DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

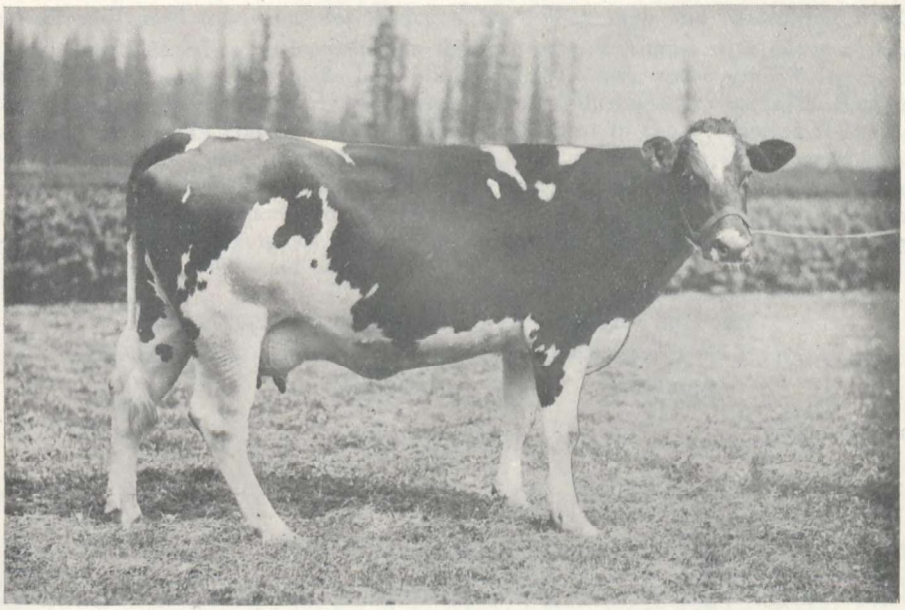
EXPERIMENTAL FARM

AGASSIZ, B.C.

INTERIM REPORT OF THE SUPERINTENDENT

W. H. HICKS, B.S.A.

FOR THE YEAR 1921



AGASSIZ LULU SYLVIA—56072

Sire—Inka Sylvia Beets Posch 5563. R.O.P. Junior Two-year-old. 14,803 lbs. milk, 650 lbs. butter. This is 4,880 lbs. of milk and 196 lbs. of butter more than her dam at same age.

Printed by authority of Hon. W. R. Motherwell, Minister of Agriculture, Ottawa, 1922

OTTAWA
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1922

40527—1

EXPERIMENTAL FARM, AGASSIZ, B. C.

REPORT OF THE SUPERINTENDENT, W. H. HICKS, B.S.A.

SEASONAL NOTES

The season of 1921 opened with every indication of an early spring. The fore part of March was wet, but the last ten days were bright, warm and dry. At the close of the month many shrubs and early fruit trees were in bloom. Considerable spring work was done on the land, including a limited amount of seeding. This fine weather was continued to April 12, after which the balance of April was wet. Those farmers fortunate enough to get their seed sown early did good work, as little could be done on the land except sod ploughing after the rains commenced. May was dry, thus affording excellent conditions for getting the remainder of the crops sown. June was very wet, making conditions almost impossible for cleaning hoed crops. All crops were good except corn, which felt the urgent need of sunshine. July was dry and afforded good conditions for saving a heavy hay crop and controlling weeds.

The early cereals were harvested in the fore part of August with about average yields. Later, heavy rains made harvesting a difficult task, much grain being badly discoloured and sprouted. Early roots were harvested during a dry period in September and October, but late roots were difficult to harvest in the wet period following. On the whole, root crops yielded above the average, with corn giving poor returns. A very severe winter set in early in November and continued right up to the end of the year, breaking all records for severity of wind and cold for the month of December. Many roots and potatoes were frozen in the pits and farming operations were generally upset by such conditions.

METEOROLOGICAL RECORDS AT AGASSIZ, B.C., 1921

Month	Temperature			Precipitation				Sunshine
	Mean	Highest	Lowest	Rain	Snow	Total	Average per month last 10 years	
	°	°	°	Inches	Inches	Inches	Inches	Hours
January	37·55	49	25	8·23	16	9·83	10·42	38·2
February	39·94	64	20	9·93	5	9·82	6·12	62·3
March	42·99	62	25	4·51	7	5·21	6·21	90·3
April	49·13	72	28	5·58	.....	5·58	5·66	89·4
May	54·08	83	35	3·58	.....	3·58	4·35	187·2
June	59·46	81	39	5·20	.....	5·20	4·58	101·0
July	62·65	84	45	2·18	.....	2·18	2·21	225·3
August	63·09	90	45	1·81	.....	1·81	2·51	178·0
September	52·84	70	38	7·67	.....	7·67	4·99	127·2
October	51·46	80	34	12·79	.....	12·79	8·81	114·1
November	38·91	56	17	9·74	16	11·34	10·59	45·6
December	33·70	57	5	9·52	.....	9·52	9·18	62·5
Totals	.....	.....	.....	80·13	44	84·53	.....	1,321·1
Average for 10 years	.....	.....	.....	70·85	48·17	75·66	.....	1,454·47

PRECIPITATION AT AGASSIZ, B.C., FOR TEN YEARS

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In..	In.	In.	In.
1912....	4·31	10·66	2·18	4·26	3·99	5·95	5·09	7·84	2·5	6·99	13·82	10·09	77·68
1913....	20·11	5·12	7·65	4·72	6·08	7·33	3·71	2·71	7·68	8·84	12·29	3·06	89·60
1914....	13·96	4·06	3·12	2·94	3·55	5·18	0·15	0·60	6·29	7·53	14·72	0·53	62·63
1915....	7·17	5·67	2·45	5·37	5·2	2·06	1·62	0·07	1·26	11·26	7·75	15·39	65·57
1916....	2·89	4·93	13·78	6·3	4·98	2·68	4·67	0·98	1·68	1·76	7·83	6·72	59·20
1917....	10·1	4·92	5·6	9·84	2·22	4·35	0·59	1·1	3·44	6·84	8·71	14·79	72·45
1918....	9·76	7·02	10·66	1·38	4·64	1·74	2·28	7·94	0·26	14·85	0·06	13·39	82·98
1919....	11·01	6·98	5·07	6·26	4·71	2·68	0·66	0·45	6·7	5·9	15·61	9·63	75·66
1920....	15·08	2·04	6·44	9·95	4·56	8·39	1·21	1·67	12·42	11·35	4·8	8·46	86·37
1921....	9·83	9·82	5·21	5·58	3·58	5·2	2·18	1·81	7·67	12·79	11·34	9·52	84·53
Total..	104·22	61·22	62·16	56·66	43·51	45·81	22·16	25·17	49·90	88·11	105·93	91·88	756·67
Aver...	10·42	6·12	6·21	5·66	4·35	4·58	2·21	2·51	4·99	8·81	10·59	9·18	75·66

ANIMAL HUSBANDRY

DAIRY CATTLE

At the close of the year 1921, the herd numbered fifty-four head of pure-bred Holstein cattle, as follows:—Two bulls three years old, one yearling bull and two bull calves; sixteen mature cows, nine three years old, nine two years old, six yearlings and nine heifer calves. The grade herd started here in 1911 has been completely dispersed and now only pure-bred animals are retained.

Of the twenty-three cows that finished a lactation period during the nine months ending December, 1921, twelve, or just over fifty per cent, produced heifer calves. The average production of these cows was 9,996 pounds of milk and 330 pounds of fat for an average lactation period of 350 days. This is a good showing considering the fact that thirteen of these records were made by two-year-old heifers. Six heifers completed 365 day R.O.P. records, averaging 14,548 pounds of milk and 607 pounds of butter.

The herd has continued free from tuberculosis and received an Accredited Certificate May 30, 1921. The herd thus won the distinction of being the eleventh accredited herd in Canada, the first Experimental Farm herd and the first Holstein herd in British Columbia.

For a number of years it has been customary to do some experimental feeding of dairy cattle. This is most conveniently done in the winter, and as this report covers only the calendar year of 1921, an account of these tests is necessarily deferred until next year's reports.

DAIRY HERD RECORDS

The following list shows the performance of all cows finishing a lactation period during the nine months concluded at the end of December, 1921. In this table, feeds were charged at market value. Butterfat is computed at 60 cents per pound and skim-milk at 50 cents per hundred pounds.

Cow No.	No. of Lactation Period	Number of days in Milk	Total amount of Milk produced	Average yield of Milk per day	Average percentage of Fat in Milk	Pounds of Fat for Period	Pounds of Butter for Period	Amount of Meal consumed	Amount of Roots and Silage consumed	Amount of Hay Consumed	Months on Pasture at $2.00 per month	Total Cost of Feed for Period	Total Value of Product	Profit on Product	Cost to produce 100 lbs. Milk	Cost to produce 1 lb. butter	Sex of Calf
			Lbs.	Lbs.				Lbs.	Lbs.	Lbs.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	cts.	
143.....	1	365	14,435·0	39·54	3·37	486·0	607·50	5,221	24,434	346	.....	200 62	356 50	155 88	1 39	33·0	F.
142.....	1	365	16,010·0	39·86	2·98	477·0	598·0	5,470	25,129	347	2 50	205 82	358 24	152 42	1 28	34·41	M.
138.....	1	345	13,381·0	38·78	3·29	440·0	550·0	4,863	24,060	246	2 50	189 32	324 21	134 89	1 41	34·41	M.
126.....	1	365	16,575·0	45·41	3·23	536·0	670·0	5,866	22,400	1,035	.....	266 59	396 19	129 60	1 60	39·78	M.
127.....	1	365	14,803·0	40·55	3·51	520·0	650·0	5,666	21,795	1,054	.....	264 59	378 61	114 02	1 78	40·7	F.
*131.....	1	399	11,072·4	27·75	3·16	350·53	438·16	4,722	18,414	20	9 82	157 69	260 14	102 45	1 42	0·36	F.
77.....	4	325	10,356·0	31·86	2·95	305·72	382·15	4,025	18,685	18	8 34	136 81	230 03	93 22	1 32	35·8	M.
52.....	5	348	9,440·0	27·12	3·74	353·05	441·32	4,470	20,375	205	9 94	172 93	254 31	81 38	1 83	39·19	F.
*141.....	1	258	7,611·7	29·50	3·0	232·63	290·78	2,658	13,377	.....	4 61	94 25	173 82	79 57	1 23	32·41	F.
46.....	6	287	3,452·2	29·45	3·0	253·56	316·95	3,405	14,555	116	8 64	111 86	190 16	78 30	1 32	35·29	M.
114.....	2	365	12,085·0	33·11	3·76	455·0	568·75	6,569	23,456	798	5 20	254 32	327 38	73 06	2 10	44·71	F.
*132.....	1	385	9,275·0	24·09	3·19	296·07	370·09	4,021	18,064	.....	8 97	149 89	219 38	69 49	1 61	40·52	F.
86.....	3	651	15,249·0	23·42	2·95	450·27	562·83	7,009	32,902	772	11 71	270 60	338 78	68 18	1 77	47·9	M.
81.....	4	295	6,257·3	21·21	3·38	211·92	264·90	2,808	12,065	.....	8 34	89 41	155 30	65 89	1 42	33·75	M.
118.....	2	218	5,750·6	26·37	3·53	203·11	253·88	2,554	10,700	.....	7 78	82 37	147 74	65 37	1 43	32·44	F.
139.....	1	410	7,924·4	19·42	2·52	279·33	349·16	3,757	18,855	.....	8 48	140 17	203 25	63 08	1 76	40·14	F.
75.....	9	252	6,994·9	27·75	3·2	227·16	283·95	3,066	15,500	4	7 52	108 12	167 77	59 65	1 54	38·07	F.
135.....	1	362	7,754·6	21·42	3·43	266·04	332·55	3,649	17,524	36	6 81	135 54	194 52	58 98	1 74	40·75	M.
*136.....	1	371	7,428·6	20·02	3·74	278·32	647·90	4,435	18,149	105	5 59	153 89	200 42	46 50	2 07	44·23	F.

Cow No.	No. of Lactation Period	Number of days in Milk	Total amount of Milk produced	Average yield of Milk per day	Average percentage of Fat in Milk	Pounds of Fat for Period	Pounds of Butter for Period	Amount of Meal consumed	Amount of Roots and Silage consumed	Amount of Hay Consumed	Months on Pasture at $2.00 per month	Total Cost of Feed for Period	Total Value of Product	Profit on Product	Cost to produce 100 lbs. Milk	Cost to produce 1 lb. butter	Sex of Calf
			Lbs.	Lbs.				Lbs.	Lbs.	Lbs.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	cts.	
*134.....	1	335	7,103·8	21·20	3·2	232·76	290·95	3,286	16,289	.....	5 36	126 61	171 62	45 11	1 78	43·48	M.
87.....	10	330	9,315·3	28·22	3·26	304·16	380·20	5,220	21,836	391	5 11	189 58	223 91	34 33	2 03	49·86	M.
70.....	4	289	6,497·9	22·48	3·26	212·03	265·03	3,348	18,325	155	1 50	137 59	156 45	18 86	2 11	51·91	F.
137.....	1	372	6,135·5	16·5	3·35	205·71	257·13	3,471	17,456	129	7 11	137 26	151 03	13 77	2 23	53·38	M.

*Cow numbers marked thus are grades, all others are purebreds.

COMPARISON OF THE PERFORMANCE OF THE FIVE MOST PROFITABLE AND THE FIVE LEAST PROFITABLE COWS; ALSO OF THE BEST AND THE POOREST COW; ALSO THE FIVE MOST PROFITABLE PURE-BRED COWS AND THE FIVE MOST PROFITABLE GRADE COWS

—	Most profitable cow	Least profitable cow	Average 5 most profitable cows	Average 5 least profitable cows	Average 5 most profitable pure-bred cows	Average 5 most profitable grade cows
Duration of lactation period .....days	365	372	361	339·4	361	349·6
Yield of milk.....lbs.	14,435	6,135·5	15,041	7,296·2	15,041	8,498·3
Yield of fat.....lbs.	486	205·71	491·8	246·59	491·8	278·06
Cost of food..... $	200·62	137·26	225·39	148·96	225·39	136·44
Profit over food consumed $	155·88	13·77	137·36	31·72	137·36	69·03

LIST OF RECORDS COMPLETED BY COWS IN THE CANADIAN RECORD OF PERFORMANCE FOR THE NINE MONTHS ENDING DECEMBER, 1921

Name	Age at start of test	Month starting test	Duration of test	Amount of milk	Amount of fat	Per cent of fat
	years days		days	lbs.	lbs.	
Agassiz Walula Sylvia.....	2 122	May, 1920	365	16,575	536	3·23
Agassiz Priscilla Sylvia.....	2 88	Dec. 1920	365	16,010	477	2·98
Agassiz Lulu Sylvia.....	2 104	May, 1920	365	14,803	520	3·51
Agassiz Mechthilde Sylvia.	2 68	Nov. 1920	365	14,435	486	3·37
Agassiz Faforit Sylvia.....	2 158	Nov. 1920	345	13,381	440	3·29
Agassiz Faforit Sylvia.....	2 158	Nov. 1920	305	12,561	392	3·12
Agassiz Faforit Canary.....	3 158	Aug. 1920	365	12,085	455	3·76

LIST OF RECORDS COMPLETED BY COWS OF THE HERD IN RECORD OF MERIT FOR THE NINE MONTHS ENDING DECEMBER, 1921

Name	Duration of test	Age of cow	Milk	Fat	Butter
	days	y. m. d.	lbs.	lbs.	lbs.
Agassiz Priscilla Korndyke.....	7	6 7 27	529·6	15·77	19·72
Agassiz Pietje Canary Queen.....	7	2 2 23	383·2	13·20	16·51

FEED COST OF RAISING CALVES TO SIX MONTHS OF AGE

Whole milk, 970 lbs. at $3 per 100 lbs..	$29 10	
Skim-milk, 2,276 lbs. at 50 cents per 100 lbs..	11 38	
Roots and silage, 1,096 lbs. at 25 cents per 100 lbs...	2 74	
Grain, 287 lbs. at 1.687 cents per lb..	4 84	
Hay, 67 lbs. at 1 cent per lb..	67	
		$48 73

FEED COST OF RAISING CALVES FROM SIX TO TWELVE MONTHS OF AGE

Skim-milk, 4,182 lbs. at 50 cents per 100 lbs..	$20 91	
Roots and silage, 5,204 lbs. at 25 cents per 100 lbs.. ..	13 01	
Grain, 683 lbs. at 1.86 cents per lb..	12 70	
Hay, 66 lbs. at 1.25 cents per lb..	82	
		$47 44
Average cost of raising 4 heifers to twelve months of age..		$96 17

BREEDING FOR IMPROVEMENT OF TYPE AND PRODUCTION

Project No. 2.—The aim of this work is to improve, by the use of good sires, the show ring and production qualities of each generation of offspring over that of their dams. At one time, the bull Inka Sylvia Beets Posch —5563— was used as herd sire here. He is the sire of May Echo Sylvia and a number of other cows with creditable records. In type he was only fair. At time of writing, this bull's first five tested daughters on this Farm have completed their 365-day R. O. P. junior two-year-old records. The following shows a comparison between the records of these heifers and the two-year-old records of their dams:—

COMPARISON OF HEIFERS' RECORDS WITH THEIR DAMS

Heifers' Records			Dams Records			Difference	
No.	Yield in Pounds		No.	Yield in Pounds		Milk	Fat
	Milk	Fat		Milk	Fat		
127	14,803	520	81	9,923	363	4,880	157
126	16,575	536	86	12,257	376	4,318	160
143	14,435	486	56	9,628	323	4,807	163
138	13,381	440	93	8,821	322	4,560	118
142	16,010	477	70	14,305	504	1,705	−27
Total						20,270	571
Average						4,054	114·2

This shows an average increased production of the heifers over their dams of 4,054 pounds of milk and 114·2 pounds of fat. There is no improvement in type.

