DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

FREDERICTON, N.B.

REPORT OF THE SUPERINTENDENT

C. F. BAILEY, B.S.A.

FOR THE YEAR 1927

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NOTES ON THE SEASON

The fall of 1926 was wet and open, and the soil and subsoil were well saturated when winter set in.

The winter was mild and the fields were partly bare during December and January, as each snowfall was followed by either rain or warm weather. February was the coldest month of the winter. Twenty-two inches of snow fell on the 27th of the month and this was the heaviest snowfall recorded during the winter. There was 40 inches of snow on the ground on March 1 but this snow was gradually removed by rain and warm weather so that the ground was bare from the 22nd of the month. The first 15 days in April were dry and cold. The last half of the month was much milder. The ice ran out of the St. John river on April 17 as compared with May 1 the previous year. Although the fields were bare a large part of the winter, there was very little winter killing either in the orchards or on the hay lands.

May was wet and cold and planting did not become general until June. The first dates of planting field crops were: wheat, May 9; oats, May 10; barley, May 26; potatoes, June 3; sunflowers, June 4; and corn, June 8.

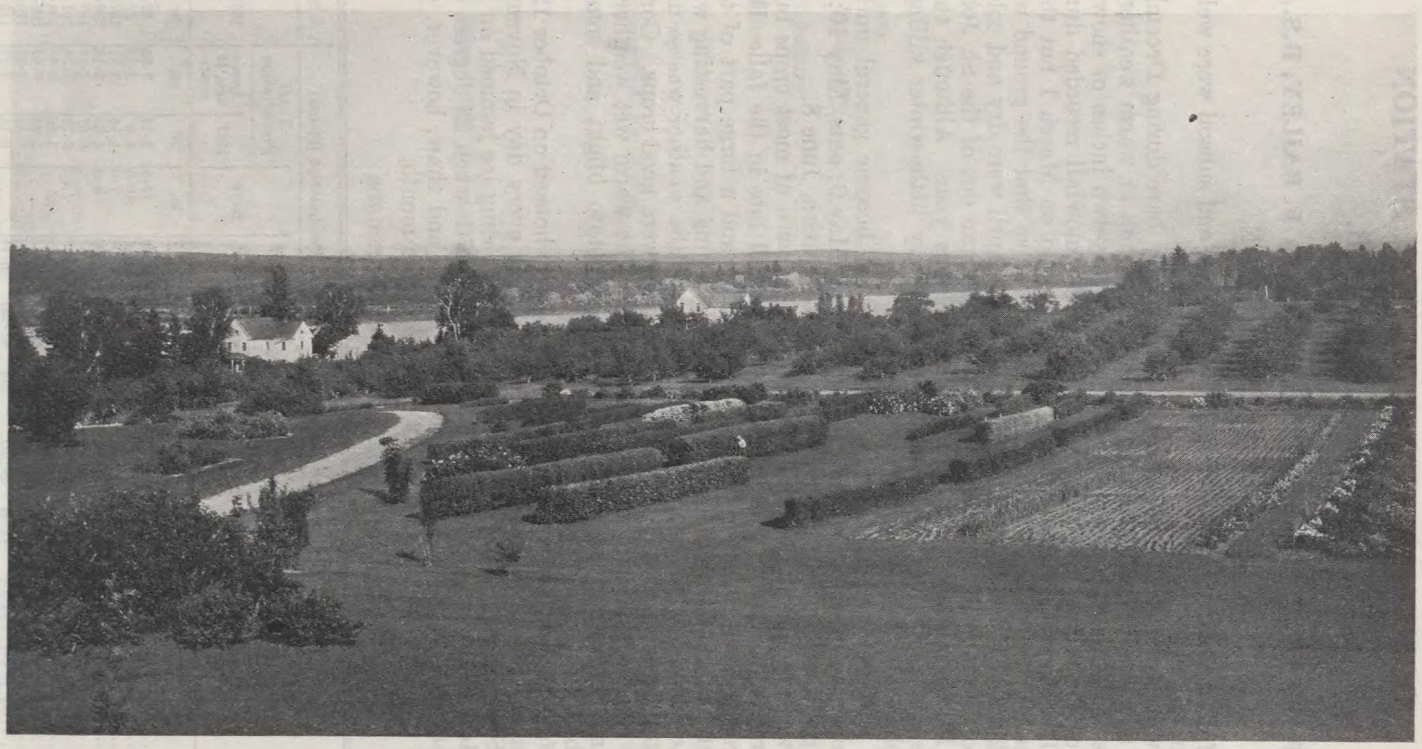
The wet summer and autumn favoured the growth of most crops but made farm operations difficult. Pastures were good until late in the fall. Hay was a good crop but wet weather retarded haymaking and a large part of the crop was rather mature when cut. Grain was late ripening and harvesting was difficult as the straw was heavy and lodged badly and the weather was so unsettled that the grain dried slowly. Roots and sunflowers were good crops. Corn made poor growth and was very immature when cut. The warm wet weather during August and September favoured the spread of potato blight and some fields blighted badly.

The fall was wet and open. Young cattle were housed on October 12, sheep on November 15. It was possible to plough nearly every day in November.

The St. John river froze at places where the floating ice jammed on December 4. Most of the open places froze over on the 27th when 35 degrees of frost were recorded. This frost was followed by a rain and thaw, however, and the river was not entirely frozen over at the end of the month.

TABLE 1—1927 METEOROLOGICAL RECORDS

—	Temperature (F.)						Precipitation (inches)				Sunshine	
	Mean		Maximum		Minimum				Total Precipitation			
	1927	Average, 14 years	Highest	Mean Maximum	Lowest	Mean Minimum	Rain	Snow	1927	Average, 14 years	1927	Average, 14 years
	°	°	°	°	°	°	in.	in.	in.	in.	hr.	hr.
January	19·26	12·26	44·0	28·9	−17	9·6	1·66	14·5	3·11	3·58	82·70	103·87
February	14·43	14·05	35·5	25·46	−22	3·0	.....	40·0	4·0	2·79	77·05	120·16
March	29·18	26·58	51·0	39·59	− 2	18·77	1·06	7·0	1·76	2·81	157·15	148·32
April	39·93	40·28	80·0	51·13	16	28·73	1·23	3·0	1·53	3·19	224·30	158·08
May	48·78	50·81	73·0	59·66	28	37·9	3·67	.....	3·67	2·37	167·00	200·10
June	57·06	60·25	84·0	69·80	31	44·33	3·73	.....	3·73	3·26	261·50	207·11
July	66·75	66·54	96·0	77·71	39	55·8	3·92	.....	3·92	2·98	184·05	217·62
August	61·5	63·89	79·0	72·22	40	50·8	5·36	.....	5·36	3·69	203·75	206·16
September	56·3	56·17	76·0	66·96	29	45·66	3·19	.....	3·19	3·32	176·40	169·05
October	48·87	46·20	71·0	56·67	26	41·08	6·14	.....	6·14	3·71	115·85	146·66
November	38·4	32·79	66·0	46·7	11	30·1	2·96	2·0	3·16	2·98	80·85	89·17
December	25·31	18·97	57·0	33·5	− 3	17·12	1·63	37·0	5·33	3·03	69·05	89·94
1927	42·30	.....	.....	.....	.....	.....	.....	.....	44·95	.....	1,800·25	.....



View of lawns, garden and orchard taken from the Superintendent's residence, Experimental Station, Fredericton, New Brunswick.

ANIMAL HUSBANDRY

The work carried on under this division consisted of breeding and feeding experiments, cost of production, and demonstrational work.

CATTLE

The herd consisted of the following stock on January 1, 1927:—

Pure-Bred—	
Ayrshire: 10 cows, 4 heifers, 1 bull; total	15
Holstein: 10 cows, 7 heifers, 2 bulls; total	19
Shorthorn: 5 cows, 2 heifers, 1 bull; total	8
Grade Stock—	
12 cows	12
4 work oxen	4
Total stock on hand	58

The pure-bred herd did not make any increase during the year as most of the calves were bulls. Bull calves which gave promise of being good individuals were sold to farmers for breeding purposes. All inferior calves were sold to drovers.

A number of creditable milk records were made during the year. The four year old Holstein cow "Cheer Echo"—98596—made an R.O.P. record of 27,688 pounds milk and 744 fat in 365 days.

The Ayrshire herd sire "Ottawa Lord Kyle 24th"—91808—and the Holstein herd sire "Korndyke Midnight Boy" 59015 were bred at the Central Experimental Farm, Ottawa.

The former Shorthorn herd sire "Brandon Conjuror"—144189—was sold to Peart Brothers, Caledonia, Ont. A new herd sire "Lennoxville Lassie's Lad" —176255—was obtained from the Lennoxville Experimental Station.

SUMMER FEEDING

The grass while abundant contained very little clover, therefore the milch cows were fed grain during the entire pasture season. The pasture was supplemented with green feed during August and with silage from September 1. The grain mixture fed to the cows while at pasture consisted of two parts corn meal, one part brewers' grains and one part bran.

WINTER FEEDING

The roughage ration for the winter consisted chiefly of corn silage, swedes, and mixed clover and timothy hay. A small quantity of other feeds, such as sunflower silage, oats and pea silage, and mangels were fed but they were not considered the main feed.

The meal ration varied at times owing to the nature of the feeds on hand, but consisted for the most part of bran, one part; oats, one part, brewer's grains, two parts; and oil cake, one part. One per cent of salt was added at mixing, with a view to supplying regularly this very necessary ingredient in the ration. One tablespoonful of the following mineral mixture was fed daily; 100 pounds calcium phosphate, 100 pounds sodium phosphate, 120 pounds Epsom salts, 40 Glaubers salts, 100 pounds sulphur, 2 pounds potassium iodide.

DAIRY HERD RECORDS

Table 2 shows the milk record of all the milch cows that finished a lactation period during the year 1927. In the case of heifers with their first calf, feed is charged from date of freshening. In the case of cows with previous lactation periods, the charge for feed includes the period during which they were dry before beginning the lactation period here recorded. The following prices were charged for feed:—

Hay	$ 8 80 per ton
Roots	4 81 per ton
Ensilage	6 55 per ton
Green feed	5 50 per ton
Meal mixture	40 00 per ton
Pasture	2 00 per month

These values represent the cost of production of hay, roots and ensilage for 1926, and the price paid in 1927 for carload lots, plus a small charge for hauling from car to Station for the grain which made up the meal mixture.

The majority of the cows, which were milked three times daily, were Holsteins. These cows were on much better pasture than the rest of the herd but they were only charged the same, viz., $2 per month.

TABLE 2—INDIVIDUAL MILK RECORDS COMPLETED DURING THE YEAR

Name of cow	Age at beginning of lactation period	Date of dropping calf	No. of days in lactation period	Total pounds of milk for period	Daily average yield of milk	Average per cent fat in milk	Pounds of butter produced in period	Value of butter at 40c. per pound	Value of skim-milk at 20c. per cwt.	Total value of product	Amount of meal eaten at $2 per cwt.	Amount of roots at $4.81 per ton and ensilage at $6.55 per ton	Amount of hay eaten at $8.80 per ton	Amount of green feed at $5.50 per ton	Amount of beet pulp at $45.75 per ton	Months on pasture at $2.00 per month	Total cost of feed for period	Cost to produce 100 lb. of milk	Cost to produce 1 lb. butter skim-milk neglected	Profit on 1 lb. of butter skim-milk neglected	Profit on cow during period labour and calf neglected
	yrs.			lb.	lb.	p.c.	lb.	$ cts.	$ cts.	$ cts.	lb.	lb.	lb.	lb.	lb.	mos.	$ cts.	$ cts.	cts.	cts.	$ cts.
Ayrshires																					
Spottie	6	Dec. 2/25	522	13,353·3	25·58	3·85	605·62	242 25	25 68	267 93	4,650	R–6,630 E–11,497	6,797	2,841	680	3·77	207 41	1 55	0·343	0·057	60 52
Briery	7	Oct. 19/26	300	9,135·1	30·45	3·93	421·7	168 68	17 55	186 23	3,456	R–14,370 E– 2,130	4,601	328	.....	2·62	137 04	1 50	·325	·075	49 19
Ottawa Folly 2nd	3	April11/26	322	8,001·9	24·85	3·75	352·66	141 06	15 40	156 46	2,541	R–1,725 E–6,000	3,344	2,550	201	3·77	108 48	1 36	·308	·092	47 98
White Bess of Ottawa 2nd.	7	Feb. 1/27	259	7,474·5	28·86	3·55	312·10	124 84	14 42	139 26	2,113	R–6,290 E–4,560	3,000	240	.....	4·32	94 82	1 27	·304	·096	44 44
Fredericton Pansy	2	July 20/26	397·5	7,221·8	18·17	4·24	359·4	143 76	13 83	157 59	2,668	R–1,905 E–5,230	3,553	2,280	.....	5·04	107 05	1 48	·298	·102	50 54
Fredericton Starlight.	2	Aug. 10/26	292	5,322·8	18·23	4·02	251·4	100 56	10 22	110 78	2,440	R–2,525 E–4,210	3,511	2,040	.....	2·00	93 72	1 76	·373	·027	17 06
Average for Breed	.....	.....	348·8	8,418·2	24·14	3·88	383·81	153 53	16 18	169 71	2,978	R–5,574 E–5,605	4,134	1,713	147	3·59	124 75	1 48	·325	·075	44 96
Holsteins																					
Cheer Echo	4	July 2/26	539·5	33,650·8	62·37	2·73	1,081·61	432 64	65 46	498 10	8,014	R–28,515 E– 6,290	5,741	6,770	249	8·09	315 22	0 94	·291	·109	182 88
Helen Clover Ormsby.	8	Feb. 21/27	280	15,764·9	56·30	2·98	552·70	221 08	30 59	251 67	3,289	R–11,930 E– 4,040	3,947	640	249	4·32	141 17	0 90	·255	·145	110 50
Fredericton Lee Johanna.	2	Oct. 13/26	305	12,842·2	42·11	3·38	510·56	204 22	24 81	229 03	3,402	R–15,850 E– 2,440	3,465	156	.....	2·42	134 67	1 05	·264	·136	94 36
March Echo Segis	5	June 14/26	262	9,974·0	38·07	3·32	389·34	155 74	19 29	175 03	2,984	R–2,010 E–8,460	4,687	4,760	.....	3·77	133 47	1 34	·344	·056	41 56
Fredericton Frances.	2	Mar. 9/27	273	8,608·8	31·53	3·21	324·75	129 90	16 66	146 56	2,091	R–4,300 E–2,790	2,119	240	200	4·32	84 50	0 98	·260	·140	62 06
Johanna Alcartra Lee.	6	Mar. 3/27	269·5	8,509·2	31·57	3·47	346·86	138 74	16 43	155 17	2,143	R–4,460 E–5,680	3,658	240	.....	4 32	97 59	1 15	·281	·119	57 58
Fredericton May Echo.	2	Feb. 22/27	236·5	7,524·6	31·82	3·45	305·68	122 27	14 53	136 80	1,876	R–4,770 E–2,140	1,575	240	74	4·32	73·92	0 98	·242	·158	62 88
Average for Breed	.....	.....	309·4	13,839·2	44·74	3·62	501·64	200 66	26 82	227 48	3,400	R–10,262 E– 4,549	3,599	1,864	110	4·51	140 08	1 0.	·279	·121	87 40
Shorthorns																					
Kentville Lady 3rd.	4	April 8/27	233·5	6,135·8	26·28	3·63	262·06	104 82	11 83	1.6 65	1,932	R–4,420 E–5,395	3,899	240	196	4·32	97 88	1 60	·374	·026	18 77
Fredericton Susan	2	Sept.27/26	310	4,000·7	12·91	3·72	174·93	69 97	7 70	77 67	1,418	R–2,010 E–5,230	3,614	120	.....	2·20	70 95	1 77	·406	—·006	6 72
Lady Betty of Fredericton.	4	Mar.16/27	167	3,596·9	21·54	2·78	117·42	46 97	6 99	53·96	1,345	R–3,930 E–3,810	3,600	240	70	2·93	72 79	2 02	·620	—·220	—18 83
Average for Breed	.....	.....	236·8	4,577·8	19·32	3·43	184·80	73 92	8 84	82 76	1,565	R–3,453 E–4,812	3,704	200	89	3·15	80 54	1 76	·436	—·036	2 22

R—Roots; E—Ensilage.

COST OF REARING DAIRY HEIFERS

Calves were fed whole milk until four to six weeks of age, then they were gradually changed to skim-milk. A fat substitute was added to the skim-milk. The fat substitute fed until the calves were three months of age was composed of one part flax seed and four parts crushed oats. For the older calves one part of crushed oats was replaced by corn meal. Each calf was fed from one-quarter to one pound of this fat substitute per day, the amount fed depending upon the age and condition of the calf. The calves were also fed hay, roots, and dry grain as soon as they would eat them. The composition of this dry meal mixture varied slightly at times owing to the nature of the feed on hand, but was mainly made up of three parts bran, two parts crushed oats, one part oil cake, and one part brewers' grains. The aim in feeding was to keep the calves growing and to avoid a setback.

Yearling and two-year old heifers were turned to pasture on May 28. They were wintered on hay, roots and silage, together with a grain ration of from two to four pounds, depending upon the condition of the animal. The feed costs are shown in table 3.

TABLE 3—COST OF RAISING DAIRY HEIFERS

Average Cost of Feed—Birth to one year for three heifers (1 Ayrshire and 2 Holsteins)

—	Amount of feed consumed	Cost of feed
	lb.	$ cts.
New milk at $40 per ton	710	14 20
Skim-milk at 04 per ton	3,015	6 03
Fat substitute at $61 per ton	165	5 03
Dry meal at $40 per ton	941	18 82
Turnips at $4.81 per ton	908	2 18
Ensilage at $6.55 per ton	2,098	6 87
Beet pulp at $45.75 per ton	14	0 32
Green feed at $5.50 per ton	1,850	5 09
Hay at $8.80 per ton	1,281	5 64
	mos.	
Pasture at $2 per month	0·41	0 82
Average cost of feed per head	.....	65 00
	lb.	
Average weight at 1 year	658	

Average Cost of Feed—One to two years for four heifers (2 Ayrshires and 2 Holsteins)

	lb.	$ cts.
Skim-milk at $4 per ton	182	0 36
Fat substitute at $61 per ton	13	0 40
Meal at $40 per ton	638	12 76
Turnips at $4.81 per ton	978	2 35
Ensilage at $6.55 per ton	3,506	11 48
Beet pulp at $45.75 per ton	13	0 30
Green feed at $5.50 per ton	418	1 15
Hay at $8.80 per ton	2,546	11 20
	mos.	
Pasture at $2 per month	3·64	7 28
Average cost of feed per head	.....	47 28
	lb.	
Average weight at 1 year	872	

Average Cost of Feed—Two years to calving at 2 years 313 days, for ten heifers (2 Ayrshires, 6 Holsteins and 2 Shorthorns)

	lb.	$ cts.
Meal at $40 per ton	399	7 90
Turnips at $4.81 per ton	1,175	2 83
Ensilage at $6.55 per ton	3,519	11 52
Green feed at $5.50 per ton	12	0 03
Hay at $8.80 per ton	2,860	12 58
	mos.	
Pasture at $2 per month	3·81	7 62
Average cost of feed per head	.....	42 48
	lb.	
Average weight at 1 year	1,144	

FEEDING EXPERIMENT—LIBERAL VERSUS LIGHT FEEDING FOR GROWING HEIFERS

The experiment which was begun in April, 1924, to compare a scanty ration with a liberal ration for growing heifers was continued this year. The six heifers in the well fed group and four of the six in the poorly fed group have completed their first lactation period. These cows will all be carried through a second lactation period before the results of the experiment are published.

SHEEP

The flock on December 31, 1927, consisted of one aged ram, thirty-one ewes and seven ewe lambs, all pure-bred Shropshires.

CONTROL OF PARASITES

External.—The flock was dipped in Cooper's Dip in the spring and again in the fall. This treatment gave excellent results.

Internal.—As a protection against tape worm the flock was treated with Male Fern in July according to the directions in Exhibition Circular No. 61. In the fall they were drenched with a one per cent solution of copper sulphate. The copper sulphate treatment is much cheaper than Male Fern and seems to be equally effective. The procedure for making and administering this drench as recommended by Dr. Stevenson of the Ontario Department of Agriculture, is as follows:——

"The one per cent solution of copper sulphate treatment, if repeated, will get all the stomach worms and tape worms. It is not difficult to apply, if proper apparatus is rigged for drenching. Sixty sheep an hour is easily possible with system, while about thirty an hour can be handled if the drench is applied with a small necked bottle or dosing syringe. An approximate *one per cent* solution can be made by using four ounces of copper sulphate to three gallons of water. This is enough for one hundred sheep. In drenching sheep, care is important. Do not raise the mouth above the level of the eye, let the sheep stand quietly on its feet, and do not hurry it unduly and have other sheep around so that the patient will not bleat. Sheep should be starved for at least eighteen hours before drenching and not given water for at least six hours after drenching. The dose for an adult sheep is from three to four ounces of one per cent solution.

"Sheep should be treated when they come in from the grass. Frozen herbage will in all probability shift a few of the parasites but there will be enough left to carry the infestation over winter. They should be treated again in the spring, four weeks and one week before they go out for the summer."

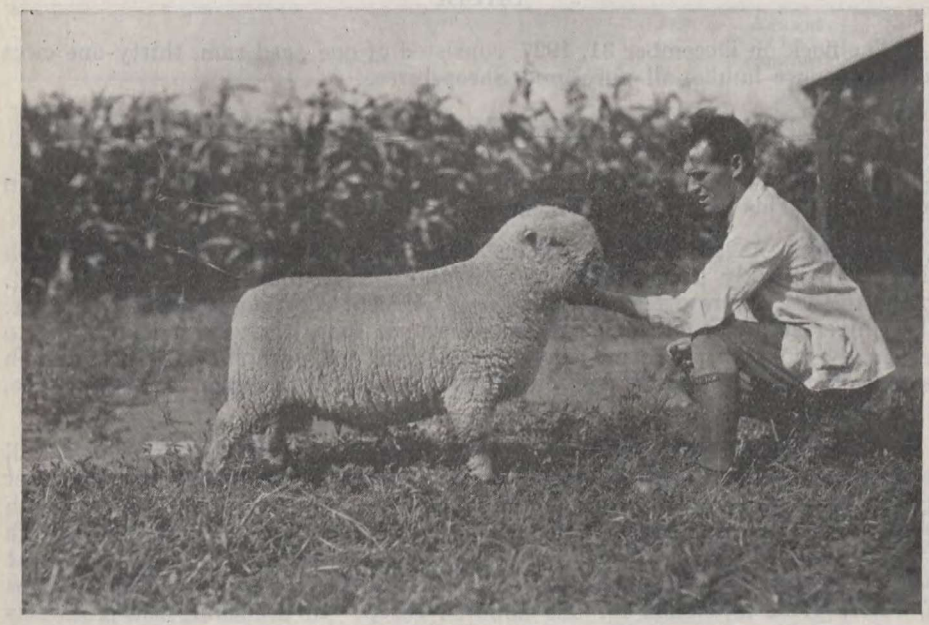
Dr. Stevenson believes that approximately 75 per cent of the sheep in Eastern Canada are infected with internal parasites. Therefore, New Brunswick farmers would be well advised to try this treatment.

TREATMENT OF PREGNANT EWES WITH IODIZED SALT

In order to ascertain whether pregnant ewes would have stronger lambs if fed iodized salt, one-half of the ewes at the Station had access to iodized salt and one-half to common salt during the winter of 1926-27. This iodized salt was prepared by drying the moisture out of 50 pounds of common salt and then sprinkling it with two ounces of potassium iodide dissolved in water. No conclusion could be derived from the year's work. The experiment is being continued.

