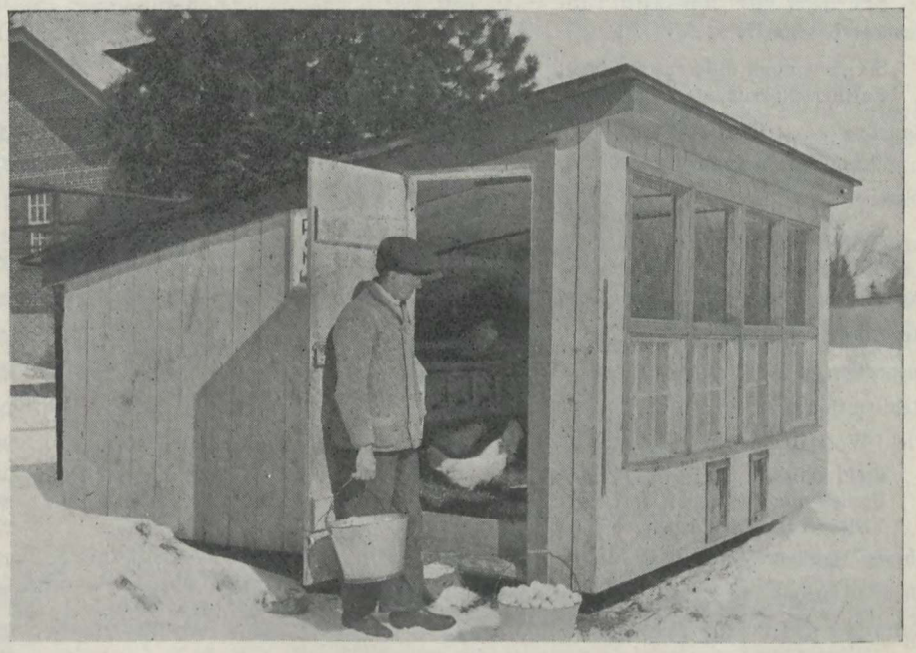
DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

POULTRY DIVISION

REPORT OF THE DOMINION POULTRY HUSBANDMAN

F. C. ELFORD

FOR THE YEAR 1922



THE COLONY HOUSE IN WINTER

Printed by authority of Hon. W. R. Motherwell, Minister of Agriculture
Ottawa, 1923

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ANNUAL REPORT

POULTRY DIVISION, EXPERIMENTAL FARM

DECEMBER 31, 1922

CONDITIONS IN CANADA

Poultry conditions, in a general way, have remained somewhat normal though there has been a drop in the prices received for eggs and poultry meat during the year that may have some influence upon later production.

Low prices always tend toward a falling-off in interest. The slightly lower prices during the year undoubtedly will have the effect of eliminating some of those formerly interested in poultry production, but the decrease in prices for poultry products should not be taken too seriously, as it is in keeping with the prices of other farm produce.

However, poultry prices are still good and it is in seasons of low prices of other farm produce when the value of side lines such as poultry is emphasized. More than ever during the past year has the revenue from the poultry yard been appreciated, and though a few producers may drop out, the wise will pay attention to better breeding and management in order to increase production against the time of heavy demand next winter.

The increased importance, during the past year or two, that has been attached to revenue from poultry may be responsible for the extra interest shown in correspondence to this division. The information asked for has been more of a definite nature, the inquiries as to stock and eggs have increased, there never was as big a demand for cockerels, and fortunately the Farms never had as many pedigreed birds to dispose of as they have had this year.

The turkey industry seems to be reviving, as the number of Christmas turkeys this year would indicate. Not in years have there been as many dressed turkeys available and at a price, when compared with past prices so reasonable. The Prairie Provinces, especially Alberta, apparently have developed the most in this regard; there the dry climate is particularly adapted to the rearing of turkeys, and there seems no good reason why this crop should not return an increasing revenue to the farmers each year.

THE WORK OF THE DIVISION

CENTRAL FARM

Upon the Central Farm, work is carried on with poultry, geese and ducks. There are three breeds of poultry kept,—White Leghorns, Barred Plymouth Rocks and White Wyandottes; three breeds of geese—Toulouse, African, and Canada Wild, and three breeds of ducks—Pekin, Muscovy and Indian Runner.

Because of their adaptability for experimentation, the Leghorns are more numerous than either Rocks or Wyandottes. Little new work has been conducted with geese. In ducks, experiments show the value of the Muscovy as a market bird, though for eggs they may not compare with either the Pekin or the Runner.

Experimental work has been conducted upon feeding for egg production and for fertility, also upon feeding broilers and green ducks for market. The detailed results appear under "Experimental Work," farther on in this report.