DAIRY CATTLE GRADING WORK

Project No. 1.—In December, 1911, a number of grade Holstein cows were secured as the foundation for a grade herd. Since then pure-bred sires have been used in this herd, the object being to secure data on the improvement in production by the use of pure-bred sires. The cows numbered from 1 to 28 inclusive were foundation cows; their best mature records are those used for comparison. All other records were made during the first lactation period and are thus made by two-year-old heifers. The following is a brief summary of some of the results obtained, which shows a gradual improvement in production. A more complete analysis of the results secured will be included in the next report:—

Heifers				Dams				Grand Dams				Great Grand Dams			
Tag No.	No. of days in	Total milk	Amount fat	Tag No.	No. of days in milk	Total milk	Amount fat	Tag No.	No. of days in milk	Total milk	Amount fat	Tag No.	No. of days in milk	Total milk	Amount fat
121	354	8,893·2	288·26	60	394	7,824·4	276·30	25	397	10,740·4	311·63	Unknown			
122	343	9,099·0	303·30	55	347	8,498·5	305·63	16	291	7,873·6	252·12	"			
123	293	7,563·4	238·14	51	352	8,484·9	280·10	20	294	7,115·2	214·25	"			
124	379	11,476·4	367·79	62	374	7,370·7	263·76	33	230	4,491·2	159·45	25	397	10,740·4	311·63
128	300	8,090·5	255·51	48	352	8,277·3	296·26	17	314	9,416·8	339·0	Unknown			
130	402	12,708·7	386·39	68	388	9,083·6	299·68	32	346	6,633·1	229·39	19	301	7,220·7	253·44
131	399	11,072·4	350·53	84	359	7,280·9	233·73	51	352	8,484·9	280·1	20	294	7,115·2	214·23
132	385	9,274·6	295·89	89	372	8,020·6	228·28	34	339	9,172·1	295·21	13	302	7,123·8	243·63
133	178	3,875·8	128·95	31	452	10,247·4	328·27	16	291	7,873·6	252·12	Unknown			
134	335	7,103·8	232·76	92	368	7,384·7	237·03	32	339	7,312·6	242·45	19	301	7,220·7	253·44
Average	336·8	8,915·8	284·25		375·8	8,247·3	274·9		319·3	7,911·3	257·57		319	7,885·1	255·28

CONTAGIOUS ABORTION

Project No. 5.—There appears to be some recovery from the ravages of this disease by the herd. Whether the animals are becoming immunized naturally or whether the treatment given is having some effect is difficult to confirm. Thorough sanitation is being practised and latterly isolation of aborters and those retaining the afterbirth is followed. There is less retention of the afterbirth than for several years. These results are encouraging. Two cows that were at one time almost sacrificed for sterility are pregnant and at time of writing one is just due while the other is not due for three months and so may or may not abort. Of the cows freshening during the last nine months sixty-three per cent have had normal calvings. Twenty-two cows and heifers were vaccinated with Health of Animals Branch vaccine. The treatment was double doses to non-pregnant animals of first killed culture and then live culture. The following results were secured:—

Number of animals vaccinated	Results
2	Aborted.
4	Apparently sterile.
6	Normal calvings.
3	In herd 7 months pregnant, apparently normal.
2	Young heifers just bred.
5	Disposed of before breeding.

DAIRY

STILTON CHEESE

Project No. 20.—The quantity of Stilton cheese made this season was smaller than usual. This was not because of any falling off in the demand, which still exceeds the supply, but on account of shortage of milk. During July and August and again in November a few Stiltons were made and have since been sold. They averaged eleven and one-half pounds at time of sale. The price is still fifty cents per pound which is the equivalent of $1.09 per pound butterfat supposing that the milk contains 3·3 per cent fat; from such milk good Stilton can be made.

The cheese has gradually created a market for itself among people who were previously unacquainted with it. The fear that its tough coat and blue veined interior might displease those unaccustomed to the appearance of this cheese has proved groundless.

Project No. 21a.—The following is the recipe used in the manufacture of Agassiz Wensleydale cheese. This is a small, mild flavoured cheese made from whole milk and having when ripe an average weight of 2½ pounds.

To make three cheeses:—Seventy-five pounds of milk; 7 cub. cent. rennet.

Utensils:—Three tubs, one smaller than the others. The small one should be of enamel or smooth tin with capacity about 8 gallons.

Measuring glass for rennet.

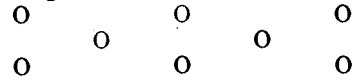
Thermometer.

Two American curd knives.

Sieve.

Cotton cloth, 36 inches square.

Tin moulds, 5 inches high by 5 inches in diameter pierced as indicated below at 2½-inch intervals to assist drainage



Two tin discs or followers, and two wooden ones to fit inside each mould. One of each pair of tin discs is pierced also.

If mixed morning and evening milk is used, probably there will be no need of starter; but if only new milk is used, or in cases where milk does not easily develop acidity, about three ounces of starter will be required. The exact quantity must be determined by experience of the conditions in which cheese is being made. The dose of rennet may also be varied according to conditions, an acid milk needing less than an alkaline one. The point to aim at is to have the acidity of the milk from 0·2° to 0·25° when the rennet is added. Put the milk into the smaller tub, which is standing in the other. Fill the outer tub with lukewarm water and raise the temperature of milk to 82° or 84°F. (82 in summer), using the thermometer to insure accuracy. If starter is used put it in while the milk is being warmed, stirring well. When the milk is the right temperature add the rennet diluted with three times its bulk of cold water; stir well for three minutes and then stir the surface till coagulation begins, to prevent the cream from rising. Stop stirring when the milk begins to set and be sure before adding the rennet that the water in the outer tub is not more than 30° higher than the milk inside. Cover the tub and leave to set.

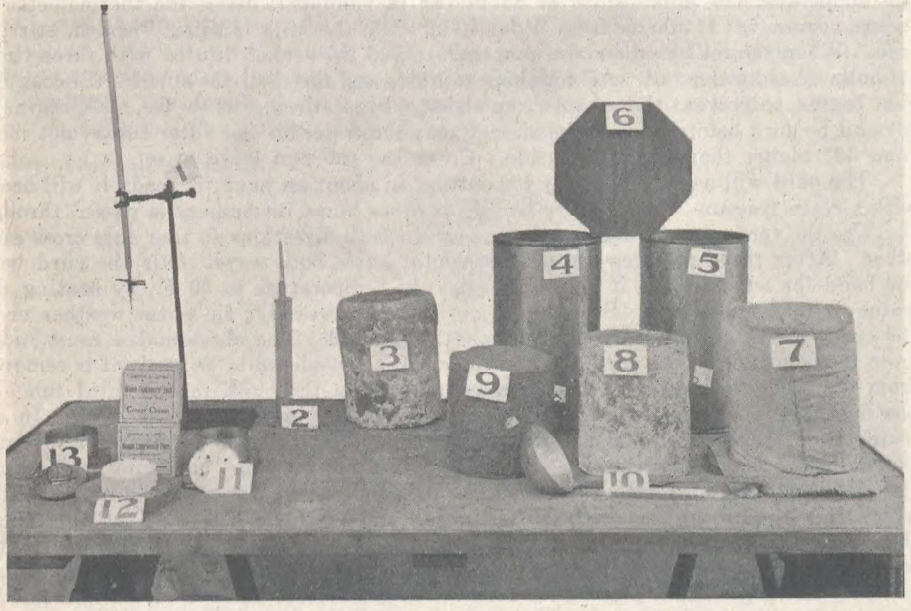
The curd will usually be ready for cutting in about an hour; if ready it will break with a clean fracture when a knife handle or other blunt instrument is passed through it. Use the vertical knife first across the tub in both directions so that cuts cross each other. After three minutes use the horizontal knife both ways. Stir the curd with the hand for ten minutes, if necesary raise the temperature to 90°F., by heating the water in the outside tub. Scalding is not always necessary; in warm weather or if the curd is firm enough without it it may be omitted. The cheesemaker must judge from the condition of the curd. When the curd is considered to be ready it is removed from the whey by means of the sieve and placed on the cloth in the third tub. If possible have a wooden rack at the bottom of the tub underneath the cloth. In an hour's time the whey which has drained off from the curd may be poured away and the cloth tightened. Repeat this process at the end of an hour, but before tightening the cloth cut the curd into five or six-inch cubes. Leave for thirty minutes, after which it will probably be ready for grinding and salting. The curd at this stage should be tender and free from visible whey. Break it up with the fingers into, roughly, three-quarter-inch pieces, sifting in salt; 2½ or 3 ounces will be needed to this quantity of curd. Place pierced tin follower at the bottom of each mould and put in the curd, packing each layer down with the fist. When all moulds are filled place the other tin followers on top of curd and a wooden one as well. The upper surface of the wooden follower must be above the top edge of the mould; use two if one is not thick enough. Press the cheese by putting on weights of five pounds or more to each cheese. A board which will cover the number of moulds used and weights totalling the desired amount is the simplest way. Leave till morning. Remove the mould and smooth the sides and top of cheese with a knife. Paste on a cheese cloth bandage large enough completely to envelop the cheese, using raw starch paste. Return the cheeses to the moulds, inverting them, and replace the weight. Next day the mould may be removed for good and the cheeses placed in a draughty room with a temperature between 60° and 70°F.

Turn them over daily for the first week. In two to three weeks from day of making they may be marketed, but if kept where they will not lose their moisture the cheese will be in a good condition at the end of six weeks.

This cheese continues to be readily saleable at a remunerative figure; a two and a half pound cheese selling for one dollar is only forty cents per pound and yet if made from 3·3 per cent milk, which is satisfactory, $1.21 per pound butterfat is obtained. Besides being more profitable, it has two other points which in some cases render it more useful than Stilton. It can be made with a quantity of milk varying from 25 pounds for one cheese up to any amount desired, while Stilton never takes less than 160 pounds. It is quick ripening, hence the maker need not wait so long for his returns. Against these advantages are the facts that on account of its small size it becomes dry much more rapidly than Stilton and the Stilton is a higher class cheese. Some customers would prefer the Stilton even at sixty cents per pound which would be over $1.30 per pound butterfat.

Project No. 23.—The manufacture of butter was discontinued from the beginning of May. It was not being made experimentally so, in view of the fact that material at that time was short, and that it was desired to economize in labour, it was decided to stop the manufacture of butter and use any milk available for cheese.

Project No. 21.—Cream cheese was manufactured regularly, approximately eight dozen being marketed weekly.



Some cheese and utensils used in their manufacture

No. 1. Acidmeter.
2. Pipette within a rennet measure.
3. Stilton cheese showing cracks, effect of injury from drying weather.
4. Stilton mould.
5. Stilton mould.
6. Board on which Stilton rests, used in turning.
7. Stilton two weeks out of mould.
8. Stilton, commencement of ripening stage.
9. Stilton fully matured.
10. Ladle, quart size, and thermometer.
11. Cream cheese mould and removable bottom.
12. Cream cheese finished.
13. Cream cheese mould and follower.

The table is a hardwood draining table with groove around the edge to carry off the whey.

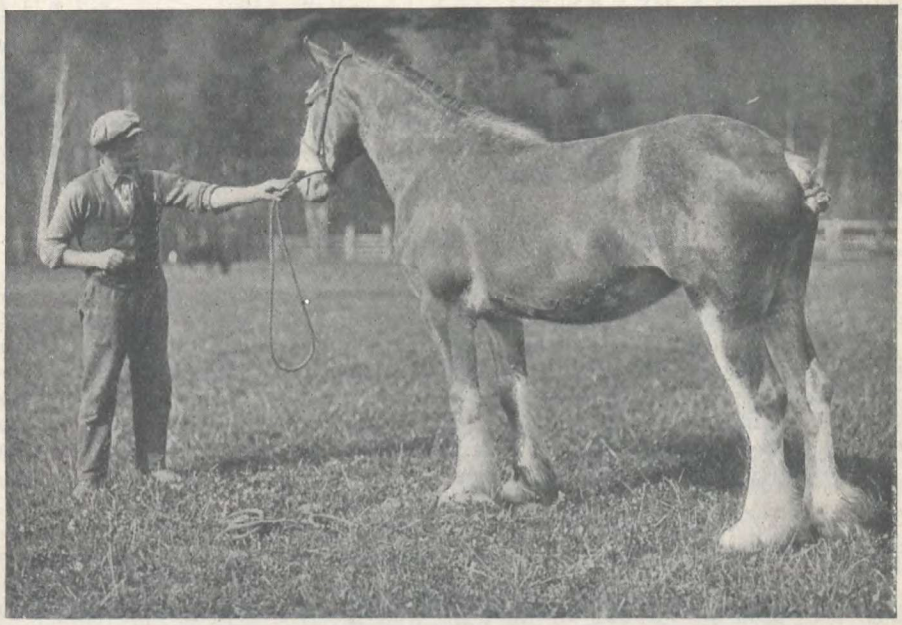
Milk testing consisted mainly of the weekly composite test for the herd and tests for any dairymen who cared to submit samples.

Record of Merit testing consisted of two seven-day records for Agassiz Priscilla Korndyke—32145 and Agassiz Pietje Canary Queen—70552, respectively.

A steam chamber for sterilizing all dairy utensils and milking pails was installed and is giving excellent satisfaction. The apparatus is simple but effects saving of labour and greater cleanliness.

HORSES

The horses on hand December 31, 1921, total sixteen head. They consist of four mature mares, three three-year-olds, one two-year-old, one yearling gelding, one horse foal and one filly foal, all pure-bred Clydesdales; also three grade geldings, one grade mare and one driver. Five of the mares are in foal to Scotland's Cross. The two foals are sired by Pride of Drumburle; the filly was born May 3, the other a month later. On January 1 they weighed 875 and 740 pounds respectively.



MELITA PRIDE—45641
Born August 21, 1919. Sire—Pride of Drumburle. Dam—Melita. Weight 1,540 when 28 months old.

RECORDS OF FEED AND LABOUR FROM APRIL 1 TO DECEMBER 31, 1921

—	Date of birth	Oats consumed	Bran consumed	Hay consumed	Roots consumed	Pasture $2 per month	Total cost of feed	Blacksmithing	Total cost of upkeep	Hours labour performed	Weight Dec. 31, 1921
		lbs.	lbs.	lbs.	lbs.	$ cts.	$ cts.	$ cts.	$ cts.		lbs.
Scotty	May, 1920	1,155	251	1,257	361	15 00	50 04	.....	50 04	.....	1,360
Melita Pride	Aug. 1919	1,190	258	1,291	376	16 00	52 07	.....	52 07	.....	1,545
Heather	June, 1918	2,174	258	2,697	472	9 09	76 02	15 25	91 27	1,090	1,616
Diana	May, 1918	2,193	273	2,795	544	9 09	78 02	12 50	90 52	1,260	1,620
Belle	June, 1916	1,476	374	1,863	536	15 00	64 32	2 25	66 57	205	1,615
Madge	" 1915	1,104	386	1,839	536	15 00	58 59	.....	58 59	230	1,645
Paul	May, 1915	2,880	242	3,218	444	5 49	88 21	15 00	103 21	1,762	1,560
Pete	" 1915	2,880	242	3,252	529	5 49	88 74	17 25	105 99	1,762	1,660

These results show a cost of approximately fifty dollars for feeding a yearling or a two-year-old for nine months. Heather and Diana were a team of three-year-old fillies in foal that were worked rather steadily up to November. The shoes were then taken off and they were allowed out in a field during the day and fed in the barn at

night. Belle and Madge were a young pair of pure-bred mares, each raising a colt. They worked in the spring up to within a few days of foaling time, were pastured till October first and then stabled at night and given exercise in a field during the day. Paul and Pete were a pair of good geldings that were worked steadily when weather permitted. The feed and shoeing cost for one hour's work with this team was approximately twelve cents.

SHEEP

The following animals were on hand at the close of the year 1921: Four Dorset Horn rams, fifty-six Dorset ewes, twenty second-cross Dorsets, six first-cross Oxfords and two second-cross Oxfords, making a total of ninety-five breeding sheep. There were also sixteen lambs born in December for the purpose of supplying the Easter market. These lambs should be well developed by Easter and a good price must be secured to make this a remunerative business, particularly this year when weather conditions were so severe that stabling of all sheep was compelled early in November.

GRADING WITH A PURE-BRED DORSET RAM

Project No. 28.—In November, 1915, ten ordinary range ewes showing a preponderance of Shropshire and Oxford type were purchased to form a foundation for a grading experiment. These ewes produced two crops of lambs by Dorset rams and two crops by Oxford rams. Thus not only is grading work started with Dorsets but with Oxfords as well and later a good comparison of the rams of these respective breeds for grading purposes will be available. The original ewes as well as the first-cross Dorsets have been disposed of and as these two generations are now complete the following information is given concerning them:—

FOUNDATION EWES USED IN GRADING EXPERIMENT

Ewe No.	Description	Average weight taken in autumn	No. of years average taken	Average weight of fleece	No. of fleeces average	Number of Lambs				No. of lamb crops	Per cent lambs per crop raised
						Born		Raised			
						Male	Female	Male	Female		
1	Shropshire type, brown face	162	5	7·7	4	4	2	4	2	4	150
2	Shropshire type, long neck, brown face	142	5	7·1	4	4	1	4	1	4	125
3	Shropshire type, rangy, black face	143	5	7·9	4	6	1	5	1	4	150
4	Shropshire type, low set, grey face	145	5	8·4	4	4	3	3	3	4	150
5	Oxford type, face dark, well wooled	157	5	9·7	4	4	3	4	2	4	150
6	Shropshire type, small bone, grey face	130	5	7·8	4	1	3	1	3	4	100
7	Southdown type, low set, grey face	134	3	7·2	3	1	3	1	3	3	133
8	Shropshire type, coarse head, grey face	133	4	7·0	4	2	4	2	4	4	150
9	Shropshire type, grey face	150	5	6·4	4	3	4	3	4	4	175
10	Oxford type, dark face	129	5	7·8	4	2	4	2	4	4	150
	Total average	142·5	.....	7·7	.....	.....	.....	.....	.....	.....	143·3

DORSET HORN FIRST CROSS EWES

Ewe No.	Dam No.	Face colour	Horns	Average weight taken in autumn	No. of years average taken	Average weight of fleece	No. of fleeces average	Number of Lambs				No. of lamb crops	Per cent of lambs per crop raised
								Born		Raised			
								Male	Female	Male	Female		
32	2	White	No	182	4	8·6	4	2	3	2	3	3	166
35	7	"	Yes	187	4	7·5	4	4	2	4	0	3	133
36	9	Brown	No	159	2	7·5	2	2	0	2	0	1	200
39	6	White	Yes	178	4	8·6	5	2	5	2	5	4	175
40	8	"	No	185	4	8·2	5	5	3	5	3	4	200
41	10	Brown	"	187	3	7·9	4	1	3	1	2	3	100
45	4	White	Yes	164	3	9·4	4	2	3	2	2	3	133
55	8	Grey	No	181	3	6·7	4	4	2	4	3	3	233
56	8	Brown	Yes	183	3	8·9	4	2	7	2	5	3	233
64	5	Spotted	No	169	3	8·1	4	3	3	3	3	4	150
65	5	"	"	199	3	8·1	3	4	2	4	2	3	200
66	10	Brown	"	182	3	9·0	4	1	3	1	3	3	133
46	9	"	Yes	.....	.....	.....	.....	.....	.....	.....	.....	.....	
47	9	Grey	"	.....	.....	.....	.....	.....	.....	.....	.....	.....	
59	6	White	"	.....	.....	.....	.....	.....	.....	.....	.....	.....	
		Total average	.....	179·7	.....	8·2	.....	.....	.....	.....	.....	.....	171·3

In breeding work of such a nature as this plan entails, there are a number of characteristics plainly discernible that may be identified. There are many other characters that are not so easily located. The five chief points of comparison are weight, wool, percentage of lambs, white faces and horns. The results obtained in the first crossing of the dark-faced, hornless range ewes with good Dorset rams show 40 per cent of the lambs with white faces and 46·6 per cent with horns. The average weight is increased 37·2 pounds per ewe, the average increase in weight of fleece is one-half a pound and the average lamb production is increased 28 per cent. All the increase in size in the first-cross ewes cannot be credited to the Dorset breeding, but considerable of it is due to care and management. The foundation ewes were weighed as purchased when not in high condition, and this first weight is included with later autumn weights in calculating the averages. The lamb autumn weights are not included in the first-cross ewe averages. Some allowance must also be made in lamb production for the original ewes, as in most instances the last two crops of lambs were sired by Oxford rams and it may not be entirely the ewes' fault that more were not raised. The first-cross ewes were also young and in their prime, although their first crop is included. In wool production the first-cross ewes have their shearling clip averaged in their totals, while the original ewes have not. In spite of these allowances which must be made, the fact remains that the first-cross flock was a great improvement over the foundation flock and a large amount of this improvement is due to the breeding and quality in the pure-bred Dorset rams used.

