 "
March, 1920	"	"	1,108	"	"	"	"	"	"	26.9 "
April, 1920	"	"	906	"	"	"	"	"	"	20.5 "
May, 1920	"	"	792	"	"	"	"	"	"	22.5 "
June, 1920	"	"	622	"	"	"	"	"	"	26.8 "
July, 1920	"	"	722	"	"	"	"	"	"	28.9 "
August, 1920	"	"	655	"	"	"	"	"	"	21.4 "
September, 1920	"	"	582	"	"	"	"	"	"	21.9 "
October, 1920	"	"	516	"	"	"	"	"	"	21.9 "

PULLET YEAR RECORDS OF 10 BEST PULLETS FOR THE FOLLOWING YEARS.

1916-17 (A).		1917-18 (B).		1918-19 (C).		1919-20 (D).	
No. of pullet.	No. of eggs laid.	No. of pullet.	No. of eggs laid.	No. of pullet.	No. of eggs laid.	No. of pullet.	Record.
15	268	167	267	279	300	511	289
5	261	162	257	280	291	513	281
34	258	124	256	204	274	481	280
23	254	118	251	241	257	526	267
4	243	113	239	256	246	505	257
12	243	164	236	202	244	401	256
84	241	117	234	281	243	450	256
77	234	112	231	261	235	322	254
16	234	175	227	229	226	378	254
24	226	127	225	258	225—	412	253
Totals.....	2,462		2,423		2,541		2,647

COST OF FEEDING FLOCK 2. 1920.

APRIL HATCHED CHICKENS.

Flock 2. Third month. No. of birds, 310—

658 pounds dry mash at 4 cents	26.32
61 pounds wheat at 5 cents	3.05
194 pounds skim milk at ½ cent	.97
½ pound grit at 2 cents	.01
97½ pounds chick food at 6 cents	5.85
152 pounds scratch food at 4½ cents	6.84
Total	$43.04
Cost of feed per bird	13.9 cents.

268 birds. Fourth month—

412 pounds scratch food at 4½ cents	$19.57
142 pounds wheat at 5 cents	7.45
460 pounds dry mash at 4 cents	18.40
208 pounds skim milk at ½ cent	1.04
12 pounds shell at 2½ cents	.27
4 pounds bone at 7 cents	.28
21 pounds grit at 2 cents	.42
8 logs charcoal at 2 cents	.16
	$47.59
Pounds of feed consumed per bird	4.7
Cost of feed per bird	17.7 cents.

First month	2.5	cents	per	bird
Second month	8.0	"	"	"
Third month	13.9	"	"	"
Fourth month	17.7	"	"	"
Fifth month	22.5	"	"	"
Feed cost	64.6	"	"	" 1920
" "	46	"	"	" 1916

MARCH HATCHED CHICKENS

Flock 1. Fourth month. 254 birds—

216 pounds wheat at 5 cents	$10.80
420 pounds scratch grain at 4½ cents	18.90
749 pounds dry mash at 4 cents	29.96
270 pounds skim milk at ½ cent	1.35
21 pounds grit at 2 cents	.42
4 logs charcoal at 2 cents	.08
6 pounds bone at 3½ cents	.21
4 pounds shell at 2½ cents	.10
Total	$61.82
Cost of feed per bird	24 cents.

Flock 1. Fifth month. 125 birds (pullets)—

168 pounds dry mash at 4 cents	$ 6.72
72 pounds wheat at 5¼ cents	3.78
360 pounds scratch at 4¾ cents	17.10
12 pounds shell at 2¼ cents	.27
74 pounds skim milk at ½ cent	.37
4 logs charcoal at 2 cents	.08
Total	$28.32
Cost of feed per bird	22⅔ cents.
Total feed cost up to 5 months (laying stage)	77 "
Approximate cost of rearing to 5 months' stage	$1.25

FERTILITY OF EGGS FOR MARCH, 1920.