COST OF MAINTAINING THE FLOCK

The sheep were housed on November 15, 1926. The shearling ewes and the dry ewes were turned to pasture on May 19 and the ewes with lambs on May 23. Previous years ewes have been carried until two or three weeks before lambing without any grain. This year, however, the hay was of such poor quality that the ewes were fed three-fourths of a pound and the shearlings were fed one-half a pound of meal each day. After lambing, the grain ration



York model 387, Shropshire shearling ram, Experimental Station, Fredericton, New Brunswick.

to the ewes was gradually increased, while the young lambs had access to the grain fed their dams and also were fed grain in a creep. The grain ration fed to the shearling ewes was discontinued on the 20th of April. The sheep were given all the hay they would eat clean, and from November 20, they also were fed four pounds of turnips each day. The breeding and shearling ewes were not fed any turnips after the 28th of February and the ram was not fed any turnips after the 31st of March.

This year, for the first time since records were kept, the flock did not show a profit. This was due to a number of causes; first, the large amount of meal fed owing to the poor quality of hay; second, the small lamb crop (three ewes did not have any lambs, and three had dead lambs, while a number of the remaining ewes had single lambs); third, losses during the year (one ewe died at pasture and one ewe died nine days after they were housed in the fall; one lamb was drowned at pasture and one lamb disappeared from pasture); fourth, in culling the flock in the fall a number of useful ewes were sold at very reasonable prices to farmers who were starting pure-bred flocks.

The shearling ewes sheared an average of 9 pounds and the breeding ewes an average of 6·9 pounds wool. The results for the flock are as follows:

To feed for 1 ram, 30 ewes and 29 lambs—		
6,395 pounds meal at $40 per ton	$ 127 30	
19,380 pounds hay at $8.80 per ton	85 27	
12,360 pounds turnips at $4.81 per ton	29 73	
Pasture, 31 head at $1.50 each	46 50	
Pasture, 29 lambs at 50 cents each	14 50	
450 pounds meal fed ram lambs after weaning at $40 per ton	9 00	
		$ 312 30
To feed for 14 shearlings—		
1,092 pounds meal at $40 per ton	21 84	
6,202 pounds hay at $8.80 per ton	27 29	
5,600 pounds turnips at $4.81 per ton	13 47	
		62 60
To control of parasites in flock—		
Male Fern mixture (for worms)	9 40	
4 ounces copper sulphate (for worms)	0 07	
6 pounds Cooper's Dip at 60 cents per pound	3 60	
		13 07
Total feed and parasite control cost		387 97
Decreased stock 7 shearlings at $15		105 00
		$ 492 97
By—		
Sale of 95 pounds wool at 23 cents per pound	$ 21 85	
Sale of 270 pounds wool at 22 cents per pound	59 40	
Sale of 5 registered ram lambs at $20 each	100 00	
Sale of 1 registered ram lamb at $12	12 00	
Sale of 1 registered ram lamb at $10	10 00	
Sale of 1 registered ram lamb at $8	8 00	
Sale of 1 ram lamb at 8 cents per pound live weight	4 80	
Sale of 4 registered ewe lambs at $10	40 00	
Sale of 7 ewe lambs at 10 cents per pound live weight	50 40	
Sale of 1 ewe lamb at $5	5 00	
Sale of 1 ewe at $15	15 00	
Sale of 2 ewes at $12	24 00	
Sale of 2 ewes at $10	20 00	
Sale of 4 ewes at $9	36 00	
Sale of 1 ewe at $5	5 00	
Sale of 1 ewe at 4 cents per pound live weight	5 80	
Sale of 1 sheep skin at $1	1 00	
Increased stock 1 ewe at $25	25 00	
		$ 443 25
Loss		49 72

HORSES

On January 1, 1928, there were nineteen horses in stock including (pure-bred Clydesdales) five mares, two geldings, two two-year-old mares, one one-year-old mare, one horse foal, and (pure-bred French-Canadians) two two-year-old mares, and (Grade Clydesdales) one gelding, two mares and one two-year-old mare, and two general purpose horses.

One pure-bred Clydesdale horse foal was born during the year. As a preventative of joint ill the pregnant dam was given a teaspoonful of potassium iodide on the first and fifteenth of each month. The foal showed no indication of joint ill.

Two two-year-old pure-bred French Canadian mares were transferred to the station from St. Joachim, Que., on September 29, 1927.

The grain ration for work horses consisted of a mixture of oats and bran, the percentage of bran being varied according to the character of the work. The horses worked a total of 19,563 hours during the year, eight heavy horses working a total of 15,313 hours. The cost of feed and horse-shoeing for these eight horses was as follows:—

25 tons 814 pounds of hay at $8.80 per ton	$ 223 58
1,022 bushels 13 pounds oats at 66·5 cents per bushel	679 88
2 tons 1,265 pounds bran at $31 per ton	81 61
1 ton 1,056 pounds roots at $4.81 per ton	7 35
42 pounds corn at $48 per ton	1 01
Horseshoeing at $3 for new shoes and $1.75 for changing shoes	135 38
Total cost (labour, interest, depreciation and drugs neglected)	1,128 81
Number of hours worked	15,313·0
Cost of horse labour per hour	$ 0·074

FEED COST OF RAISING YOUNG HORSES

The last two foals born at the Station were the progeny of one mare. One of these foals was 5 months and 11 days and the other was 6 months of age when weaned. Until weaned they had free access to the feed fed the dam both when at pasture and when in the stable. Therefore, records could not be kept of the feed consumed by these foals the first 6 months. The feed costs for the other young horses are given in table 4. In this table no allowance is made for time lost or for feed consumed by their dams.

The last nine horses raised consumed an average of 8 pounds oat meal, 0.2 gallons molasses, 105 pounds bran, 391 pounds oats, 592 pounds hay, 10 pounds roots and were 0.5 months at pasture during the first 6 months. With feeds at the same prices as in table 4, the feed cost would be $13.28. They weighed an average of 623 pounds at 6 months of age.

The last nine horses raised consumed an average of 8 pounds oat meal, 1.1 gallon molasses, 400 pounds bran, 1,235 pounds oats, 2,294 pounds hay, 129 pounds roots and were 1 month at pasture during the first year. With feeds at the same prices as in table 4, the feed cost would be $43.37. They weighed an average of 793 pounds when 1 year old.

The last nine horses raised consumed an average of 8 pounds oat meal, 1.1 gallon molasses, 867 pounds bran, 2,837 pounds oats, 5,164 pounds hay, 465 pounds roots and were 6.11 months at pasture during the first 2 years. With feeds at the same prices as in table 4, the feed cost would be $105.60. They weighed an average of 1,179 pounds when 2 years of age.

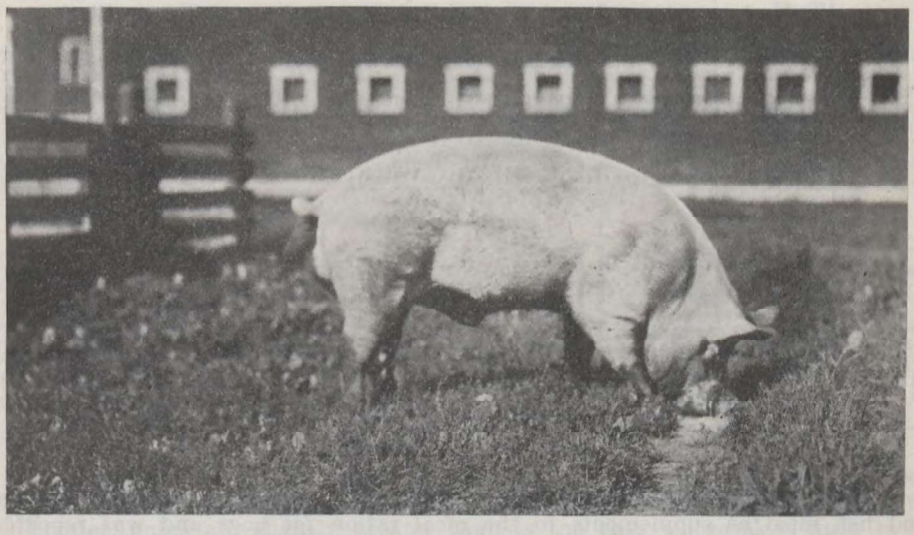
The last six horses raised at the Station consumed an average of 0.7 gallons molasses, 1,351 pounds bran, 4,762 pounds oats, 8,818 pounds hay, 582 pounds roots and were at pasture 10 months in the first 3 years. With feeds at the same prices as in table 4, the feed cost would be $174.46. They weighed an average of 1,416 pounds when 3 years of age.

TABLE 4—FEED COST OF RAISING YOUNG HORSES

Item		Six months to one year	Birth to two years		
		Princess	Grace	Duchess	Beauty
Oats	lb.	558·0	2,935·0	3,491·0	2,723·0
Oatmeal	"	.....	.....	.....	71·0
Bran	"	276·0	1,024·0	1,126·0	898·0
Hay	"	1,210·0	4,817·0	4,960·0	4,503·0
Roots	"	95·0	844·0	703·0	577·0
Pasture	months	1·4	7·9	8·0	8·6
Molasses	gallons	.....	2·0	4·0	4·0
Weight at end of period	lb.	800·0	1,229·0	1,215·0	1,046·0
Statement of Costs					
Oats at $39.12 per ton	$	10 91	57 41	68 28	53 26
Oatmeal at $4.17 per 100 pounds	$	.....	.....	.....	2 96
Bran at $31 per ton	$	4 28	15 87	17 45	13 92
Hay at $8.80 per ton	$	5 32	21 19	21 82	19 81
Roots at $4.81 per ton	$	0 23	2 03	1 69	1 39
Pasture at $2 per month	$	2 80	15 80	16 00	17 20
Molasses at 25 cents per gallon	$	.....	0 50	1 00	1 00
Total cost of feed	$	23 54	112 80	126 24	109 54

SWINE

The swine herd at this Station on December 31, 1927, numbered nine head, consisting of the two pure-bred Yorkshire boars, "Charlottetown Boy"—114974—and "Ottawa Alexander 239"—120064— with six two-year-old brood sows



Yearling boar—Charlottetown Boy—114974—Experimental Station, Fredericton, New Brunswick.

and one young unbred sow. The brood sows are a particularly strong useful lot and have been selected for desirable qualities such as good disposition, milking ability and prolificacy.

FARROWING RECORDS

The spring farrowing record was the highest yet attained at this Station. Eight brood sows rising two years of age farrowed 114 pigs or an average of 14·25 pigs per litter.

TABLE 5—FARROWING RECORDS

Sow number	Date of birth	Farrowing date	Number of pigs in litter	Number reared
586	March 21, 1925	April 12, 1927	19	13
320	April 5, 1925	April 15, 1927	13	9
290	April 14, 1925	April 20, 1927	14	8
583	March 21, 1925	April 20, 1927	18	13
381	April 12, 1925	April 20, 1927	17	12
321	April 5, 1925	April 22, 1927	12	10
530	January 18, 1925	April 25, 1927	9	9
287	April 12, 1925	May 30, 1927	12	9
Total			114	83

Average number of pigs farrowed per spring litter	14·25
Average number of pigs reared per spring litter	10·3
Percentage of pigs reared per spring litter	72·8

COST OF REARING LITTERS

Statement of Feed Fed to Sows from Breeding Date to Date of Farrowing

Roots, 650 pounds at 24 cents per cwt	$ 1 56
Bran, 177 pounds at $1.48 per cwt	2 62
Crushed oats, 89 pounds at $1.80 per cwt	1 60
Middlings, 89 pounds at $2.05 per cwt	1 82
Barley, 177 pounds at $2.20 per cwt	3 89
Oil meal, 28 pounds at $2.90 per cwt	0 81
Skim-milk, 2,948 pounds at 20 cents per cwt	5 89
Total	$18 19

Statement of Feed from Birth to Weaning

Skim-milk, 1,470 pounds at 20 cents per cwt	$ 2 94
Crushed oats, 175 pounds at $1.80 per cwt	3 15
Middlings, 175 pounds at $2.05 per cwt	3 58
Total	$ 9 67

Statement of Costs

Boar service	$ 2 00
Feed to birth	18 19
Feed birth to weaning	9 67
Total cost of weaning	$29 86
Average cost per pig to weaning (10·3 pigs per litter)	2 89

SKIM-MILK VERSUS TANKAGE VERSUS FISH MEAL AS SUPPLEMENTS TO THE MEAL RATION

This experiment was undertaken in 1926 to compare skim-milk, tankage and fish meal as supplements to the meal ration for hogs and was repeated this year.

Twelve pigs were used in the experiment and divided in three lots of four pigs.

Group I had skim-milk in addition to the meal ration from time of weaning until hogs were slaughtered.

Group II had tankage in addition to the meal ration from time of weaning until hogs were slaughtered.

Group III had fish meal in addition to the meal ration from time of weaning until hogs were slaughtered.

The meal ration fed to all groups the first sixty days consisted of oats, two parts; buckwheat, one part; shorts, one part; middlings, one part. After sixty days the amount of buckwheat was increased to two parts, the other feeds remaining the same throughout the duration of the experiment.

The following prices were charged for the feeds used in this, and other experiments conducted during the year.

	Per cwt.
Crushed oats	$1 80
Buckwheat	3 00
Shorts	1 70
Tankage	3 45
Middlings	2 05
Skim-milk	0 20
Fish meal	2 75

TABLE 6—SKIM-MILK VERSUS TANKAGE VERSUS FISH MEAL AS SUPPLEMENTS TO THE MEAL RATION

—		Group I Skim-milk	Group II Tankage	Group III Fish meal
Number of pigs in experiment		4	4	4
Number of days in experiment		130	130	130
Gross initial weight at 6 weeks	lb.	124·5	109·5	105·5
Average		31·1	27·3	26·3
Gross finished weight	lb.	740·0	610·0	700·0
Gross dressed weight	"	593	479·0	541·0
Total gain per group	"	615·5	500·5	594·5
Average daily gain per animal	"	1·18	0·962	1·14
Average gain per animal	"	153·8	125·1	148·6
Statement of Feeds				
Total skim-milk fed	lb.	6,390·0	.....	.....
Total tankage fed	"	.....	120·0	.....
Total fish meal fed	"	.....	.....	120·0
Total crushed oats fed	"	533·0	490·0	490·0
Total buckwheat fed	"	433·0	398·0	398·0
Total shorts fed	"	266·0	245·0	245·0
Total middlings fed	"	266·0	245·0	245·0
Meal fed per 100 lb. gain	"	243·2	275·3	231·8
Statement of Costs				
Cost of pigs at 6 weeks	$	11 56	11 56	11 56
Total cost of meal fed	$	32 55	29 94	29 94
Total cost of skim-milk fed	$	12 78	.....	.....
Total cost of tankage fed	$	.....	4 14	.....
Total cost of fish meal	$	.....	.....	3 30
Total cost of feed	$	45 33	34 08	33 24
Total cost of hogs	$	56 89	45 64	44 80
Feed cost per 100 lb. gain	$	7 36	6 80	5 58
Cost per 100 lb. dressed weight	$	9 59	9 52	8 28

The above experiment was conducted in 1926 and again in 1927 and both year's results indicate that when hogs are fed skim-milk from weaning until slaughter, gains are slightly greater than is the case where skim-milk is not fed. Cost per pound gain is, however, somewhat in excess of that where tankage or fish meal was used as the supplement to the meal ration. This year's figures indicate that the fish meal group and the skim-milk fed group required less meal per hundred pounds gain than did the tankage group.

SKIM-MILK VERSUS FISH MEAL FOR MARKET HOGS

This experiment was conducted to compare skim-milk and fish meal as supplements to the meal ration for hogs.

Thirty-two pigs were used in the experiment and divided into eight lots of four each. A standard meal ration was fed to each lot. For the first sixty days the ration consisted of oats, two parts; buckwheat, one part; shorts, one part; middlings, one part. For the remainder of the feeding period the buckwheat was increased to two parts, the other feeds remaining as before.

Skim-milk and fish meal were fed according to the following plan:—

Lot 1—Skim-milk from weaning to finish, with standard meal ration.

Lot 2—Fish meal from weaning to finish, with standard meal ration.

Lot 3—Skim-milk until pigs were three months of age, then milk replaced by fish meal.

Lot 4—Skim-milk until pigs were four months of age, then milk replaced by fish meal.

Lot 5—Skim-milk until pigs were five months of age, then milk replaced by fish meal.

Lot 6—Skim-milk until pigs were three months of age. (No fish meal).

Lot 7—Skim-milk until pigs were four months of age. (No fish meal).

Lot 8—Skim-milk until pigs were five months of age. (No fish meal).

TABLE 7—SKIM-MILK VERSUS FISH MEAL AS SUPPLEMENTS TO THE MEAL RATION

—		Lot 1 Skim-milk from weaning to slaughter	Lot 2 Fish meal from weaning to slaughter	Lot 3 Skim-milk to three months then fish meal	Lot 4 Skim-milk to four months then fish meal	Lot 5 Skim-milk to five months then fish meal	Lot 6 Skim-milk to three months no fish meal	Lot 7 Skim-milk to four months no fish meal	Lot 8 Skim-milk to five months no fish meal
Number of hogs in experiment		4	4	4	4	4	4	4	4
Number of days in experiment		130	130	130	130	130	130	130	130
Gross initial weight at 6 weeks	lb.	124·5	105·5	93·0	97·0	85·5	87·0	80·0	77·5
Average initial weight at 6 weeks	"	31·1	26·3	23·2	24·2	22·1	21·7	20·0	19·3
Gross finished weight	"	740·0	700·0	670·0	710·0	710·0	660·0	650·0	680·0
Average finished weight	"	185·0	175·0	167·5	177·5	177·5	165·0	162·5	170·0
Gross dressed weight	"	593·0	541·0	520·0	544·0	567·0	510·0	515·0	550·0
Average dressed weight	"	148·2	135·2	130·0	136·0	141·7	127·5	128·7	137·5
Total gain per group	"	615·5	594·5	577·0	613·0	621·5	573·0	570·0	602·5
Average daily gain per animal	"	1·18	1·14	1·10	1·17	1·19	1·10	1·09	1·16
Average gain per animal	"	153·8	148·6	144·2	153·2	155·3	143·2	142·5	150·6
Statement of Feeds									
Fish meal fed	lb.	.....	120·0	108·0	76·0	48·0	.....	.....	.....
Crushed oats	"	533·0	490·0	494·8	507·8	517·2	533·2	533·2	533·2
Buckwheat	"	433·0	398·0	398·4	407·8	417·2	433·2	433·2	433·2
Shorts	"	266·0	245·0	247·4	253·9	258·6	266·6	266·6	266·6
Middlings	"	266·0	245·0	247·4	253·9	258·6	266·6	266·6	266·6
Skim-milk	"	6,390·0	.....	1,300·0	2,850·0	4,710·0	1,300·0	2,850·0	3,710·0
Meal fed per 100 pounds gain	"	243·3	231·8	240·6	232·2	233·5	261·7	263·0	248·8
Statement of Costs									
Cost of pigs at 6 weeks	$	11 56	11 56	11 56	11 56	11 56	11 56	11 56	11 56
Total cost of meal fed	$	32 55	29 94	30 12	30 88	31 50	32 57	32 57	32 57
Total cost of skim-milk	$	12 78	.....	2 60	5 70	9 42	2 60	5 70	7 42
Total cost of fish meal	$	.....	3 30	2 97	2 09	1 32	.....	.....	.....
Total cost of feed	$	45 33	33 24	35 69	38 67	42 24	35 17	38 27	39 99
Total cost of hogs	$	56 89	44 80	47 25	50 23	53 80	46 73	49 83	51 55
Cost per 100 pounds gain	$	7 36	5 58	6 18	6 30	6 79	6 13	6 71	6 63
Cost per 100 pounds dressed weight	$	9 59	8 28	9 08	9 23	9 48	9 16	9 67	9 37

The above experiment has been conducted for two years in succession. It will be noted from the foregoing table that the cheapest gains were made by Pens 2, 3 and 6. That is to say, the pen receiving fish meal, the pen receiving skim-milk to three months of age and this succeeded by fish meal, and the pen receiving skim-milk until three months of age and no fish meal thereafter, made the cheapest gains. These results bear out the results as found in the feeding trial conducted last year, viz:—

(1) That pigs are capable of making slightly more profitable gains when fed to about three months of age on a ration supplemented with skim-milk and then the skim-milk replaced by fish meal than is the case where skim-milk is fed the full period.

(2) Skim-milk gives more rapid gains.

(3) Skim-milk is necessary in the early feeding period for weaned pigs but can profitably be discontinued after three months and replaced by fish meal.

(4) That after three months of age a fish meal supplement will give more rapid and also more economical gains than when no supplement is used.

(5) That the feeding of skim-milk after three months of age results in slightly increased feed costs, these depending on the length of time the skim-milk was fed.

The hogs in Pen 8 were closely confined during the entire feeding period on a concrete floor whereas the other pens had earth floors and in consquence exercised more freely, thus gains in the case of Pen 8 were slightly greater and the cost per hundred pounds gain somewhat less than was the case with Pen 7.

TABLE 8—DEPTH OF FAT—LENGTH OF SIDE AND GRADE

Pen	Treatment	Average depth of fat		Average length of side	Grade
		Shoulder	Loin		
		inch	inch	inch	
1	Standard meal ration with skim-milk from weaning to slaughter	1·7	1·03	28·6	3 selects, 1 thick, smooth.
2	Standard meal ration with tankage from weaning to slaughter	1·34	0·87	26·4	1 select, 2 shop, 1 thick, smooth.
3	Standard meal ration with fish meal from weaning to slaughter	1·57	1·03	27·6	3 selects, 1 thick, smooth.
4	Standard meal ration with skim-milk to three months of age, then fish meal to finish	1·5	0·93	27·1	2 selects, 1 shop, 1 thick, smooth.
5	Standard meal ration with skim-milk to four months of age, then fish meal to finish	1·5	0·96	27·6	3 selects, 1 shop.
6	Standard meal ration with skim-milk to five months of age, then fish meal to finish	1·53	1·03	27·1	1 select, 1 shop, 2 thick, smooth.
7	Standard meal ration, skim-milk to three months of age	1·46	0·93	27·3	3 selects, 1 shop.
8	Standard meal ration, skim-milk to four months of age	1·56	0·81	28·0	1 select, 2 thick, smooth, 1 shop.
9	Standard meal ration, skim-milk to five months of age	1·59	1·12	27·4	2 selects, 2 thick, smooth.

Table No. 8 indicates that the hogs in Pen 2, the tankage fed group lacked finish and produced a very short side and as a result the carcasses graded lower than was the case with the hogs in Pens 1 and 3 that received skim-milk and fish meal respectively.

FEEDING COD LIVER OIL TO PREGNANT BROOD SOWS

This experiment was undertaken to determine the value, if any, of cod liver oil when fed to pregnant brood sows as indicated by the vitality of the young pigs, per cent mortality, etc. Due to the limited number of sows available it will be necessary to conduct this experiment over a period of years before definite conclusions can be arrived at.

FIELD HUSBANDRY

The work in this division included production costs with various field crops; rotation experiments comparing three-, four-, five-, and six-year rotations; also different treatments as to manure and fertilizer; an experiment comparing the cost of producing succulent food from different sources; an experiment comparing the yield of corn in hills and in drills; and experiments in rates and dates of seeding Victory oats.

The land was well saturated in the fall. The winter was mild and except for scattered ice patches, and the ground bare until the last of January. The ground was evenly covered with snow during February and the first half of March. The spring opened early and ploughing was begun on April 21. The weather after May 6 was unsettled and planting was delayed, especially on heavy land. The first dates of seeding were: wheat, May 9; oats, May 10; barley, May 26; potatoes, June 3; sunflowers, June 4; corn, June 8.