CO-OPERATIVE WOOL SELLING

Project No. 36.—The 1921 wool clip was 93 fleeces, 869 pounds, or an average of 9·3 pounds per fleece. It was sold through the Canadian Wool Growers.

Grade	Pounds	Value	Amount
		cts.	$ cts.
Medium staple	128	18·0	23 04
Low medium staple	691	15·5	107 10
Low staple	32	14·0	4 48
Coarse, rejects, tags	18	8·5	1 53
Total	869	.....	136 15

Of this amount it cost $36.64 for selling, grading, sacks, etc., leaving $99.51 net for 869 pounds of wool, or just short of 11½ cents per pound, or $1.07 per sheep.

VALUE OF RAPE PASTURE FOR FATTENING LAMBS

Project No. 32.—On July 11 thirty-one weaned lambs were placed on rape pasture, with plenty of water to drink but were not fed grain. On September 1 they were taken off and weighed, with the following results:—

Number of lambs in experiment		31
Weight at commencement of trial	lbs.	2,973
Length of trial	days.	52
Weight at end of trial	lbs.	3,530
Total gain	"	557
Total value of gain at 10 cents per lb	$	55.70
Value of rape pasture	$	55.70
Value of rape pasture per lamb per day	cents.	3.4553

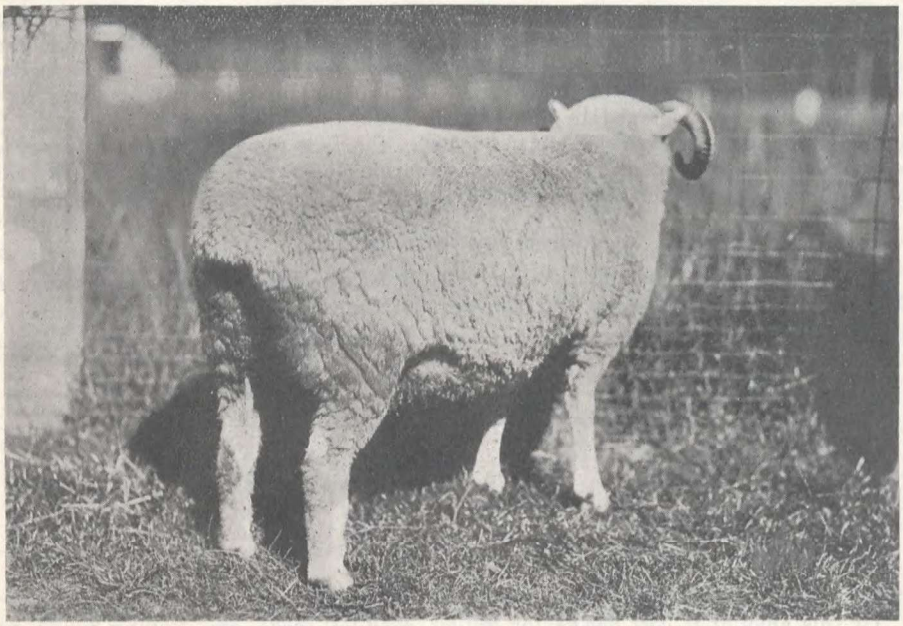
With a value of ten cents per pound placed on the gain, the return per lamb per day for the pasture was almost 3½ cents.

To show the difference in gain of rams, ewes, grade ewes and grade wethers the following data is given:—

LAMBS ON PASTURE FROM JULY 11 TO SEPTEMBER 1, 1921

		Pure-bred Dorset horn ewe lambs	Grade Dorset ewe lambs	Pure-bred Dorset ram lambs	Grade Dorset wether lambs
Number of lambs on trial		14	8	4	5
Length of trial, days		31	31	31	31
Total weight at commencement	lbs.	1,384	730	428	431
Total weight at finish	"	1,614	879	523	514
Total gain	"	230	149	95	83
Average gain per lamb	"	16·43	18·625	23·75	16·6

In spite of the fact that the rams were the heaviest at the commencment they made the greatest gains.



Dorset Horn Ewe. The kind to produce Easter lambs.

SWINE

The stock on hand consists of thirty-eight pure-bred Yorkshires. They are as follows: Two aged boars, ten brood sows, two gilts and twenty-four feeders.

There were sold for breeding purposes during the past year, fourteen males and thirty-one females. These animals were shipped to various localities in British Columbia.

BREEDING YOUNG SOWS AT DIFFERENT AGES

Project No. 42.—The question often being asked as to when a young sow may be bred for the first time, it was decided to make a comparison of two methods of procedure, either of which has its good features, the purpose being ultimately to form an idea as to which method left the respective sows in the better physical development on attaining maturity.

Six young sows were selected, three of which were bred at eight months of age so as to farrow when about one year old. These sows were given six months rest and bred the second time so as to have second litters at two years of age. The other three sows were bred for the first time six months later than the first lot farrowing therefore at one and one-half years of age, these also to have second litters at two years of age. At a later stage for a further comparison a third group of sows was selected, to farrow for the first time at one year old and to have second litters at a year and one-half. After all sows have had second litters they will be bred to farrow two litters yearly thereafter.

As this experiment has still to run for some time no results are yet available for report.

COST OF RAISING LITTERS

Project No. 44.—During each year accurate figures are kept of what it costs to raise a litter of pigs to weaning age. To determine this cost a record is kept of cost of maintaining brood sows from time of weaning one litter to date of farrowing next litter, together with cost of feeding sows from time of farrowing said litter up to date of weaning, same including cost of food for young pigs.

From results obtained during three years the average cost of raising a litter is $35. Some litters would cost considerably more and some less, depending on the thriftiness of the different sows and size of litters, for the larger the litter raised the more profitable is the sow as a rule.

COST TO RAISE SOW TO BREEDING AGE (ONE YEAR)

Records are kept every year as to the cost of raising young sows to breeding age. This naturally varies from year to year with the differences in prices of feed.

Results are arrived at by first figuring the cost to raise an entire litter from birth to ten weeks of age, including cost of maintaining sow since weaning former litter and taking an average from the number of pigs in the litter. The feed cost from ten weeks to six months and finally from six months to twelve months is recorded.

Taking an average from several comparisons to raise a sow to breeding age costs from $28 to $32.

FEED COST TO MAINTAIN FOR A YEAR, BROOD SOW RAISING TWO LITTERS PER YEAR

To estimate feed cost per year of a sow raising two litters a year close account is kept of all feed used and cost. Included in this is also the feed of her young pigs to ten weeks of age.

An average of results shows cost of from $50 to $55 to feed a sow for a year.

Conclusions are that a real good sow raising two litters a year is always a safe investment.

COST OF MAINTAINING MATURE BOAR

Project No. 45.—To determine the yearly cost of maintaining the herd boar accurate records are kept of amount of feed fed and the cost.

Results to date indicate an average cost per annum of from $55 to $60 to maintain a mature boar. Considering his value as head of the herd, he pays for his keep many times over in one season.

LIFE RECORDS OF PRODUCING SOWS

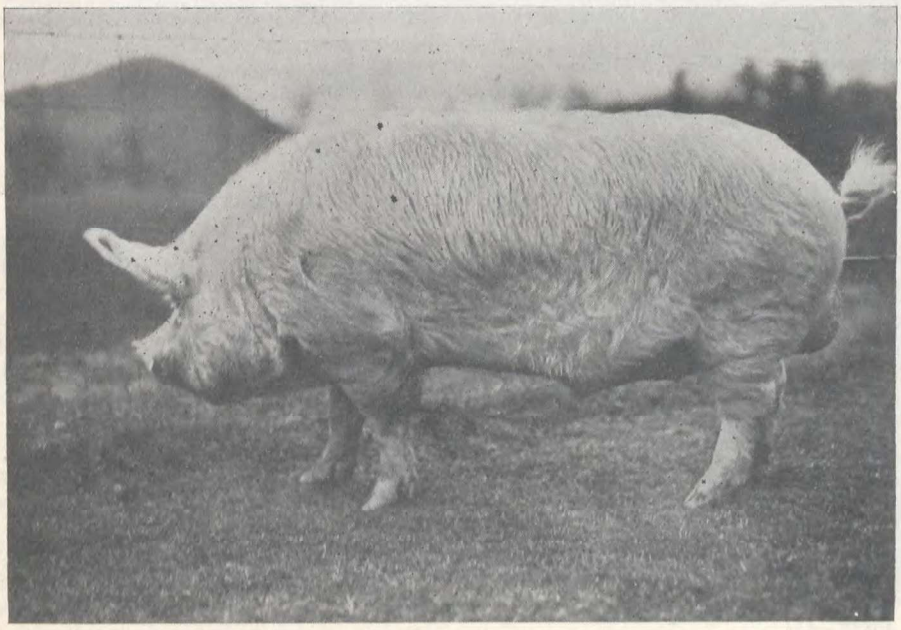
Project No. 46.—Close account is kept of the record of all sows as to whether they are prolific breeders or not, the number of pigs farrowed and the number of pigs per litter raised.

By this means a decision is arrived at with reference to the best families from which to select breeding stock for the future maintenance and development of the herd.

From records compiled for several years the average number of pigs per litter raised is 8.5. These results may be considered to be good when it is realized that this average includes sows which were past their best from a prolific standpoint but were still retained in the herd for special individual characteristics. In the foregoing results are also included the first litters of young sows. It is only reasonable to conclude, therefore, that the average number of pigs per litter raised from sows in their prime is higher than 8.5 at this Farm. Individual sows have farrowed as many as from 16 to 21 pigs in one litter.

SELF FEEDER VERSUS TROUGH FEEDING

Project No. 47.—Twelve young pigs were given a small clover paddock to run on and fed a grain ration dry from a self-feeder. They were given a limited supply of skim-milk in a separate trough and all the fresh clean water they required to drink. The pigs in lot 2, in which there were also twelve, were grown under the same conditions except that they were fed from a trough in the ordinary way. The grain ration consisted of four parts shorts, two of corn and one of crushed oats.



Pine Grove Jack 2nd 49402. Senior Boar in use in the Yorkshire herd.

The following table gives a comparison of results obtained:—

SWINE FEEDING EXPERIMENT, 1921

—		Lot 1 Self-feeder	Lot 2 Trough feeding
Number of pigs in pen		12	12
Average age at beginning of experiment	days	84	80
Duration of feeding period		90	90
Average weight at beginning	lbs.	54	50
" " finish	"	200	169
" gain for period	"	146	119
" daily gain	"	1·62	1·32
Feed consumed per 100 pounds gain—			
Shorts at $35 per ton		212·66	216·80
Corn at $55 per ton		122·30	110·40
Oats at $35 per ton		61·15	77·05
Skim-milk at 50c. per 100 pounds		219·73	148·31
Cost to produce 100 pounds gain	$	9·25	8·90

The results show a greater daily gain per pig in favour of the self-feeder but cheaper gains were made by those fed from the trough. However, the amount of labour in connection with feeding pigs by hand from the trough is considerably more than when using a self-feeder and, therefore, as a means towards the reduction of the labour expense, the "self-feeder" has a distinct advantage over hand-feeding methods where a dozen pigs or so are fed together.

FEEDING OF SKIM-MILK TO GROWING PIGS

Project No. 48.—Beginning in 1917 experiments were started in connection with the feeding of different quantities of skim-milk to growing pigs and to be continued until reliable conclusions could be arrived at as to the most profitable quantity to feed depending on varying conditions.

The general conclusions arrived at are that a profitable amount of skim-milk to feed to growing pigs is anywhere from 4 to 6 pounds per pig per day. However, where the skim-milk is very plentiful and cheap it may be fed profitably at the rate of 8 or even 10 pounds per pig per day and especially is this true of certain individuals with more vigorous characteristics than others.

FIELD HUSBANDRY

FIELD CROP YIELDS, 1921

Crop	Yield	
	tons	lb.
Corn silage	273	
Clover silage	329	1,550
Sunflower silage	62	15
Clover hay	150	730
Mangels	193	1,640
Carrots	11	220
Sugar beets	1	1,300
Potatoes	4	600
Mixed grain	60	1,080
Peas	1	700

This gave a total of 871 tons 725 pounds of silage and roots, 150 tons 730 pounds of hay, 60 tons 1,080 pounds of mixed grain and 4 tons 600 pounds of potatoes.

ROTATION WORK

Project No. 56.—The four-year rotation carried on here since 1911 has continued to give good results; it consists of: first year, hoed crop; second year, grain seeded down; third year, hay; fourth year, pasture.

Preparing land for hoed crop.

HOED CROPS

The crops grown in this section were corn, sunflowers, roots and potatoes. The land had been in pasture the previous year. It was given an application of barnyard manure during the fall and winter on the sod.

That portion of the field devoted to growing ensilage crops was not ploughed till spring. It was well disced and harrowed just previous to planting. The cool damp weather during the growing season resulted in a poorer yield of corn than ordinarily. Longfellow, Golden Glow and Northwestern Dent were the varieties grown.

The root section was ploughed in the fall and reploughed again in early spring and well worked. It was in excellent condition at planting time. The varieties of mangels sown were Danish Sludstrup and Yellow Leviathan. The seed was sown in set up drills thirty inches apart and at the same time commercial fertilizer was applied composed of 300 pounds of superphosphate of lime and half that amount of nitrate of soda per acre. Although weeds were difficult to control in June the roots grew rapidly and the crop harvested was one of the heaviest on record.

GRAIN

Following the plan of the rotation the grain was grown on the section devoted to hoed crops the previous year. The land was fall ploughed after the root crop was harvested. It was well disced and harrowed in the spring, sown early in April, and harvested the first part of August. Five acres of the field were sown to Banner oats; the remaining thirty-four acres were sown to a mixture of oats and peas. The entire

field yielded at the rate of 1 ton 230 pounds of grain per acre. Heavy rains occurred just after the grain was harvested and damaged it severely before it could be threshed. The same grass mixture was used for seeding down as in the previous year resulting in a good catch.

Swedish Select Oats, Agassiz, B.C.

HAY

A very heavy crop of clover hay was harvested from the 36-acre hay field. The first cutting in June produced 55 tons of clover silage and 77 tons 1,270 pounds of hay. The second cutting in August produced 44 tons 1,630 pounds of hay most of which was damaged to some extent by inclement weather.

PASTURE

The pasture section was seeded down during the spring of 1919. The following winter the clover on eight acres of this field was winter-killed. This area was sown to peas and oats which were allowed to ripen for grain but yielded only 1,420 pounds per acre. A further three and one-half acres of the field were sown to rape which afforded some excellent sheep pasture. The balance of the field which did not winter kill produced an excellent crop of succulent pasture throughout the entire summer and autumn.

VALUE OF WIZARD BRAND MANURE (A) FOR MANGELS

Project No. 194.—Four half-acre plots of mangels were grown to test the value of Wizard manure. They were planted under the same conditions as the field crop,

getting an application of 300 pounds of superphosphate of lime and 150 pounds of nitrate of soda per acre at planting time. On June 1 the Wizard manure was applied at the rate of 400 pounds per acre, with the following results:—

Type of manure	Yield per acre	
	tons	lb.
Shredded	11	1,800
Pulverized	11	360
Phosphated	12	400
Check, no manure	10	1,200

The results show a slight advantage in favour of the different manures over the plot that received no manure. The difference might have been greater had the manure been applied earlier in the season.

VALUE OF WIZARD MANURE (B) FOR CORN

The land upon which the corn was grown received similar treatment to the regular field corn, i.e., twelve tons per acre of barnyard manure, spring ploughed, well worked and planted. Longfellow was the variety of corn grown. On June 1 Wizard manure was applied at the rate of 400 pounds per acre, with the following results:—

Type of manure	Yield per acre	
	tons	lbs.
Shredded	13	100
Pulverized	14	400
Phosphated	14	300
Check, no manure	14	220

The results show no increased yield from the application of Wizard manure.

VALUE OF WIZARD MANURE (C) FOR HAY CROP

Immediately after taking off the first crop of clover hay in June, the different types of Wizard manure were applied, broadcast, on half-acre blocks at the rate of 400 pounds per acre. The application was made June 11; the crop was harvested August 6 and well cured. The results were as follows:—

Type of manure	Yield per acre	
	tons	lbs.
Shredded	1	1,880
Pulverized	2	410
Phosphated	1	1,890
Check, no manure	2	90

The results show no increased yields by the application of Wizard manure on the second crop of hay.

YIELDS OF CORN VERSUS SUNFLOWERS FOR ENSILAGE PURPOSES

Project No. 211.—To secure data upon the yielding capacity of corn and sunflowers, each crop was grown in drills and in check rows under field conditions. Sown in drills sunflowers yielded 13 tons 1,570 pounds and corn 12 tons 1,205 pounds per acre. In check rows sunflowers produced 12 tons 1,140 pounds and corn 8 tons 1,778

pounds per acre. This shows sunflowers producing greater yield which is contradictory to results obtained last year with the crops grown in drills. The season 1921 was a very poor one for corn and this may have been responsible for these results.

Russian Giant Sunflowers.

SUNFLOWERS IN DRILLS VERSUS IN CHECK ROWS

Project No. 212.—To determine which of these methods is preferable in growing sunflowers a trial was made. Under field conditions a commercial Russian Giant varity sown in drills yielded 13 tons 1,570 pounds per acre, as compared with a yield of 12 tons 1,140 pounds sown in check rows. These results show a greater yield from drill planting; the quality was equal. In districts where the growing season is shorter, the check row system would tend toward earlier maturity. More thorough horse cultivation can be given when the check row planting is followed.

CORN IN DRILLS VERSUS IN CHECK ROWS

Project No. 213.—This project had the same object as No. 58 except that corn was the crop grown. The results secured were similar. The drills yielded 12 tons 1,205 pounds per acre and the check rows 8 tons 1,778 pounds per acre. For maximum yields the former method is preferable but for early maturity and economy of labour the latter system is recommended.

VALUE OF COMMERCIAL FERTILIZERS FOR ENSILAGE

Project No. 200. A one-acre block of corn was given an application of commercial fertilizer consisting of 100 pounds nitrate of soda and 300 pounds of superphosphate of lime. Another was given exactly the same treatment except that no commercial fertilizer was applied. Each plot received a twelve ton application of barnyard manure. The variety grown under field conditions was Golden Glow.