Incubator.	Eggs set.		Per cent Fertile.
Electric No. 1	50		82
Electric No. 2	50		94
Queen	122		83·6
Cyphers 140	142		78·8
Cyphers 250	254		77·5
Cyphers 75	60		86·6
Vico	162		79
Jubilee	218		74·3
		Fertile.	
Hens	488	394	80·7
Pullets	570	447	78·4

RESULTS WITH INCUBATORS.

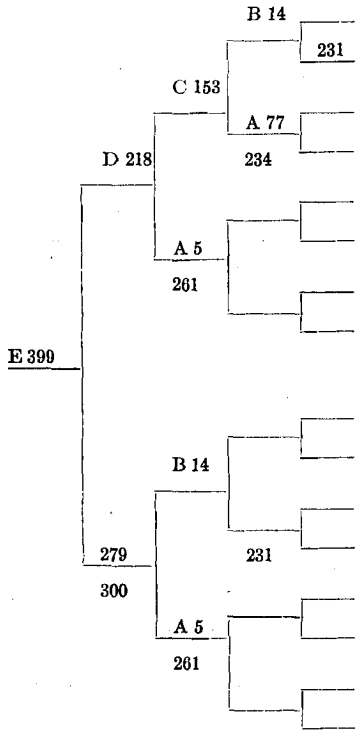
Incubator.	Eggs set.	No. fertile.	Per cent fertile.	No. chicks.	Per cent total eggs hatched.	Per cent fertile eggs hatched.	Total fertile eggs for 1 chick
Vico	329	239	73·7	176	54·3	73·6	1·3
Jubilee	436	315	72·2	249	57·1	79·0	1·2
Queen	250	192	76·8	153	61·2	79·6	1·2
Armstrong electric	480	376	78·3	194	40·4	51·5	1·9
Hens	416	356	85·5	271	65·1	76·1	1·3
Cyphers	2,390	1,920	80·3	1,384	57·9	72·0	1·3

BREEDING SEASON, 1921.

Pen 1. Progeny of B 162. Record pullet year 257 Winter 85.

Number of hen.	Winter record.	Pullet year record.
322	78	254
325	86	250
339	78	227
347	73	232
420	46	218
481	88	280
505	59	257
511	77	289
525	66	223

Number and pedigree of male.

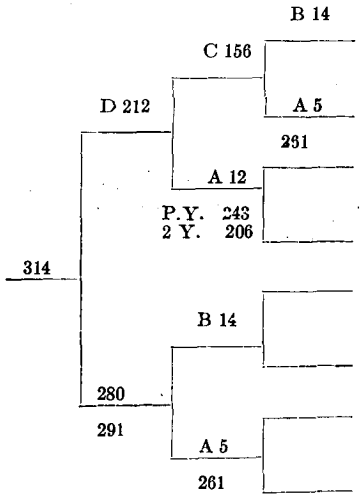


Remarks.

Plumage white, long keel, pelvic bones fine, free from gristle and of good shape; depth four fingers from pelvic bones to keel, good body and head, eyes and comb exceptionally good.

PEN 2.

Female Numbers.	Winter record.	Pullet year record.
340	76	238
345	76	233
351	90	235
412	79	253
450	70	257
455	75	240
494	88	250
499	70	237
542	61	241
547	54	247



Remarks.

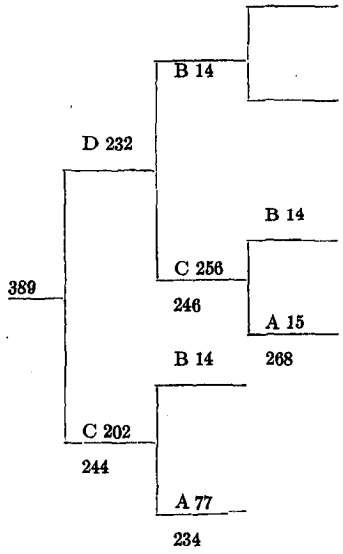
All females from 200 egg stock for two generations mated to males out of hens laying over 235 eggs in pullet year.

314 a good strong individual; large bone and good type (utility). Good head, eye, comb and beak.

PEN 3.