Rains were timely during June, July and August, and growing conditions were good for all field crops except corn which made rather poor growth and was very immature when cut. The weather during harvest was unsettled and it was difficult to dry hay and grain. The wet mild weather in August and September also caused the potatoes to blight and in most fields there was considerable rot.

This spring a six-year rotation, consisting of, first year, hoed crop; second year, grain; third year, clover hay; fourth year, mixed hay; fifth year, mixed hay; and sixth year, grain; was substituted for the four year rotation of, first year, hoed crop; second year, grain; third year, clover hay; fourth year, mixed hay, which has been followed since 1921.

It is hoped that the present rotation will to a large extent overcome the weaknesses of the former one. In the four-year rotation, the proportion of grain was so small that it was necessary to purchase large quantities of oats and straw. In addition, there was not enough hay raised as compared with root and ensilage crops. Also, the planting and the cultivating of hoed crops on one-fourth the rotation land each year made farm work too heavy during the spring and early summer months. The new rotation has a weakness in that it does not provide for pasture improvement. When a farmer has island or interval hay land and does not require the hay, he could change the fifth year in a six-year rotation to pasture. A large percentage of the land used for pasture at the Station is unimproved land which could not be included in a rotation.

CROP PRODUCTION COSTS

Tables 9, 10 and 11 show costs per acre of producing hay, succulent food (corn, sunflowers, oats and peas, and swedes), and concentrates (oats, wheat and barley) respectively. The tables show the average cost for the five years (1922-26 inclusive) in which a four-year rotation was conducted at the Station for all the crops except barley; the average cost for all crops for 1924-26 in-

clusive; the cost for 1927 of 1st and 2nd year hay; the cost for 1927 of succulent food (sunflowers, swedes and oats and peas) on sandy loam fertilized with 1,000 pounds 4-8-6 fertilizer; the cost of succulent food (corn, sunflowers and swedes) on clay loam fertilized with 15 tons manure and 600 pounds 2-8-3 fertilizer.

The column showing cost for 1924-26 inclusive, was added in order to compare the various crops on a dry matter basis (samples were not sent to Ottawa for dry matter determination previous to 1924). Owing to the changes from a four to a six-year rotation, 1927 was not included in the averages.

All material and operations in the tables are charged at the 1927 prices which are:—

Rent and taxes	$ 3 00 per acre
Machinery	2 85 per acre
Manure	2 00 per ton
Nitrate of soda	62 50 per ton
Sulphate of ammonia	59 50 per ton
Superphosphate	19 50 per ton
Muriate of potash	38 50 per ton
Timothy seed	12 00 per cwt.
Red clover seed	35 00 per cwt.
Alsike clover seed	36 50 per cwt.
Alfalfa seed	25 00 per cwt.
Corn	2 75 per bush.
Oats	1 00 per bush.
Peas	3 00 per bush.
Vetches	3 50 per bush.
Wheat	2 00 per bush.
Barley	1 75 per bush.
Sunflowers	0 08 per bush.
Swedes	0 65 per lb.
Twine	0 17 per lb.
Manual labour, teamster and tractor operator	0 25 per hour
Horse	0 10 per hour
Tractor	0 60 per hour
Rent of silage cutter and blower	0 40 per hour
Threshing wheat	0 10 per bush.
Threshing oats or barley	0 08 per bush.

The cost of the manure was distributed to the various crops in the rotation on the following basis:—

	Per cent
Four-year Rotation—	
1st year Crop	40
2nd year Crop	30
3rd year Crop	20
4th year Crop	10
Six-year Rotation—	
1st year Crop	40
2nd year Crop	25
3rd year Crop	20
4th year Crop	10
5th year Crop	5
6th year Crop	0
Mixed Fertilizers—	
1st year Crop	55
2nd year Crop	30
3rd year Crop	10
4th year Crop	5

SEED FOR HAY

One-half of the cost of hay seed is charged to each hay crop in a four-year rotation, and one-third of the cost to each hay crop in a six-year rotation. The hay seed mixture used for the four-year rotation contained 10 pounds timothy, 8 pounds red clover and 2 pounds alsike clover. The hay seed mixture used for the six-year rotation contained 10 pounds timothy, 8 pounds red clover, 4 pounds alsike clover and 2 pounds alfalfa.

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SEED FOR SUCCULENT FOOD

White Capped Yellow Dent corn was grown in 1922, 1925 and 1926. Longfellow was grown in 1923, 1924 and 1927. Mammoth Russian sunflowers were grown in 1922, 1923 and 1927 and Russian Giant sunflowers were grown in 1924-1926 inclusive. Good Luck swedes were grown in 1922, Monarch in 1923, Bangholm in 1924 and 1926 and Ditmars in 1925 and 1927. Banner oats and Canadian Beauty peas were grown in 1922-1924 inclusive. Victory oats and Canadian Beauty peas were grown in 1925-1927 inclusive. In 1922 and 1923 one-half bushel of vetches was added to the mixture but as the vetches did not appear to increase the tonnage they were discontinued.

SEED FOR GRAIN CROPS

Banner oats were grown in 1922-1924 inclusive and Victory oats in 1925-1927 inclusive. White Russian wheat was grown in 1922, 1924 and 1925. Huron in 1923 and Garnet in 1926 and 1927. Charlottetown No. 80 barley was grown in 1924-1927 inclusive.

TABLE 9—COST PER ACRE OF PRODUCING HAY

Item	1927		Average	
	1st year hay	2nd year hay	1924-26	1922-26
Rent and taxes ... $	3 00	3 00	3 00	3 00
Manure ... $	6 00	3 00	4 03	4 22
Fertilizer ... $	1 15	0 72	0 50	0 30
Seed ... $	1 99	1 99	2 37	2 37
Machinery ... $	2 85	2 85	2 85	2 85
Manual labour ... $	4 38	3 33	2 76	3 30
Horse labour ... $	0 96	0 89	0 93	1 08
Statement of Yield and Cost				
Total cost per acre ... $	20 33	15 78	16 44	17 12
Yield per acre hay ... tons	2·02	2·19	1·79	1·76
*Yield per acre dry matter ... tons	1·62	1·75	1·43	1·41
†Average digestibility ... per cent	55·0	55·0	55·0	.....
Total yield per acre digestible nutrient ... ton	0·89	0·96	0·79	.....
Cost per ton hay ... $	10 07	7 21	9 18	9 73
Cost per ton dry matter ... $	12 55	9 02	11 50	12 14
Cost per ton digestible nutrient ... $	22 84	16 44	20 81	.....

*Assuming that hay contains 80 per cent dry matter.
†Clover and timothy, Table 2, Feeds and Feeding Henry and Morrison 1923 edition.

TABLE 10—COST PER ACRE OF PRODUCING SUCCULENT FEED

Item	Corn			Sunflowers				Swedes				Oats and Peas		
	Clay loam, 1927	Average		Clay loam, 1927	Sandy loam, 1927	Average		Clay loam, 1927	Sandy loam, 1927	Average		Sandy loam, 1927	Average	
		1924-26	1922-26			1924-26	1922-26			1924-26	1922-26		1924-26	1922-26
Rent and taxes ... $	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00
Manure ... $	12 00	13 33	10 40	12 00	.....	13 00	10 40	12 00	.....	13 33	10 40	.....	13 33	10 40
Fertiliser ... $	3 17	6 30	7 69	3 17	7 88	6 30	7 69	3 17	7 88	6 30	7 69	7 88	6 30	7 69
Seed ... $	1 33	1 44	0 98	1 44	1 44	1 44	1 18	1 30	1 30	1 08	1 17	5 75	5 75	6 35
Machinery ... $	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85
Twine ... $	0 94	0 51	0 55	0 85	0 85	0 62	0 64	.....	.....	.....	.....	.....	.....	.....
Manual labour ... $	18 60	16 68	16 80	31 06	26 88	20 43	20 75	36 19	31 44	34 41	33 15	12 88	14 93	13 51
Horse labour ... $	6 88	7 94	6 75	8 05	7 80	8 41	7 16	7 75	7 20	8 23	6 87	5 45	6 26	4 78
Tractor ... $	2 00	3 17	4 46	3 60	3 90	4 22	4 90	.....	.....	1 42	2 33	1 80	3 17	4 36
Rent of silage cutter and blower ... $	1 33	1 17	1 42	2 40	2 60	1 87	1 71	.....	.....	.....	.....	1 20	1 17	1 36
Statement of Yield and Cost														
Total cost per acre ... $	52 10	56 39	54 90	68 42	57 20	62 47	60 28	66 26	53 67	70 62	67 46	40 81	56 76	54 30
Total yield per acre ... ton	12·67	13·21	13·32	17·52	15·00	17·79	14·64	24·56	23·78	14·48	17·14	8·36	8·88	8·76
Dry matter ... per cent	13·50	14·23	.....	14·53	11·60	13·13	.....	9·91	10·73	12·85	.....	12·74	17·79	.....
Total yield per acre dry matter ... ton	1·71	1·88	.....	2·55	1·74	2·33	.....	2·43	2·55	1·86	.....	1·07	1·58	.....
*Average digestibility ... per cent	64·0	64·0	.....	58·0	58·0	58·0	.....	87·0	87·0	87·0	.....	65·0	65·0	.....
Total yield per acre digestible nutrient ton	1·09	1·20	.....	1·48	1·01	1·35	.....	2·11	2·22	1·62	.....	0·70	1·03	.....
Cost per ton green weight ... $	4 11	4 27	4 12	3 91	3 81	3 51	4 12	2 70	2 26	4 88	3 94	4 88	6 39	6 20
Cost per ton dry matter ... $	30 47	29 99	.....	26 83	32 87	26 81	.....	27 27	21 05	37 97	.....	38 14	35 92	.....
Cost per ton digestible nutrient ... $	47 80	46 99	.....	45 23	56 63	46 27	.....	31 40	24 18	43 59	.....	58 30	55 11	.....

*Corn, dent, immature; sunflower; and oat and pea silage and Rutabaga, Table 2, Feeds and Feeding, Henry and Morrison, 1923 edition.

NOTE.—In 1927 corn, sunflowers, oats and peas were sown on both sandy loam and clay loam. Owing to seasonal conditions, damage from crows, etc., the data for the corn on sandy loam and the oats and peas on clay loam are not included.

TABLE 11—COST PER ACRE OF PRODUCING CONCENTRATES

Item	Oats			Spring Wheat			Barley	
	1927	Average		1927	Average		1927	Average
		1924-26	1922-26		1924-26	1922-26		1924-26
Rent and taxes ... $	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00
Manure ... $	10 00	9 00	9 00	7 50	7 00	7 80	7 50	6 75
Fertilizer ... $	2 58	2 81	2 03	2 56	5 34	4 86	2 56	3 05
Seed ... $	3 00	3 00	3 00	3 00	3 34	3 60	1 50	3 00
Machinery ... $	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85
Twine ... $	0 43	0 34	0 41	0 44	0 37	0 41	0 46	0 34
Manual labour ... $	5 46	5 41	5 63	2 36	4 60	5 67	4 34	4 76
Horse labour ... $	3 39	3 12	3 06	1 03	3 49	3 86	2 79	3 02
Threshing ... $	3 14	4 46	4 31	1 94	1 93	2 46	2 22	2 37
Statement of Yield and Cost								
Total cost per acre ... $	33 85	33 99	33 29	24 68	31 92	34 51	27 22	29 14
Yield per acre grain ... bush.	39·2	55·7	53·9	19·43	19·28	24·64	27·71	29·59
Yield per acre grain ... ton	0·67	0·95	0·92	0·58	0·58	0·74	0·67	0·71
Yield per acre straw ... ton	1·07	0·84	1·13	0·99	1·05	1·36	0·87	0·83
Value of straw at $4 per ton ... $	4 28	3 36	4 52	.....	.....	.....	3 48	3 32
Value of straw at $2 per ton ... $	.....	.....	.....	198	2 10	2 72	.....	.....
Cost of grain per acre ... $	29 57	30 63	28 77	22 70	29 82	31 79	23 74	25 82
*Dry matter ... per cent	90·8	90·8	90·8	88·8	88·8	88·8	90·7	90·7
Yield per acre dry matter ... ton	0·608	0·863	0·835	0·515	0·515	0·657	0·608	0·643
†Average digestibility ... per cent	70·0	70·0	70·0	87·0	87·0	87·0	88·0	88·0
Yield per acre digestible nutrient ... ton	0·426	0·604	0·585	0·448	0·448	0·572	0·535	0·566
Cost per bushel grain ... $	0·754	0·550	0·534	1·168	1·547	1·290	0·857	0·873
Cost per ton grain ... $	44 13	32 24	31 27	39 14	51 41	42 96	35 43	36 37
Cost per ton dry matter in grain ... $	48 63	35 49	34 46	44 08	57 90	48 39	39 05	40 16
Cost per ton digestible nutrient in grain ... $	69 41	50 71	49 18	50 67	66 56	55 58	44 37	45 62

*Oats; wheat, Atlantic States; barley, Common; Table 1, Feeds and Feeding, Henry and Morrison, 1923 edition.

†Oats; wheat, ground; barley; Table 2, Feeds and Feeding, Henry and Morrison, 1923 edition.

The results for the six years seem to show:—

(1) That in this district while corn, sunflowers and swedes will produce more dry matter and digestible nutrients per acre than hay, they will produce them at a higher cost.

(2) That oats and peas are not a profitable silage crop.

(3) That sunflowers have no appreciable advantage over corn in cost of production and that when the palatability of the two crops is taken into consideration, corn is the superior crop.

(4) That although rots were a light crop in 1925 owing to cutworms and in 1926 owing to club root, they will produce digestible nutrients at a lower cost than either corn or sunflowers.

According to table 2 Feeds and Feeding, Henry and Morrison, only 64 per cent of the dry matter in immature dent corn is digestible as compared with 87 per cent in swedes. The swedes would therefore be expected to have a higher feeding value.

Feeding experiments carried on by the Animal Husbandry Division at the Central Experimental Farm, Ottawa, indicate that the dry matter in roots has 25 per cent higher feeding value than the dry matter in corn silage. Table 12 shows the value that dry matter in swedes (table 10) would have as compared with dry matter in corn silage (table 10) on that basis.

TABLE 12—COMPARISON OF CORN SILAGE AND SWEDES AS INDICATED BY FEEDING EXPERIMENTS

Item		Clay loam, 1927	Sandy loam, 1927	Average 1924-26
Yield corn per acre, green	ton	12·67	.....	13·21
Yield swedes per acre, green	"	24·56	23·78	14·48
Yield dry matter per acre corn silage	"	1·71	.....	1·88
Yield dry matter per acre swedes	"	2·43	2·55	1·86
Corn silage necessary to equal yield of swedes (considering dry matter of swedes to be worth 25 per cent more than dry matter of silage)	"	3·04	3·19	2·33
Total cost of corn per acre	$	52 10	.....	56 39
Total cost of swedes per acre	$	66 26	53 67	70 62
Cost per ton dry matter in corn silage	$	30 47	.....	29 99
Cost per ton dry matter in swedes	$	27 27	21 05	37 97
Cost of dry matter in swedes necessary to equal 1 ton dry matter in corn silage (considering the higher value of the dry matter in swedes)	$	21 80	16 82	30 31

The results in table 10 when swedes and corn silage are compared on the basis of total digestible nutrients and in table 12 when they are compared on the value of the dry matter in the two crops as indicated by feeding experiments conducted by Animal Husbandry Division, Ottawa, show that swedes will yield a higher value of feed per acre in this district.

The oats were a light crop this year and produced both dry matter and digestible nutrients at a higher cost than either wheat or barley. This light yield was partly due to lodging and poor harvest conditions. Only small acreages of wheat and barley are grown each year and they are sown on the best drained and most fertile parts of the rotation land. Therefore, under the same conditions, oats would probably produce dry matter and digestible nutrients cheaper than either wheat or barley. It usually pays, however, to grow a small acreage of wheat and barley. Feed wheat for hens was quoted at $2.63 per hundred pounds December 13, and barley is a valuable feed for fattening hogs.

CULTURAL TESTS

VICTORY OATS—RATES OF SEEDING

1/100 acre plots were sown with Victory oats at rates shown in table 13 on May 15, 1925, and on May 31, 1926. In 1927 the oats at the rate of 3 bushels per acre were sown the afternoon of June 4. It was planned at that time to sow the other rates the next day but a rain of 1.77 inches made this impossible and the other plots could not be sown until June 11. In each case, seeding at the rate of 3 bushels per acre was sown in quadruplicate and the other rates in duplicate plots. The rates of seeding and the results are shown in table 13.

TABLE 13—VICTORY OATS—RATES OF SEEDING

Rate of Seeding	Yield per acre						Average for 3 years	
	Straw, 1927	Grain, 1927	Straw, 1926	Grain, 1926	Straw, 1925	Grain, 1925	Straw	Grain
Bushel	ton lb.	bush. lb.	ton lb.	bush. lb.	ton lb.	bush. lb.	ton lb.	bush. lb.
2	1 750	27 7	0 1,969	43 19	1 700	69 4	1 473	46 21
2½	1 800	28 23	1 6	46 30	1 825	66 31	1 544	47 17
3	1 583	36 14	1 334	44 20	1 964	70 ..	1 627	50 11
3½	1 1,287	34 6	1 925	56 21	1 1,350	69 4	1 1,187	53 10
4	1 1,175	36 1	1 344	50 6	1 1,075	65 15	1 865	50 19

VICTORY OATS—DATES OF SEEDING

One-hundredth acre plots were sown with Victory oats in 1925, 1926 and 1927. The first dates each year were on quadruplicate and the later dates were on duplicate plots. The date of seeding and results are shown in table 14.

TABLE 14—VICTORY OATS—DATES OF SEEDING

Date of Seeding	Number of days seeding to harvest	Yield of straw per acre	Yield of grain per acre
		tons lb.	bush. lb.
June 4, 1927	108	1 583	36 14
June 15, 1927	114	1 1,200	33 3
June 25, 1927	108*	1 563	18 26
May 31, 1926	106	1 344	44 20
June 12, 1926	110	1 1,044	48 24
June 23, 1926	124	1 981	37 11
May 14, 1925	106	1 964	70 0
May 26, 1925	100	1 1,825	72 27
June 7, 1925	94	2 550	66 6
Average for three years—			
Early Seeding	107	1 630	50 11
Medium Early Seeding	108	1 1,356	51 18
Late Seeding	109	1 698	40 26

*The oats sown June 25, 1927, were in late milk to early dough when cut. They were so badly broken down by rain, however, that they were cut to prevent rotting.

CORN GROWN IN HILLS VERSUS DRILLS

The land on which this test was conducted was a clay loam. Two-thirds of each plot was in grain and one-third in corn the previous year. This land was fall ploughed and in the spring fifteen tons of manure per acre were ploughed under. The land was then disked and given a broadcast application of 800 pounds 2-8-3 home-mixed fertilizer. The fertilizer was mixed with the soil by means of the spring tooth and smoothing harrows. Compton's Early was grown in drills three feet apart and six to eight inches between plants, and in hills three feet apart each way with three plants to each hill. Triplicate plots were sown in each manner on May 27 and harvested on September 26.

In harvesting the corn, all land which did not have a perfect stand was discarded. The corn grown in hills gave an average yield of 12 tons, 1,723 pounds forage containing 1 ton, 1,464 pounds dry matter per acre. The corn grown in drills gave an average yield of 17 tons, 626 pounds forage containing 2 tons, 252 pounds per acre. An increase of 34·6 per cent on a forage and of 22·7 per cent on a dry matter basis over the corn grown in hills.

This project has been carried on during the past three years. The two previous years, however, White Capped Yellow Dent corn was grown and the corn in the drills was thinned to one foot. In 1926, corn grown in hills gave an increase of 4·4 per cent on a forage and 8·9 per cent on a dry matter basis over the corn grown in drills, while in 1925, the corn grown in hills gave an increase of 11·4 per cent on a forage and 15·8 per cent on a dry matter basis over that grown in drills.

OTHER EXPERIMENTS

The rotation experiments, various cultural experiments, and other farm management experiments will be reported at a later date when more data accumulates.

HORTICULTURE

ORCHARD

The winter of 1926-27 was a moderate one and the orchard came through in good condition. The winter was followed by a cold late spring. Most varieties were in full bloom June 8. This was four days earlier than in 1926. Weather conditions were good during the period that the orchard was in bloom but the set of fruit on several varieties was less than in the previous year. A general application of 9 pounds 5-8-7 commercial fertilizer was made to all developed trees not in fertilizer experiments.

SPRAYING

A block of Fameuse and McIntosh trees under a cultural experiment was used for a spraying experiment to determine the value of lime-sulphur and a lime-sulphur aluminium sulphate mixture in comparison with the regular New Brunswick spray calendar. The balance of the orchard was sprayed in accordance with the New Brunswick spray calendar as follows:—

1st application—Applied May 12-13 when the leaf tips showed green. Materials: 3-10-40 Bordeaux plus 1½ pounds arsenate of lime.

2nd application—Applied May 27 when blossom buds showed pink. Materials: same as above.

3rd application—Applied June 14 when bloom had fallen. Materials: wettable sulphur 10 pounds, arsenate of lead 2 pounds, water 40 gallons.

4th application—Applied July 4-5. Materials: 3-10-40 Bordeaux plus 1½ pounds arsenate of lime.

EXPERIMENT WITH LIME-SULPHUR

In 1926 an experiment was carried on in co-operation with the Entomological Branch to determine the value of lime-sulphur for apple orchards in comparison with the regular New Brunswick spray calendar which recommends Bordeaux mixture for all applications excepting the after-blossom spray when wettable or soluble sulphur is used. Experiments were also begun to determine the value of aluminium sulphate in reducing lime-sulphur injury. These experiments were somewhat modified and continued in 1927.

The system of spraying which was carried on in triplicate with Fameuse and McIntosh varieties was as follows:

Plot 1—Sprayed 4 times with lime-sulphur, 1-40 plus 1 pound arsenate of lime.

Plot 2—Sprayed 4 times with lime-sulphur, 1-40 plus 3½ pounds aluminium sulphate, plus 1 pound arsenate of lime.

Plot 3—Sprayed in accordance with New Brunswick spray calendar as follows:

1st application—3-10-40 Bordeaux plus 1½ pounds arsenate of lime.

2nd application—Same as above.

3rd application—Wettable sulphur 10 pounds, arsenate of lead 2 pounds, water 40 gallons.

4th application—3-10-40 Bordeaux plus 1½ pounds arsenate of lime.

Plot 4—Not sprayed.

The lime-sulphur aluminium sulphate mixture was prepared as follows:

The aluminium sulphate was dissolved in a pail of water and emptied into the spray tank. The tank was then nearly filled and the mixture agitated. The lime-sulphur was then added, the mixture agitated and the arsenate of lime added.

The dates of applying the different spray mixtures were as follows:

1st application—May 12 when leaf buds showed green.
2nd application—May 28 when blossom buds showed pink.
3rd application—June 14 when blossom petals had fallen.
4th application—June 29, two weeks after 3rd spraying.

Weather Conditions

1st application—dull and threatening, before, during and after spraying.
2nd application—rain, before, during and after spraying.
3rd application—fine, before, during and after spraying.
4th application—fine, before, during and after spraying.

The results are shown in table 15.