Plot No.	Treatment	Yield	
		tons	lbs.
1	Fertilized	17	575
2	Unfertilized	14	290

An increased yield of 3 tons 285 pounds of corn with the aid of fertilizer was profitable in this instance. The fertilizer cost $7.20 while the increased yield of corn even at $3 per ton was greater than this. In 1917 when fertilizers were more expensive a similar test gave a slightly greater increased yield, but at that time it was not profitable.

VALUE OF BARNYARD MANURE FOR CLOVER

Project No. 201.—During the month of January a twelve-ton application of barnyard manure was given an acre block of light soil and also an acre block of rich soil on the hay meadows. Corresponding areas were left unmanured as check plots. The meadow had been seeded down the preceding spring with peas and oats as a nurse crop. The clover crop was cut June 18, weighed green and used for ensilage.

Plot No.	——	Yield	
		tons	lbs.
	Light Soil—		
1	Manured	10	440
2	No manure	7	1,448
	Rich Soil—		
1	Manured	12	300
2	No manure	10	1,300

The increased yields secured from the manured plot of 2 tons 992 pounds on poor soil and one and one-half tons on the better soil were not sufficient to pay for the manure.

HORTICULTURE

The horticultural work done this year consisted of the usual variety tests of potatoes, vegetables, fruits and flowers, and experiments in the culture of same.

The season was not a good one. A lot of cold, wet weather in June and a lack of sunshine generally throughout the season militated against good results and earliness. Rain throughout the autumn again prevented the saving of seed to any extent.

POTATOES—TEST OF VARIETIES, 1921-22

Project No. 167.

Name of Variety	Size	Season	Date of planting	Date of digging	Yield per acre marketable		Yield per acre not marketable		Form and colour
					tons	lb.	tons	lb.	
Dakota Red	Large	Late	May 7	Sept. 30	10	1,735	2	1,520	Round, red.
Morgan Seedling	"	"	" 7	" 30	10	184	2	1,520	Oval, white.
Manitoba Wonder	Medium	Medium	" 7	" 30	9	1,734	1	484	Round, pink.
Wee McGregor	Large	Late	" 7	Oct. 1	9	1,596	1	1,657	Oblong, white.
Dreer Standard	Medium	"	" 7	" 3	9	630	2	692	Round, white.
Carman No. 1	Large	"	" 7	" 3	9	261	3	92	Oblong, white.
Arran Chief	"	"	" 7	" 1	8	1,802	3	348	Oval, white.
Table Talk	Medium	"	" 7	Sept. 30	8	1,388	1	1,312	Oblong, white.
Jessica	"	Medium	" 7	Oct. 3	8	974	2	968	Oblong, rose.
Early Ohio	"	Early	" 7	Sept. 30	8	767	3	72	Round, pink.
Ormandy	"	Late	" 7	" 30	8	729	3	301	Oval, round, white.
Late Puritan	Large	"	" 7	Oct. 1	8	422	2	1,796	Long, white.
Gold Coin	Medium	Medium	" 7	" 3	7	1,870	3	624	Oblong, white.
Eureka Extra Early	Small	Early	" 7	Sept. 30	7	1,664	2	1,934	Round, white.
Houlton Rose	Medium	"	" 7	Oct. 1	7	1,247	2	1,520	Round, rose.
Bermuda Early	"	"	" 7	" 1	7	1,111	3	279	Oblong, rose.
Green Mountain	Large	Late	" 7	" 1	7	283	2	1,244	Oblong, white.
Jones' White	"	"	" 7	" 3	6	1,800	1	1,864	Round, white.
Rawlings Kidney	"	"	" 7	" 3	6	1,662	1	1,588	Round, white.
Vick Extra Early	Small	Early	" 7	Sept. 30	6	627	1	1,036	Long, pink.
Early Rose	Medium	"	" 7	" 30	6	558	3	624	Long, rose.
American Wonder	Large	Late	" 7	Oct. 1	6	282	1	1,585	Long, white.
Irish Cobbler	"	Early	" 7	" 4	6	282	1	484	Round, white.
Empire State	"	Late	" 7	" 4	6	6	1	484	Long, white.
Netted Gem	Small	"	" 7	" 3	5	1,868	3	1,452	Round, russet.
Dalmeny Beauty	Large	"	" 7	Sept. 30	5	1,730	1	1,894	Oblong, white.
Early Hero	Small	Early	" 7	Oct. 4	5	1,592	2	1,790	Oblong, rose.
Agassiz Special	Medium	"	" 7	Sept. 30	5	1,523	1	1,538	Long, white.
U. B. C	Large	Late	" 7	Oct. 4	5	419	1	1,312	Round, white.
Sir Walter Raleigh	Medium	"	" 28	" 3	4	172	–	1,391	Round, white.
New Queen	Large	Medium	" 7	" 3	3	1,590	1	760	Round, pink.

Dakota Red was the best yielder this year in the test of varieties; it is a good main crop potato of excellent flavour and a good keeper and disease resister but its colour and deep eyes are against its commercial value. Of the Early varieties, Early Ohio was the best, and is one of the earliest ready for use. Wee McGregor is, as usual, well to the fore and can be recommended as one of the best for this locality. Dreer Standard is again good. New Queen, which ranked fifth in production last year, failed to germinate this year.

On the whole, this season was a bad one for potatoes, disease being very prevalent, a severe attack of Early Blight causing great damage, the weather being most unfavourable—very wet and cold in June and part of July and August.

POTATOES—CULTURAL TESTS

Project No. 116.—An experiment was made to determine the value of planting seed prepared in three different manners for the production of early crop.

First.—From seed consisting of whole tubers *sprouted.*

Second.—From seed consisting of whole tubers *unsprouted.*

Third.—From seed consisting of *cut* tubers.

Ten varieties of potatoes were used in the experiment, four of which were early varieties and six were late varieties. Drills were 30 feet long and 30 inches apart. Sets were planted 1 foot apart in the drills.

There were thirty sets of each variety in each class. Land was manured in drills at the rate of 16 tons barnyard manure to the acre.

Potatoes were harvested at intervals of about two weeks, 10 feet of each variety at a time, on July 11, July 23 and August 6.

All seed was planted March 22.

In the following tables:—

No. 1 represents whole tubers *sprouted.*

No. 2 represents whole tubers *unsprouted.*

No. 3 represents *cut* tubers.

RESULT OF TEN FEET HARVESTED

Test No.	Amount seed planted 30 feet		July 11				July 23				August 6				Total weight of crop			
			Marketable		Not marketable		Marketable		Not marketable		Marketable		Not marketable		Marketable		Not marketable	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
Irish Cobbler—																		
1	6	0	9	4	0	12	14	12	0	4	15	8	0	0	39	8	1	0
2	6	0	7	8	1	00	9	12	1	0	15	0	0	4	32	4	2	4
3	3	0	8	0	0	00	5	00	0	4	12	0	0	0	25	0	0	4
Early Rose—																		
1	6	0	12	0	0	4	14	8	0	0	20	12	1	0	47	4	1	4
2	6	0	9	8	0	8	9	12	1	0	15	00	0	4	34	4	1	12
3	3	0	2	4	0	0	2	12	0	12	8	00	0	8	13	0	1	4
Early Ohio—																		
1	6	0	10	12	0	12	9	12	0	4	13	8	0	8	34	0	1	8
2	6	0	7	00	1	00	7	00	1	0	9	8	1	0	23	8	3	0
3	3	0	10	8	0	8	9	00	0	0	10	0	0	2	29	8	0	10
Agassiz Special—																		
1	6	0	6	12	1	0	10	12	0	4	12	8	0	0	30	0	1	4
2	6	0	3	12	1	12	9	00	0	4	8	4	1	0	21	0	3	0
3	3	0	3	8	0	8	5	12	0	0	8	8	0	0	17	12	0	8
Wee McGregor—																		
1	6	0	13	4	0	4	15	00	0	2	15	0	0	8	43	4	0	14
2	6	0	9	8	0	8	11	00	0	0	19	0	0	12	39	8	1	4
3	3	0	9	2	0	0	14	00	0	2	12	0	0	8	35	2	0	10
Dreer Standard—																		
1	6	0	9	0	0	4	21	8	0	2	18	8	0	0	49	0	0	6
2	6	0	9	8	0	8	16	0	0	4	14	8	0	8	40	0	1	4
3	3	0	7	8	0	4	9	4	0	0	12	0	0	0	28	12	0	4
Gold Coin—																		
1	6	0	10	12	0	0	13	8	0	8	13	0	0	0	37	4	0	4
2	6	0	10	00	0	4	13	8	0	8	12	0	0	4	35	8	0	12
3	3	0	8	12	0	0	11	4	0	4	14	0	0	12	34	0	1	0
Late Puritan—																		
1	6	0	13	8	0	4	13	0	0	8	16	8	0	00	43	0	0	12
2	6	0	11	4	0	4	12	12	0	4	13	8	1	0	37	8	1	8
3	3	0	5	0	1	0	6	0	0	0	10	0	0	8	21	0	1	8
American Wonder—																		
1	6	0	10	12	0	0	11	12	0	4	14	0	1	0	36	8	1	4
2	6	0	7	8	0	12	8	0	1	0	17	0	0	12	32	8	2	8
3	3	0	7	12	0	4	9	8	0	0	13	0	0	8	30	4	0	12
Carman No. 1—																		
1	6	0	7	12	0	0	8	0	1	0	12	8	1	0	28	4	2	0
2	6	0	7	4	1	0	8	8	1	8	5	0	0	0	20	12	2	8
3	3	0	5	4	0	0	3	4	0	0	6	8	0	0	15	0	0	0

SUMMARY OF RESULTS

Date of harvesting	Yield from seed No. 1		Yield from seed No. 2		Yield from seed No. 3		Totals	
	lbs.	oz.	lbs.	oz.	lbs.	oz.	lbs.	oz.
Four Early Varieties—								
July 11	38	12	27	12	24	4	90	12
July 23	49	12	35	8	22	8	107	12
Aug. 6	62	4	47	2	38	8	147	14
Totals	150	12	110	6	85	4	346	6
Six Late Varieties—								
July 11	65	0	55	0	43	6	163	6
July 23	82	12	69	12	53	4	205	12
Aug. 6	89	8	81	0	67	8	238	0
Totals	237	4	205	12	164	2	607	2
Early and Late varieties combined—								
July 11	103	12	82	12	67	10	254	2
July 23	132	8	105	4	75	12	313	8
Aug. 6	151	12	128	2	106	0	385	14
Totals	388	0	316	2	249	6	953	8

In the above three tables only marketable potatoes are considered.

It is clearly demonstrated by above tables that for producing an early crop the sprouted whole seed gives the best results; in fact crops harvested at any of the three dates are larger in yield when grown from the sprouted seed than from the other seed.

Project No. 160.

EXPERIMENT IN DIFFERENT WAYS OF CUTTING SEED

Kind of Sets	Seed from potatoes having strong buds from seed end to base			Seed from potatoes having strong buds near seed end only		
	Weight of seed planted per acre	Yield per acre		Weight of seed planted per acre	Yield per acre	
		Marketable	Not marketable		Marketable	Not marketable
	lbs. oz.	tons lbs.	tons lbs.	tons lbs.	tons lbs.	tons lbs.
Whole small tubers	3,003 –	7 256	3 1,392	3,168 –	4 1,504	3 864
Cut to 1 eye	759 –	4 448	1 1,168	957 –	4 448	2 224
Cut to 2 eyes	1,105 8	3 1,920	2 224	1,056 –	4 448	1 1,696
Cut to 3 or more eyes	1,782 –	4 976	3 336	1,617 –	3 1,920	2 752

Variety planted, Gold Coin.

Size of plots, one-five hundred and twenty-eighth of one acre.

Planted May 7.

Harvested October 1.

On the whole, seed from potatoes having strong buds from the seed end to the base proved the better class of seed though the margin is small. In both cases the seed of whole small tubers gave better results.

Project No. 161.

EXPERIMENT IN DISTANCE OF PLANTING

	Sets 12 inches apart		Sets 14 inches apart	
	Yield per acre marketable	Yield per acre not marketable	Yield per acre marketable	Yield per acre not marketable
	tons lb.	tons lb.	tons lb.	tons lb.
Rows 2½ feet apart	5 212	1 208	4 1,384	– 1,656
Rows 3 feet apart	3 1,590	– 1,610	3 1,015	– 1,150

Variety planted, American Wonder.

Size of plots, one one hundred and thirty-eighth and one one hundred and fifteenth of one acre.

Planted May 7, 1921.

Harvested October 1, 1921.

The above table shows that sets planted in rows 2½ feet apart gave better results than those planted in rows 3 feet apart and those planted 12 inches apart in the rows better than those planted 14 inches apart. Twenty per cent of yield was diseased.

PLANTING ON DIFFERENT DATES

Project No. 162.

Date planted	Date harvested	Yield per acre marketable	Yield per acre not marketable	Date planted	Date harvested	Yield per acre marketable	Yield per acre not marketable
		tons lb.	tons lb.			tons lb.	tons lb.
May 6	Sept. 29	4 1,504	3 336	May 6	Sept. 29	5 32	1 1,168
May 13	" 29	5 296	1 1,168	" 13	" 29	7 784	3 1,392
May 20	" 29	8 896	5 32	" 20	" 29	5 560	2 224
May 27	" 29	5 560	6 144	" 27	" 29	3 1,392	3 864
June 3	" 29	4 448	6 1,200	June 3	" 29	2 224	5 32

It would appear from the above table that the best time to plant potatoes is the middle of the month of May in this section of country.

COMPARISON OF POTATO SEED CUT AND COATED WITH PLASTER AND UNCUT AND UNCOATED

Project No. 163

Coated with Plaster				Uncoated			
Fresh cut and planted		Cut and coated 14 days before planting		Fresh cut and planted		Cut and coated 14 days before planting	
Yield per acre marketable	Yield per acre not marketable	Yield per acre marketable	Yield per acre not marketable	Yield per acre marketable	Yield per acre not marketable	Yield per acre marketable	Yield per acre not marketable
tons lbs.	tons lbs.	tons lbs.	tons lbs.	tons lbs.	tons. lbs.	tons lbs.	tons lbs.
4 448	1 1,168	3 1,920	1 640	4 1,240	1 1,696	3 1,676	2 224

Variety planted, Gold Coin.

Area planted, one two hundred and sixty-fourth of one acre.

Date planted, May 7.

Date harvested, September 30.

From the above table uncoated fresh cut seed gave superior yield to that of any other kind, while seed cut 14 days before being planted was the better for being coated with plaster.

HILLED VERSUS LEVEL CULTIVATION

Project No. 165

Hilled Cultivation				Level Cultivation			
Yield per acre				Yield per acre			
Marketable		Not Marketable		Marketable		Not Marketable	
tons	lbs.	tons	lbs.	tons	lbs.	tons	lbs.
6	351	1	1,312	5	1,730	1	1,588

Variety planted, Gold Coin.

Area planted, one sixty-ninth of one acre.

Date planted, May 7.

Date harvested, October 1.

Hill cultivation is more productive than level cultivation. About nine per cent of crop was diseased.

FOUR CULTIVATIONS VERSES EIGHT CULTIVATIONS

Project No. 164

Four Cultivations				Eight Cultivations			
Yield per acre				Yield per acre			
Marketable		Not Marketable		Marketable		Not Marketable	
tons	lbs.	tons	lbs.	tons	lbs.	tons	lbs.
7	1,042	1	208	7	904	—	193

Variety planted, Gold Coin.
Area planted, one sixty-ninth of one acre.
Date planted, May 7.
Date harvested, October 1.
Four cultivations gave better results than eight cultivations though the difference was slight. About nine per cent of crop diseased.

Distribution of Potato Seed

Number of samples issued.. 201
Number of reports received.. 97

BEANS

Project No. 136

Name of Variety	Date of Sowing	Date Ready for use	Height	Yield per 30 ft. row	
			In.	Lb.	Oz.
Hodson Long Pod, Wax	May 4	July 23	14	22	14
Bountiful	" 4	" 11	12	21	8
Stringless Green Pod	" 4	" 12	12	19	12
Wardell Kidney Wax	" 4	" 12	12	19	—
Extra Early Valentine	" 4	" 15	12	17	2
Refugee or 1,000 to 1	" 4	" 25	14	17	—
Pilot	" 4	" 21	12	13	8
Canadian Wonder	" 4	" 15	13	11	12
Round Pod Kidney Wax	" 4	" 15	12	11	12
Kentucky Wonder Wax	" 4	" 26	14	9	8

Hodson Long Pod again showed its merit by heading the list of eleven varieties tried this year; it has been in past years the most consistent yielder. Bountiful, a green bean, is a good second and the earliest ready for use. Canadian Wonder did not germinate well. All the above were grown from commercial seed.

Project No. 135. To determine the best time of year at which beans should be planted. Four plantings are made at intervals of two weeks between plantings.

BEANS—CULTURAL TEST

Project No. 135

Name of Variety	Date of sowing	Date ready for use	Yield per 30 foot row	
			Lb.	Oz.
Refugee or 1000 to 1	May 4	July 25	17	—
" "	" 18	Aug. 6	25	8
" "	June 1	" 11	21	8
" "	" 15	" 26	22	4

The third week in May sowing is the best of the four sowings in point of yield. The experiment was slightly altered this year; two weeks interval between sowings was allowed instead of one week, as the interval was not considered sufficiently large to make the difference noticeable.

BEETS

Project No. 138

Name of Variety	Date of sowing	Date ready for use	Yield per 60 foot row
			Lbs.
Crimson Globe	April 4	July 2	142
Detroit Dark Red Com	" 4	June 30	141
Detroit Dark Red 0·200	" 4	July 7	122
Black Red Ball 0·245	" 4	" 2	106
New Dandy	" 4	" 7	99
Black Red Ball. C.E.F	" 4	" 7	78

Crimson Globe is heaviest yielder but of poor quality, being coarse and stringy. It might have been better had it been harvested earlier. Both the Black Red Ball varieties from Ottawa grown seed made the best shaped and best coloured roots.

BRUSSELS SPROUTS

Project No. 139

Name of Variety	Date of sowing	Date ready for use	Yield per 30 foot row
			Lb. Oz.
Paris Market	Mar. 28	Nov. 1	15 —
Amager Market	" 28	" 1	13 12
Dwarf Gem	" 28	" 1	7 8

Paris Market is the best, though none of the three varieties did very well, the buttons being small and rather scattered.

CABBAGE

Project No. 141

Name of Variety	Date of sowing	Date of trans-planting	Date ready for use	Yield per 30 foot row
				Lb. Oz.
Enkhuizen Glory	Mar. 28	May 19	Aug 23	45 8
Flat Swedish	" 28	" 19	" 19	45 —
Copenhagen Market	" 28	" 19	" 13	34 8
Early Jersey Wakefield	" 28	" 18	" 13	23 —
Delicatessen	" 28	" 19	" 26	17 4
Kildonan	" 28	" 18	" 26	13 8
Danish Red Stonehead	" 28	" 19	Oct. 1	8 —
Wong Bok	" 28	" 18	.....	No crop, ran to seed
Pe-Tsai	" 28	" 18	.....	" "
Perfection Drumhead Savoy	" 28	" 19	Nov. 1	32 —
Improved Brunswick	" 28	" 19	.....	No crop, failure
Extra Amager Danish Ballhead	" 28	" 19	.....	" "

All plants which died from any cause whatever were replaced May 25.