BRANCH FARMS

The poultry work upon the branch Farms has progressed very satisfactorily. Better men, and more uniform flocks, have meant higher production and more carefully conducted experiments. At present, poultry work is conducted upon twenty-two branch farms and Stations, poultry being added to two new Stations this year—Swift Current, Sask., and Beaverlodge, Alta. By province, the number of branch Farms keeping poultry are: British Columbia, four; Alberta, three; Saskatchewan, four; Manitoba, two; Ontario, one; Quebec, four; New Brunswick, one; Nova Scotia, two; Prince Edward Island, one.

As a rule, one breed only is kept at each Station, though at a few of the Stations more than one breed, for the time being, may be retained. There is now a Laying Contest under way in every province, where breeds are being tested in a most efficient manner.

EGGS AND EGG PRICES

Surplus eggs upon the Farm system are usually sold locally as " new laids ". Where the quantity is large, nearby city markets are catered to, but, in every case, the eggs are disposed of while strictly new laid, and generally at the prevailing rate for eggs of that class. As a rule, they are placed in suitable wrappers, and put in one-dozen, sealed cartons. In all cases they are candled so as to eliminate those with " blood spots " as well as the occasional spoiled egg that may be found among the new-laid class.

The table below, giving the average monthly prices received for eggs at the various Farms, is interesting, though it should not be taken as the price paid by the local store for " current receipts " (eggs as gathered throughout the country) at these points. The Experimental Farm eggs are candled and guaranteed strictly new laid. No small or dirty eggs are included, and they are put up in attractive packages, all of which add to the value of the eggs.

AVERAGE MONTHLY PRICES RECEIVED UPON EXPERIMENTAL FARMS

Farm	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Average
Agassiz, B.C.	60	60	36	32	23	23	23	23	30	25	35	50	35
Sidney, B.C.	66	55	39	38	30	27	25	25	27½	27½	37	55	37½
Invermere, B.C.	52½	70	65	55	30	25	25	30	35	25	35	40	40½
Summerland, B.C.	53	53	43	39	33	30	30	30	35	35	42	48	39
Lacombe, Alta.	45	60	35	35	20	22	22	15	20	20	20	25	28
Indian Head, Sask.	50	50	50	50	25	25	25	25	25	25	25	30	34
Rosthern, Sask.	25	30	30	30	30	25	15	15	15	15	25	25	23½
Scott, Sask.	45	55	70	60	40	25	20	20	20	20	25	30	36
Brandon, Man.	45	70	65	65	30	25	27½	25	25	25	30	40	39½
Morden, Man.	35	46	50	50	26½	25	23	21	20	25	25	30	32
Kapuskasing, Ont.	63	77½	76½	65½	56	44½	42	40	40	40	45	46	53
Cap Rouge, Que.	53	70	52	76	43	30	25	32	33	38	38	39	44
Lennoxville, Que.	65	76½	56	50	45	30	30	30	30	35	40	42	44
Ste. Anne, Que.	50	70	70	50	40	20	25	30	30	30	30	40	40½
La Ferme, Que.	45	90	78	60	60	35	35	35	35	35	35	40	48½
Fredericton, N.B.	55	70	70	60	45	30	30	30	30	35	35	45	44
Nappan, N.S.	45	60	60	50	40	30	30	30	30	30	35	40	40
Kentville, N.S.	40	40	50	50	40	30	27	30	30	35	40	50	38
Charlottetown, P.E.I.	42	47	40	40	27	23	26	25	23	23	25	29	31
Averages	49	60½	54½	50	36	27½	26½	27	28	28½	32½	39	38½
Ottawa	70	90	1·00	65	55	45	45	40	40	40	50	50	59
British Columbia	57½	59½	45½	41	29	26	25½	27	32	28	37	48	38
Prairie Provinces.	41	52	50	48	28½	24½	22	20	21	22	25	30	32
Quebec	53	76½	64	59	47	30	29	32	32	34½	36	40	44½
Maritime	45½	54	55	50	38	28	28	29	28	31	34	41	38½

Remarks.—Compared with last year, these prices are much lower. The average price for all the branch Farms in 1921 was 45 cents per dozen, as against 38·5 cents in 1922. British Columbia prices dropped the most—12·6 cents per dozen, the price in 1921 being 50·6 cents. Outside of Ottawa, where the drop was 4·2 cents, the Maritime Provinces suffered the least decline, 5·8 cents per dozen less in 1922 than 1921. The prairie Farms' average price was 7 cents less and in Quebec it was 8 cents less.

The range in average monthly prices for the branch Farms was, in 1921, from 31 cents in June to 67 cents in January. In 1922, the lowest price came a month earlier and reached 26·5 cents in May and went to 60·5 cents in December.