TABLE 15—SPRAYING EXPERIMENT WITH LIME-SULPHUR

Plot No.	Variety	Treatment	Per cent scab				Per cent insect injury				Remarks
			Light scab	Heavy scab	Cracked	Total scab	Bud moth	Green fruit worm	Codling moth	Tussock moth	
			per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	
1	Fameuse	Lime-sulphur	30·81	1·66	0	32·47	4·23	3·10	0·15	0·07	
2	"	Lime-sulphur aluminium sulphate	7·97	0·37	0·09	8·43	5·19	1·76	0	0·27	
3	"	N. B. spray calendar	8·50	2·63	0	11·13	1·70	1·02	0·17	0	
4	"	Unsprayed	44·65	21·37	0	66·02	5·46	11·87	0	1·66	
1	McIntosh	Lime-sulphur	49·34	4·04	1·41	54·79	2·44	4·04	0·47	2·25	
2	"	Lime-sulphur aluminium sulphate	26·75	2·98	0·25	29·98	1·03	1·29	0	0·12	
3	"	N. B. spray calendar	12·72	1·01	0·42	14·15	0·92	1·60	0	0·08	
4	"	Unsprayed	45·18	33·50	9·13	87·81	2·53	4·06	0	0	(See note)*.
1	Average of both varieties	Lime-sulphur	39·06	2·72	0·62	42·40	3·44	3·52	0·29	1·05	
2	" "	Lime-sulphur aluminium sulphate	15·80	1·46	0·16	17·42	1·72	1·56	0	0·21	
3	" "	N. B. spray calendar	10·57	1·81	0·21	12·59	1·31	1·31	0·08	0·04	
4	" "	Unsprayed	44·82	25·24	2·91	72·97	4·52	9·38	0	1·13	(See note)*.

*Results from one check tree; other check so badly scabbed most of apples had dropped; what few remained were 100 per cent cracked.

Notes on Foliage

May 12.—Some foliage injury noted in plot 3 which was apparently due to hydrated lime.
May 14.—Lime-sulphur injury noted in plot 1, plot 2 was free from injury.
June 8.—Considerable foliage injury was noted in plots 1 and 3; in plot 2 foliage was normal; scab showed on foliage of unsprayed trees.
June 24.—Lime-sulphur injury was very pronounced on the foliage in plot 1; foliage in plots 2 and 3 was normal.
June 29.—Scab was noted on young fruit on unsprayed trees.
July 4.—Lime-sulphur injury was very pronounced on the foliage in plot 1; foliage on plots 2 and 3 was normal.
July 28.—The foliage on plot 2 was healthier in appearance than in plots 1 and 3; foliage in plot 1 showed the effects of lime-sulphur injury and this was noted throughout the entire season.

Lime-sulphur 1-40 did not produce as clean fruit as the regular New Brunswick spray calendar and the foliage showed the effect of lime-sulphur injury.

Lime-sulphur 1-40 with aluminium sulphate gave a little better scab control on Fameuse than the regular New Brunswick spray calendar and not as good results on McIntosh. The foliage on trees sprayed with this mixture was healthier in appearance than where the other sprays were used.

The regular New Brunswick spray calendar gave a little better scab control than the lime-sulphur, but the fruit was not as well finished as where lime-sulphur was used. Some injury was noted after the first application of Bordeaux mixture. This was similar to the hydrated lime injury noted in the Annapolis Valley in 1925.

GRASS MULCH VERSUS REMOVING HAY IN SOD ORCHARD

This experiment was begun in 1914 with a block of McIntosh and Fameuse varieties. In one section of the orchard the grass is cut and left on the ground as a mulch. In the other section, the grass is cut and removed as hay.

The average yields since the orchard came into bearing in 1920 are shown in table 16.

TABLE 16—GRASS MULCH VERSUS REMOVING HAY IN SOD ORCHARD

Variety	Treatment	Average yield per tree for eight-year period	Average annual yield per tree 1920-1927 inclusive
		pecks	pecks
Fameuse	Grass cut and left as mulch	62·09	7·76
Fameuse	Grass cut and removed as hay	51·08	6·38
McIntosh	Grass cut and left as mulch	57·19	7·15
McIntosh	Grass cut and removed as hay	39·28	4·91

VARIETY ORCHARD

This orchard remained in sod during the year. The varieties reported previously as being the most promising, viz., Melba, Lobo and Sandow, fruited during the year.

One of the two Melba trees produced a good crop of apples. The first picking was made on September 10. The colour of the fruit was fairly good and and the quality was good. Considerable scab developed on this variety.

The Lobo trees produced fair crops. On one tree the fruit was very highly coloured, while on a second tree, it lacked somewhat in colour. The quality of the fruit was good and the season extended from October 10 to December 10.

The Sandow trees produced good crops but the fruit was not quite as well coloured as in 1925. The quality was good and this promises to be a valuable winter variety.

Bingo was noted during the year on account of its quality as a winter apple.

Emilia is also a good winter apple but it lacks in colour.

Elmer is a good winter apple but it lacks a little in size and colour. These later varieties are all seedlings of the Northern Spy.

EXPERIMENTS WITH VARYING AMOUNTS OF NITRATE OF SODA IN APPLE ORCHARDS

The experiments begun in 1925 to determine the effect of heavy applications of nitrate of soda on the quality of the fruit were continued. The results obtained with trees 13 years old in sod seem to indicate that nitrate of soda could be used at the rate of 9 pounds per tree (the highest rate used) without injury to the quality of the fruit.

The results in regard to yields will be published at a later date as well as a summary of the results on quality of fruit.

ORCHARD—FERTILIZER EXPERIMENTS

The orchard set out in 1923 to study the influence of different fertilizer treatments, received its annual fertilizer application. This orchard was cultivated until July 15 when a cover crop of buckwheat was sown. At the same time the orchard was seeded down to clover and timothy.

SMALL FRUITS

The work with small fruits included variety tests with strawberries and blueberries and the establishment of a strawberry and raspberry plantation to obtain data on cost of production for canning purposes.

BLUEBERRIES—VARIETY EXPERIMENT

A variety test was begun with blueberries. These were planted May 4 in a sandy loam of the following analysis:—

Moisture	1·83 per cent
Loss on ignition (organic matter, etc.)	6·55 "
Nitrogen	0·163 "
Lime requirement—pounds per acre of carbonate of lime (ground limestone)	3,274·0
pH	5·98

These data indicate a desirable soil for blueberries being somewhat low in fertility with a fairly high acid reaction.

STRAWBERRIES—VARIETY EXPERIMENT

Experiments have been carried on with a number of different varieties of strawberries since 1920. The average yields for these different varieties in one and two-year-old plantations are shown in table 17.

TABLE 17—STRAWBERRIES—VARIETY EXPERIMENT

	Average Yield			
	One-year-old plantation		Two-year-old plantation	
	Number years grown	Yield per acre	Number years grown	Yield per acre
		quarts		quarts
Glen Mary	8	5,209·8	3	6,108·41
Ozark	8	4,867·9	3	6,618·3
Sample	8	4,844·37	3	3,228·83
K. Premier	8	4,753·0	3	5,104·6
Senator Dunlap	8	4,591·7	3	6,433·8
Warfield	8	4,490·5	3	5,217·9
Beder Wood	8	4,343·1	3	4,362·1
Lavinia	8	4,334·1	3	4,514·5
Bianca	8	3,946·2	3	5,713·08
Viola	8	3,828·6	3	6,079·7
Bubach	6	3,820·5	3	3,526·8
Portia	8	3,700·5	3	6,361·6
Parsons Beauty	8	3,672·42	3	3,622·85
Williams Improved	8	3,382·49	3	4,189·15
K. Prize	7	3,337·6	3	4,988·95
Black Beauty	8	3,314·8	2	4,279·6
Jersey Giant	7	2,997·5	3	3,547·48
Julia	6	2,960·6	3	4,414·8
Billy Sunday	7	2,851·6	3	3,467·2
Rewastico	7	2,742·02	3	2,501·3
President	6	2,550·0	3	2,674·4
Charles I	7	2,398·9	3	3,157·92
Splendid	6	2,194·5	3	1,699·8
Brandywine	7	2,174·5	3	2,896·4
Ophelia	7	2,001·2	3	2,340·7
Premier	7	1,666·7	3	1,125·8
New York	6	1,607·2	3	1,716·2
Cordelia	7	1,373·5	3	2,837·98

STRAWBERRIES—COST OF PRODUCTION FOR CANNING PURPOSES

A half-acre was planted in strawberries on May 11 in order to obtain data on the cost of producing this crop for canning purposes. Two varieties were planted, viz., Senator Dunlap and Portia. The results will be published at a later date when the yields may be shown.

RASPBERRIES—COST OF PRODUCTION FOR CANNING PURPOSES

In order to obtain data on the cost of producing raspberries for canning purposes, one-eight acre was planted to this crop on May 11. Two varieties were grown, viz., Herbert and Newman 23. The results will be published at a later date when more information will be available.

VEGETABLES

Variety tests with vegetables were suspended during the year, and experiments begun to determine the cost of growing canning crops.

CANNING CROPS

In recent years some efforts have been made to promote the growing of canning crops in this province. No information was available on the possibility of successfully growing vegetables for canning purposes under New Brunswick conditions. In order to obtain data on this subject, experiments were begun during the year with spinach, beans and corn.

Spinach.—One-eight acre of spinach was sown on May 26. The varieties grown were Viroflay, King of Denmark, Bloomsdale, Victoria, Juliana and Broad Flanders. The growing season was very wet and the plants became infected with mildew. The crop was not very satisfactory for canning purposes on account of this infection and heating while in transit to the canning factory at Saint John.

Beans.—One acre was sown to beans on May 31. Three varieties were grown, viz., Masterpiece, Refuge and Hodson Wax. The crop grew well but the latter two varieties were rather late and the late pickings were not as good for canning purposes. Generally speaking, the quality of the canned product was excellent.

Corn.—One acre of corn was planted on May 25. Three varieties were grown, viz., Early Malcolm, Golden Bantam and Whipple Yellow. The crop was so late maturing that the canning company could not conveniently handle it in the small quantities available. Consequently, the corn was sold locally. Whipple Yellow is decidedly too late a variety for this district.

These experiments are being continued. Conclusions cannot be drawn from one year's experiments. The results will be published at a later date when more definite conclusions can be arrived at.

VEGETABLES—FALL VERSUS SPRING SEEDING

The project begun four years ago to determine the results from fall seeding of beets, carrots, cabbage, lettuce, onions, radish, turnips and peas was continued. Seeding was done on October 28 the previous year in a sandy well drained loam. The results were unsatisfactory with all crops excepting carrots. A fair stand of carrots was obtained which were ready for use before the spring sown crop. The results of four years work show that fall seeding with these vegetables cannot be relied upon.

POTATOES

The only potato projects carried on during the year were those testing out a tuber unit planter and a few hill selections from McCain Green Mountain potatoes. Our 1926 crop of potatoes showed more disease than could be easily cleaned out so the crop was disposed of. Seed of the McCain strain of Green Mountain potatoes was procured in 1927 from John McCain and only a trace of Mosaic could be found in the growing crop.

During the growing season the potatoes were dusted with Bordeaux mixture instead of being sprayed. Late blight was more prevalent and more infectious than for several years. Dusting six times during the season did not result in good blight control. A comparison of the foliage injury with a sprayed crop on a neighbouring farm showed just as much blight injury as on dusted potatoes at the Station.

POTATOES—HILL SELECTION

Several strains of McCain Green Mountain potatoes grown as hill units during three previous years were tested out during the year. On account of having to be rogued for the elimination of disease, no comparative results of yields could be obtained.

POTATOES—TUBER UNIT PLANTER

A new type of potato planter was tested out during the year. The machine used was manufactured by the Baker Valve Company, Minneapolis, Minn., and is called a tuber unit planter. This machine cut the sets when planting by quartering the tubers, and drops the same in regular order so that the sets from each potato are adjacent. Provision is also made so that a space may be skipped between the four sets of each tuber and each unit is thus easily observable. This machine is specially designed for the seed grower. If a plant within a unit shows any disease, it is recommended that the companion plants within that unit be rogued out as well as the diseased individual.

This machine has not yet been perfected. A number of improvements have been suggested and it is hoped that these improvements may be effected in such a manner that this machine will be particularly valuable in the production of high class disease free stock.

CEREALS

The spring opened early. Light lands with good drainage could be worked the first week in May. The weather after May 6 was wet and dull and seeding did not become general until June.

The experimental work with cereals this season included variety tests of spring wheat, oats, barley, beans, peas and buckwheat; tests of various mixtures of wheat, oats and barley; and of oats and barley. Tests were also conducted with different selections of wheat, barley, oats and buckwheat. The oats and wheat were treated with formalin (one pint to forty gallons water).

The land on which the $\frac{1}{100}$-acre plots of spring wheat, oats and barley, and the tests of mixed grains were located, was spring ploughed, after which it was put in good tilth by means of the stiff tooth cultivator disk and smoothing harrow.

Each variety was sown in quadruplicate plots. In order to obtain field conditions, the two outside rows of each side of every plot were removed at harvest time and discarded, while a foot was trimmed off each end. The plots were $\frac{1}{100}$-acre each when the sides and ends were thus removed.

SPRING WHEAT—VARIETY TEST

The variety tests of wheat were located on heavy clay soil. This land had grown a crop of potatoes the previous year and was fertilized for that crop with 15 tons barnyard manure and 750 pounds 4-8-6 home-mixed fertilizer per acre. It was, therefore, in a fair state of fertility. The land, however, became waterlogged owing to the excessive moisture in June and July. The wheat germinated poorly, did not tiller, and the kernels were badly shrunken. The yields for the three varieties that were grown were,—White Russian 230 pounds, Huron 128 pounds, Early Red Fife 123 pounds per acre. The weights per measured bushel were,—Huron 51·5 pounds, White Russian 48·5 pounds and Early Red Fife 46·0 pounds. The average yields of these varieties for the previous six years were,—White Russian 21 bushels, 42 pounds; Huron 21 bushels, 7 pounds; and Early Red Fife 19 bushels, 48 pounds per acre. The wheat plots were all sown on June 4 at the rate of 7 pecks per acre and harvested on September 27.

OATS—VARIETY TEST

Five varieties of oats were sown in quadruplicate plots of $\frac{1}{100}$-acre each on June 4. Laurel, which is a hulless variety, was sown at the rate of $2\frac{1}{4}$ bushels per acre. The other varieties were sown at the rate of 3 bushels per

acre. The oat plots were on part of the same field, had the same application of fertilizer and grew the same crop the previous year as the wheat variety plots. Thy were on slightly higher land, however, and were not so badly affected by the excessive moisture. Gold Rain again gave the highest yield. This variety seems to be able to withstand unfavourable soil and weather conditions much better than Victory and slightly better than Banner. It has outyielded Victory three times and Banner five times in the seven years it has been grown on this Station. Victory has outyielded every other variety nine times in the last twelve years. However, when the soil is heavy or the weather conditions are unfavourable, it does not yield as well as either Gold Rain or Banner. The yields are shown in table 18.

TABLE 18—OATS—VARIETY TESTS

Name of variety	Number of days maturing	Average length of straw including head	Strength of straw on scale of 10 points	Yield of grain per acre	Weight per measured bushel after cleaning	Per cent hull	Yield of kernel per acre	Average percent hull last 3 years	Average yield last 4 years
		inches		bush. lb.	lb.		lb.		bush. lb.
Gold Rain	101	47·0	8·1	43 13	37·5	32·67	993·1	29·05	54 29
Banner, Ottawa 49	106	46·2	8·5	43 1	37·0	40·24	874·0	32·55	52 12
Victory	108	43·7	7·7	36 14	40·0	38·06	766·5	31·44	52 30
Laurel, Ottawa 477	97	34·7	10·0	29 27	53·5	—	1,013·0	—	33 29
Alaska	99·2	38·5	7·9	29 8	40·5	27·27	722·7	24·19	39 33

BARLEY—VARIETY TEST

The $\frac{1}{100}$-acre plots used in testing varieties of barley were located in the same field as those testing wheat and oats. They were on the highest part of the field, however, and the land did not suffer to the same extent from the wet weather in June and July. This part of the field was given a 1,500-pound application of fertilizer the previous year. Otherwise, it had the same treatment in 1926 and 1927 as the area on which the wheat and oat variety test plots were located.

Four varieties were sown on June 4 in quadruplicate plots. O.A.C. No. 21 was sown at the rate of 2 bushels per acre. The other varieties were sown at the rate of $2\frac{1}{2}$ bushels per acre. Chinese Ottawa 60 did not stool well and although sown at the same rate per acre as the larger kernelled, two-rowed varieties, Charlottetown No. 80 and Gold, it had a much thinner stand. This year the barleys all matured at the same time, viz., September 27. In previous years, Charlottetown No. 80 has been slower maturing. The results are shown in table 19.

TABLE 19—BARLEY—VARIETY TEST

Name of Variety	Number of days maturing	Average length of straw including head	Strength of straw on scale of 10 points	Yield of grain per acre	Weight per measured bushel after cleaning	Average yield last 7 years
		inches		bush. lb.	lb.	bush. lb.
O.A.C. No. 21	94	33·2	7·5	24 23	50·5	30 39
Charlottetown No. 80	94	31·2	8·5	19 34	47·5	35 42
Chinese, Ottawa 60	94	34·5	8·7	18 17	47·5	28 28
Gold	94	27·5	9·0	16 45	50·5	.. ..

GRAIN MIXTURES

Tests of grain mixtures were begun in 1923 to determine (1) whether combinations of grain would outyield the same grains sown separately, (2) which were the best grains to combine, (3) what proportion of each grain should be used in the mixture.

Each grain mixture was tested in duplicate $\frac{1}{100}$-acre plots located in the same field as the variety tests of wheat, oats and barley. Owing to the wet condition of the soil, caused by a rain of 1·77 inches on June 5 and 6, the grain mixtures were not sown until June 11, which was a week later than the date of sowing of these same grains separately. It is quite possible that the heavy rain and the water-logged condition of the soil decreased the germination of the grains when sown at the earlier date. The grains used in the mixtures were,—Huron wheat, Victory oats, and Charlottetown No. 80 barley. In nearly all mixtures the oats did not ripen as early as the wheat and barley. The yields for 1925, 1926 and 1927 are shown in tables 20 and 21.

TABLE 20.—BARLEY, WHEAT AND OATS—SOWN IN COMBINATION

Mixture per acre, bushels	Number of days maturing 1927	Yield of grain per acre 1927	Yield of grain per acre 1926	Yield of grain per acre 1925
		lb.	lb.	lb.
Wheat 1, oats 1, barley 1	114	1,112	1,563	2,250
Wheat ½, oats 1, barley 1	114	975	1,825	2,550
Wheat ½, oats 2, barley 1	114	850	2,088	2,383
Huron wheat 1½	115	128	800	1,400
Victory oats 3	108	1,237·5	1,516	2,637
Charlottetown No. 80 barley 2½	94	946·2	1,488	2,250

TABLE 21—BARLEY AND OATS—SOWN IN COMBINATION

Mixture per acre, bushels	Number of days maturing 1927	Yield of grain per acre 1927	Yield of grain per acre 1926	Yield of grain per acre 1925
		lb.	lb.	lb.
Oats 1, barley 1	114	1,013	1,694	2,250
Oats 1½, barley 1½	114	1,075	2,069	2,266
Oats 2, barley 1	114	1,388	2,301	2,416
Victory oats 3 bush	108	1,238	1,516	2,637
Charlottetown No. 80 barley 2½	94	946	1,488	2,250

BEANS—VARIETY TEST

Seven varieties of beans were tested this year. The land on which they were grown, grew a crop of sunflowers the previous year. For that crop the land was given an application of 15 tons of barnyard manure and 1,600 pounds of 4-8-6 home-mixed fertilizer per acre. This spring 15 tons manure per acre was ploughed under. The land was then given a broadcast application of 800 pounds per acre of 2-8-3 home-mixed fertilizer. This fertilizer was worked into the land with disk and smoothing harrow.

The beans were sown on May 27 in drills 30 inches apart. In harvesting, those parts of each plot which had misses were discarded. Therefore, all yields are for perfect stands. Although the land was exceptionally well fertilized, the

foliage on all plots was light. There was less anthracnose on most varieties, however, than usual. White Pea and Large White gave the lightest yields and the beans were so badly infected with anthracnose as to be unsaleable. White Marrow-fat and Soldier were the best quality. White Marrowfat is a good yielder but rather late maturing variety for this district. Soldier is good quality, a fair yielder and is early maturing. The yields are shown in table 22.

TABLE 22.—BEANS—TEST OF VARIETIES

Name of variety	Date of ripening	Number of days maturing	Average length of straw	Average length of pod	Yield per acre		Weight per measured bushel after cleaning	Average yield for last 6 years	
			inches	inches	bush.	lb.	lb.	bush.	lb.
White Marrowfat	Oct. 1	127	14·2	4·12	27	18	60	23	20
Yellow Eye, Kentville	Sept. 14	110	14·7	4·3	20	37	63	20	6
Norwegian, Ottawa 710	Sept. 8	104	13	4·69	18	28	62·5	24	15
Navy, Ottawa 711	Oct. 1	127	16	3·87	18	13	64·5	26	30
Soldier	Sept. 8	104	12	6·0	15	20	64·0	20	31
White Pea	Oct. 1	127	16·7	3·87	13	30	62·5	22	17
Large White, Ottawa 713	Sept. 8	104	12·2	3·87	12	24	62·5	15	8

PEAS—VARIETY TEST IN ROD-ROW PLOTS

Five varieties of peas were sown in quadruplicate rod-row plots on May 9. Good stands were secured on all plots. Owing to continued wet weather, none of the pea vines matured. They had to be pulled because the peas were shelling badly on the lower part of the vines. There was considerable shelling in all plots but it was especially bad in Chancellor plots. Mackay, while a heavy yielder, is rather late for this district. Canadian Beauty; Prussian Blue; Arthur, Ottawa 18; Chancellor, Ottawa 26; and Mackay, Ottawa 25 yielded in order named.

ROD-ROW VARIETY TESTS OF CEREALS

The variety tests of cereals in rod-row plots, begun in 1924, was continued this year. Six varieties of wheat, seven varieties of oats and seven varieties of barley on which special information was wanted in the shortest possible time, were each tested eight times. Eight varieties of wheat, twenty-six varieties of oats and ten varieties of barley were each tested four times. Six varieties of wheat and five varieties of barley which did not appear to have any economic importance were allowed one plot each only. In all cases the plots consisted of 3 drills each with the exception of one of the plots of each variety which was planted to 5 drills in order to give more seed. All drills were 18½ feet long. At harvest time a foot was taken off the ends of each plot and discarded in order to obtain field conditions. The yield was taken from the centre row in the three-row plots and from the three centre rows in the five-row plots, the outside rows being discarded.

Table 23 gives the average per cent yields for the last four years of the seven varieties of wheat, oats and barley which have given the highest average yields in the rod-row plots. Only varieties which have been grown all four years are given. Among the wheats, Aurore, which has been grown the last three years, has given excellent yields. Among the barleys, Star, which has been grown the last three years, and Velvet and Glabron, which have only been grown this year, are very promising.

TABLE 23.—ROD-ROW VARIETY TEST OF CEREAL (WHEAT, OATS AND BARLEY)

Wheat		Oats		Barley	
Name	Yield	Name	Yield	Name	Yield
	Per cent		Per cent		Per cent
Huron Cap Rouge	100·0	Banner Waugh	100·0	Manchurian Ottawa 50.	100·0
Bishop Ottawa 8	98·9	Banner Sask. 99	97·7	Mandscheuri MacDonald 1807.	97·6
Whitehead's (Charlottetown No. 123).	96·2	Banner Dow	97·7	Mensury MacDonald 3207.	96·2
Early Russian Ottawa 40.	95·1	Leader B—Ottawa Selected.	97·1	O.A.C. No. 21	95·3
Garnet, Ottawa 652	93·5	Lincoln	96·3	Chinese, Ottawa 60	95·1
Huron, Ottawa 3	93·4	Banner McColne	95·9	Manchurian Cap Rouge	93·1
White Russian, Ottawa Selected.	92·7	Banner MacDonald 4407	95·1	Early Chevalier Ottawa 51.	93·1

BUCKWHEAT-VARIETY TEST IN ROD-ROW

Twenty-two varieties or strains of buckwheat were sown in duplicate rod-row plots of three rows each on June 10. This year, Silverhull gave the largest yield, but various selections of Tartarian and Rye have given better average yields for the years grown.