Enkhuizen Glory and Flat Swedish were the best of the earlier varieties and Perfection Drumhead Savoy was the best of the later varieties. The Red varieties failed to produce a reasonable crop and the Chinese varieties ran to seed immediately after being transplanted.

CABBAGE—CULTURAL TEST

Project No. 140

To determine whether it is better to sow cabbage in hot bed and transplant to the open or to sow in the open and transplant.

SOWN IN HOT-BED

Name of Variety	Date Sown	Date transplanted	Date ready for use	Yield per 30 ft. row
				Lb. Oz.
Early Jersey Wakefield	Mar. 26	May 11	July 19	46 10
Copenhagen Market	" 26	" 11	" 25	35 8

SOWN IN OPEN

Early Jersey Wakefield	Mar. 28	May 19	Aug. 13	23 —
Copenhagen Market	" 28	" 19	" 13	34 8

It is shown by above tables that seed sown in hot-bed gave a better crop both in quantity and earliness than that sown in the open. All the plants in this test were unprotected from the root maggot.

Another experiment was made with plants grown in the hot bed and transplanted, 30 feet being grown unprotected as a check plot and 30 feet protected with tar paper discs. The variety used was Copenhagen Market.

The unprotected plants gave a yield of 35 pounds 8 ounces and the protected plants 97 pounds 4 ounces.

This test determines the value of protection with tar paper discs which increased the yield by nearly 200 per cent.

A further experiment was made to determine the relative values of various chemical preparations in preventing the ravages of the cabbage root maggot. The variety used was Improved Brunswick.

Treated with	Date Sown	Date transplanted	Date ready for use	Yield per 30 foot row
				Lb. Oz.
Check	Mar. 26	May 19	.....	.....
Paris Green	" 26	" 19	.....	.....
Bichloride mercury, diluted	" 26	" 19	.....	.....
Commercial Lime Sulphur solution	" 26	" 19	.....	.....
Formalin, diluted	" 26	" 19	Aug. 8	23 8
Sulphuric acid	" 26	" 19	.....	.....
Bichloride and Lime Sulphur	" 26	" 19	Aug. 20	44 8
Calcium Carbide	" 26	" 19	" 16	81 8
Lime Sulphur diluted 1-3	" 26	" 19	.....	.....

Any plants which died were replaced on May 25. The most successful preparation was the calcium carbide which was placed around the root after transplanting. The

next best was the bichloride of mercury and lime sulphur mixture. With the exception of the formalin mixture all others failed; the mixtures were too strong and killed most of the plants.

CARROTS—TEST OF VARIETIES

Project No. 143.

Name of Variety	Date of sowing	Date ready for use	Yield per 60 foot row	
			lb.	oz.
Ox Heart	April 4	June 25	190	–
Early Scarlet Horn	" 16	" 18	172	8
Chantenay Half Long, Ottawa 236	" 4	" 25	170	–
Select Chantenay	" 4	" 22	162	–
Hutchinson	" 4	July 2	152	–
Chantenay, Ottawa 246	" 4	" 2	128	–
Half Long Scarlet Nantes	" 4	June 25	122	–
Improved Danvers Half Long	"	" 25	104	–

Of the eight varieties tried Ox Heart was the heaviest yielder but it is of poor quality being long and coarse grained and has a tendency to split badly. Early Scarlet Horn was the best all round carrot being of nice shape, good colour and tender, also good cropper. Of the others Select Chantenay and Half Long Scarlet Nantes were the best.

CAULIFLOWERS

Project No. 145.—Three varieties were sown: Early Dwarf Erfurt, Early Snowball and Veitch Autumn Giant, but were all destroked by cabbage root maggot.

CAULIFLOWERS—CULTURAL

Project No. 144.—To determine the value of tar paper discs as a protection against the cabbage root maggot. Two varieties, Early Snowball and Extra Early Erfurt were used and were sown in hot bed and transplanted out.

Protected with discs Early Snowball yielded 16 heads, weight 23½ pounds to thirty feet planted, unprotected a total failure.

Extra Early Erfurt failed totally in both cases.

Again, sown under cheese cloth and protected with discs, Veitch Autumn Giant yielded 10 fair sized heads, weight 11 pounds, to 30 feet planted while the same variety unprotected failed completely. The value of tar paper discs is clearly demonstrated.

CELERY—TEST OF VARIETIES

Project No. 146.

Name of Variety	Date sown	Date planted out	Date ready for use	Yield per 30 foot row	
				lb.	oz.
Winter Queen	Mar. 22	May 19	Sept. 30	124	8
Giant Pascal	" 22	" 19	" 30	123	0
Evans Triumph	" 22	" 19	" 7	108	0
Golden Yellow	" 22	" 19	" 7	82	8
White Plume	" 22	" 19	" 14	66	0
French Success	" 22	" 19	" 24	60	0
Golden Self Blanching	" 22	" 19	" 1	54	0

Plants were planted six inches apart i.e., 60 plants to row. All varieties are good though none made very big yields. Winter Queen is the best yielder and best keeper.

CITRONS—TEST OF VARIETIES

Project No. 195.

Name of Variety	Date sown	No. of Hills	Date ready for use	Yield per 4 hills
				lb. oz.
Citron (Ferry)	May 6	4	July 15	227 –
Red Seeded (0-826)	" 6	4	" 13	219 –
Red Seeded (Rennie)	" 6	4	" 20	201 –
Preserving (0-822)	" 6	4	" 13	191 –

Citron (Ferry) was the best yielder. Red Seeded, Ottawa grown seed, was a good second. All citrons did remarkably well this year.

CORN—TEST OF VARIETIES

Project No. 147.

Name of Variety	Date of planting	Date ready for use	Height	Yield
			ft.	lb.
Howling Mob	May 5	Sept. 3	5½	51½
Metropolitan	" 5	Aug. 27	10½	49½
Country Gentleman	" 5	Sept. 19	8	41
Early Malcolm A. Ottawa	" 5	Aug. 12	4½	30½
Extra Early Cory	" 5	" 18	7	29¾
Stowell Evergreen	" 5	Sept. 3	9	29½
Sweet Squaw, Ottawa	" 5	Aug. 10	6½	27
Golden Bantam, Agassiz	" 5	" 30	5½	25½
Pocahontas	" 5	" 26	5	24½
Golden Bantam	" 5	" 22	6½	20½
Klootchman, Ottawa	" 5	" 6	4½	16½
Picaninny, Ottawa	" 5	" 2	3	11½

No. of Hills, 8. Hills are 4 feet by 4 feet apart.

Corn in general produced a fair crop this year, the best in point of production being Howling Mob. Picaninny was the earliest; it is of good flavour but cobs are very small. Klootchman and Sweet Squaw following close after are far superior in size of cobs. Early Malcolm is also good and from the above varieties a good successive crop can be raised. Golden Bantam from Agassiz raised seed was better than that grown from commercial seed.

CUCUMBERS—TEST OF VARIETIES

Project No. 148.

Name of Variety	Date of Sowing	Date ready for use	Yield from 9 plants
			lb.
Davis Perfect	May 6	July 27	376½
Fordhook Famous	" 6	" 27	315½
Improved Long Green	" 6	" 30	277
Boston Pickling	" 6	" 22	270¼
Giant Pera	" 6	Aug. 2	253
Prize Pickle	" 6	July 27	244½

Three hills of each, three plants to one hill; hills 6 feet by 6 feet.

Cucumbers gave an enormous crop this year. All the varieties are good, Fordhook Famous being the most attractive in shape though not so prolific as Davis Perfect.

CUCUMBERS—CULTURAL

Project No. 148a.—An experiment to determine the value of commercial fertilizer when applied to cucumbers.

Variety used was Giant Pera.

Yield with commercial fertilizer, 3 hills	381½ lbs.
Yield without commercial fertilizer, 3 hills	253 lbs.

Commercial fertilizers increased the yield by 128½ pounds.

LETTUCE—TEST OF VARIETIES

Project No. 150.

Name of Variety	Date of Sowing	Date ready for use	Yield
			lb.
Cos	April 12	June 27	68
New York	Mar. 31	" 18	63
Hanson	" 31	" 25	60½
Curled Simpson	" 31	" 3	43
Iceberg	" 31	" 29	41¼
All Heart	April 12	" 18	40½
Grand Rapids Forcing	Mar. 3	" 6	38½
Earliest Wayahead	" 3	" 9	32¼
Early Paris Market	April 12	" 14	16½
Crisp as Ice	" 12	" 20	15½
Salamander	Mar. 31	" 17	15½

Quantity sown, 30 feet.

Cos was the largest yielder as it was last year; it is, however, slow in maturing but is firm, crisp and of good flavour.

Of the cabbage lettuces New York, a hitherto untried variety, did the best; it is of good size and shape, solid and tender and quite the best lettuce we have tried to date. Hanson is a good variety, also Iceberg and All Heart. Salamander showed very poor germination as it also did last year. All these varieties were sown in the open and thinned out to one foot apart.

In order to determine the relative values of lettuce from seed sown in frame and transplanted and that sown in the open two varieties; Grand Rapids Forcing and New York, were sown in frame and transplanted. Grand Rapids yielded 30½ pounds, New York 81¾ pounds. The result was contradictory: Grand Rapids frame sown yielded 8 pounds less and New York 18¾ pounds more than when sown in open.

ONIONS—TESTS OF VARIETIES

Project No. 154.

Name of Variety	Date of Sowing	Date ready for use	Yield per 60 foot plot
			lb.
Silver King	Mar. 26....	July 29....	48
Ailsa Craig, Commercial	" 26....	" 25....	45
Ailsa Craig, Agassiz	" 26....	" 25....	42
Giant Prizetaker	" 26....	" 29....	40
Yellow Globe Danvers, Commercial	" 26....	" 29....	39½
Southport Yellow Globe	" 26....	29 29....	38
Southport Red Globe	" 26....	" 29....	36
Australian Brown	" 26....	" 25....	35
Large Red Wethersfield, Ottawa	" 26....	" 29....	35
Large Red Wethersfield, Commercial	" 26....	" 29....	34½
Southport White Globe	" 26	" 25....	31½
Yellow Globe Danvers, Ottawa	" 26....	" 29....	26

The onion crop this year compared unfavourably with that of last year, the poor result being traceable to severe attack of mildew when bulbs were being formed. This is the first time we have experienced it here; perhaps the mildew may be owing to the fact that the crop was grown on the same plot for three years in succession.

Silver King headed the list for largest weight and yield as it did also last year.

Best varieties for weight, shape and general market appearance are, Ailsa Craig, Yellow Globe Danvers, Prizetaker, Australia, Brown and Southport Red and Yellow Globe. All of these are good keepers. All were sown in the open and thinned out.

Project No. 38.—An experiment was made to determine the advisability of sowing onion seed in frame and transplanting the young plants to open instead of sowing in open and thinning. Four varieties, Yellow Globe Danvers, Ailsa Craig, Giant Prizetaker and Large Red Wethersfield, were used.

Name of Variety	Date of Sowing	Sown in open. Yield per 60 ft.	Sown in frame. Yield per 60 ft.
		lb.	lb.
Giant Prize Taker	Mar. 26....	40	42
Yellow Globe Danvers	" 26....	39½	38
Ailsa Craig	" 26....	45	37½
Large Red Wethersfield	" 26....	34½	36

On the whole sown in open seed yielded 159 pounds and sown in frame seed 153½ pounds, showing that it is unnecessary to sow in frame for yield and, of course, the cost is greater in time spent on the frame sown seed.

ONION SETS-TEST OF VARIETIES

Project No. 155.—No commercial sets were tried in this test this season. Two samples were planted of Yellow Globe Danvers, one from sets grown at Central Experimental Farm, Ottawa, and the other from sets grown at Agassiz Experimental Farm. The Agassiz grown sets yielded 25 pounds onions to 60 foot row and the Ottawa grown sets 18½ pounds.

PARSNIPS

Project No. 157.—Two samples of seed were sown, both Ottawa grown seed, No. 104-5 yielding 162 pounds roots and No. 104 yielding 128 pounds to 60-foot row. The former, though yielding the larger amount, grew inferior roots which were misshapen and branching while the latter made good, well shaped roots.

PARSLEY

Project No. 196.—Champion Moss Curled and Triple Curled were the varieties tried this season, the former yielding a very good crop of excellent quality; in fact it is the best we have ever tried; the latter only a medium crop and that of poor quality. All the parsley was allowed to go to seed and a quantity of seed was saved.

PEAS—TEST OF VARIETIES

Project No. 159

Name of Variety	Date of Sowing	Date of Blooming	Date ready for use	Height	Weight
					lb.
Telephone	Mar. 28	June 6	June 27	6	33½
Thos. Laxton	" 28	May 27	" 18	5½	30
Pilot	" 28	" 28	" 23	4½	21
American Wonder	" 28	" 30	" 23	3	20
McLean Advancer, Ottawa 167-8	" 28	June 2	" 18	3	17½
Western Beauty	" 28	May 30	" 18	2	16½
Gregory Surprise	" 28	" 25	" 16	4	15½
Danby Stratagem	" 28	June 9	July 9	1½	15½
Juno	" 28	" 12	" 2	3	14½
Gradus	" 28	May 28	June 23	5½	13¼
McLean Advancer, Commercial	" 28	June 6	" 27	4½	13
Stevenson, V.I.S. 2360	" 28	May 28	" 24	1¼	12½
Extra Early Blue Bantam	" 28	" 28	" 18	2½	12¼
Reliance	" 28	June 8	" 30	3	11¾
Sutton Excelsior	" 28	May 28	" 21	2	11¾
Homesteader	" 28	June 6	" 28	2	8½
Heroine	" 28	" 10	" 30	2½	–

Rows were 30 feet long for each variety.

Telephone was the best, yielding more than one pound to the foot sown; the pods were large and well filled. Thos. Laxton was very good and very early. Of the other varieties, Pilot and American Wonder were also good and fairly early. Ottawa grown seed was ahead of the commercial seed in McLean Advancer.

The feature of this year's test of varieties was the first trial of a new pea. The Stevenson, introduced from the Vancouver Island Experimental Station, is a hybrid developed by Mr. Lionel Stevenson when superintendent of the Vancouver Island Experimental Station, and it proved to be an excellent pea. This pea is a true dwarf, only growing to fifteen inches in height and bearing a large, well filled pod of large sized peas. The colour of the pod is a beautiful green and the growth of the plant is vigorous; it is also among the earliest to mature. The pea is of excellent flavour. Heroine did not germinate well, hence its failure.

PEAS—CULTURAL EXPERIMENT

Project No. 158.—To determine the most suitable time to sow peas by sowing them at intervals of two weeks between sowings. Three varieties were used. Thirty feet was sown at each sowing.

Name of Variety	Date of Sowing	Date of Blooming	Date ready for use	Height	Yield
					lb.
McLean Advancer	Mar. 28	June 6	June 27	4½	13
	April 11	" 1	July 7	4½	18½
	" 25	" 7	" 17	4½	9¾
	May 9	" 27	" 25	4½	11½
Danby Stratagem	Mar. 28	June 9	July 9	1½	15½
	April 11	" 13	" 11	1½	9
	" 25	" 18	" 9	1½	5
	May 9	July 1	" 27	1½	6½
Gradus	Mar. 28	May 28	June 23	5½	13½
	April 11	" 28	" 30	4	15½
	" 25	June 4	July 2	3½	8½
	May 9	" 24	" 11	4	7

It was considered advisable this year to increase the interval between sowings from one week to two weeks as the difference was not sufficient during the more rapid growth of the later sown peas.

It is clearly demonstrated by above table that the earlier sowings are better than the late ones. This is largely due to the amount of mildew which invariably attacks late sown peas in this district.

PEPPERS—TEST OF VARIETIES

Project No. 197.—Only one variety, Ruby King, was used; it was sown in hotbed April 5 and planted out May 23, but did not ripen. There was a yield of 18 pounds of green peppers to 60 feet.

RADISH—TEST OF VARIETIES

Project No. 169. Four varieties were tried this year. Part of the seed of each was sown in the open and part under cheese cloth protection. That sown under cheese cloth grew a fairly good crop but suffered from a black rot in some cases and that sown in the open failed completely owing to flea beetle and maggot.

SPINACH—TEST OF VARIETIES

Project No. 198. Only one variety, New Zealand, was grown this year; it made promise of a good crop but ran to seed when small.

SQUASH—TEST OF VARIETIES

Project No. 173.

Name of Variety	Date Sown	Amount Sown	Date ready for use	Yield
				lb.
Golden Hubbard	May 6	3 hills	Aug. 15	173
Hubbard	" 6	3 "	" 26	133½

Golden Hubbard is the better both in yield and quality and is the better keeper.

VEGETABLE MARROW

Project No. 199.

Name of Variety	Date Sown	Amount Sown	Date ready for use	Yield
				lb.
English Vegetable Marrow	May 6	3 hills	July 21	351½
Long White Bush Marrow	" 6	3 "	" 25	194¾

These varieties of vegetable marrows reversed last year's results, English vegetable marrow nearly doubling the yield of Long White Bush marrow; the latter has the advantage of taking up less room than the former.

TOMATOES—TEST OF VARIETIES

Project No. 175.

Name of Variety	Date of Sowing	Date of planting out	Date of blooming	Date of ripening	Yield ripe	Yield green
					lb.	lb.
Victoria Whole Salad	Mar. 21	May 18	June 2	Aug. 15	83½	24¾
Chalk's Early Jewel 0–710	" 21	" 18	May 29	" 10	62¾	7
Danish Export	April 5	" 18	June 7	" 6	62¾	8
Earlibell, 0–734	Mar. 21	" 18	May 29	" 12	62	19½
Danish Export, 0–722	" 21	" 18	June 2	July 29	61¾	11½
Chalk's Early Jewel	" 21	" 18	" 7	Aug. 24	51	8
Alacrity-Hipper, 0–709	" 22	" 18	May 29	July 29	50½	20
Crimson Canner 0–707	" 21	" 18	June 30	Aug. 19	46½	29
Burbank Early 0–732	" 21	" 18	" 29	" 6	46	8½
Alacrity-Earlibell, 0–711	" 21	" 18	" 2	" 13	40	27
Alacrity, 0–704	" 21	" 18	" 2	" 9	29½	13
Bonny Best 0–719	" 21	" 18	" 7	" 19	28¾	40

Number of plants, five.

With the exception of three varieties all the seed used this year was Ottawa grown and it showed up very favourably with the commercial grown seed.

Victoria Whole Salad was by far the best yielder this year and the quality was good; the fruit was larger than Danish Export and of better flavour, smooth and round and did not crack and rot in the wet weather as did the larger varieties; it is a universal favourite in this locality. Chalk's Early Jewel and Danish Export are very good, the latter being the earliest to mature. Bonny Best, usually one of the best here, failed this season, the wet weather in the ripening season affecting it.