Females.	Pullet year record.	Winter record.	No. dam.	Dams record.
C. 205	207	84	A 23	254
C. 243	234	68	A 23	200–225
D 340	238	76	A 23	200–225
D 352	223	86	A 23	200–225
D 433	207	57	A 23	200–225
D 449	204	57	A 23	200–225
D 502	225	65	A 23	200–225
D 421	207	62	A 23	200–225

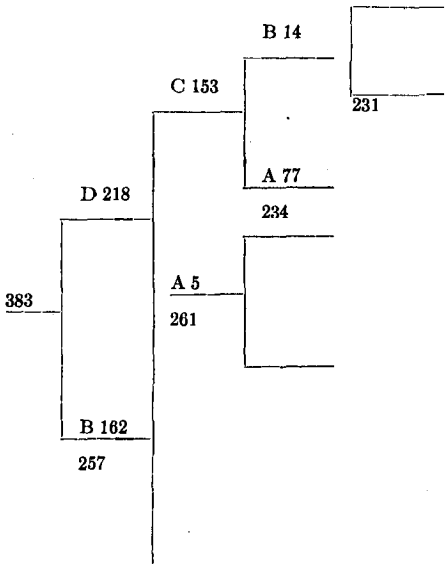
Remarks.



389 a small bird weighing 6 lbs. but good in every other respect. Head, comb, eyes and pelvic bones very good. Short but full of life and vigor.
Weight.
Hatched March 7, 1920.

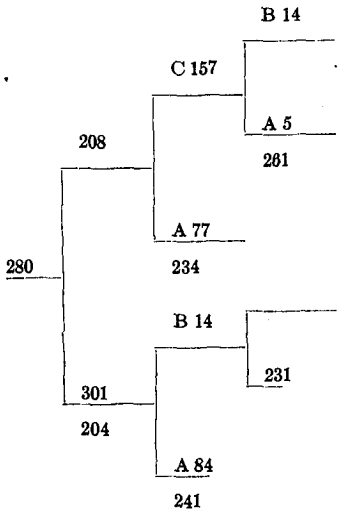
PEN 4.

Females.	Winter record.	Record pullet year.
C. 255	55	214
C 279	94	300
C 280	95	291
C 281	77	243
D 400	69	229
D 448	41	218
D 508	57	225
D 513	88	282
D 532	42	234
D 533	44	255



PEN 5.

Females.	Winter record.	Pullet year record.
334	73	242
336	84	249
338	58	218
405	84	227 Progeny of B. 118
425	65	244
439	62	245
A 23	70	254
A 5	91	261
B 162	85	257
D 526	79	267



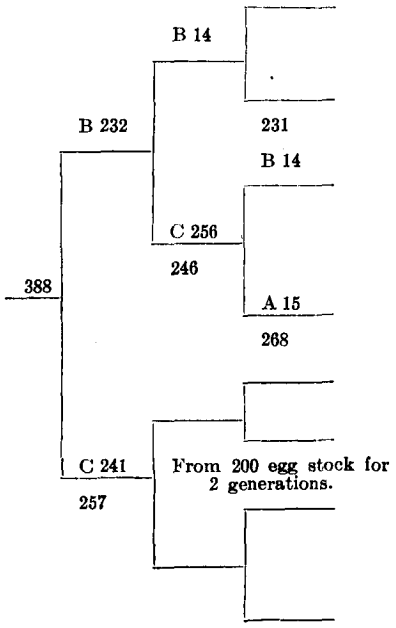
Remarks.

A good strong vigorous bird. Depth 4 fingers. Pelvic bones straight and free from gristle or flesh, and wide apart. Good head, comb and eye.

PEN 6.

Females No.	Winter record.	Pullet year record.	Females dam.	Dams record.
376	80	206	B 124	259
401	68	256	B 167	267
402	66	222	B 167	267
419	57	232	B 124	256
424	66	228	A 84	241
438	69	245	A 23	254
464	60	248	B 124	256
470	16	226	B 124	256
519	49	217	A 84	241
529	53	248	A 23	254

Males pedigree.



Remarks.

A good strong bird full of vigour and of good utility type. Good eye, head and comb; 4 fingers in depth. Long keel and good pelvic bones.