FORAGE CROPS

The spring opened early and considerable ploughing was done in April. From May 6 to June 6 nearly seven inches of rain fell. This rain delayed planting and caused poor germination on clay soils which were sown during that period.

FIELD ROOTS

The soil in the field where the variety tests of field roots were conducted was a clay loam. This land was fall ploughed and in the spring, fifteen tons of barnyard manure were ploughed under. The land was then disked, and given a broadcast application of 800 pounds 2-8-3 home-mixed fertilizer per acre. The fertilizer was mixed with the soil by means of the spring-tooth and smoothing harrows, after which, the land was ribbed up into 30-inch drills. All varieties were tested four times in drills 76 feet long. Two plots of each variety were on land which had been in clover the previous year, while the other two were on land which had been in corn. When estimating yields only those portions of each plot which had a perfect stand were taken.

When the roots were harvested two composite five-pound samples of each variety were taken. These samples were air dried and forwarded to Ottawa for dry matter determination.

SWEDES AND TURNIPS—VARIETY TEST

Twenty-two varieties of swedes and three varieties of turnips were sown on May 25. They were thinned to 12 inches on July 17, and all the turnips were pulled on September 17. Two plots of each variety of swedes were pulled on October 21 and the other two plots on October 24. One plot of each variety which was on land which grew a crop of swedes two years previous, was badly affected with club root. Olsgaard Bangholm showed considerable resistance to club root, whereas all the other varieties proved quite susceptible. The yields are shown in table 24.

TABLE 24.—SWEDES AND FALL TURNIPS—VARIETY TEST

Name of Variety	Source of Seed	Yield per acre			
		Green weight		Dry weight	
		tons	lb.	tons	lb.
Swedes—					
Ditmars	H. H. McNutt	36	867	3	770
Mammoth Clyde Purple Top	Wm. Ewing Co	29	157	3	110
Best of All	Wm. Rennie Seed Co	28	1,072	3	66
Improved Yellow Swedish	General Swedish Seed Co	29	1,362	3	33
Olsgaard Bangholm	Hjalmar, Hartman & Co., Copenhagen	28	723	2	1,799
Canadian Gem	Wm. Rennie Seed Co	28	1,070	2	1,798
Magnum Bonum	Wm. Ewing Co	27	1,118	2	1,662
Best of All	Wm. Ewing Co	25	1,219	2	1,639
New Century	Wm. Rennie Seed Co	26	1,192	2	1,624
Bangholm	General Swedish Seed Co	25	1,148	2	1,496
Irish King	Wm. Rennie Seed Co	26	1,464	2	1,477
Invicta	Wm. Rennie Seed Co	26	1,207	2	1,394
Bangholm	Wm. Ewing Co	24	16	2	1,311
Bangholm	Charlottetown	21	1,922	2	1,311
Bangholm	Nappan	23	674	2	1,293
Kangaroo	Wm. Ewing Co	24	152	2	1,247
Selected Magnum Bonum	Wm. Rennie Seed Co	25	665	2	1,085
Shepherd Golden Globe	Hjalmar, Hartman & Co., Copenhagen.	22	1,646	2	987
Garton's Superlative	Wm. Ewing Co	26	1,147	2	953
Corning	Yarmouth Fruit Producers	24	1,717	2	901
Kangaroo	Wm. Rennie Seed Co	23	918	2	841
Bangholm	Kentville	21	1,828	2	782
Fall Turnips—					
Fynsk Portfelder	Hjalmar, Hartman & Co., Copenhagen.	23	883	*	
Fynsk Bortfelder	Danske Landboforeningers Froforsyning Roskilde.	22	1,337		
Yellow Tankard	" " " "	20	1,465		

* Dry matter samples of fall turnips spoiled and were disregarded.

MANGELS—VARIETY TEST

Thirty-one varieties of mangels were sown in quadruplicate plots on May 24. Plots 1 and 2 of each variety which were on clover sod, made quicker growth than those following corn and were thinned to 11·5 inches on June 26 and pulled on October 5. The other two plots were thinned on July 4 and pulled on October 7. The yields are shown in table 25.

TABLE 25.—MANGELS—VARIETY TEST

Name of Variety	Source of Seed	Yield per acre			
		Green weight		Dry weight	
		tons	lb.	tons	lb.
Sludstrup Barres	Hjalmar, Hartman & Co., Copenhagen.	24	120	2	1,532
Green Top Half Sugar	Hjalmar, Hartman & Co., Copenhagen.	18	918	2	676
Ideal	Wm. Rennie Seed Co	19	952	2	634
Svalof Original Rubra	General Swedish Seed Co., Svalof	17	163	2	621
Giant White Half Sugar	Wm. Ewing Co	19	1,726	2	512
Long Red Mammoth	Wm. Ewing Co	18	1,571	2	500
Danish Sludstrup	Wm. Ewing Co	20	634	2	484
Yellow Intermediate	Central Experimental Farm	18	1,648	2	444
Rosted Barres	Hjalmar, Hartman & Co., Copenhagen.	21	1,246	2	434
Yellow Leviathan	Wm. Rennie Seed Co	21	951	2	421
Stryno Barres	Hjalmar, Hartman & Co., Copenhagen.	20	1,654	2	343
Yellow Eckendorfer	General Swedish Seed Co., Svalof	19	1,955	2	266
Red Top Half Sugar	Hjalmar, Hartman & Co., Copenhagen.	16	1,970	2	229
Fjerritsley Barres	Hjalmar, Hartman & Co., Copenhagen.	20	734	2	226

TABLE 25.—MANGELS—VARIETY TEST—*Concluded*

Name of Variety	Source of Seed	Yield per acre			
		Green weight		Dry weight	
		tons	lb.	tons	lb.
Perfection Mammoth Long Red	Wm. Rennie Seed Co	18	1,316	2	203
Danish Sludstrup	Kenneth McDonald & Sons	19	1,005	2	170
Eckendorfer Yellow	Hjalmar, Hartman & Co., Copenhagen.	21	656	2	167
Barres Sludstrup	General Swedish Seed Co., Svalof	19	416	2	89
Barres Half Long	General Swedish Seed Co., Svalof	17	1,736	2	86
Red Top Half Sugar	Wm. Ewing Co	17	120	2	79
Giant Yellow Intermediate	Wm. Ewing Co	18	410	1	1,987
Improved Giant Sugar	Wm. Rennie Seed Co	15	842	1	1,808
Giant Yellow Globe	Wm. Rennie Seed Co	21	351	1	1,758
Giant Yellow Globe	Wm. Ewing Co	20	33	1	1,725
Barres Oval	General Swedish Seed Co., Svalof	17	372	1	1,703
Golden Tankard	Wm. Ewing Co	16	191	1	1,695
Elvetham Mammoth	Hjalmar, Hartman & Co., Copenhagen.	16	432	1	1,671
Eckendorfer Red	Hjalmar, Hartman & Co., Copenhagen.	19	1,657	1	1,610
Red Eckendorfer	General Swedish Seed Co., Svalof	19	1,693	1	1,466
Svalof Original Alfa	General Swedish Seed Co., Svalof	15	699	1	1,295
Golden Tankard	Wm. Rennie Seed Co	14	1,837	1	1,006

CARROTS—VARIETY TEST

Thirteen varieties of carrots were sown in quadruplicate plots on May 25. They were thinned to 6·5 inches on July 2 and pulled on October 10 and 11. As this experiment has been completed, two columns are added to table 26 giving the "Relative" and "Comparative" yields for dry matter for the last 4 years. In these columns all varieties are compared with Improved Intermediate White which is taken as the check. For method employed, see "Test of Red Clover from different Sources", page 42. Results are shown in table 26.

TABLE 26.—CARROTS—VARIETY TEST

Name of Variety	Source of Seed	1927		Dry Weight		Number of years included in test
		Green weight	Dry weight	Relative yield	Comparative yield	
		tons lb.	tons lb.	per cent	tons lb.	
Improved Intermediate White.	Wm. Ewing Co	11 1,430	1 151	100·0	1 1,293	4
White Belgian No. 1207	Trifolium	.. ..	.. ..	98·3	1 1,237	1
White Intermediate	Summerland	10 281	.. 1,893	94·6	1 1,115	2
Mammoth Short White	Wm. Rennie Seed Co	11 194	1 37	92·7	1 1,053	4
Mammoth Intermediate	Wm. Rennie Seed Co	12 1,206	1 226	92·0	1 1,030	3
White Belgian (French)	Wm. Ewing Co	10 646	.. 1,838	89·3	1 941	4
Large White Belgian	Wm. Rennie Seed Co	11 271	1 90	88·0	1 898	4
White Belgian Carrot	Hjalmar, Hartman & Co., Copenhagen.	8 1,704	.. 1,696	87·6	1 885	4
Champion Carrot	Hjalmar, Hartman & Co., Copenhagen.	6 1,395	.. 1,386	87·2	1 871	2
Yellow Belgian	Wm. Ewing Co	10 1,172	1 34	86·7	1 855	4
White Belgian	Dupuy & Ferguson	12 552	1 136	86·5	1 848	4
Half Long White	General Swedish Seed Co., Svalof.	.. ..	.. ..	86·1	1 835	3
Danish Champion	C.E.F. Ottawa No. 19	6 77	.. 1,146	84·7	1 789	4
White Belgian	Graham Bros	.. ..	.. ..	84·1	1 769	1
White Belgian 9008	Trifolium	.. ..	.. ..	82·9	1 730	2
Danish Champion	Hjalmar, Hartman & Co., Copenhagen.	.. ..	.. ..	82·4	1 713	2
New Yellow Intermediate	Wm. Ewing Co	9 1,418	.. 1,757	81·3	1 677	4
James B. L. 781 (21)	Danske Landboforeningers Forforsyning Roskilde.	.. ..	.. ..	77·5	1 552	2
Champion Carrot	General Swedish Seed Co., Svalof.	7 452	.. 1,439	73·4	1 417	3

SUGAR BEETS—VARIETY TEST

Four varieties of sugar beets were sown on May 24. Plots 1 and 2 of each variety which were on clover sod, made quicker growth than those following corn, and were thinned to 10·5 inches on June 27. The other two plots were thinned to the same distance on July 4, and all plots were pulled on October 3. The yields are shown in table 27.

TABLE 27.—SUGAR BEETS—VARIETY TEST

Name of Variety	Source of seed	Yield per acre	
		Green weight	Dry weight
		tons lb.	tons lb.
Home Grown	Dominion Sugar Co., Chatham, Ont.	12 108	2 1,039
Schreiber & Sons	Dominion Sugar Co., Chatham, Ont.	11 1,262	2 1,031
Horning	Dominion Sugar Co., Chatham, Ont.	11 394	2 817
Dippe	Dominion Sugar Co., Chatham, Ont.	10 1,384	2 567

KALE AND RAPE—VARIETY TEST

Five varieties of kale and six varieties of rape were sown in quadruplicate plots on May 25. The kale was thinned to 6 inches on June 18 and the rape to the same distance on June 17. The kales were cut on September 27. One variety of rape, viz., Small Seeded German Winter Rape, began to bloom and was cut on August 22. The remaining varieties of rape were cut on September 22. The yields are shown in table 28.

TABLE 28.—KALE AND RAPE—VARIETY TEST

Name of variety	Source of seed	Yield per acre	
		Green weight	Dry weight
		tons lb.	tons lb.
Kale—			
Green Stem Marrow	E. Webb & Sons, England	20 1,440	2 1,363
Improved 1,000-headed Kale	Suttons & Sons, England	17 734	2 586
Purple Stem Marrow	E. Webb & Sons, England	19 516	2 439
1,000-headed Kale	Suttons & Sons, England	15 1,581	2 423
Curled Sheep Kale	Suttons & Sons, England	12 1,391	1 1,229
Rape—			
Giant Rape	Suttons & Sons, England	15 1,008	2 1,411
Large Seeded Common Winter Essex.	Vilmorin Andrieux, France	17 1,135	2 784
Broad Leaved Essex	Suttons & Sons, England	16 899	2 634
Large Seeded Winter Umbrella	Vilmorin	16 40	2 379
Dwarf Essex	E. Webb & Sons	11 1,843	1 1,424
Small Seeded German Winter Rape	Vilmorin	16 269	1 357

ENSILAGE CROPS

The soil in the field where the variety tests of corn and sunflowers were conducted, was a clay loam. Two-thirds of each plot had been in grain and one-third in corn the previous year. This land was fall ploughed and in the spring, fifteen tons of barn-yard manure per acre were ploughed under. The

land was then disked and given a broadcast application of 800 pounds 2-8-3 home-mixed fertilizer per acre. The fertilizer was mixed with the soil by means of the spring tooth and smoothing harrows.

The corn and sunflowers were planted in hills three feet apart each way and thinned to three plants per hill. The area of each plot was 288 square feet when the outside hills were removed. In harvesting, all hills with misses were discarded.

When harvesting a 5-pound composite sample was taken from each plot and sent to Ottawa for dry matter determination.

CORN—VARIETY TEST

Twenty-seven varieties of corn were tested in quadruplicate plots and one variety, viz., Hybrid (Wisconsin No. 7 x Howes Alberta Flint), was tested in a single plot. The corn was sown on May 26 and harvested on September 26. Owing to continued wet weather, the soil was cold and damp after seeding, and there was poor germination in a number of varieties. The results are shown in table 29.

TABLE 29—CORN—VARIETY TEST

Name of variety	Source of seed	Degree of maturity	Yield per acre			
			Green weight		Dry weight	
			tons	lb.	tons	lb.
Burr Leaming	Carter	Ears beginning to form	15	437	1	1,818
Hybrid	Twitchell's Pride x Wisconsin No. 7	Beginning to come in milk- to early milk	10	1,416	1	1,523
Longfellow	J. O. Duke	Kernels beginning to form	12	1,367	1	1,343
Longfellow	Dakota Improved Seed Co	Kernels beginning to form	13	248	1	1,296
Hybrid	Wisconsin No. 7 x Twitchell's Pride	Beginning to come in milk	12	553	1	1,243
Leaming	J. O. Duke	Kernels beginning to form	9	1,172	1	1,194
White Capped Yellow Dent	Steele-Briggs	Kernels beginning to form	11	1,258	1	1,062
Compton's Early	J. O. Duke	Kernels beginning to form	11	1,019	1	1,025
Lancaster County Sure Crop	A. H. Hoffman	Ears beginning to form	12	1,475	1	1,008
Northwestern Dent, South Dakota grown	A. E. McKenzie	Kernels beginning to form	11	767	1	956
Northwestern Dent	Dakota Improved Seed Co	Kernels beginning to form	10	1,477	1	909
Northwestern Red Dent	Wm. Rennie	Kernels beginning to form to early milk	11	314	1	841
Hybrid	A. Wimple	Kernels beginning to form	11	420	1	816
Golden Glow	J. O. Duke	Ears beginning to form	9	1,669	1	793
Wisconsin No. 7	J. O. Duke	Not tasseled	13	116	1	736
90 Day White Dent	Dakota Improved Seed Co	Kernels beginning to form	9	1,617	1	626
Pride Yellow Dent	Dakota Improved Seed Co	Kernels beginning to form	10	257	1	620
Northwestern Dent, Crookston Strain	A. E. McKenzie	Kernels beginning to form to medium milk	8	1,858	1	576
Quebec 28	Dr. Todd	Early to late milk	8	1,030	1	521
Yellow Dent	A. Wimple	Kernels beginning to form	9	407	1	516
Hybrid	Wisconsin No. 7 x Howes Alberta Flint	Late milk to early dough	7	1,775	1	440
Northwestern Dent	McDonald College	Kernels beginning to form to early milk	8	472	1	392
Northwestern Dent	O. Will	Kernels beginning to form to medium milk	8	311	1	383
Twitchell's Pride	Fredericton	Early to late milk	7	784	1	248
Quebec 28	McDonald College	Early milk	7	951	1	203
North Dakota	Steele-Briggs	Kernels beginning to form	8	1,540	1	195
Northwestern Dent	Brandon Experimental Station	Late milk to early dough	6	1,667	1	4
Amber Flint	A. Wimple	Kernels beginning to form	5	1,554	..	1,473

SUNFLOWERS—VARIETY TEST

Four varieties of sunflowers were sown in quadruplicate plots on May 26. Each variety was harvested when approximately fifty per cent in bloom. As this experiment has been completed, two columns are added to the table giving the "Relative" and "Comparative" yields on a dry matter basis. In these columns the different varieties of sunflowers are compared with Ottawa 76, a variety which has been grown each year. For method used to obtain relative and comparative yields, see "Test of Red Clovers from different Sources", page 42.

The test indicates that Mammoth Russian will give the highest yields on both forage and dry matter basis, followed by Russian Giant. The results are shown in table 30.

TABLE 30—SUNFLOWERS—VARIETY TEST

Name of variety	Source of seed	Green weight	Dry weight	Dry weight		Number of years included in test
				Relative yield	Comparative yield	
		tons lb.	tons lb.	per cent	tons lb.	
Mammoth Russian	Kenneth MacDonald & Son	24 86	3 637	265·8	3 379	4
Disco Russian Giant	Dakota Improved Seed Co	18 1,064	2 664	224·1	2 1,378	5
Manteca	C.P.R.			114·1	1 738	3
Mammoth Russian	C.P.R.			112·7	1 705	2
Black	C.P.R.			107·0	1 568	3
C.P.R. Mixed	C.P.R.			106·1	1 546	3
Manchurian	A. E. MacKenzie			105·5	1 532	4
Giant Russian	C.P.R.			104·0	1 496	1
Manchurian	C.P.R.			101·0	1 424	2
Ottawa 76	Ottawa	13 178	1 212	100·0	1 400	5
Mennonite	Rosthern	7 139	.. 1,095	47·1	.. 1,130	4

CORN-BREEDING

The in-breeding work begun with Twitchell's corn in 1924 was continued during the year. A number of distinct strains have been developed that are quite uniform in type and some of which are promising. Intercrosses were made between a number of these strains but on account of the heavy rain-fall during the breeding season, it was impossible to obtain intercrosses between all the strains. This work will be continued during the next season.

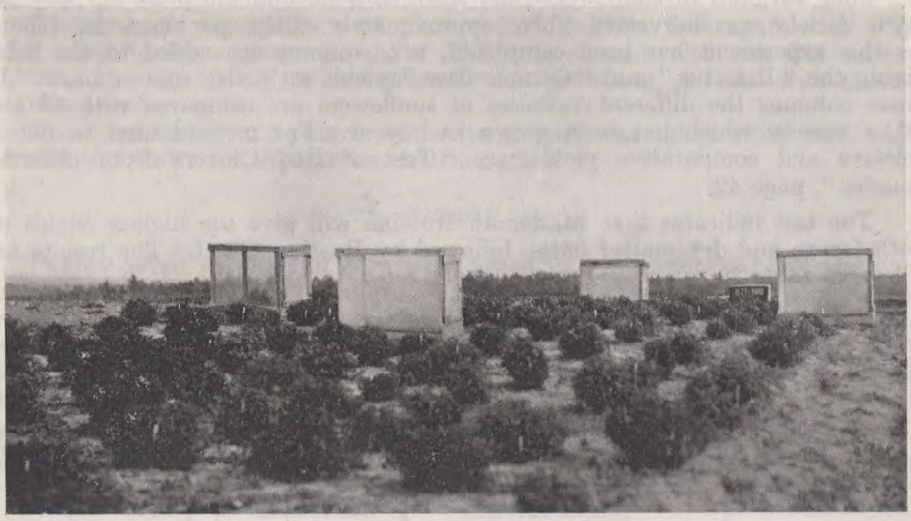
Experiments have been carried on for 3 years crossing Twitchell's Pride corn with Wisconsin No. 7 corn. This work has been carried on at the corn-breeding station at Harrow.

The resulting hybrids have given excellent yields at this station during the past three years, and it is hoped that crosses between Wisconsin No. 7 and some of the in-bred strains of Twitchell's Pride now available, will give even better results.

EXPERIMENTS IN GROWING ALFALFA

Plots sown June 26, 1922, to test the effect of nurse-crops, rates and methods of seeding, lime and wood-ashes on alfalfa, winter-killed rather badly last winter and consequently, were ploughed up this summer. Except for

patches of ice, this field was bare during December and January. A new series of alfalfa plots will be started next spring.



New Brunswick strain of alfalfa in the process of development at the Fredericton Experimental Station.

TEST OF RED CLOVER FROM DIFFERENT SOURCES

An experiment testing the suitability of clover seed from different sources begun in 1922, was completed this year. On June 26, 1922, clover seed from the following sources, viz., Alta Swede, Late Swedish, Early Swedish, Medium Late Swedish, Casimir Quebec, St. Clet Quebec, Ottawa District, Kenora District Seed Growers' Association, Ottawa C.E.F., O.S. 21, Ottawa C.E.F. 16-20, Ottawa 17-20, France 500, France 533, Italy 501, and Italy 536, was sown without a nurse-crop in single 1/50 acre plots. The following winter was unusually severe and the snow blew off one portion of the field. Of the clovers planted on this section, viz., Alta Swede, Casimir Quebec, St. Clet Quebec, Ottawa District, Kenora District Seed Growers' Association (one-half plot), Ottawa C.E.F. 16-20, France 500, France 533 and Italy 536, all winter-killed except Ottawa District. The other plots were well covered with snow and with the exception of Italy 501, came through the winter in good condition. (For the yields of the surviving plots, see 1923 report of the Fredericton Experimental Station, page 55.)

On June 29, 1923, red clover seed from the following sources, viz., Ottawa; Late Swedish; Swedish Late; Medium Late Swedish; Early Swedish; Swedish Early; Alta Swede; St. Casimir, Quebec; St. Clet, Quebec; North Italy 539 and North Italy 540, was sown without a nurse-crop in one-fiftieth acre plots. Good catches of seed were secured from all sources of seed. The land selected lacked uniformity however, and the plots were so weedy in 1924 that the yields were disregarded.

On July 11, 1924, red clover seed from 18 sources was sown without a nurse-crop in either duplicate or triplicate one-one hundredth acre plots. Next spring it was found that there was considerable winter-killing in the plots sown with seed from Italian sources. The average yields for the two plots of each variety which were on land which grew a hoed crop in 1923, are given in table 31.

Clover seed from different Canadian and European sources, 11 triplicate and 3 duplicate plots one-one-hundredth acre each, was sown on June 10, 1925. Charlottetown No. 80 barley, sown at the rate of 1 bushel per acre, was used

as a nurse-crop. All plots went into the winter in good condition. The land was evenly covered with snow from December 22 to April 25. Notwithstanding this protection fifty per cent of the clover in the plots sown with seed from Italian sources winter-killed.

On June 23, 1926, clover seed from 16 sources was sown in quadruplicate plots one-one-hundredth acre each. Charlottetown No. 80 barley sown at the rate of one bushel per acre was again used as a nurse-crop. The barley grew so vigorously that it partly smothered the clover, and so, although the stands were good, the clover plants were rather spindly in the fall. The winter was exceptionally mild and except for patches of ice, the field was bare until February. From February to the middle of March, the field was evenly covered with snow. All the clovers except those from Italian sources came through the winter in fair condition.

The yields for the plots sown in 1924, 1925 and 1926, are given in table 31.

As all the varieties were not grown each year, the average yield would not be a satisfactory basis for comparison. Therefore, the yielding ability of each variety tested is compared with one variety, viz., St. Clet. The yields of the other varieties are given in the column "Relative Yield" in per cent of St. Clet which is given a value of 100.

The figures in the column headed "Comparative Yield" correspond to the relative yield but are expressed in tons and pounds. These are obtained by taking the average hay yield for the three years of St. Clet which is 2 tons 999 pounds as 100. Thus Medium Late Swedish which has a relative yield of 107.7 per cent, has a comparative yield of 2 tons 1,384 pounds.