TURNIPS—TEST OF VARIETIES

Project No. 176

Name of Variety	Date of sowing	Quantity Sown	Date of thinning	Date ready for use	Yield
					Lb.
Golden Ball	April 5	30 ft.	May 16	July 12	24¾
Early Snowball	" 5	30 "	" 16	" 12	17
Invicta	" 5	30 "			

Golden Ball was the best in yield though not of such good flavour as Early Snowball. The cabbage root maggot bores into the white and yellow turnips when they get large and destroys them. Invicta failed completely owing to ravages of flea beetle.

ORCHARD

APPLES

Project Nos. 122 and 123. All the apple trees except the Northern Spy are in full bearing and are making good growth and yielding fairly well, some exceptionally so. The trees were all sprayed with lime sulphur solution and very little scab was to be found, the fruit being the best and cleanest we have had so far. The following table shows the yields of the different varieties:—

Variety	Number of Trees	Yield	Remarks
		lb.	
Lowland Raspberry	1	28	75 per cent No. 1 fruit
Duchess of Oldenburg	2	66	All No. 1 fruit
Wealthy	2	115	" "
Gravenstein	2	12	" "
McIntosh Red	2	25	No marketable fruit, scabby
Delicious	2	107	
Winter Banana	2	67	
Jonathan	2	72½	All No. 1 fruit
Yellow Transparent	2	82	" "
King	6	128½	" "
Grimes Golden	5	553	95 per cent No. 1 fruit
Belle de Boskoop	6	661	All No. 1 fruit
Northern Spy	6	.....	Has not bloomed yet
Cox Orange Pippin	5	85	All No. 1 fruit
Wagener	6	812	90 per cent No. 1 fruit
Ontario	5	309	99 " "

The best of the early apples is undoubtedly the Yellow Transparent; it is the earliest and cleanest, having no disease.

Of the late apples the Wagener has again led in productiveness with the Grimes Golden a good second, but for flavour the Grimes Golden is the better of the two, and Belle de Boskoop yielded very well.

PEARS

Project No. 131. The pear crop was almost a total failure, as it was throughout the district owing to the late frosts destroying the first forming fruit. Three trees of Boussock produced 81 pounds; three trees Clairgeau, 72 pounds; three trees Bartlett, 38½ pounds; three trees Dr. Jules Guyot, 29½ pounds. The best early pears are Bartlett and Dr. Jules Guyot. The best late ones are Bosc, Boussock, and Clairgeau.

PLUMS

Project No. 132. The plum crop was poor this year; the trees blossomed freely but late frosts ruined the fruiting season and heavy rains in August and September destroyed most of the fruit which came to maturity.

Diamond gave a yield of 664 pounds to three trees and at least twenty per cent more were spoilt by excessive rains. Washington yielded 165 pounds to three trees, three trees of Italian Prune 130 pounds, and three trees Millard 100 pounds. The best plum we have for yield and flavour is the Washington. Diamond, though the best in point of production, is a poor plum in flavour and contains very little juice. The Italian Prune suffers more from the wet weather than any other.

CHERRIES

Project No. 125. The sweet cherry crop was small; as was the case with the plum crop, the late frosts were ruinous. Only two varieties Bing and Royal Anne, the former yielding 159 pounds and the latter 122 pounds to three trees, had crops worth recording.

The sour varieties were a little improvement on the sweet varieties, English Morello being the best of a poor lot. Most of the cherries were spoilt by rain.

SMALL FRUITS

Projects 124, 126, 127, 128, 129, 130 and 133. Blackberries, loganberries, currants and gooseberries having been removed to a new plantation did not yield any fruit this year.

STRAWBERRIES

Project No. 134. The new plantation of strawberries made in the main garden last year was in full bearing and did very well; the following table shows the results of this year's crop.

Name of Variety	Date began to bloom	Date in full bloom	Number of plants	Date first fruit ripe	Size of fruit	Total Yield
						lb.
Magoon	May 5	May 16	100	June 9	Medium	99
Sharpless	" 4	" 16	100	" 7	"	86½
Paxton	" 10	" 31	100	" 13	Large	75¾
Royal Sovereign	" 1	" 14	100	" 3	Medium	49
Dollar	" 1	" 14	100	" 1	Small	26½

Magoon yielded almost one pound of fruit per plant and held up its reputation as the best commercial berry for the Coast district of British Columbia. The earliest to ripen is the Dollar, a favourite with many growers, but it is not a heavy producer. Royal Sovereign is the best berry for home use, is of exceptionally good flavour but not a great yielder.

CULTURAL TEST WITH STRAWBERRIES

Project 134a.—A cultural experiment was made with the Paxton variety of strawberry to determine the value of commercial fertilizer in addition to the barnyard manure used on check plot.

The result obtained was that the commercial fertilizer plot grew too much foliage and less fruit than the check plot.

Check plot, 100 plants. . . . . 75¾ pounds yield
Fertilizer plot, 100 plants. . . . . 63½ pounds yield

FLOWERS

ROSES—TEST OF VARIETIES

Project No. 115.—All of our roses did well this season; some varieties of the climbing roses bloomed well and very early. The climbing Papa Gontier and Gloire de Dijon were in blossom on May 10.

Where all did so well it is hard to choose any particular rose for special excellence. Margaret Molyneux, Killarney, White Maman Cochet, James Coey, Hugh Dickson and Frau Karl Druschki were perhaps the pick of a good lot.

The new roses planted last year have made strong growth and should make a good showing next season.

SWEET PEAS—TEST OF VARIETIES

Project No. 117. Of thirty varieties of sweet peas sown the best were Constance Hinton (white), Royal Purple, The President (orange scarlet), King Manoel (maroon), King Edward (crimson), and Hercules (pink). All sweet peas were of good quality and bloomed profusely, a marked improvement on last year.

ANNUALS—TEST OF VARIETIES

Project No. 110.—This was a good year for annuals though a very wet autumn shortened the blooming season and prevented much seed collecting.

The annuals which made the best showing were Salpiglossis, Schizanthus, Cosmos, Zinnia, Linaria and Phlox Drummondi.

TULIPS, EARLY—TEST OF VARIETIES

Project No. 118.—The tulips this year were not so good as they were last year, but were good. Artus and Keizerskroon were the best.

TULIPS, LATE OR MAY FLOWERING—TEST OF VARIETIES

Project No. 119.—Of the late tulips Gesneriana spathulata and the Darwin, Clara Butt were very good.

BULBS, OTHER THAN TULIPS

Project No. 53.—All the gladioli were good, as were the narcissi.

ASTERS—TEST OF VARIETIES

Project 111a.—Few of the asters did well this year, whole blocks of them being destroyed by the stem and root rot caused by a fungus which lives in the soil, a Fusarium species, we think; this disease is similar to a disease affecting the tomato and is very prevalent throughout the district.

ANTIRRHINUMS—TEST OF VARIETIES

Project No. 111.—This was an off year for antirrhinums which usually do well here, and they did not make the showing they did in the past.

IRISES—TEST OF VARIETIES

Project No. 114.—The Germanica were the best, the Johan de Witt the best of them all.

PERENNIALS

The perennial border has recovered from the effects of the severe thinning it got last year and the majority of the plants did very well, supplying a continual show of colour from early spring to autumn, Delphiniums, Irises, Poppies, Doronicum and Rudbeckia were good in their seasons.

SHRUBS—TEST OF VARIETIES

Project No. 116.—Of the flowering shrubs Azalea Mollis, Rhododendrons and Blue Hydrangeas were the best. Syringas, Philadelphus and Ceanothus were also good in their seasons. All shrubs did well.

HEDGES—TEST OF VARIETIES

Project No. 113.—Caragana and Deutzia hedges were very good and blossomed freely but are only ornamental. The holly, European maple, Spiraea and Hawthorn are the best of the serviceable varieties.

Of the flowering trees the magnolias, Japanese dogwoods, Japanese cherries and crabapples, mountain ashes and laburnums were very beautiful; the *Peterostyrax hispida* and Horse chestnut were much admired.

Among the shade trees the cut-leaved beeches and copper beeches are the best. Weeping birches, lindens and maples, both Norway and Sycamore, were good.

The trees in the shelter belt on the northerly boundary of the farm have made good growth and the following are some girth measurements taken of the trees four feet six inches from the ground.

Scotch firs	4	feet		
Red pines	4	"	1	inch
European larch	5	"	2	"
Birch	3	"	6	"
Willow	5	"	5	"
Tamarack	2	"	2	"
European elm	5	"	4	"
Plane	4	"	8	"
Lime	3	"	9	"
Cutleaved beech	2	"	4	"
European beech	3	"	11	"
European sweet chestnut	4	"		
Maple	3	"	5	"
White pine (*Pinus Strobus*)	5	"		

CEREALS

LAND AND TREATMENT

The land upon which the cereal crops were grown is a chocolate sandy loam. It had grown a crop of corn the previous year, was spring ploughed and well worked. All grains were treated for smut before sowing. The seed was sown April 18. The crops were harvested from July 9 to August 16.

VARIETY AND STRAIN TESTS OF OATS

Project No. 49.—Eleven varieties of oats were tested. Two strains of the old favourite Banner were near the bottom in comparative yields beating only Daubeney and Liberty, a hulless variety. Victory and Gold Rain gave the best yields with Irish Victor third.

OATS—TESTS OF VARIETIES

Name of Variety	Date of Sowing	Date of Ripening	Number of days maturing	Average length of Straw, including Head	Strength of Straw on a Scale of 10 points	Actual Yield of Grain per acre	Remarks
				Inches		Pounds	
Banner, Ottawa 49	April 18	Aug. 8	112	60	10	2,820	
Banner, U.B.C	" 18	" 8	112	64	10	2,700	
Daubeney, Ottawa 47	" 18	" 1	105	54	9	2,760	
Gold Rain	" 18	" 8	112	70	9	3,360	
Irish Victor	" 18	" 8	112	68	9	1,300	
Liberty, Ottawa 480	" 18	" 8	112	58	10	1,920	
Ligowo	" 18	" 9	113	64	10	3,060	
Lincoln	" 18	" 9	113	66	10	2,880	
O.A.C. No. 72	" 18	" 10	114	64	10	2,820	
Swedish Select	" 18	" 10	114	66	10	3,000	Most uniform plot of all
Victory	" 18	" 10	114	68	8	3,360	½ plot lodged

FIVE-YEAR AVERAGES

Variety	Average number of days maturing	Average yield per acre
		Bush. Lbs.
Victory	108	78 ..
Gold Rain	107	76 5
Irish Victor	108	75 33
Lincoln	109	73 14
Swedish Select	108	71 28
O.A.C. No. 72	108	70 32
Ligowo	108	68 16
Banner	108	68 15
Daubeney	101	57 20

These results would indicate that Victory is one of the best oats for this district. Banner has long been the recommended variety but recently it has given poorer yields. Gold Rain and Irish Victor have given good yields but some growers object to the yellowish colour of the former. Daubeney is one of the best early oats but is a poor yielder here.

VARIETY AND STRAIN TESTS OF BARLEY

Project No. 49.—Twelve varieties of barley were tested. Bark's Excelsior gave by far the best yield followed by Gold, Duckbill and Oderbruch. The poorest yielders were Guymalaye, Albert and Success. The yields were well above normal.

BARLEY—TEST OF VARIETIES

Name of Variety	Date of Sowing	Date of ripening	Number of days maturing	Average length of Straw including Head	Strength of Straw on a scale of 10 points	Actual yield of Grain per Acre	Remarks
				Inches		Pounds	
Albert, Ottawa 54.....(6)	April 18..	July 19..	92	36	8	1,800	
Danish Chevalier.....(2)	" 18..	" 28..	101	39	4	2,640	All plot lodged
Bark's Excelsior.....(6)	" 18..	Aug. 4..	108	40	9	3,420	
Duckbill, Ottawa 57..(2)	" 18..	" 1..	105	34	8	2,760	
Gold.....(2)	" 18..	July 29..	102	30	5	2,820	¾ plot lodged
Guymalaye.....(6)	" 18..	" 19..	92	30	6	1,740	½ " "
Manchurian, Ottawa 50(6)	" 18..	" 28..	101	42	7	2,640	½ " "
O.A.C. No. 21.....(6)	" 18..	" 28..	101	46	5	2,460	¼ " "
Oderbruch.....(6)	" 18..	" 27..	100	42	4	2,760	Entire plot lodged
Odessa C.....(6)	" 18..	" 28..	101	42	5	2,700	¾ plot lodged
Stella, Ottawa 58.....(6)	" 18..	" 28..	101	42	5	2,700	¾ " "
Success.....(6)	" 18..	" 19..	92	42	4	1,860	Entire plot lodged

FIVE-YEAR AVERAGES

Eight varieties have been grown for at least five years and have given the following average results:—

Variety	Average number of days maturing	Average Yield per acre	
		Bush.	Lbs.
Gold (2)	102	48	33
Danish Chevalier (2)	103	45	30
Odessa C. (6)	98	44	17
Oderbruch (6)	97	43	6
Manchurian, Ottawa 50 (6)	98	43	..
O.A.C. No. 21 (6)	99	41	6
Duckbill, Ottawa 57 (2)	103	39	42
Success (6)	91	35	6

Gold has given consistent, heavy yields and along with Danish Chevalier are the recommended two-row varieties. Odessa has given the best average results of the six-row varieties followed closely by Oderbruch and Manchurian, both good sorts.

VARIETY AND STRAIN TESTS WITH PEAS

Project No. 49.—No work was done in this test. Solo is consistently the best yielding pea in this district and along with Arthur is highly recommended.

VARIETY AND STRAIN TESTS WITH WHEAT

Project No. 49.—Owing to the presence of wheat midge little work with wheat has been attempted. Each year a small plot of Marquis is grown for the Influence of Environment work. This year a plot of White Russian was also grown but gave poor results in comparison with the Marquis, thus duplicating the results of last year.

WHEAT—TEST OF VARIETIES

Name of Variety	Date of Sowing	Date of ripening	Number of days maturing	Average length of Straw including Head	Strength of Straw on a scale of 10 points	Actual yield of Grain per Acre	Remarks
				Inches		Pounds	
Marquis for Chemist.....	April 18..	Aug 16..	120	55	9	1,560	Wheat midge present in both crops
White Russian, U.B.C...	" 18..	" 16..	120	55	9	1,560	

VARIETY AND STRAIN TESTS OF OATS FOR HAY

Project No. 50 *Size of plot, one-sixtieth acre*

Variety	Date of Sowing	Date of Harvesting	Total weight per acre green	Total weight per acre cured
			Lbs.	Lbs.
Banner, Ottawa 49	April 18	July 9	17,580	6,360
Daubeney, Ottawa 47	" 18	" 9	13,500	4,800
Ligowo	" 18	" 9	14,040	4,920
Swedish Select	" 18	" 9	16,860	6,060

Banner gave the greatest yield for hay, followed by Swedish Select, Ligowo and Daubeney. In the five-year average results Swedish Select displaces Banner for first place leaving the position of the other two varieties unchanged.

MIXED VARIETIES OF PEAS AND OATS

Project No. 51.—A mixture of Arthur peas and Banner oats was compared with a mixture of Solo peas and Banner oats, the former giving the best results.

MIXED GRAINS—TEST OF VARIETIES

Name of Variety	Date of sowing	Date of ripening	Number of days maturing	Actual Yield of Grain per acre
				Lbs.
Arthur Peas and Banner Oats	April 18	Aug. 8	112	2,280
Solo Peas and Banner Oats	" 18	" 8	112	1,920

FIVE-YEAR AVERAGES

Variety	Average number of days maturing	Average yield per acre
		Lbs.
Banner Oats and Arthur Peas	100	2,563
Banner Oats and Solo Peas	110	2,400

These five-year average results show Arthur peas with Banner oats giving 163 pounds of grain per acre more than the Solo peas and Banner oats.

FORAGE CROPS

The season of 1921 was a favourable one for all forage crops except corn. The hay crop was a heavy one and with the dry period during July a large portion of it was saved in excellent condition. The yields of mangels and carrots were the best for many years.

SOIL AND MANURING

Following out the same rotation plan of previous years the forage crops were grown on land that had been in pasture the previous year, manured in the late summer, ploughed, reploughed in the spring, well worked and set up in drills for roots. At time of seeding an application of 150 pounds of nitrate of soda and 300 pounds of superphosphate of lime was made.

VARIETY TESTS OF CORN FOR ENSILAGE

Project No. 61.—Of the twelve varieties of corn tested Bailey and Leaming gave the greatest net yields but these varieties do not cob up well here. Longfellow, Golden Glow and Northwestern Dent are the best varieties for this district. The last three on the list are early but do not yield sufficient bulk.

INDIAN CORN FOR ENSILAGE—TEST OF VARIETIES

No.	Name of Variety	Date of sowing	Date of cutting	Average Height	Condition when cut	Weight per acre grown in hills
				Inches		Tons Lbs
1	Bailey	May 25	Sept. 23	96	Cobs forming	22 1,500
2	Leaming	" 25	" 23	106	Cobs formed	20 1·000
3	Compton's Early	" 25	" 23	100	Early milk	20
4	Wisconsin No. 7	" 25	" 23	80	Late milk	19
5	North Western Dent	" 25	" 23	82	Glazed	18
6	White Cap Yellow Dent	" 25	" 23	98	Soft dough	18
7	Longfellow	" 25	" 23	92	Glazed	16 1,750
8	North Dakota	" 25	" 23	92	Cobs forming	16 1,000
9	Golden Glow	" 25	" 23	90	Late milk	15 1,500
10	Twitchell's Pride	" 25	" 23	62	Ripe	10 1,000
11	Quebec 28	" 25	" 23	60	Glazed	9 1,500
12	Canada Yellow	" 25	" 23	72	Almost ripe	8 500

VARIETY TESTS OF SUNFLOWERS FOR ENSILAGE

Project No. 63.—Four varieties of sunflowers were grown on one one hundredth acre plots sown in check rows three feet apart each way. The soil and treatment were similar to that for corn.

Variety	Date of sowing	Date of harvesting	Yield per acre
			Tons Lbs.
Sunflower, Alberta	May 25	Aug. 23	20 1,600
Early Sunflower, Dr. Saunders	" 25	" 23	16 1,600
Freisen Sunflower, Rostbern	" 25	" 23	16 1,120
Giant Russian (Commercial)	" 25	" 23	14 800

Alberta seed produced the greatest yield with Dr. Saunders early selection second, Rosthern seed third and Commercial Russian Giant last.

VARIETY AND STRAIN TESTS OF MANGELS

Project No. 76.—Twenty-two varieties or strains of mangels were grown in uniform test rows with the following results.