Hatched April 1, 1920.

Weight, 7 lbs. 12 oz.

DETERMINATION OF EGG LAYING

A test was made of the "Feeling" method to determine its accuracy. Thirty hens that were under "Trapnest" record were subjected to the "Feeling" process on eight days; January 17 to 24, with the following results:—

Average time to "Feel" 30 birds.....13½ minutes
Average time to "Trap" 30 birds.....30¼ minutes

The results of "Feeling" were checked up and tallied perfectly with the "Trap nesting," indicating that it is quite possible for any careful person to determine which hens are laying by simply feeling the bird in the early morning before she leaves the perch. The method also has an advantage in that it eliminates the necessary confinement of birds in a trapnest for a period frequently longer than is actually required to produce the egg. One disadvantage of the feeling method is that the eggs of the individuals are not kept separate.

RATIONS FOR, AND METHODS OF FEEDING CHICKS

The rations—

No. 1.	1	pound rolled oats.	
	1	pound stale bread crumbs.	
No. 2.	2	hard boiled eggs (chopped fine).	
	¼	pound rolled oats.	
	2	ounces bread crumbs.	
No. 3.	300	pounds cracked wheat.	
	200	pounds cracked corn, *or* commercial chick *food.*	
	100	pounds pin head oatmeal.	
No. 4.	300	pounds bran.	100 pounds corn meal
	200	pounds shorts.	100 pounds beef scraps.
	200	pounds ground oats.	4 pounds fine salt.

METHOD OF FEEDING

The first day the chicks remain in the incubator. The second day they are transferred to the brooder but are not fed until they are forty-eight hours old. Feed sparingly for the first week; overfeeding causes bowel troubles. On the third day ration No. 1 should be moistened with a little *sour* skim milk and on the fourth day supply the chicks with clean water with the chill taken off, also provide a newly-burnt log of charcoal.

RATIONS AND TIME OF FEEDING

Day	6 a.m.	10 a.m.	2 p.m.	6 p.m.
1	——	——	——	——
2	——	——	——	——
3	No. 1	No. 1	No. 1	No. 1
4	No. 1	No. 2	No. 2	No. 1
5	No. 1	No. 2	No. 2	No. 1
6	No. 1	No. 2	No. 2	No. 1 and 3 equal parts
7	No. 1	No. 2 and 4 equal parts	No. 2 and 4 equal parts	No. 1 and 3 equal parts

Second and third weeks.—Feed coarse oatmeal or rolled oats in litter at 6 a.m. Put No. 4 ration in shallow troughs or tins and place it before the chicks from 10 a.m. to 3 p.m. daily. Do not leave the dry mash before the chicks after 3 p.m. or they will not be hungry at 6 p.m. when a good feed of No. 3 should be given. Supply charcoal in the form of a burnt cedar log, fine ground bone, grit and sand should be kept before the chicks at all times. Give green food daily; chopped lettuce, chickweed or young alfalfa shoots. Weather permitting let the chicks run outside the second week.

Fourth, fifth and sixth weeks.—Feed No. 3 at 6 a.m., No. 4 10 a.m. to 3 p.m., and No. 3 again at 6 p.m.

Seventh and eighth weeks.—No. 3 at 6 a.m., No. 4 9 a.m. to 4 p.m., wheat at 6 p.m. At this period shell should be supplied in hoppers.

Ninth week to fifth month.—Wheat at 6a.m., No. 4 before them all the time and wheat for the last feed in the evening.

Special notes.—Do not chill or overheat the chickens, or disastrous results will follow. If they pant they are too hot, and if they huddle together they are not warm enough.

Do not overfeed during the first week.
Change water often and see that it is perfectly clean.
Give plenty of green food.
Feed *Sour* skim milk whenever possible.
Do not forget to supply charcoal, grit and shell.
Make all changes of food and feeding gradually.
Clean and disinfect brooder often.
Do not use damp, mouldy feed or straw.
Never allow chicks to crowd in brooders or colony houses.
Place chicks on the range in colony houses after the eighth week.
Do not let the cockerels and pullets run together on the range.