The tests of clover carried on since 1922 indicate, (1) That Italian clover cannot withstand the average New Brunswick winter; (2) That clover from Canadian and Swedish sources are hardy and adapted to New Brunswick conditions.

TABLE 31—TEST OF RED CLOVER SEED FROM DIFFERENT SOURCES

Name of variety and source of seed	1925 Total		1926 Total		1927 Total		Hay		Number of years included in test
	Green weight	Hay	Green weight	Hay	Green weight	Hay	Relative yield	Comparative yield	
	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	per cent	tons lb.	
Medium Late Swedish (General Swedish Seed Co.)	14 450	3 1,377	8 1,167	1 1,865	13 1,650	2 913	107·7	2 1,384	3
Chateauguay (Sam Reddick)	9 1,100	2 1,017	11 433	2 1,080	13 450	2 1,230	102·2	2 1,109	3
Dauphine (South Eastern France)	14 350	3 921	9 866	2 213	10 381	2 25	101·1	2 1,054	3
Transylvania (Roumania)	13 ..	3 495	8 1,650	2 156	.....	.....	101·0	2 1,049	2
St. Clet (Quebec)	10 1,250	2 1,647	10 900	2 894	11 1,282	2 457	100·0	2 999	3
Alta Swede (University of Alberta)	10 550	2 771	10 1,433	2 1,054	13 1,738	2 880	98·0	2 899	3
Late Swedish (General Swedish Seed Co.)	11 150	2 1,481	8 1,433	2 204	13 250	2 841	96·9	2 844	3
Chilean	.....	.....	.....	.....	11 1,375	2 313	96·8	2 839	1
Alfred (Ontario)	9 300	2 1,196	10 500	2 700	.....	.....	93·9	2 694	2
Kenora (Kenora District Co-operative)	8 1,200	2 225	9 1,133	2 471	12 417	2 879	90·5	2 524	3
Early Swedish (General Swedish Seed Co.)	8 1,550	2 1,014	7 1,900	1 1,787	12 726	2 748	90·3	2 514	3
Ottawa	8 1,900	2 714	.....	.....	.....	.....	83·5	2 174	1
Padua (Italy)	5 1,350	1 1,294	.....	.....	.....	.....	58·3	1 914	1
Spadona (Italy)	5 1,200	1 1,092	.....	.....	6 1,431	1 611	56·4	1 819	2
Sicily (Southern Italy)	8 200	2 380	.....	.....	1 1,869	834	51·6	1 579	2
Mountain Regions (Central Italy)	4 ..	1 235	.....	.....	.....	.....	39·6	1,980	1
Emilia (North Central Italy)	3 1,850	1,749	2 1,950	1,451	2 38	867	27·1	1,355	3
Umbria (North Central Italy)	2 1,700	1,475	2 33	1,069	2 1,150	1,347	25·9	1,295	3
North Italy	.....	.....	2 550	1,218	.....	.....	24·9	1,245	1
Romagna (Central Italy)	.....	.....	.....	.....	2 400	945	21·2	1,060	1
Marche (North Central Italy)	2 1,250	1,215	1 1,967	1,031	1 1,494	741	19·9	995	3
Yendo (North Italy)	.....	.....	.....	.....	1 538	687	15·4	770	1

SWEET CLOVER—VARIETY TEST

On June 23, 1926, White Blossom and Yellow Blossom Sweet Clovers were sown on quadruplicate one-one-hundredth acre plots. Barley, sown at the rate of 1 bushel, was used as a nurse-crop. The plots came through the winter in fair condition and were cut when they came in bloom, the Yellow Blossom, being cut on July 5 and the White Blossom on July 18. The Yellow Blossom, while the lighter yielder, was the better quality. The White Blossom was so woody that it would have little if any feeding value.

PASTURE CLOVERS

In testing pasture clovers in previous years, the practice has been to cut them as hay. While this method gave the yields from the varieties tested, it did not allow a comparison to be made of their ability to withstand grazing. On June 18, 1927, three plots approximately one-half acre each, were sown with Danish Stryno, Danish Morso and Wild English. These plots will be grazed with cattle next year and notes taken of their ability to stand grazing.

EXPERIMENTS WITH FERTILIZERS

The fertilizer formulae experiment with a three-year rotation of potatoes, grain and hay (Project C 8); the experiment to compare the value of different sources of phosphoric acid when used alone and with nitrogen and potash (Project C 26 and 138); the pasture fertilizer experiment (Project C 98); stock-carrying properties of New Brunswick pastures slagged versus untreated (Project C 96); the orchard fertilizer experiment (Project C 99); the experiment testing Ammo Phos for the potato crop (Project C 159); the experiment testing sources of nitrogen for the potato crop (Project C 161), are being continued. A new experiment has been begun testing different sources of nitrogen for a grain crop (Project C 163). These experiments will be reported at a later date.

NITRATE OF SODA ON HAY LANDS

The last three years an experiment has been carried on to ascertain which rates and dates of application of nitrate of soda would give the best results when applied broadcast to second year hay land. Nitrate was applied at the rate of 100, 200 and 300 pounds per acre as soon as possible after commencement of growth. Also 100 and 200 pounds per acre in two applications, half at commencement of growth and the other half three weeks later, and 300 pounds in three applications, one-third at commencement of growth, one-third three weeks later, and one-third six weeks later. The results to date indicate that while heavier applications will give larger yields, 100 pounds per acre is the most profitable application. In 1925 and 1926, 100 pounds gave better results when applied in two applications. In 1927 the best results were obtained from 100 pounds applied at commencement of growth. (Project C 25).

POULTRY

The work in the poultry plant, during the year, was largely a continuation of that begun in previous years. Feeding, breeding and hatching experiments were carried on and the seventh New Brunswick Egg Laying Contest was concluded. The poultry plant was inspected by the World's Poultry Congress delegates while on their Trans-Canadian tour. Three Barred Rock cock birds were exhibited in the New Brunswick exhibit at the World's Poultry Congress. A succesful poultry field day was held on September 15.

The stock on hand December 31, 1927 consisted of:—

Barred Rock: 10 males, 368 hens, 100 chickens.
Pekin Ducks: 2 drakes, 8 ducks.

HATCHING RESULTS

All our hatching was done in a 2,400 egg Buckeye incubator. The results for the season were as follows:—

Total eggs set	5,563·0
Number fertile	4,501·0
Per cent fertile	80·9
Number of chicks	1,638·0
Per cent total eggs hatched	29·44
Per cent fertile eggs hatched	36·39
Number of chicks alive when wing banded	1,223·0
Per cent chicks hatched alive when wing banded	74·66
Total eggs required for one chick hatched	3·39
Total fertile eggs for one chick hatched	2·74
Total eggs required for one chick when wing banded	4·54

BEST DATE FOR INCUBATION

The hatching results from eggs set at different dates are shown in table 32.

TABLE 32.—HATCHING RESULTS FROM SETTINGS OF DIFFERENT DATES

—	Setting March 20	Setting March 26	Setting March 31	Setting April 12	Setting April 19	Setting April 27	Setting May 13
Total eggs set	1,037	915	696	723	905	616	671
Number fertile	781	672	564	654	730	514	586
Per cent fertile	75·3	73·4	81·0	90·4	80·6	83·4	87·3
Number of chicks	292	255	179	324	141	217	230
Per cent total eggs hatched	28·1	27·8	25·7	44·8	15·5	35·2	34·2
Per cent fertile eggs hatched	37·3	37·9	31·7	49·5	19·3	42·2	39·2
Number of chicks alive when wing-banded	264	217	170	248	75	133	116
Per cent chicks hatched alive when wing banded	90·4	85·0	94·9	76·5	53·1	61·2	50·4
Total eggs required for one chick hatched	3·5	3·5	3·8	2·2	6·4	2·8	2·9
Total fertile eggs for one chick hatched	2·6	2·6	3·1	2·0	5·1	2·3	2·5
Total eggs required for one chick when wing banded	3·9	4·2	4·0	2·9	12·0	4·6	5·7

NOTES:—The greatest fertility was obtained from April and May settings. Hatchability, as shown by the percentage of fertile eggs hatched, was best from settings made April 12, April 27 and May 13. A setting made on April 19 was particularly low in hatchability. Viability, as shown by the percentage of chicks hatched that were alive when wing banded, was best from the March settings.

HATCHING RESULTS FROM HENS AND PULLETS

The hatching results from hens and pullets are shown in table 33.

TABLE 33.—HATCHING RESULTS FROM HENS AND PULLETS

—	Hens	Pullets
Total eggs set	2,770	2,688
Number fertile	2,414	2,005
Per cent fertile	87·1	74·5
Number of chicks	966	615
Per cent total eggs hatched	34·8	22·8
Per cent fertile eggs hatched	40·0	30·6
Number of chicks alive when wing banded	720	432
Per cent chicks hatched alive when wing banded	74·5	70·2
Total eggs required for one chick hatched	2·8	4·3
Total fertile eggs for one chick hatched	2·4	3·2
Total eggs required for one chick when wing banded	3·8	6·2

NOTES:—The fertility, hatchability and viability of chicks indicate the value of old hens over pullets as breeders.

SKIM-MILK VERSUS BEEF SCRAP VERSUS FISH MEAL

Experiments were carried on during the year to determine the relative value of beef scrap, skim-milk and fish meal as protein feeds for laying hens. The experiments were carried on for a six months' period from December 1, 1926 to May 31, 1927. There were fifteen Barred Rock pullets in each pen in the experiments and dead birds were not substituted. The system of feeding was as follows:—

All pens were fed a scratch grain mixture consisting of 200 pounds cracked corn, 200 pounds wheat and 100 pounds oats. Pen 1 was fed a dry mash, in hoppers, consisting of 100 pounds wheat bran, 100 pounds wheat middlings, 100 pounds corn meal, 100 pounds crushed oats, 45 pounds of beef scrap and 5

Experimental feeding and breeding poultry house, Experimental Station, Fredericton, New Brunswick.

pounds of charcoal. Pen 2 was fed a mash of the same composition as Pen 1, excepting that the beef scrap was omitted and skim-milk was fed at the rate of one quart daily per fifteen birds. Pen 3 was fed a mash similar to that of Pen 1, excepting that fish meal was fed instead of beef scrap. The results are shown in table 34.

TABLE 34.—BEEF SCRAP VERSUS SKIM-MILK VERSUS FISH MEAL FOR EGG PRODUCTION

—		Pen 1 Beef scrap	Pen 2 Skim-milk	Pen 3 Fish meal
Number of days in experiment		182	182	182
Number of birds in experiment at beginning		15	15	15
Scratch feed eaten per bird	lb.	28·25	28·81	28·28
Mash eaten per bird	lb.	24·43	23·15	22·31
Beef scrap eaten per bird	lb.	2·69	.....	.....
Skim-milk fed per bird	lb.	.....	28·52	.....
Fish meal eaten per bird	lb.	.....	.....	2·45

TABLE 34.—BEEF SCRAP VERSUS SKIM-MILK VERSUS FISH MEAL FOR EGG PRODUCTION
—Continued

—		Pen 1 Beef scrap	Pen 2 Skim-milk	Pen 3 Fish meal
Grit eaten per bird	lb.	1·03	1·11	1·11
Shell eaten per bird	lb.	2·07	2·15	2·08
Green feed eaten per bird	lb.	15·10	15·60	15·10
Average gain per bird	lb.	0·63	0·53	0·33
Number of birds died		0	2	0
Average egg production per bird		75·85	96·54	91·38
Statement of Costs				
Scratch feed at $2.40 per cwt	$	·678	·691	·678
Mash at $1.95 per cwt	$	·476	·451	·435
Beef scrap at $3.60 per cwt	$	·096	.....	.....
Skim-milk at 20c. per cwt	$	.....	·057	.....
Fish meal at $2.00 per cwt	$	.....	.....	·049
Grit at $1.80 per cwt	$	·018	·019	·019
Shell at $1.50 per cwt	$	·031	·032	·031
Green feed at 24c. per cwt	$	·036	·037	·036
Total cost of feed per bird	$	1·335	1·287	1·248
Cost of eggs per dozen	$	·211	·160	·164
Average value of eggs per bird	$	2·768	3·440	3·260
Gain per bird over cost of feed	$	1·433	2·153	2·012

AVERAGE EGG PRODUCTION PER BIRD PER MONTH AND MONTHLY PRICES

—	Beef scrap	Skim-milk	Fish meal	Price per dozen
	eggs	eggs	eggs	cents
December	12·00	13·40	12·53	65
January	10·53	12·86	11·33	55
February	11·26	13·13	12·60	50
March	13·86	18·00	19·80	40
April	14·40	19·92	20·06	30
May	13·80	19·23	15·06	30

The hatching results from birds on the different rations are shown in table 35. These results were taken from two mating periods (1) male birds not alternated (2) male birds alternated from pen to pen daily.

TABLE 35.—HATCHING RESULTS FROM HENS FED SKIM-MILK VERSUS BEEF SCRAP VERSUS FISH MEAL

—	Beef scrap	Skim-milk	Fish meal
Total eggs set	167	203	186
Number fertile	90	96	152
Per cent fertile	53·89	47·29	81·72
Number of chicks	14	30	35
Per cent total eggs hatched	8·38	14·77	18·81
Per cent fertile eggs hatched	15·55	31·25	23·02
Per cent mortality to three weeks of age	42·85	10·0	22·85

Experiments have been carried on with beef scrap and skim-milk for five years. During three of these years, skim-milk has given better egg production and a larger profit than beef scrap.

Fish meal has been compared with beef scrap for two seasons. In 1926, the egg production was in favour of beef scrap, while this year, it was in favour of fish meal.

During the present season the hatching experiments were carried on in two periods. In the first period, the male birds were not changed while in the second period, they were alternated from pen to pen daily. The best fertility was obtained where fish meal was fed. Hatchability, as shown by the percentage of fertile eggs hatched, was best where skim-milk was fed. Mortality in chicks up until three weeks of age was less where skim-milk was fed.

STANDARD (HOME MIXED) RATION CONTAINING CORN VERSUS RATION MADE FROM HOME-GROWN GRAINS WITHOUT CORN VERSUS RATION CONTAINING HOME-GROWN GRAINS FED SINGLY.

The experiment begun in 1926, to determine the value of home-grown grains for poultry feeding, and also to determine the value of feeding a scratch grain mixture and a mash in hoppers, in comparison with the practice sometimes adopted by small flock owners of feeding grains singly, was continued.

Group 1 was fed a standard ration of scratch grains consisting of 200 pounds cracked corn, 200 pounds wheat, and 100 pounds oats, and a mash (fed in hoppers) consisting of 100 pounds wheat bran, 100 pounds wheat middlings, 100 pounds corn meal, 100 pounds crushed oats, 50 pounds beef scrap and 5 pounds charcoal. Grit, oyster shell, green feed, skim-milk and water were also supplied.

Group 2 was fed a ration of scratch grain consisting of 200 pounds wheat, 100 pounds buckwheat and 100 pounds oats, and a mash fed in hoppers consisting of 100 pounds wheat bran, 100 pounds wheat middlings, 100 pounds crushed oats, 100 pounds buckwheat meal and 5 pounds charcoal. Grit, oyster shell, green feed, skim-milk and water were also supplied.

Group 3 was fed on whole oats, buckwheat and wheat, fed singly and in no definite order. A moist mash of crushed oats was fed at midday. This group received skim-milk occasionally. Grit, oyster shell, green feed and water were also supplied.

This experiment ran from December 1, 1926, to May 31, 1927. There were fifteen Barred Rock pullets in each pen at the beginning of the experiment. Birds that died were not substituted.

The results are shown in table 36.

TABLE 36.—STANDARD (HOME-MIXED) RATION CONTAINING CORN VERSUS RATION CONTAINING BUCKWHEAT (REPLACING CORN) VERSUS GRAIN FED SINGLY WITH MASH OR CRUSHED OATS

—	Group 1 Standard ration	Group 2 Buck-wheat in ration replacing corn	Group 3 Grains fed singly
Number of days in experiment	182	182	182
Number of birds in experiment at beginning	15	15	15
Scratch feed, containing cracked corn eaten per bird lb.	27·93	.....	.....
Scratch feed, containing buckwheat eaten per bird lb.	.....	31·44	.....
Wheat eaten per bird lb.	.....	.....	11·14
Oats eaten per bird lb.	.....	.....	16·88
Buckwheat eaten per bird lb.	.....	.....	12·29
Mash, containing corn meal, eaten per bird lb.	21·28	.....	.....
Mash, containing buckwheat, eaten per bird lb.	.....	27·23	.....
Crushed oats eaten per bird lb.	.....	.....	11·71
Skim-milk eaten per bird lb.	27·56	29·83	12·88
Grit eaten per bird lb.	0·97	1·39	1·05
Shell eaten per bird lb.	2·02	2·42	1·76
Green feed eaten per bird lb.	15·10	16·27	15·10
Average gain per bird lb.	0·34	0·65	0·54
Number of birds died	0	1	0
Average egg production	89·85	96·01	85·05

TABLE 36.—STANDARD (HOME MIXED) RATION CONTAINING CORN VERSUS RATION CONTAINING BUCKWHEAT (REPLACING CORN) VERSUS GRAIN FED SINGLY WITH MASH OR CRUSHED OATS—*Concluded*

Statement of Costs		Group 1 Standard ration	Group 2 Buck-wheat in ration replacing corn	Group 3 Grains fed singly
Statement of Costs				
Scratch feed, containing corn at $2.40 per cwt.	$	·670	.....	.....
Scratch feed containing buckwheat, at $2.35 per cwt.	$	.....	·738	.....
Wheat at $2.85 per cwt.	$	.....	.....	·317
Oats at $1.95 per cwt.	$	.....	.....	·329
Buckwheat at $1.66 per cwt.	$	.....	.....	·204
Mash containing corn meal, at $2.15 per cwt.	$	·457	.....	.....
Mash containing buckwheat, at $2.15 per cwt.	$	.....	·585	.....
Crushed oats at $2.00 per cwt.	$	.....	.....	·234
Skim-milk at 20c. per cwt.	$	·055	·059	·025
Grit at $1.80 per cwt.	$	·017	·025	·018
Shell at $1.50 per cwt.	$	·030	·036	·026
Green feed at 30c. per cwt.	$	·045	·048	·045
Total cost of feed per bird	$	1·274	1·491	1·198
Food cost of eggs per dozen	$	·170	·186	·169
Average value of eggs per bird	$	3·293	3·418	2·995
Gain per bird over cost of feed	$	2·019	1·927	1·797

AVERAGE EGG PRODUCTION PER BIRD PER MONTH AND MONTHLY PRICES

—	Standard ration	Buckwheat in ration	Grains singly	Price per dozen
	eggs	eggs	eggs	cents
December	14·06	10·73	8·20	65
January	14·86	13·21	13·46	55
February	11·20	17·00	11·06	50
March	16·93	17·69	19·80	40
April	17·20	19·69	16·40	30
May	15·60	17·69	16·13	30

The hatching results from the pens fed in this experiment are shown in table 37. These results were taken from two mating periods (1) male birds not alternated, (2) male birds alternated from pen to pen daily.

TABLE 37—HATCHING RESULTS FROM HENS FED STANDARD (HOME-MIXED) RATION CONTAINING CORN VERSUS RATION CONTAINING BUCKWHEAT (REPLACING CORN) VERSUS GRAINS FED SINGLY WITH MASH OF CRUSHED OATS

—	Standard ration	Buckwheat in ration replacing corn	Grains fed singly
Total eggs set	208	172	202
Number fertile	186	127	145
Per cent fertile	89·42	73·83	71·78
Number of chicks	37	30	68
Per cent total eggs hatched	17·78	17·44	33·66
Per cent fertile eggs hatched	19·89	23·62	46·89
Per cent mortality to three weeks of age	18·91	13·33	7·35

An analysis of the results shows a higher average egg production where buckwheat replaced corn meal in the ration. In 1926, the egg production was very slightly in favour of corn meal.

Feeding the grains singly did not result in as good egg yields as when a scratch grain mixture and a mash, in hoppers, were fed.

The greatest fertility was obtained where corn was fed in the ration. Similar results were obtained in 1926.

Hatchability, as shown by the percentage of fertile eggs hatched, was best where the grains were fed singly. In 1926, the best hatchability was obtained where corn was fed in the ration.

The mortality in the chicks up until three weeks of age was least where the grains were fed singly.

POTATOES AS A SUBSTITUTE FOR CORN MEAL IN THE LAYING MASH

Experiments, begun in 1926, were continued in 1927, to determine the value of small unmerchantable potatoes as a substitute for corn meal in the laying mash.

Group 1 was fed a scratch grain consisting of 200 pounds cracked corn, 200 pounds wheat, 100 pounds oats and a mash consisting of 100 pounds corn meal, 100 pounds wheat bran, 100 pounds wheat middlings, 100 pounds crushed oats and 5 pounds charcoal, fed in a hopper. Grit, oyster shell, milk, green feed and water were also supplied.

Group 2 was fed the same scratch grain mixture as Group 1. Instead of receiving a dry mash as Group 1, they were fed, twice a day, a moist mash consisting of equal parts wheat bran, wheat middlings and crushed oats mixed with boiled potatoes. The proportions fed were two parts of potatoes (raw weight) and one part mash. Grit, oyster shell, milk, green feed and water were also supplied.

This experiment ran from December 1, 1926, to May 31, 1927. There were fifteen Barred Rock pullets in each pen at the beginning of the experiment and dead birds were not substituted.

The results are shown in table 38.

TABLE 38—POTATOES AS A SUBSTITUTE FOR CORN MEAL IN THE LAYING MASH

—		Group 1 Corn meal in mash	Group 2 Potatoes in mash
Number of days in experiment		182	182
Number of birds in experiment at beginning		15	15
Scratch feed eaten per bird	lb.	29·83	30·60
Mash feed, containing corn meal, eaten per bird	"	27·43	....
Mash feed, without corn meal, eaten per bird	"	.....	11·79
Potatoes eaten per bird	"	.....	23·63
Skim-milk fed per bird	"	27·56	27·56
Grit fed per bird	"	1·22	0·90
Shell fed per bird	"	2·20	1·80
Green feed fed per bird	"	15·10	15·20
Average gain per bird	"	1·2	1·35
Number of birds died		0	0
Average egg production		78·91	86·18
Statement of Costs			
Scratch feed at $2.40 per cwt	$	0·715	0·734
Mash, containing corn meal, at $1.95 per cwt	$	0·534	.....
Mash, without corn meal, at $1.90 per cwt	$	.....	0·224
Potatoes at 33c. per cwt	$	.....	0·077
Skim-milk at 20c. per cwt	$	0·055	0·055
Grit at $1.80 per cwt	$	0·021	0·016
Shell at $1.50 per cwt	$	0·033	0·027
Green feed at 30c. per cwt	$	0·045	0·045
Total cost of feed per bird	$	1·403	1·178
Total cost of eggs per dozen	$	0·213	0·164
Average value of eggs per bird	$	2·725	3·016
Gain per bird over cost of feed	$	1·322	1·838

AVERAGE EGG PRODUCTION PER BIRD, PER MONTH, AND MONTHLY PRICES

—	Corn meal in mash	Potatoes in mash	Price per dozen
	eggs	eggs	cents
December	7·80	6·33	65
January	11·86	13·73	55
February	8·26	15·20	50
March	16·86	16·66	40
April	17·80	16·33	30
May	16·33	17·93	30

The hatching results from the pens in this experiment are shown in table 39. These results were obtained from two mating periods (1) male not alternated (2) male alternated from pen to pen daily.

TABLE 39—HATCHING RESULTS FROM HENS FED POTATOES AS A SUBSTITUTE FOR CORN MEAL IN THE LAYING MASH

—	Corn meal in mash	Potatoes in mash
Total eggs set	206	218
Number fertile	131	194
Per cent fertile	63·59	88·99
Number of chicks	48	48
Per cent total eggs hatched	23·30	22·01
Per cent fertile eggs hatched	36·64	24·74
Per cent mortality to three weeks of age	20·83	25·00

The results show a higher average egg production where potatoes were used to replace corn meal in the mash. In 1926, the results were slightly in favour of corn meal.