MANGELS—TEST OF VARIETIES

	Variety	Yield per acre				Remarks
		tons	lb.	bush.	lb.	
1	Sludstrup (Denmark)	31	650	1,253		Fairly smooth, not prongy.
2	Danish Sludstrup (Steeves)	31	300	1,246		Smooth and not too prongy.
3	Danish Sludstrup (United Seed Growers).	29	520	1,170	20	Rather nice crop of uniform roots, smooth and not prongy.
4	Yellow Leviathan (Agassiz—1919 seed).	29	100	1,162		Inclined to be prongy, quite a number of small roots.
5	Rose Giant (Denmark	28	490	1,129	40	Uniform in colour and shape.
6	Yellow Ovoid Giant (Denmark)	27	950	1,099		Fairly uniform in shape but badly cracked.
7	Royal Giant Sugar Beet (Steele Briggs).	27	740	1,094	40	Badly mixed in colour, uniform in shape.
8	Ideal (Rennie)	27	390	1,087	40	Several roots rather long and spindly, rough at crown.
9	Yellow Leviathan (Rennie)	26	1,550	1,071		Nice smooth type of root, free from roughness
10	Golden Tankard (Rennie)	26	1,340	1,066	40	Uniformly shaped and not prongy.
11	White Sugar (Vancouver Milling Co.).	26	990	1,059	40	Uniform in shape, slightly rough.
12	Giant White Sugar (United Seed Growers)	25	190	1,003	40	Uniform crop, not prongy.
13	Giant White Green Top (Denmark)	24	1,350	987		Nice smooth type of root.
14	Perfection Mammoth Long Red (Rennie).	23	1,040	920	40	Too prongy, hard to pull, too much top.
15	Giant Yellow ½ Long Intermediate (Rennie).	22	1,850	917		Too many spindly roots.
16	Yellow Intermediate (Ottawa)	22	450	889		Good crop of uniformly shaped roots.
17	Yellow Leviathan (United Seed Growers).	21	1,610	872	10	Rather nice smooth roots.
18	Long Red (Vancouver Milling Co.)	21	1,050	861		Too prongy, too hard to pull.
19	Yellow Intermediate (Vancouver Milling Co.).	20	1,300	826		Rather prongy, fairly uniform crop.
20	Yellow Intermediate (United Seed Growers.)	20	1,090	821	40	Very high percentage of small roots
21	Giant White Sugar (Rennie)	20	811	816	11	Uniformly shaped roots, nice crop.
22	Giant Yellow Globe (Rennie)	18	1,100	742		Not well shaped.

In yield, three strains of Danish Sludstrup lead the list. This has long been one of the recommended varieties for this district. It is smooth, of good shape, easy to pull and a good keeper. Yellow Intermediate and Golden Tankard are also good varieties. It is difficult to get consistent results from year to year in this work as the quality of the seed is so variable.

VARIETY TESTS OF CARROTS

Project No. 67.—Seven varieties were grown in test plots with the following results:—

CARROTS—TEST OF VARIETIES

No.	Variety	Yield per acre				Remarks
		tons	lb.	tons	lb.	
1	Short Belgian (Rennie)	38	300	1,526		Good crop of nice smooth roots.
2	White Intermediate (Vancouver Milling Co.)	36	1,500	1,470		Smooth carrot, good crop.
3	Large White Belgian (Rennie)	35	1,120	1,422	20	Nice, uniformly shaped smooth carrot.
4	Mammoth White Intermediate (Rennie)	35		1,400		Uniform crop of good big carrots.
5	Mammoth Short White (Rennie)	34	600	1,372		Not quite uniform in shape, many too rough.
6	½ Long White (United Seed Growers)	33	1,900	1,358		Several rather rough and cracked.
7	Danish Champion (Ottawa)	26	780	1,057	30	Nicely shaped, smooth carrot, uniform crop.

All plots produced unusually heavy crops, Short Belgian giving the best yield. The White Intermediate and Short White varieties have been consistent good producers and are recommended.

VARIETY OF TESTS OF SUGAR BEETS

Project No. 77.—To determine the productiveness and factory value of sugar beets three plots were grown. The yields were as follows:—

SUGAR BEETS—TEST OF VARIETIES

No.	Variety	Yield per acre				Remarks
		tons	lb.	bush.	lb.	
1	B.C. Grown	15	1,150	623		Rough, prongy, hard to pull, not large enough.
2	Chatham	14	1,890	617	40	Too many small roots, very prongy, hard to pull.
3	Waterloo	14	910	578	10	Very many small roots, very prongy, hard to pull.

Like the mangel and carrot crops all yields were good, British Columbia producing the best crop. Representative roots of each variety tested were forwarded to the Chemistry Division for analysis. During the past eighteen years the average amount of sugar in the juice in sugar beets grown here is 16·69 per cent and the yields have compared favourably with those in other parts of Canada. Sugar beets are not recommended for stock food as the yield is less than mangels and the crop too difficult to pull.

VARIETY AND STRAIN TESTS WITH SWEDE TURNIPS

Project No. 80.—Three plots of turnips were sown under the same conditions as the other roots. Ditmar's Swede, Monarch turnip (Nappan) and Sutton's Champion (Fredericton) were the varieties. Owing to the ravages of the aphis and maggots the crop was a complete failure. This result is in accord with past trials and turnips are not recommended here where mangels do so well.

CHEMISTRY

EXPERIMENT E 21

Project No. 53a.—Following up the work with commercial fertilizers concluded last year with Experiment E 7, another one with the same object in view was commenced, i.e., to determine the most profitable combination and quality of a fertilizer mixture, as measured by its influence in relation to cost, throughout a three year rotation. The rotation commenced in 1921 consists of mangels, grain and hay. The results of the first crop (mangels) are given below.

HISTORY OF THE LAND

The experiment is conducted on a comparatively new piece of good, clean, fairly uniform soil. The land is a heavy, sandy, chocolate loam with a gravel subsoil. It was cleared of heavy firs, birch, alder, maple, etc., in 1914; grain crop, 1915; pasture, 1916; corn, 1917; grain, 1918; hay, 1919; and pasture, 1920.

Ten tons of barnyard mixture were applied in the fall of 1920 and the land ploughed; ploughed again in the spring of 1921 and well worked. It is fairly rich land and hence the improving power of fertilizers was handicapped. The field was laid out in plots one-fortieth of an acre in size and fertilizers applied broadcast just previous to seeding. Drills were set up with the double mould board plough and the seed sown May 5 and 6 with a hand planter. The field was kept well cleaned and the roots harvested October 6 and 7.

FERTILIZERS IN POUNDS PER ACRE APPLIED MAY 5, 1921

Plot No.	Barnyard manure	Nitrate of soda	Superphosphate of lime	Muriate of potash	Basic Slag	Tankage	Dried Blood	Yield	
								tons	lb.
1A		400	500	200				43	600
1B		200	500	200				42	400
1C		100	500	200				41	680
2A		200	500	200				44	480
2B		100	500	200				34	1,600
2C		50	500	200				33	640
3A		400	250	200				44	....
3B		200	250	200				38	800
3C		100	250	200				39	400
Check								23	800
4A		200	250	200				39	....
4B		100	250	200				34	1,080
4C		50	250	200				37	1,320
5A		400	500	100				44	640
5B		200	500	100				41	1,480
5C		100	500	100				37	1,440
6A		200	500	100				39	1,280
6B		100	500	100				37	200
6C		50	500	100				31	400
7A		400	250	100				39	600
7B		200	250	100				28	1,600
7C		100	250	100				29	800
Permanent check								21	1,000

Plot No.	Barn-yard manure	Nitrate of soda	Super-phos-phate of lime	Muriate of potash	Basic Slag	Tank-age	Dried Blood	Yield	
								tons	lb.
8A	.....	200	250	100	.....	.....	.....	35	1,920
8B	.....	100	250	100	.....	.....	.....	34	1,000
8C	.....	50	250	100	.....	.....	.....	37	400
9A	10	200	500	100	.....	.....	.....	42	520
9B	10	100	500	100	.....	.....	.....	40	1,320
9C	10	50	500	100	.....	.....	.....	40	440
10	.....	.....	500	100	.....	.....	.....	37	320
11A	.....	400	500	100	.....	.....	.....	44	1,280
11B	.....	300	375	75	.....	.....	.....	39	1,320
11C	.....	200	250	50	.....	.....	.....	36	800
12A	.....	200	500	100	.....	.....	.....	41	120
12B	.....	150	375	75	.....	.....	.....	38	1,000
12C	.....	100	250	50	.....	.....	.....	37	920
13A	.....	400	250	100	.....	.....	.....	43	800
13B	.....	300	188	75	.....	.....	.....	38	1,600
13C	.....	200	125	50	.....	.....	.....	37	920
14A	10	200	500	100	.....	.....	.....	40	1,160
14B	10	150	375	75	.....	.....	.....	39	520
14C	10	100	250	50	.....	.....	.....	41	1,440
15A	10	200	250	100	.....	.....	.....	45	....
15B	10	150	188	75	.....	.....	.....	40	800
15C	10	100	125	50	.....	.....	.....	41	320
16A	.....	400	250	100	250	.....	.....	41	1,280
16B	.....	300	188	75	188	.....	.....	37	320
16C	.....	200	125	50	125	.....	.....	33	1,800
17A	.....	400	.....	100	500	.....	.....	28	400
17B	.....	300	.....	75	375	.....	.....	25	880
17C	.....	200	.....	50	250	.....	.....	24	1,120
Check	.....	.....	.....	.....	.....	.....	.....	20	1,680
18A	.....	200	360	100	.....	384	.....	37	1,680
18B	.....	150	270	75	.....	288	.....	36	400
18C	.....	100	180	50	.....	192	.....	35	1,600
19A	.....	.....	306	100	.....	384	280	35	1,640
19B	.....	.....	230	75	.....	288	210	33	1,480
19C	.....	.....	153	50	.....	192	140	36	680
20A	.....	.....	306	100	.....	384	280	38	1,920
20B	.....	.....	230	75	.....	288	210	31	160
20C	.....	.....	153	50	.....	192	140	30	....
21A	15	.....	.....	.....	.....	.....	.....	16	640
21B	10	.....	.....	.....	.....	.....	.....	16	880

The spring applications of manure indicated in the table were supplemental to the 10 tons of manure, per acre, which the whole area received in the previous fall.

The results show that maximum yields of mangels cannot be secured by the use of only barnyard manure. The three check plots and numbers 21A and 21B gave the five poorest yields. It is difficult to explain why the two latter plots yielded less than the check plots, unless that the spring applied manure was not well rotted and may have had a tendency to dry the land. This, however, would apply equally to plot 15A which produced the maximum yield. In comparing series six and nine the ten ton application of manure in the spring increased the yields when applied with nitrate, superphosphate and potash. The heaviest yielding plot No. 15A had a medium applica-

tion of commercial fertilizers and ten tons of manure in spring. Except series 8, 14 and 19 plot A of each series which received the heaviest applications yielded the heaviest crops. There was less consistency in the yields from B and C plots of each series. In harmony with previous results secured here this experiment demonstrates that maximum profitable crops of mangels cannot be grown here without some assistance from commercial fertilizers.

SODA NITROGEN VERSUS NITRATE OF SODA FOR OATS

Project No. 52a.—During the spring of 1921 soda nitrogen a nitrogenous fertilizer was offered for sale in Vancouver. It was deemed advisable to get some data on its value as compared to nitrate of soda. Accordingly ten plots one-fortieth of an acre in size were utilized for this purpose with the following results.

OATS

Plot	—	Yield of grain per acre	Yield of straw per acre
		lb.	lb.
1	Nitrate of soda, 150 pounds applied at seeding	1,240	5,400
2	Soda nitrogen, 150 " "	1,160	2,600
3	Nitrate of soda 300 " "	1,560	5,000
4	Soda nitrogen, 300 " "	1,680	3,800
5	Check Plot	1,240	5,000
6	Nitrate of soda. 150 pounds applied as top dressing	1,280	4,200
7	Soda nitrogen, 150 " "	1,680	5,800
8	Nitrate of Soda, 300 " "	1,440	3,800
9	Soda nitrogen, 300 " "	2,040	6,200
10	Check Plot	1,200	3,000

The weights of straw are of little value because of the amount of weeds.

With the exception of plots 1 and 2 best results are given in the soda nitrogen plots, especially in plot 9. In this plot practically all weeds were burnt up at the time soda nitrogen was applied. They came along afterwards but it would appear that the grain had a good start of the weeds. From these results it would appear that for grain soda nitrogen may be used profitably as a substitute for nitrate of soda.

SODA NITROGEN VERSUS NITRATE OF SODA FOR POTATOES

Project No. 52a.—Nine plots, seven four-hundred and eighty-fourths of one acre in size, were devoted to this work. Wee McGregor potatoes were planted May 7 and harvested October 3. It was estimated that eight per cent of the crop was diseased.

Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8	Plot 9
Nit. Soda 200 Superph. 300 Mur. Pot. 150	Soda Nitro. 200 Superph. 300 Mur.Pot.150	Nit. Soda 400 Superph. 300 Mur.Pot.150	Soda Nitro. 400 Superph. 300 Mur.Pot.150	Check	Nit. Soda 400 Superph. 300 Mur. Pot. 150 Nit. Soda applied 200 at planting, 200 as top dressing	Soda Nitro. 400 Superph. 300 Mur. Pot. 150 Soda Nitro. applied 200 at planting, 200 as top dressing	Superph. 300 Mur.Pot 150	Check
Yield per acre	marketable							
tons lbs.	tons lbs.	tons lbs.	tons lbs.	tons lbs.	tons lbs.	tons lbs.	tons lbs.	tons lbs.
9 254	6 1,345	7 1,488	6 141	5 648	10 121	8 1,977	5 1,409	5 717
Not marketable 1 1,872	3 707	2 1,943	2 1,601	3 1,191	2 425	2 267	3 1,053	3 1,191

These results show nitrate of soda superior to soda nitrogen in each instance, either in total crop or marketable crop, in heavy or light applications and applied at planting time or as a topdressing. The check plots gave lighter yields than the fertilized plots.

VALUE OF COMMON SALT (SODIUM CHLORIDE) AS A FERTILIZER FOR MANGELS

Project No. 202.—The object of this test was to determine the value of common salt for growing mangels alone and in combination with superphosphate of lime and nitrate of soda. The variety of mangels grown was Danish Sludstrup. The land received an application of barnyard manure at the rate of twelve tons per acre and was well cultivated.

Plot No.	Fertilizers applied per acre in pounds	Yield	
		Tons	Lbs.
1	Salt 500, superphosphate 300, nitrate 150	35	840
5	Superphosphate 300, nitrate 150	33	1,726
2	Salt 1,000	24	116
4	Salt 500	23	338
3	Check	21	226

These results demonstrate that with mangels, salt exerts a direct or indirect fertilizing influence. The increased yield of mangels secured, however, did not pay for the salt used on any plot.

POULTRY

No material additions have been made to the plant this year. The new house built last year to accommodate the laying contest is proving most satisfactory for the purpose and can be recommended as an ideal house for large flocks of layers.

The stock on hand at the end of the year consisted of the following: One hundred and sixty Barred Plymouth Rocks and two hundred and thirty-four S. C. White Leghorns, or a total of three hundred and ninety-four birds. All hens were trap-nested during the year and accurate results kept of the egg production and cost of feed.

INCUBATION

All eggs were hatched in the mammoth "Candee" incubator, the first chicks of the season being hatched on March 24 and the last on May 18.

Hatching records showed their average fertility to be ninety-four per cent but the number of chicks hatched was about forty per cent. Seventy per cent of the chicks lived to maturity.

Project No. 203.—A considerable amount of custom hatching was done at a charge of three cents per egg. Of the total 705 eggs set for custom hatching, 369 chicks, or 52·32 per cent, were hatched. There would seem to be a demand for custom hatching if it could be handled at suitable local centres in a commercial way.

EGGS SOLD FOR HATCHING

During the hatching season there was considerable demand for settings of eggs particularly of the Barred Rock breed. There were from fifty to sixty settings of this breed sold as compared to twenty-five settings of Leghorns. This would indicate that the farmer, from whom the demand principally came, wants a general-purpose bird, for which purpose the Barred Plymouth Rock is well suited. The demand for settings of eggs of this breed was at least double that which the Farm was able to supply.

BREEDING STOCK SOLD

A considerable number of Barred Rock and White Leghorn cockerels were sold for breeding purposes, the greater demand being for Rocks. Pedigree cockerels from high producing mothers such as we are able to provide now will do much to help bring up the average egg production in the province.

PEDIGREE BREEDING

Project No. 190.—For the purpose of determining hereditary tendencies in breeding heavier egg-laying strains and obtaining information as to the size of eggs and the vigour of birds, all birds are trapnested and pedigree and mating records are kept of every bird producing 200 eggs or over in her first year.

Breed	Total yearlings	No. of hens older	No. of hens laying 150 to 200 eggs		No. of hens laying 201 to 225 eggs		No. of hens laying 225 to 250 eggs		No. of hens laying over 250 eggs	
			Yearlings	Older	Yearlings	Older	Yearlings	Older	Yearlings	Older
Rocks	30	31	21	1	6	18	2	8	1	4
Leghorns	97	22	59	.....	26	9	7	10	5	3

Egg production has been raised during recent years until the standard of the flock averages in the neighbourhood of 200 eggs per bird with individuals as high as 282 eggs. In the Barred Rock flock of 61 breeding hens there are 39 over the 200 mark while in the Leghorn flock of 119 breeding hens there are 60 hens over the 200 egg standard.

FEEDING

Project No. 204.—With a view to securing some information on the relative value of commercial mixtures for poultry in comparison to home grown grain and mash an experiment has been started, and is to continue for a year or more if necessary.

For this experiment two pens of Barred Rocks and two of White Leghorns were chosen. In each pen of Barred Rocks there are ten birds while there are fifteen in each of the Leghorn pens. In this way there is a pen of Rocks and one of Leghorns fed the commercial mixture while the other Rock and Leghorn pens are fed the prevailing scratch and mash given the remainder of the poultry on the plant.

At the end of each year a report of the results to date will be made.

CONFINEMENT VERSUS RANGE

Project No. 189.—During the year an experiment was set on foot for a duration of five years to determine the effect on birds confined to pens as compared to the effect on others allowed free range.

For this experiment seventy Barred Rock and eighty White Leghorn pullets were selected. These were again separated into two pens of Rocks and two of Leghorns. The Rocks were again sub-divided into thirty-five birds confined and thirty-five on range and similarly the Leghorns with forty birds in each case.

At the end of each year a report will be made of results as the experiment progresses.

RECORD OF PERFORMANCE "A"

Project No. 205.—One hundred and fifty pullets are entered in Record of Performance "A." Of these, seventy are Barred Rocks and eighty are White Leghorns.

EGG LAYING CONTEST

Project No. 191.—October 30, 1921, completed the first British Columbia Egg Laying Contest conducted at Agassiz under the Experimental Farms Branch. While

of value in itself the contest is of further importance as a means whereby birds competing become eligible for certificates under Record of Performance "AA" and also for registration under the Canadian National Live Stock Records when such become available.

Twenty-six pens of ten pullets each were entered in the contest representing nine of the various utility and egg-laying breeds. These were as follows:—

Variety	Number of Pens
S. C. White Leghorns	12
Brown Leghorns	1
Blue Andalusians	1
White Wyandottes	4
White Plymouth Rocks	1
Rhode Island Whites	1
" Reds, S.C.	1
" " R.C.	1
Buff Orpingtons	1
Barred Plymouth Rocks	3

Total number of eggs for contest	47,740
Average number of eggs per pen	1,836.13
" " " bird	183.61
Best Pen No. 11 (Grahame's Leghorns) total	2,247
Best Bird No. 4, Pen 11	283
Number of birds laying over 150 eggs and less than 175	41
" " " 175 " " 200	58
" " " 200 " " 225	53
" " " 225 " " 250	28
" " " 250 " over	13

Breed Average per Bird.