The fertility of the eggs was highest where potatoes were fed in place of corn meal in the mash. Similar results were obtained in 1926.

Hatchability, as shown by the percentage of fertile eggs hatched, was highest where corn meal was fed in the mash. These results correspond with those obtained in 1926.

Mortality in the chicks up until three weeks of age was less where corn meal was fed in the mash.

TURNIPS VERSUS MANGELS VERSUS POTATOES VERSUS EPSOM SALTS FOR WINTER EGG PRODUCTION

This experiment was begun in 1926 and continued in 1927 to compare turnips, mangels and potatoes, as green feed, and also to test out Epsom salts as a substitute for green feed.

Four pens of Barred Rock pullets were used for this experiment, which ran from December 1, 1926, to May 31, 1927. There were thirty birds in each pen at the beginning of the experiment. Each group was fed alike excepting for the green feed.

Group 1 was fed mangels as green feed.

Group 2 was fed swedes as green feed.

Group 3 was fed raw potatoes as green feed.

Group 4 was fed no green feed but was fed Epsom Salts in the drinking water at the rate of 1½ to 2 ounces for fifteen birds per day.

The results are shown in table 40.

TABLE 40—TURNIPS VERSUS MANGELS VERSUS POTATOES VERSUS EPSOM SALTS FOR WINTER EGG PRODUCTION

—		Group 1 Mangels	Group 2 Swedes	Group 3 Potatoes	Group 4 Epsom salts
Number of days in experiment		182	182	182	182
Number of birds in experiment (at beginning)		30	30	30	30
Scratch feed eaten per bird	lb.	26·94	25·61	27·11	27·24
Mash eaten per bird	"	15·24	17·64	19·70	17·91
Skim-milk eaten per bird	"	28·33	27·86	27·72	27·72
Grit eaten per bird	"	0·84	0·81	0·94	0·84
Shell eaten per bird	"	1·86	1·92	1·93	1·79
Mangels eaten per bird	"	17·62	.....	.....	.....
Swedes eaten per bird	"	.....	17·47	.....	.....
Potatoes eaten per bird	"	.....	.....	17·15	.....
Epsom salts eaten per bird	oz.	.....	.....	.....	14·97
Average gain per bird	lb.	0·76	0·84	0·86	0·86
Number of birds died		2	1	0	0
Average egg production		60·36	66·12	62·99	56·34
Statement of Cost					
Scratch feed at $2.40 per cwt	$	0·646	0·614	0·650	0·653
Mash at $2.15 per cwt	$	0·327	0·379	0·423	0·385
Skim-milk at 20c. per cwt	$	0·056	0·055	0·055	0·055
Grit at $1.80 per cwt	$	0·015	0·014	0·016	0·015
Shell at $1.50 per cwt	$	0·027	0·028	0·028	0·026
Mangels at 30c. per cwt	$	0·052	.....	.....	.....
Swedes at 24c. per cwt	$	.....	0·041	.....	.....
Potatoes at 33c. per cwt	$	.....	.....	0·056	.....
Epsom salts at $4 per cwt	$	.....	.....	.....	0·037
Total cost of feed per bird	$	1·123	1·131	1·228	1·171
Food cost of eggs per dozen	$	0·223	0·205	0·234	0·249
Average value of eggs per bird	$	2·095	2·219	2·175	1·907
Gain over cost of feed	$	0·972	1·088	0·947	0·736

TABLE 40A—AVERAGE EGG PRODUCTION PER BIRD PER MONTH AND MONTHLY PRICES

—	Mangels	Swedes	Potatoes	Epsom salts	Price of eggs per dozen
	eggs	eggs	eggs	eggs	cents
December	5·13	4·80	5·53	2·73	65
January	7·96	8·86	8·90	9·76	55
February	10·33	7·86	8·43	7·63	50
March	11·86	13·36	13·70	10·66	40
April	12·55	16·93	13·53	12·70	30
May	12·53	14·31	12·90	12·86	30

The hatching results from pens fed with the different green feeds and Epsom salts are shown in table 41.

TABLE 41—HATCHING RESULTS FROM HENS FED TURNIPS VERSUS MANGELS VERSUS POTATOES VERSUS EPSOM SALTS FOR WINTER EGG PRODUCTION

—	Mangels	Swedes	Potatoes	Epsom salts
Total eggs set	159	229	221	192
Number fertile	90	183	167	143
Per cent fertile	56·60	79·91	75·56	74·47
Number of chicks	20	55	57	55
Per cent total eggs hatched	12·57	24·01	25·79	28·64
Per cent fertile eggs hatched	22·22	30·05	34·13	38·46
Per cent mortality to three weeks of age	40·00	10·90	7·01	16·36

The results show the highest average egg production when swedes were fed as green feed. Potatoes were superior to mangels and Epsom salts were not a satisfactory substitute for green feed.

The greatest fertility was obtained where swedes were fed. Potatoes and Epsom salts in the ration did not produce quite as good fertility as swedes. The 1926 results were in favour of swedes, followed by potatoes, mangels and Epsom salts.

Hatchability, as shown by the percentage of fertile eggs hatched, was highest where Epsom salts were fed in place of green feed.

Potatoes gave the second best hatchability, followed by swedes with mangels at the bottom of the list. In 1926, the hatchability was in favour of swedes, followed by potatoes, Epsom salts and mangels.

The mortality of the chicks, up to three weeks of age, was least where potatoes were fed as green feed. Mortality where swedes were fed was less than with Epsom salts, and the mortality where mangels were fed was particularly heavy.

FEEDS FOR FERTILITY, HATCHABILITY AND VIABILITY

Experiments, begun the previous year, were continued to determine the value of supplementary feeds such as cod-liver oil, raw liver, bone meal and a combination of cod-liver oil and liver, when fed to breeding hens.

A combination of cod-liver oil, liver and bone meal was also tested this year. Six pens were used in this experiment.

Group 1 was used as a check and was fed a standard ration of scratch grain and mash fed in hoppers. The scratch grain consisted of 200 pounds cracked corn, 200 pounds wheat and 100 pounds oats. Mash consisted of 100 pounds corn meal, 100 pounds wheat middlings, 100 pounds wheat bran, 100 pounds crushed oats, 50 pounds beef scrap and 5 pounds charcoal. Grit and oyster shell were supplied in hoppers and mangels were fed as green feed. Water was supplied in abundance. Milk was supplied daily.

Group 2 was fed the same as the check with the addition of one-quarter teaspoon of cod-liver oil per bird daily. The cod-liver oil was fed in a moist mash of the same composition as that fed in the hopper.

Group 3 was fed the same as the check with the addition of one-half ounce of raw liver per bird daily. The liver was chopped fine and fed in a wet mash. The liver used was largely from pigs.

Group 4 was fed the same as the check with the addition of five per cent of bone meal to the dry mash.

Group 5 was fed the same as the check with the addition of one-quarter ounce of raw liver and one-eighth teaspoon of cod-liver oil per bird per day. The liver and cod-liver oil were fed in a moist mash being the same as that fed in the hoppers.

Group 6 was fed the same as the check with the addition of one-quarter ounce of raw liver and one-eighth teaspoon cod-liver oil per bird, per day. Two and one-half per cent bone meal was added to the mash. The liver and cod-liver oil were fed in a moist mash of the same composition as that fed in hoppers, with the addition of bone meal.

The experiment was divided into two periods, with a week between them. During the first period the hens in each pen were mated with the male bird assigned to their particular pens. During the second period, the male birds were changed from pen to pen daily. They were allowed to alternate for a week before eggs were saved for the second period.

The results are as shown in table 42.

TABLE 42.—FEEDS FOR FERTILITY, HATCHABILITY AND VIABILITY

Pen	Feed	Mating period	Eggs set	Fertile	Hatched	Per cent fertile	Per cent fertile hatched	Per cent total hatched	Per cent chicks alive 3 weeks after hatching
Group 1....	Check.....	Regular mating...	182	167	36	91·75	21·55	19·78	88·89
		Males alternated..	32	24	9	75·00	37·50	28·12	22·23
		Total.....	214	191	45	89·25	23·56	21·02	75·56
Group 2....	Cod-liver oil..	Regular mating...	337	316	124	93·76	39·24	36·79	79·04
		Males alternated..	64	62	33	96·87	53·22	51·56	72·73
		Total.....	401	378	157	94·26	41·53	39·15	77·71
Group 3....	Liver.....	Regular mating...	160	134	28	83·75	20·89	17·50	82·15
		Males alternated..	31	24	5	77·41	20·83	16·12	0
		Total.....	191	158	33	82·72	20·88	17·27	30·30
Group 4....	Bone meal....	Regular mating...	181	163	50	90·05	30·67	27·62	92·00
		Males alternated..	28	21	4	75·00	19·04	14·28	50·00
		Total.....	209	184	54	88·03	29·34	25·83	88·89
Group 5....	Cod-liver oil.. and liver.	Regular mating...	374	333	149	89·03	44·74	39·83	85·91
		Males alternated..	51	47	26	92·15	55·31	50·98	84·62
		Total.....	425	380	175	89·41	46·05	41·17	85·72
Group 6....	Cod-liver oil, liver and bone-meal.	Regular mating...	320	263	152	82·18	57·79	47·50	92·11
		Males alternated..	47	41	25	87·23	60·97	53·19	68·00
		Total.....	367	304	177	82·83	58·22	48·22	88·71

During the period in which the males were not alternated cod-liver oil, liver and bone meal, cod-liver oil and liver, cod-liver oil, and bone meal apparently increased the percentage of the total eggs hatched. The hatchability from the birds fed liver was slightly below the check birds.

When the males were alternated cod-liver oil, liver and bone meal, cod-liver oil, and cod-liver oil and liver increased the hatchability of the eggs. Where liver and bone meal were fed the hatchability was below the check.

In so far as the viability of the chicks was concerned, the lowest mortality was from the birds fed bone meal, cod-liver oil liver and bone meal, and cod-liver oil and liver.

This experiment has been carried on for two years and the results to date indicate little if any benefit from feeding liver, such as was obtainable, when fed alone.

Bone meal fed alone has resulted in a little if any increase in hatchability.

Cod-liver oil fed alone has resulted in increased hatchability.

Cod-liver oil when fed with liver has resulted in a little better hatchability and viability than when cod-liver oil was fed alone.

Cod-liver oil when fed with liver and bone meal has only been tested for one year. This combination resulted in the best hatchability.

CONTROL OF FOWL TYPHOID

Agglutination tests for fowl typhoid were made in September and October. This test has been made for four consecutive years. Blood samples were taken from September 20 to October 21 with the following results:

	Number tested	Number reacted
Hens	146	20
Cocks	10	0
Pullets	379	101
Cockerels	136	16
Total	671	137

The percentage reactors by years is as follows:—

	Per cent
1924	34·4
1925	3·93
1926	9·8
1927	20·41

The percentage of reactors shows a considerable increase over that of the two previous years. This is probably due to an improvement in the technique of the agglutination test rather than to an increased infection.

EGG LAYING CONTEST

The seventh New Brunswick Egg Laying Contest was conducted during the year and concluded on October 30. Twenty pens of ten birds each competed in this contest. A change was made in the regulations for this contest and two spare birds were allowed to accompany the original pen.

The score system by points begun in 1926 to give credit to birds laying 24-ounce eggs or over, was continued during the year. One point was deducted for each ounce that eggs averaged less than 24 ounces to the dozen, and one point was added for each ounce that eggs averaged over 24 ounces to the dozen. Eggs weighing more than 27 ounces to the dozen were considered as 27-ounce eggs and eggs weighing less than 20 ounces to the dozen were not counted.

Registration was on the same basis as in previous years. Hens that laid 200 or more eggs averaging 24 ounces or more per dozen were registered, providing they were free from breed disqualifications.

Sixty-eight contest birds, including four spares moved up to replace original contest birds, laid 200 or more eggs.

Seventy-four contest birds including three spare birds moved up to contest positions, had a credit of 200 or more points.

Forty-eight birds including two spares qualified for registration.

Twenty-two contest birds and one spare were disqualified for registration on account of small eggs.

Forty-seven hens died during the year.

Forty-seven second generation birds were entered in the contest. Eight of these died. Fourteen qualified for registration.

The average production of the thirty-eight second generation birds that completed the contest was 193·71 eggs and 202·98 points.

The average production for the year as well as for each year since the contest began was as follows:

Year	Eggs	Points
1921	152·13	.....
1922	139·43	.....
1923	162·25	.....
1924	165·00	.....
1925	164·7	.....
1926	183·38	185·58
1927	171·54	176·85

The average egg production for the different breeds was as follows:

	Eggs	Points
Barred Plymouth Rock	188·8	191·8
Single Comb White Leghorn	151·0	161·6
White Wyandotte	137·0	147·5
Rose Comb Brown Leghorn	136·5	137·8
Single Comb Rhode Island Red	136·1	142·0

The highest producing pens were:—

Name	Address	Breed	Eggs	Points
John Woods	Bloomfield	B.R.	2,294	2,418·0
W.E.B. Tait	Dorchester	B.R.	2,037	2,184·2
George Wood	Carter's Point	B.R.	2,268	2,168·2
E. M. Balkam	Milltown	W.L.	1,838	2,123·5
James Monohan	Elmsville	B.R.	1,960	2,095·3

The highest individual points records were as follows:—

Name	Address	Breed	Hen No.	Eggs	Points
John Woods	Bloomfield	B.R.	83	278	302·7
John Woods	Bloomfield	B.R	86	245	299·7
George Wood	Carter's Point	B.R.	99	280	299·4
George Wood	Carter's Point	B.R.	91	258	291·8
W.E.B. Tait	Dorchester	B.R.	103	240	290·7
John Woods	Bloomfield	B.R.	89	259	286·2
James Monahan	Elmsville	B.R.	43	246	283·9
R. A. Snowball	Chatham	B.R.	122	225	281·7
R. A. Snowball	Chatham	B.R.	128	218	274·6
John Woods	Bloomfield	B.R.	85	240	274·0
John Woods	Bloomfield	B.R.	82	248	273·0
E. M. Balkam	Milltown	W.L.	200	220	269·6
W. E. B. Tait	Dorchester	B.R.	110	242	266·5
E. M. Balkam	Milltown	W.L.	198	209	260·2
Harry Patterson	Hoyt	B.R.	64	218	259·5
A. T. Reed	Rollingdam	B.R.	53	206	256·3
James Monohan	Elmsville	B.R.	48	203	255·6
Harry Patterson	Hoyt	B.R.	63	217	250·7
Harry Patterson	Hoyt	B.R.	68	231	244·8
Helen Parks	Saint John	W.L.	181	203	243·9
John Woods	Bloomfield	B.R.	84	219	243·1
Mrs. Leo Hayes	North Devon	W.L.	178	213	242·2
N. W. Eveleigh	Sussex	B.R.	71	226	241·5
A. T. Reed	Rollingdam	B.R.	52	208	240·1

The list of contestants and individual records of the birds are shown in table 43.

TABLE 43—SEVENTH NEW BRUNSWICK EGG-LAYING CONTEST—FREDERICTON, N.B.

Pen	Name	Address	Breed	1	2	3	4	5	6	7	8	9	10	Total	Spare No. 1	Spare No. 2
1	Experimental Station	Fredericton	B.R.	267·0	126·0	217·0	149·0	179·0	197·0	*191·0	221·0	216·0	110·0	1,873·0	D	162·0
				205·5	114·8	186·8	124·2	162·0	233·0	203·3	222·5	220·4	99·0	1,771·5	.....	150·6
2	L. B. Johnston	Nashwaaksis	B.R.	185·0	237·0	201·0	215·0	120·0	273·0	22·0	189·0	143·0	*139·0	1,724·0	158·0	198·0
				194·2	237·9	218·7	214·1	132·5	212·7	21·6	173·5	131·9	175·1	1,712·2	159·3	184·2
3	George Danby	North Devon	B.R.	D198·0	183·0	165·0	160·0	181·0	141·0	66·0	207·0	16·0	177·0	1,494·0	D	177·0
				189·9	183·8	196·2	174·5	169·8	163·7	57·9	231·0	16·5	189·0	1,572·3	.....	186·7
4	James Monohan	Elmsville	B.R.	216·0	209·0	246·0	125·0	185·0	178·0	218·0	203·0	187·0	193·0	1,960·0	103·0	63·0
				232·7	221·5	283·9	150·8	176·8	175·9	181·0	255·6	211·8	205·3	2,095·3	109·2	57·0
5	A. T. Reed	Rollingdam	B.R.	123·0	208·0	206·0	222·0	208·0	204·0	218·0	231·0	172·0	*221·0	2,013·0	220·0	201·0
				140·3	240·1	256·3	208·8	200·2	186·2	187·4	233·5	137·7	231·0	2,021·5	255·7	180·1
6	Harry Patterson	Hoyt	B.R.	181·0	213·0	217·0	218·0	198·0	192·0	202·0	231·0	*139·0	*179·0	1,970·0	197·0	146·0
				204·5	206·5	250·7	259·5	176·8	194·7	209·4	244·8	130·7	193·6	2,071·2	195·9	127·1
7	N. W. Eveleigh	Sussex	B.R.	226·0	153·0	204·0	109·0	*D 21·0	209·0	188·0	243·0	190·0	190·0	1,733·0	D	124·0
				241·5	172·0	231·8	106·1	20·4	186·7	208·4	237·3	213·9	163·9	1,782·0	.....	116·6
8	John Woods	Bloomfield	B.R.	214·0	248·0	278·0	219·0	240·0	245·0	*188·0	270·0	259·0	*133·0	2,294·0	257·0	120·0
				213·8	273·0	302·7	243·1	274·0	299·7	201·0	190·5	286·2	134·0	2,418·0	234·6	93·6
9	George Wood	Carter's Point	B.R.	258·0	*249·0	243·0	200·0	222·0	254·0	*103·0	215·0	280·0	244·0	2,268·0	100·0	231·0
				291·8	235·9	212·7	228·7	150·2	208·7	98·9	217·5	299·4	224·4	2,168·2	99·1	205·5
10	W. E. B. Tait	Dorchester	B.R.	210·0	180·0	240·0	159·0	260·0	207·0	173·0	191·0	175·0	242·0	2,037·0	237·0	232·0
				170·8	179·3	290·7	196·7	218·1	221·4	213·2	207·5	220·0	266·5	2,184·2	280·0	254·4
11	C. M. Peart	Lewisville	B.R.	158·0	*112·0	177·0	*D57·0	165·0	D144·0	D109·0	139·0	175·0	*78·0	1,314·0	162·0	D
				106·3	119·9	174·2	45·7	150·5	143·2	101·6	112·0	135·2	86·0	1,174·6	108·6	.....
12	R. A. Snowball	Chatham	B.R.	223·0	225·0	204·0	*173·0	177·0	D184·0	208·0	218·0	173·0	*196·0	1,981·0	202·0	170·0
				175·6	281·7	162·3	168·9	198·5	178·4	228·1	274·6	184·8	192·9	2,045·8	189·3	130·1
13	A. D. Fownes	Moncton	W.W.	*111·0	151·0	92·0	163·0	156·0	173·0	118·0	156·0	152·0	*98·0	1,370·0	D	72·0
				112·3	186·8	87·7	113·9	201·2	204·5	122·1	200·3	149·6	97·2	1,475·6	.....	75·6
14	H. G. Harrison	Saint John	S.C.	121·0	138·0	110·0	188·0	*28·0	178·0	177·0	128·0	114·0	179·0	1,361·0	82·0	139·0
			R.I.R.	134·4	121·1	132·4	164·5	25·3	180·6	192·2	155·7	139·0	174·9	1,420·1	75·1	170·0
15	Arthur Pringle	Stanley	R.C.B.L.	185·0	175·0	145·0	113·0	107·0	*149·0	116·0	156·0	102·0	117·0	1,365·0	167·0	123·0
				185·3	160·8	150·6	128·8	134·0	152·7	92·4	165·6	96·6	112·1	1,378·9	169·4	123·6
16	A. Vye Gibson	Moncton	W.L.	196·0	D190·0	D28·0	*143·0	*60·0	196·0	112·0	182·0	75·0	154·0	1,336·0	141·0	126·0
				216·6	224·4	30·8	140·2	64·2	212·2	122·8	183·4	58·2	138·6	1,391·4	139·2	129·3
17	Mrs. Leo Hayes	North Devon	W.L.	D130·0	*D*109·0	*172·0	D70·0	*D125·0	148·0	D82·0	213·0	*125·0	202·0	1,376·0	137·0	D
				109·1	112·2	188·8	78·6	124·7	162·9	82·9	242·2	131·1	213·9	1,446·4	140·0	.....
18	Helen Parks	Saint John	W.L.	203·0	221·0	144·0	184·0	113·0	191·0	105·0	142·0	159·0	146·0	1,608·0	114·0	71·0
				243·9	224·9	153·3	198·1	139·8	195·1	124·4	170·6	198·5	149·9	1,798·5	107·0	80·8
19	E. M. Balkam	Milltown	W.L.	189·0	*147·0	188·0	200·0	165·0	136·0	172·0	209·0	212·0	220·0	1,838·0	133·0	116·0
				229·3	142·3	237·9	239·1	175·5	145·8	184·5	260·2	239·3	269·6	2,123·5	132·5	123·7
20	Hayfield Brothers	Oromocto	W.L.	D125·0	173·0	*D*82·0	158·0	*D170·0	*191·0	D34·0	172·0	*120·0	*169·0	1,394·0	D	D
				130·0	169·7	75·7	143·5	148·7	186·9	36·8	181·3	95·6	169·2	1,320·4	.....	.....

*Substitute. D Dead.

BEST AGE FOR CAPONIZING, 1926-27

In order to determine the best age for caponizing cockerels an experiment was carried on with two lots of Barred Rock cockerels hatched May 27 and June 3, 1926. Groups of cockerels were caponized at six weeks of age and thereafter at intervals of one week until eleven weeks of age.

The results are shown in table 44.

TABLE 44.—BEST AGE FOR CAPONIZING

—	Age caponized					
	6 weeks	7 weeks	8 weeks	9 weeks	10 weeks	11 weeks
Number of bird caponized	18	19	18	17	14	14
Number of birds known dead from operation	5	4	7	0	0	0
Number of birds dead or lost on range	2	3	1	2	4	1
Number of slips	0	2	1	2	0	0
Average weight of chicks alive December 3, when 6 weeks of age (not starved) lb.	0·625	0·552	0·487	0·456	0·397	0·466
Average weight of birds living December 3, when caponized (starved) lb.	0·533	0·674	0·784	0·995	0·928	1·250
Average weight of birds December 3 (starved) lb.	6·15	6·05	5·8	5·68	4·82	5·46
Average gain per bird to December 3 lb.	5·525	5·498	5·313	5·224	4·423	5·094
Results from birds killed December 23						
Number of birds killed	6	6	5	8	5	6
Average weight of birds on December 3 lb.	6·23	6·16	6·06	5·92	5·16	5·53
Average weight of birds on December 23 lb.	6·75	6·68	6·62	6·17	5·54	6·05
Average gain per bird December 3 to 23 lb.	0·52	0·52	0·56	0·25	0·38	0·52
Average weight dressed (drawn) lb.	4·33	4·13	4·14	3·85	3·38	3·75
Dressing percentage	64·19	61·84	62·53	62·34	61·01	61·98
Results from birds killed February 22						
Number of birds killed	5	6	5	7	5	7
Average weight of birds on December 3 lb.	6·06	5·95	5·54	5·41	4·48	5·4
Average weight of birds on February 22 lb.	7·6	7·46	6·56	6·84	5·72	6·72
Average gain per bird December 3 to February 22 lb.	1·54	1·51	1·02	1·43	1·24	1·32
Average weight of birds dressed (drawn) lb.	5·3	5·08	4·4	4·72	3·78	4·55
Dressing percentage	69·73	68·08	67·07	69·1	66·08	67·72

The number of birds that were known to have died as a result of caponizing was greatest at the ages of six, seven and eight weeks, after which date, the known mortality was nil. During the previous year the mortality was very light and was greatest when caponizing was done at ten weeks of age.