Breeds	No. Birds	Average No. Eggs
White Leghorns	120	196.44
White Wyandottes	40	188.40
White Plymouth Rocks	10	174.10
Rhode Island Reds	20	173.90
Barred Plymouth Rocks	30	173.50
Blue Andalusians	10	172.60
Rhode Island Whites	10	157.59
Brown Leghorns	10	145.80
Buff Orpingtons	10	144.80
	160	183.61

PENS ACCORDING TO STANDING IN CONTEST

No.	Owner and Address	Breed	Total number of eggs
1	R. H. Grahame, Langley Prairie	W.L	2,247
2	P. Darbey & Son, Hammond	W.L	2,196
3	R. S. A. Jackson, Duncan	W.L	2,155
4	A. Cant, Appledale	W.W	2,110
5	A. S. Huntingford, Agassiz	W.W	2,085
6	Dominion Experimental Farm, Agassiz	B.P.R	2,079
7	" " "	W.L	2,070
8	Old People's Home, Vancouver	W.L	2,027
9	G. F. Henley, Agassiz	W.L	1,997
10	H. Wilkinson, Collingwood East	B.P.R	1,972
11	A. Unsworth, Sardis	W.L	1,945
12	W. Bradley, Langford	W.L	1,905
13	W. D. Bruce, Pitt Meadows	W.L	1,884
14	W. J. Mannix, North Bend	R.C.R.I.R	1,814
15	Dominion Experimental Farm, Summerland	W.W	1,809
16	J. O. M. Thackeray, Chilliwack	W.L	1,797
17	W. and F. M. Tozer, Milner	W.L	1,752
18	Glen Bros., Armstrong	W.P.R	1,741
19	T. H. Braim, Sardis	B.A	1,726
20	D. Russell, Jubilee	S.C.R.I.R	1,664
21	I. I. Blackburne, Salmon Arm	W.L	1,598
22	White Bird Poultry Yards, Vancouver	R.I.W	1,575
23	G. D. Adams, Langley Prairie	W.W	1,532
24	Mrs. S. Raby, Sardis	B.L	1,458
25	C. W. Robbins, Chilliwack	B.O	1,448
26	H. E. Waby, Enderby	B.P.R	1,154

LIST OF FIRST TWENTY LEADING BIRDS

Total Number of Eggs	Breed	Owner
283	W. L.*	R. H. Grahame
262	B.P.R	H. Wilkinson
261	W.L	R. S. A. Jackson
260	W. L	W. Bradley
260	W.L	A. Unsworth
260	B.P.R	H. Wilkinson
258	W.L	G. F. Henley
257	W.L	Dominion Experimental Farm, Agassiz
256	W. W	A. Cant
255	W. L	Old People's Home
254	W. W	A. S. Huntingford
251	B.P.R	Dominion Experimental Farm, Agassiz
250	W.L	R. H. Grahame
249	B.O	C. W. Robbins
248	W.L	Dominion Experimental Farm, Agassiz
248	W.L	R. H. Grahame
248	W.L	R. H. Grahame
246	W.L	P. Darbey & Son
245	W.L	W. D. Bruce
240	W.L	W. Bradley

*W.L.—White Leghorn. W.W.—White Wyandotte. B.P.R.—Barred Plymouth Rock. R.I.R.—Rhode Island Red. W.P.R.—White Plymouth Rock. B.A.—Blue Andalusians. R.I.W.—Rhode Island Whites. B.L.—Brown Leghorns. B.O. —Buff Orpingtons.

PENS IN ORDER OF PROFIT

No.	Owner and Address	Breed	Total cost of feed	Total value of eggs	Total gain	Total Loss
1	R. S. A. Jackson, Duncan	W.L.	35·59	76·10	40·51	
2	P. Darbey & Son, Hammond	W.L.	39·66	77·26	37·60	
3	R. H. Grahame, Langley Prairie	W.L.	37·55	74·92	37·47	
4	A. Cant, Appledale	W.W.	39·26	73·69	34·43	
5	Dominion Experimental Farm, Agassiz	B.P.R.	41·93	75·57	33·64	
6	Dominion Experimental Farm, Agassiz	W.L.	38·17	70·14	31·97	
7	G. F. Henley, Agassiz	W.L.	36·39	67·80	31·41	
8	Old People's Home, Vancouver	W.L.	38·16	68·65	30·49	
9	A. Unsworth, Sardis	W.L.	38·61	66·98	28·37	
10	W. D. Bruce, Pitt Meadows	W.L.	38·29	66·19	27·90	
11	W. Bradley, Langford	W.L.	37·53	65·06	27·53	
12	A. S. Huntingford, Agassiz	W.W.	43·11	70·04	26·93	
13	H. Wilkinson, Collingwood East	B.P.R.	44·98	69·05	24·07	
14	J. O. M. Thackeray, Chilliwack	W.L.	38·18	61·55	23·37	
15	G. D. Adams, Langley, Prairie	W.W.	36·80	55·45	18·65	
16	Dominion Experimental Farm, Summerland	W.W.	42·16	60·77	18·61	
17	T. H. Braim, Sardis	B.A.	36·61	53·95	17·34	
18	W. J. Mannix, North Bend	R.C.R.I.R.	40·97	58·26	17·29	
19	Glen Bros., Armstrong	W.P.R.	41·33	56·52	15·19	
20	W. and F. M. Tozer, Milner	W.L.	39·94	54·01	14·07	
21	I. I. Blackburne, Salmon Arm	W.L.	36·42	49·91	13·49	
22	Mrs. S. Raby, Sardis	B.L.	34·44	46·36	11·92	
23	D. Russell, Jubilee	S.C.R.I.R.	45·55	56·40	10·85	
24	C. W. Robbins, Chilliwack	B.O.	42·19	46·98	4·79	
25	White Bird Poultry Yards, Vancouver	R.I.W.	42·33	46·61	4·28	
26	H. E. Waby, Enderby	B.P.R.	41·05	37·89	.....	3·16

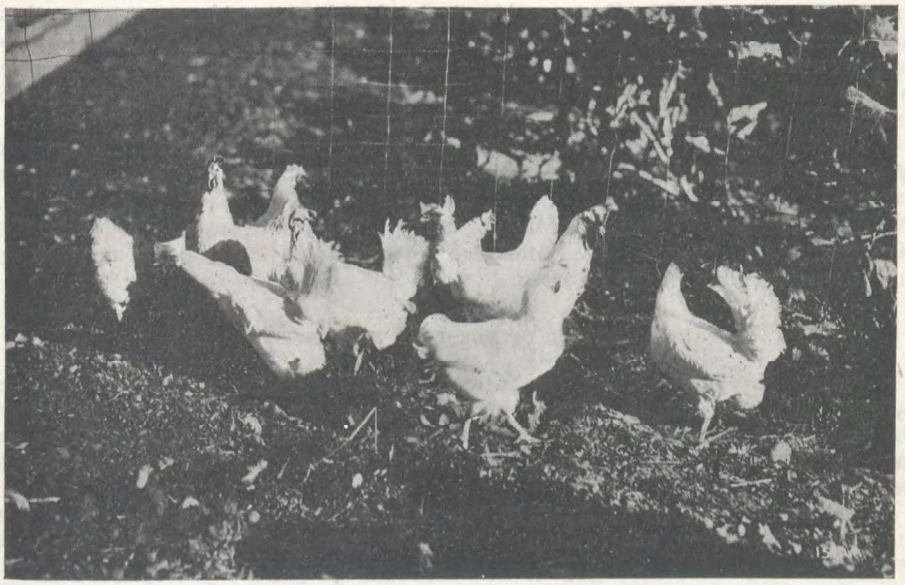
SUMMARY OF RESULTS OF INDIVIDUAL BIRDS AND EACH PEN FOR THE PERIOD OF 52 WEEKS FROM NOVEMBER 1, 1920

Pen	Breed	Bird Number										Floor	Total
		1	2	3	4	5	6	7	8	9	10		
1	W.L.	193	101	248	189	187	179	205	257	162	226	33	2,070
2	W.L.	181	204	223	*221	255	146	192	169	200	204	32	2,027
4	W.L.	261	153	194	*206	223	*216	226	213	198	236	29	2,155
5	W.L.	239	200	171	140	169	144	260	171	240	146	25	1,905
6	W.L.	154	106	166	192	161	121	148	169	162	148	71	1,598
7	W.L.	207	197	233	46	210	175	231	D107	245	221	12	1,884
8	W.L.	164	127	149	139	180	143	189	222	235	181	23	1,752
9	W.L.	189	246	194	232	*213	208	207	217	221	224	45	2,196
10	W.L.	238	207	187	196	152	182	174	128	201	105	27	1,797
11	W.L.	193	250	248	X283	211	214	204	*173	200	248	23	X2,247
12	W.L.	*182	173	123	200	197	260	203	106	200	186	15	1,945
13	W.L.	124	163	258	228	179	222	226	184	164	208	41	1,997
14	B.L.	69	134	151	154	188	119	121	155	157	157	53	1,458
15	B.A.	125	190	143	219	180	156	194	152	207	140	20	1,726
16	W.W.	256	147	212	179	180	230	203	196	197	227	83	2,110
17	W.W.	116	158	*121	158	213	124	197	194	120	107	24	1,532
18	W.W.	176	254	214	129	187	214	230	207	181	218	75	2,085
19	W.W.	185	127	153	222	221	177	235	186	141	138	24	1,809
20	W.P.R.	110	D175	227	158	238	186	189	99	199	126	34	1,741
21	R.I.W.	209	139	136	D76	180	176	218	114	132	138	57	1,575
22	R.C.R.I.R.	128	194	171	136	199	186	154	206	222	107	111	1,814
23	S.C.R.I.R.	154	236	134	131	171	150	147	D125	159	203	55	1,664
24	B.O.	249	57	D108	91	D162	136	202	190	113	88	52	1,448
25	B.P.R.	137	127	183	D41	103	41	162	161	97	D68	34	1,154
26	B.P.R.	215	161	161	140	260	173	193	262	231	148	28	1,972
27	B.P.R.	223	206	230	50	187	230	*185	184	218	251	115	2,079
Leading pen 2247. Leading bird 283. Dead 17. Substituted 9.												1,151	47,740

X—Leading Pen. X—Leading Bird. D—Dead. *—Substitute.

The results obtained in this first contest have been so satisfactory that the prospects for the future success this undertaking are most encouraging. The second contest is now under way with 28 pens. Considerable interest has already been raised in the contest work and undoubtedly the continuation of such work will do a great

deal towards creating keen enthusiasm throughout the entire poultry industry. That the coast section of this province is pre-eminently suited to poultry raising is proved by the very excellent results obtained in this contest.



Winning Pen in the 1921 Laying Contest. White Leghorns belonging to R. H. Grahame, Langley Prairie, B.C. This pen laid 2,247 eggs in the year. The best individual was also in this pen and laid 283 eggs.

Mining Pen 1921 Contest

S. C. W. Leghorns owned by R. H. Grahame, Langley Prairie, B.C. The pen laid 2,247 eggs in the year, the last individual in the contest was in this pen and laid 283 eggs.

BEES.

The spring of 1921 found the apiary composed of three colonies of hybrid bees. The spring examination found all colonies fairly strong but two were short of stores. April was a very unfavourable month for bees owing to the large amount of dull, wet, cool weather. These weather conditions coupled with the fact that light breezes were common resulted in the bees doing little work; in fact the hive on scales lost five pounds. May weather conditions were much more favourable being more bright with less rain. A moderate to strong breeze prevailed at all times especially in the mornings or better honey yields would have resulted. The hive on scales made a net gain in May of 26 pounds. With records showing a precipitation of 5.2 inches for June and many dull days only a little honey was gathered. July again was a good month for honey production with much clear, bright weather. The hive on scales showed a net gain of 21½ pounds. The season taken as a whole was not favourable for heavy honey production. The three colonies produced 221 pounds, of which 92 were reserved for feeding purposes.

By working in co-operation with Mr. Finlay, Provincial Bee Inspector for the Fraser Valley District, a few good practical demonstrations in apiary management were given for the benefit of a number of local bee-keepers.

SINGLE WALL HIVE VERSUS KOOTENAY HIVE

Project No. 206.—To determine the relative value of ten-frame Langstroth hives as compared to ten-frame Kootenay hives, two colonies were placed in the latter in the autumn of 1920. The Kootenay hive is fitted with an outside case with insulation four inches thick between the wall of the hive proper and the case. This case is kept on the entire year, the insulation tending to maintain a more even temperature than is the result in the single wall hive, which is fitted with a tight fitting box case for winter, the case being removed during summer.

We are inclined to favour the Kootenay hive for this district. It is highly spoken of by many successful bee-keepers and results obtained here point to better wintered colonies.

They averaged 77 pounds of honey during 1921 while those in the Langstroth hive produced 27 pounds. Continued use of these hives will produce more definite and interesting data in the future.

CONTROL OF EUROPEAN FOUL BROOD

Project No. 207.—During the autumn of 1920 all three colonies of bees were infected with this disease. The spring examination on April 2, 1921, also showed the disease. At that time plenty of stores were given the bees. On April 20 a new, pure Italian queen was introduced in each hive. Good general bee-keeping methods were followed.

The result was that by April 16 two colonies were clean, while on May 9 the most stubborn colony was healthy. There has been no further appearance of the disease.

METHODS OF INTRODUCING QUEENS

Project No. 208

No. 1.—Two frames of emerging brood were taken from the brood chamber and placed in the super, care being taken that all bees were brushed off. Two frames of honey were then placed one on each side of the brood frames. The queen was then released between the brood frames over which was placed a sack to assist in conserving heat. The super was then placed over the brood chamber with a double screen super clearer with trap door between, and a wire to the outside so arranged that the trap door could be opened when desired. In less than a day there were sufficient bees emerged to take care of the queen. On the second day the queen was found laying in the super. On the third day the wire was pulled letting the bees from below into the super and in a few more days all frames and bees were placed in the brood chamber, the queen being successfully introduced.

No. 2.—The queen was introduced in a small wire cage two inches square by one inch deep. The cage was forced into the comb near the top bar taking in one row of honey the remainder being empty cells. The queen was released the third day but no eggs were found in the chamber previous to the sixth day.

No. 3.—The queen was introduced by placing the mailing cage on top of the frames, wire cloth side down, it being intended that the bees would eat the honey from the opening and thus release the queen. This they failed to do so on the third day the candy was removed and the queen released. Eggs were not found in this colony until the eleventh day.

Of these three methods the first, although requiring more careful preparation, is without doubt the safest plan. In this instance, however, all three proved successful. There is very little disturbance of the hive in the first method and the queen started laying almost immediately in the super. The second system is probably preferable to the last as there is less danger of introducing disease by using one's own cage.

PREVENTION OF ROBBING

Project No. 209.—Frequently strong colonies are found robbing weaker ones. As a means of control the entrance to the robbed hive was constricted by partially filling with green grass upon which creolin had previously been sprinkled.

The result was satisfactory.

INFLUENCE OF THE WEATHER CONDITIONS ON THE HONEY FLOW

Project No. 210.—To secure data on the effect of the weather conditions on the honey flow a hive was placed on scales in the spring and kept there throughout the summer. The daily weights of the hive were recorded and the weather conditions noted. After several years of this work definite statements can be made to the effect that weather conditions are a great factor in honey production. Bright, calm days are essential for heavy honey yields, while dull, damp or windy days are detrimental.

EXTENSION AND PUBLICITY

No exhibition work was done by this Farm during the season of 1921, other than supplying some materials to assist in decorating the exhibit sent out from Ottawa and displayed at Vancouver, Victoria and New Westminster. The Experimental Farm assistant relieved the man in charge of the exhibit at Vancouver and then took the entire management over at Victoria.

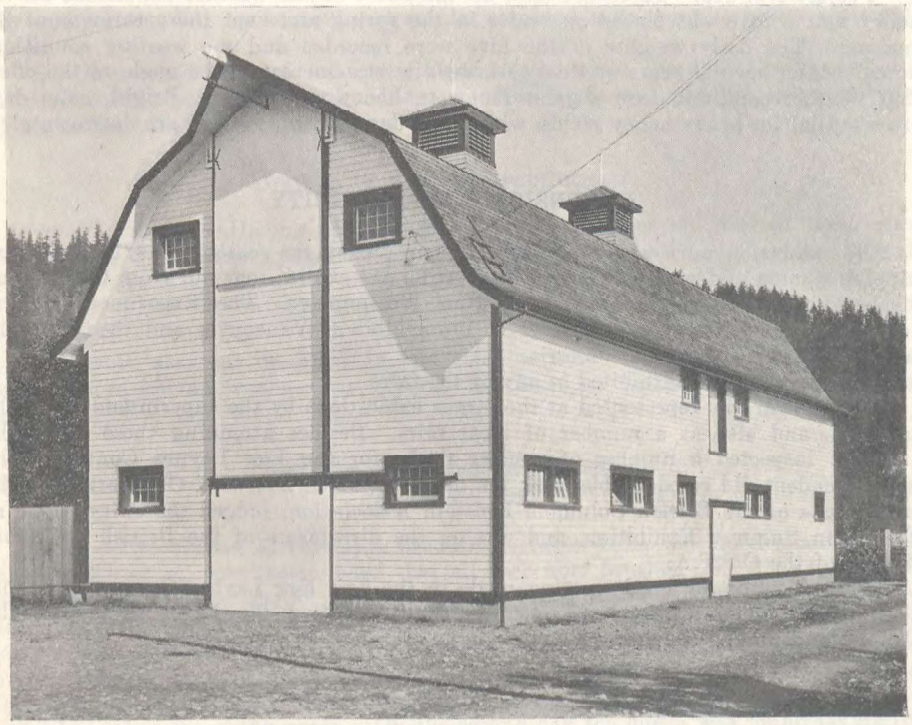
No live stock was exhibited at any of the fairs.

This Farm was represented at the larger exhibitions by the superintendent or the assistant, and also at a number of local fairs. Besides attending these fairs, the assistant inspected a number of poultry flocks for the Egg Laying Contest. The superintendent did considerable work for the local Horse Breeders' Club, attended the annual sale of the British Columbia Holstein Association, judged the dairy cattle at Edmonton Summer Exhibition, and was on the directorate of the British Columbia Branch of the C.S.T.A.

The exceptionally good showing made in the first Egg Laying Contest gave this Farm considerable publicity. Numerous persons visited the Farm to inspect the Contest and many others sought information through correspondence.

GENERAL FARM NOTES

Only a minimum amount of temporary fencing was accomplished, and no permanent fencing. No land clearing was attempted, other than some underbrushing in connection with getting out fuel. A new laying house was built on the poultry plant. The foreman's house and the boarding house were redecorated inside throughout and painted outside. The herdsman's house was redecorated inside. The implement shed was placed on a cement foundation, floored and the doors adjusted. The horse barn was sealed up inside and painted outside.



Horse Barn, Experimental Farm, Agassiz.