The percentage of slips was greatest when caponizing was done at seven, nine and eight weeks. There were no slips in the other lots. In the previous year there were no slips in the group caponized at nine weeks of age and 14·28 per cent in eight weeks old lot which were next in order.

The birds that were caponized at the youngest ages made greatest gains up to December 3. This may be due to the difference in the weights of the different groups of birds in the beginning. The birds were all weighed individually at six weeks of age when the first group was caponized. The chicks were picked up at random for caponizing but at six weeks of age there was a tendency to select the larger chicks on account of the difficulty of operating on such small birds without undue body injury. The same tendency seems to be somewhat apparent at seven weeks of age. The groups caponized at eight, nine and eleven weeks were very similar in size. The group caponized at ten weeks was a small lot

and did not make good gains. A comparison of the gains between those caponized at eight, nine and eleven weeks of age shows less gains as the birds grow older.

While the birds were being fattened, the gains made by the birds caponized at six, seven and eleven weeks were slightly larger than the others. The gains made by the remaining lots were quite similar.

BEST DATE FOR MARKETING CAPONS

The results from marketing capons at different dates were as follows:—

		Killed December 23	Killed February 23
Number of birds		36	35
Weight December 3	lb.	211·1	191·8
Weight when killed	lb.	227·1	239·2
Cost per bird	$	1·171	1·62
Profit per bird	$	0·727	0·578

The gain per bird was greatest when sold for the Christmas trade. This corresponds with our experience during two previous seasons.

DUCKS

A breeding flock of twelve Pekin ducks was kept during the year. The hatching results were as follows:—

—	Setting April 16	Setting May 19	Setting May 24	Setting June 9
Total eggs set	96	70	70	57
Number fertile	63	45	60	34
Number of ducks hatched	49	35	45	19

On June 27 the ducks were attacked by the white stocking black flies (*Simulium bracteatum*) with a resultant heavy mortality. This insect was observed last year when endeavouring to determine the cause of the heavy mortality in young ducks. It would seem as though this insect was locally established as ducks are quite successfully raised in other sections of the province.

GEESE

Three geese laid seventy-one eggs. Sixteen goslings were hatched and these all died from being attacked by white stocking black flies. This is the same fly that attacked the ducks and apparently it is of local distribution as geese are successfully raised throughout the province.

APIARY

The winter of 1926-27 was comparatively moderate in temperature and bees throughout the district wintered fairly well. The winter was followed by a cold late spring and bees were not taken from the cellar until April 19.

Fifty-eight colonies were placed in winter quarters in the fall of 1926. Seven of these died during the winter. Five were weak in the spring and united to other colonies. Three colonies were destroyed to eliminate foul brood infection and one because of paralysis. One colony was broken up for mating boxes. The forty-one remaining colonies produced 1,818 pounds of honey and two new colonies. This is an average of 44·3 pounds per colony as compared with 40·3 pounds in 1926 and 25 pounds for 1925. The highest producing colony yielded 128 pounds of honey.

Out-apiaries were conducted at Springhill and Burton. Seven colonies developed American foul brood. Three of these infected colonies were at Burton, one at Springhill and three at the Station apiary. This infection apparently came from feeding honey from old combs.

Fifty-two colonies were placed in winter quarters in the fall of 1927. Twelve of these were stored in a cellar and forty are being wintered in packing cases. Twenty of these are in the out-apiary at Burton.

CONTROL OF SWARMING BY DEQUEENING AND REQUEENING

Eleven colonies that showed preparation for swarming, by having larvae in queen cells, were dequeened and at the same time all queen cells were destroyed. Nine or ten days later the queen cells were again destroyed and a young laying queen was introduced. None of the colonies thus treated made any further preparation for swarming.

CONTROL OF SWARMING BY SEPARATION OF QUEEN AND BROOD

Eleven colonies that showed preparation for swarming by having larvae in queen cells were treated by separating the queen and brood. All combs containing brood were taken from the brood chamber and replaced by empty combs. The queen and the bees shaken from one frame were left in the brood chamber. The combs containing brood were put in an empty super, which was placed above a honey super. This super was separated from the honey super by a queen excluder, and the honey super was separated from the brood chamber by a queen excluder.

Three of the colonies, thus treated, did not make any further preparation for swarming. A fourth colony developed American foul brood and did not prepare to swarm. Seven colonies made further preparation to swarm.

This is the third year that these experiments on swarm control have been carried on. In each year the best swarm control has been obtained by dequeening and requeening. These experiments have been carried on in the out-apiaries as well as at the Station apiary and consequently it has not been possible to obtain any positive data on the effect of the different methods of management upon the honey crop. From data obtained, the indications are that the honey crop is practically the same from each manipulation.

METHOD FOR DETECTING PREPARATION FOR SWARMING

Experiments have been carried on for three years to determine the value of a double brood chamber for swarm detection. When colonies in ten-frame Langstroth hives show signs of congestion in the spring, the brood chamber has been enlarged by adding a shallow super filled with drawn comb. Thereafter,

when these colonies were examined at regular intervals of nine or ten days, this shallow super has been tipped from the rear in order to determine whether preparation for swarming could be detected by the presence of cells built along the lower edge of the comb in the shallow super. In 1927, twenty-two colonies with this double brood chamber made preparation for swarming and in all of these the queen cells were observable when tipping the shallow super. Similar results were obtained in 1925 and 1926.

WINTERING IN CELLAR

Eighteen colonies were placed in a house cellar on December 6. The part of the cellar in which the bees were wintered was separated from the main cellar by partitions so that a lower and more even temperature could be maintained. The cellar temperature ranged from thirty-eight to forty-seven degrees and the cellar was rather damp. The bees were removed from the cellar on April 19. The results are shown in table 45.

TABLE 45.—WINTERING IN CELLAR

—	10-frame Langstroth	8-frame Langstroth
Number of colonies placed in cellar	17	1
Condition	Good	Good
Average strength, fall 1926 ..... frames bees	8·53	7·0
Average strength, spring 1927 ..... frames bees	3·39	2·0
Average weight, fall 1926 ..... lb.	65·0	62·0
Average weight, spring 1927 ..... lb.	40·29	34·0
Average stores consumed ..... lb.	24·93	28·0
Number of colonies died	3	0
Number of colonies weak and united to other colonies	5	0
Number of colonies covering 6 frames in spring	2	0
Number of colonies covering 5 frames in spring	1	0
Number of colonies covering 4 frames in spring	5	0
Number of colonies covering 3 frames in spring	2	0
Number of colonies covering 2 frames in spring	1	1
Number of colonies covering 1 frame in spring	2	0
Number of colonies covering ½ frame in spring	1	0

WINTERING IN FOUR-COLONY CASES

Twelve colonies were wintered in four-colony packing cases at this Station and twelve colonies were similarly wintered in the out-apiary at Burton. Colonies were placed in packing cases before being fed for winter; feeding was done on September 28 and October 4. Buckwheat hulls were used for insulation. Five inches of packing was used on the bottom and sides, and six inches on the top. The top packing was enclosed in sacks. The results are shown in table 46.

TABLE 46.—WINTERING IN FOUR-COLONY CASES

—	Fredericton 10-frame Langstroth	Burton Apiary	
		10-frame Langstroth	10-frame Jumbo
Number of colonies wintered in four-colony cases	12	8	4
Condition	Good	Good	Good
Average strength, fall 1926 ..... frames bees	8·83	8·62	8·0
Average strength, spring 1927 ..... frames bees	5·5	6·71	5·75
Average weight, fall 1926 ..... lb.	74·58	74·75	76·75
Average weight, spring 1927 ..... lb.	45·95	45·85	45·5
Average stores consumed ..... lb.	28·63	29·0	31·25
Number of colonies died	0	1	0
Number of colonies weak and united to other colonies	0	0	0
Number of colonies covering 8 frames in spring	2	3	0
Number of colonies covering 7 frames in spring	2	1	2
Number of colonies covering 6 frames in spring	2	2	0
Number of colonies covering 5 frames in spring	2	0	1
Number of colonies covering 4 frames in spring	2	1	1
Number of colonies covering 3 frames in spring	2	0	0

WINTERING IN TWO-COLONY CASES

Six colonies were packed in two-colony cases at this Station and eight colonies at Burton. Colonies were placed in the packing cases before being fed, namely, September 28 and October 4. The packing used was the same as in the four-colony cases. The results are shown in table 47.

TABLE 47.—WINTERING IN TWO-COLONY CASES

—	Fredericton Apiary	Burton Apiary	
	10-frame Langstroth	10-frame Langstroth	10-frame Jumbo
Number of colonies wintered in two-colony cases	6	2	6
Condition	Good	Good	Good
Average strength, fall 1926 ..... frames bees	8·5	9·0	7·66
Average strength, spring 1927 ..... frames bees	5·66	8·0	4·8
Average weight, fall 1926 ..... lb.	74·83	74·5	76·83
Average weight, spring 1927 ..... lb.	49·58	40·0	44·8
Average stores consumed ..... lb.	25·25	34·0	30·6
Number of colonies died	0	1	1
Number of colonies weak and united to other colonies	0	0	2
Number of colonies covering 8 frames in spring	0	1	0
Number of colonies covering 7 frames in spring	1	0	1
Number of colonies covering 6 frames in spring	2	0	1
Number of colonies covering 5 frames in spring	3	0	1
Number of colonies covering 4 frames in spring	0	0	1
Number of colonies covering 3 frames in spring	0	0	0
Number of colonies covering 2 frames in spring	0	0	1

WINTERING IN SINGLE COLONY CASES

Two colonies were packed in single colony cases with four inches of packing on the bottom and sides and six inches on the top. Buckwheat hulls were used for packing. The results are shown in table 48.

TABLE 48.—WINTERING IN SINGLE COLONY CASES

—	Fredericton Apiary
Number of colonies packed in single cases	2
Condition	Good
Average strength, fall 1926 ..... frames bees	9·0
Average strength, spring 1927 ..... frames bees	5·0
Average weight, fall 1926 ..... lb.	74·0
Average weight, spring 1927 ..... lb.	39·5
Average stores consumed ..... lb.	35·5
Number of colonies died	1

One colony came out in good condition in the spring with five frames of bees. The second colony suffocated during the winter. This colony was left in the case all summer, the cover being raised as necessary when supers were added.

A comparison of the results from wintering bees in the cellar and in different types of packing cases shows:—

Colonies wintered in packing cases consume a little more stores than colonies wintered in the cellar.

Wintering in four-colony cases gave the best results.

Colonies wintered in packing cases were stronger in the spring than colonies kept in the cellar.

A comparison of the results from wintering in four-colony and two-colony cases shows the best results from wintering in four-colony cases. The results from the two-colony cases were not as satisfactory at Burton as at Fredericton.

The spring count, not counting weak colonies united to other colonies, estimated as percentage of the fall count for colonies wintered in different ways, is shown in table 49. The 1926 records are shown in the same table.

TABLE 49

—	Per cent 1926	Per cent 1927
Wintered in cellar	77·27	55·55
Wintered in four-colony cases	79·16	95·83
Wintered in two-colony cases	71·42	71·42
Wintered in one-colony cases	100·0	50·0

As only two colonies have been wintered in single cases each year, conclusions should not be drawn from the results when wintered in single cases.

TWO-QUEEN SYSTEM

This experiment is carried on in order to determine a satisfactory method of wintering over a number of surplus queens. Four weak colonies were selected in the fall of 1926 for the experiment. Five of the lightest combs were removed from each colony and the bees shaken back into the hive. The remaining five combs were placed to one side of the hive. The following day, a tight division board was placed in two of the colonies and the bees and brood and queens from the two remaining colonies were placed one in each of the divided hives. Two weak colonies with queens were thus brought together in one hive. Separate entrances were provided at the corner of the hives and an oil cloth cover was tacked to the division board beneath the cover and over the frames. These colonies were wintered in the cellar. In one hive, the two queens lived but in the other only one queen lived.

COMPARISON OF DIFFERENT SIZES OF HIVES

An experiment was carried on in the out-apiary at Burton to compare the ten-frame Langstroth and ten-frame Jumbo hives. As soon as the bees in the ten-frame Langstroth hives required additional room in the spring of the year, a shallow super was added. The results are shown in table 50.

TABLE 50.—A COMPARISON OF DIFFERENT SIZES OF HIVES

1926–27	Burton Outdoors	
	10-frame Langstroth	10-frame Jumbo
Number of colonies	10	10
Average strength for winter, fall 1926 ..... frames bees	8·7	7·8
Average stores consumed, 1926-27 ..... lb.	29·62	30·88
Average spring strength, 1927 ..... frames bees	6·87	5·22
Average strength, June 27 ..... frames bees	12·0	9·12
Average rapidity of increase	5·12	3·5
Per cent colonies prepared to swarm	50·0	25·0
*Average crop produced ..... lb.	76·6	34·2
Number of colonies died	2	1
Number of colonies weak and united	0	1

* Not including one colony in each group which produced no crop and two diseased colonies in each group.

PACKAGE BEES AS A MEANS OF STARTING COLONIES

Three two-pound packages of bees, with queens, were purchased on three different dates, namely, May 4, May 13, and June 2. The first two lots were obtained from W. D. Achord, Fitzpatrick, Alabama and the last lot was obtained from F. W. Jones, Bedford, P.Q. These were placed in the out-apiary at Springhill, along with six over-wintered colonies, one-half of which had been wintered in packing cases and the remainder in the cellar. Results are shown in tables 51 and 52.

TABLE 51.—PACKAGE BEES AS A MEANS OF STARTING COLONIES

Date received	Source	Number of colonies	Average strength June 30	Condition for honey flow	Average crop	Average strength for winter
			fr. bees		lb.	fr. bees
May 4	W. D. Achord	3	8·33	Fairly good	48·5	9·0
May 13	W. D. Achord	3	7·66	Fair	39·66	10·0
June 2	F. W. Jones	3	4·66	Very weak	*9·16	9·66

* Including one colony with no crop.

TABLE 52.—RESULTS FROM OVER-WINTERED COLONIES

Type of colony	How wintered	Number of colonies	Average strength June 30	Condition for honey flow	Average crop	Average strength for winter
			fr. bees		lb.	fr. bees
10-frame Langstroth	Packing cases	3	12·66	Good	34·83	9·33
10-frame Langstroth	Cellar	3	9·33	Fair	*28·83	9·33

* Including one colony with no crop.

Experiments have been carried on with package bees received on different dates, for three years. In 1925, the first shipment was received on May 11 and during the last two years, shipments have been received the last of April or the first of May. The honey crop from these early shipments compares very favourably with that from over-wintered colonies.

OUTDOOR VERSUS CELLAR WINTERING

The results of wintering in cellar and in packing cases are shown, in part, in previous tables. A summary of the results, including the honey production, is shown in table 53.

TABLE 53—WINTERING IN CELLAR VERSUS IN PACKING CASES OUTDOORS

Locality of Apiary	Type of hive	Where wintered	No. of colonies		Average strength fall, 1926	Average strength spring, 1927	Average strength June 28 and 30	Average stores fed, fall 1926	Average weight fall, 1926	Average weight spring, 1927	Stores consumed	No. of colonies prepared to swarm	Average crop, all colonies	No. of colonies produced crop	Average crop from producing colonies
			Placed in winter quarters	Spring count, 1927											
					fr. bees	fr. bees	fr. bees	lb.	lb.	lb.	lb.		lb.		lb.
Fredericton..	10-frame Langstroth	Cellar.....	14	11	8·43	2·95	7·9	15·36	65·07	40·55	24·82	6	44·87	4	44·87
Fredericton...	10-frame Langstroth	Packing cases.	20	19	8·75	5·53	12·08	18·9	74·6	46·76	27·89	12	55·44	18	55·44
Springhill.....	10-frame Langstroth	Cellar.....	3	3	9·0	5·0	9·33	16·0	64·66	39·33	25·33	3	28·83	2	41·75
Springhill....	10-frame Langstroth	Packingcases.	3	3	8·66	5·33	12·66	22·0	74·0	41·5	32·5	3	34·83	3	34·83

QUEEN REARING

Two methods of queen rearing were tested. The queen mother was a 1924 queen in colony 128 that had been used for queen rearing during the two previous seasons. She was a very prolific queen, selected for non-swarming tendencies and her bees were well marked.

(1) On June 21, a frame of foundation cut into three triangular pieces, which projected down to about two-thirds the depth of the frame, was placed in the centre of colony No. 128. On July 6, the foundation had been drawn out and contained plenty of eggs and young larvae. The comb was cut as far back as day old larvae. This frame was then placed in the top super of colony No. 97. On July 16, six cells had been drawn out. On account of the arrangement of these cells, it was difficult to remove any without destroying others. Several were placed in mating boxes formed by two frames of brood with bees and honey. Only one queen was hatched from these cells.

(2) When the frame containing the triangular comb was removed from colony 128 on July 6, it was replaced by a frame containing a full sheet of foundation. On July 16, this was drawn out and filled with eggs and larvae. Every second and third cell lengthwise and crosswise on one side was then destroyed. This frame was then placed on its flat, prepared side downward, over the brood chamber of a queenless colony, viz., No. 32. On July 27, twelve cells were drawn out. Each cell was transferred to a mating box as in (1). Seven queens hatched from these cells, of which six were successfully mated.

The first method was tried a second time but with little more success, as only two queens were reared.

These methods of queen rearing have been tested for four years. During two seasons, siinilar results have been obtained from the two methods. In two other seasons, the latter method gave the best results.

FIBRE

FLAX—VARIETY TEST

Variety tests of fibre flax were conducted at this station, and four neighbouring farmers were furnished with sufficient seed to grow one-tenth acre each. This was retted, deseeded, broken and scutched at this station.

Three varieties of flax were sown in triplicate plots, one-sixtieth acre each, on May 23 and harvested on August 23. J. W. S. yielded 295 pounds fibre, 375 pounds tow and 315 pounds seed. Riga Blue yielded 290 pounds fibre, 320 pounds tow, and 460 pounds seed. Pure Line No. 6 yielded 235 pounds fibre, 360 pounds tow and 390 pounds seed.

The average yields of these same varieties over a two-year period, 1926 and 1927, are as follows: J.W.S., 345 pounds fibre, 298 pounds tow and 423 pounds seed; Riga Blue, 285 pounds fibre, 270 pounds tow, and 546 pounds seed; Pure Line No. 6, 261 pounds fibre, 280 pounds tow and 468 pounds seed.

HEMP—DATES OF SEEDING

Kentucky hemp was sown in triplicate one-sixtieth acre plots on four different dates of seeding, namely, May 23, May, 30 June 7 and June 13, and all plots were harvested on August 30. The yields for the different seedings are as follows; May 23, 750 pounds fibre and 320 pounds tow; May 30, 830 pounds fibre and 495 pounds tow; June 7, 770 pounds fibre and 250 pounds tow; and June 13, 540 pounds fibre and 340 pounds tow.

GENERAL FARM NOTES

New Buildings.—The erection of a greenhouse during the year has added greatly to the Station's facilities for carrying on experimental and breeding work. The greenhouse is 21 feet 10 inches by 58 feet 4 inches. One section is being used by the Plant Pathologist, who is making a study of plant diseases and their control. The other section will be used for wintering flowering plants and the propagation of annual flowering plants, vegetables, etc. Attention will also be given to the growing of tomatoes and cucumbers commercially and eventually plant breeding work will be undertaken.

Land Clearing, Roads, Fences, etc.—Much needed improvement was made during the year upon the highway between the City and the Station. The roads on the farm were also resurfaced. The improved condition of the roads has had a desirable effect upon the number of people visiting this Station during the year, not to mention a great saving in the wearing parts of machinery.

A rearrangement of fields on the farm made it necessary to construct new fences and several permanent road fences were also rebuilt.

Approximately ten acres of new land were put under cultivation and about twelve acres of wild pasture land were broken and will be ready for cropping in 1929.

Extension Work.—Judging from the number of visitors received at the Station and the volume of correspondence, it is quite apparent that the farmers of the province are taking a greater interest in the work at the Station and relying more and more upon the advice given by members of the staff.

Besides the daily visitors, ten special field days were held. The Seventh Annual Poultry Field Day was well attended by poultrymen from every section of the province. On the same day the New Brunswick Poultry Producers' Association held its annual meeting and a number of important matters relating to the poultry industry were discussed and acted upon.

Later in the summer 125 World Poultry Congress delegates, representing seventeen countries, were entertained at the Station. These delegates expressed themselves as being much impressed with the class of experimental work being conducted and several of them showed a decided desire to purchase breeding stock in New Brunswick. They were accompanied by the Honourable W. R. Motherwell, Minister of Agriculture for Canada; Honourable J. S. Martin, Minister of Agriculture for Ontario; Dr. Edward Brown, President of the Congress; F. C. Elford, Director of the Congress and a number of other prominent Canadian poultrymen.

The New Brunswick Municipal Association held its annual meeting in Fredericton this year. As the members of the Association represented municipalities to quite a large extent, an invitation was extended to the delegates to visit this Station. Approximately 125 delegates were shown over the farm and a special effort was made to have each one become familiar as possible with the important experimental work carried on at the Station.

Women's Institutes.—Very gratifying indeed was the visit of 125 delegates to the New Brunswick annual convention of Women's Institutes who held one of their evening sessions at the Farm. These women who represent, for the most part, the rural sections of the province showed the keenest interest not only in the growing of flowers and vegetables, but also in the experimental work carried on with poultry.

An outstanding feature of the day was the turning of the sod for nineteen maple trees to represent The King, Mrs. Osman, and the seventeen different Institute Districts in New Brunswick, in commemoration of the Diamond

Jubilee of Confederation. These trees will be planted in the spring and this piece of ground surrounding the maple trees is to be set aside for farmers' picnics and similar gatherings.

Despite the most unfavourable weather conditions, over 300 farmers attended the Live Stock Field Day in August, at which those present listened to an instructive address delivered by Dr. J. H. Grisdale, Deputy Minister of Agriculture for Canada, and also took part in a series of judging demonstrations and discussions on the feeding and breeding of live stock.

Perhaps the most important meeting held at this Station during the year was a gathering of 65 farmers from Charlotte County on August 19. These farmers were brought to the Station by the members of the St. Stephen-Milltown Rotary Club in motor cars. This party arrived at the Station at 10 a.m. and remained until 5 p.m. During the intervening period inspection was made of every branch of the farm's activities and results of several important expériments were explained in detail. It is hoped that this will become an annual event and that service clubs in other sections of the province can be induced to follow the splendid example set by the St-Stephen-Milltown Rotary Club.

The Wirral Agricultural Society made its annual pilgrimage to this Station. This Society is one of the Station's best buyers of pure-bred sires and correspondence with the farmers in this section is increasing annually. Many societies, especially those near by, might well adopt the example set by the people of Wirral.

The Provincial Normal School students numbering approximately 300, made their annual visit to the Farm. The students were divided into five groups with a member of the staff in charge of each group. In this way the experimental work being carried on at the Station was explained at some length to each group. The staff looks forward to this annual visit of Normal School students, realizing that many of them will become teachers in the rural sections and can render a great service in attracting the farmer's attention to the work of the Station.

Exhibitions.—Educational exhibits were displayed at the St. John, St. Stephen and Fredericton Exhibitions. Members of the staff acted as judges at a number of Exhibitions. A number of articles were prepared for the press dealing with farm problems in the Maritime Provinces and addresses were delivered at far mers' meetings held throughout the province.

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