At Ottawa, the range in 1921 was 45 cents in April, May and June to $1 in December; this maximum price of $1 was also reached at Ottawa in January, 1922.

The lowest price reported in 1921 was 15 cents from Rosthern, Sask., in the months of May and June. In 1922, the same Station reported 15 cents for May, June, July and August, and Lacombe, Alta., reported as low as 10 cents for the month of June.

LIST OF STOCK

On December 31, there was upon the Experimental Farms, a total of 7,196 laying hens and 156 turkeys and water fowl. These were divided as follows: Barred Plymouth Rocks, 3,509; White Wyandottes, 1,794; White Leghorns, 1,428; Rhode Island Reds, 465. The detail is given in the table below.

TABLE SHOWING THE NUMBER OF FEMALES AND THE BREEDS OF POULTRY UPON THE EXPERIMENTAL FARMS DECEMBER 31, 1922

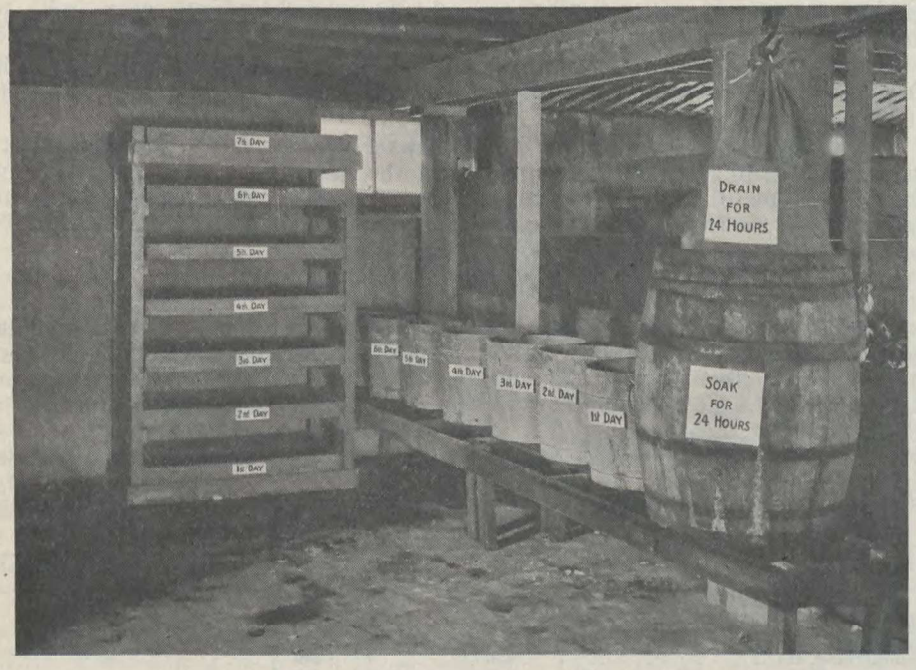
Farm	Barred Rocks	Leghorns	Wyandottes	R.I. Reds	Total Hens	Turkeys and Water Fowl		
						T.	G.	D.
Sidney, B.C.	.....	.....	342	.....	342	.....	.....	.....
Agassiz, B.C.	175	163	.....	.....	338	.....	.....	.....
Summerland, B.C.	.....	.....	440	.....	440	.....	.....	.....
Invermere, B.C.	20	48	100	.....	168	26	.....	.....
Lethbridge, Alta.	174	.....	.....	.....	174	10	.....	.....
Lacombe, Alta.	48	.....	160	90	298	.....	15	11
Swift Current, Sask.	.....	.....	.....	100	100	.....	.....	.....
Indian Head, Sask.	.....	.....	411	.....	411	.....	.....	.....
Scott, Sask.	282	.....	.....	.....	282	.....	.....	.....
Rosthern, Sask.	235	.....	.....	.....	235	.....	.....	.....
Brandon, Man.	195	.....	152	.....	347	.....	.....	.....
Morden, Man.	167	.....	.....	150	317	.....	.....	.....
Kapuskasing, Ont.	320	.....	.....	.....	320	.....	.....	.....
La Ferme, Que.	230	.....	.....	.....	230	.....	.....	.....
Cap Rouge, Que.	277	.....	.....	.....	277	.....	.....	.....
Lennoxville, Que.	297	.....	.....	.....	297	.....	.....	.....
Ste. Anne, Que.	40	.....	.....	125	165	.....	.....	.....
Fredericton, N.B.	220	.....	70	.....	290	.....	.....	.....
Nappan, N.S.	272	77	.....	.....	349	.....	.....	.....
Kentville, N.S.	213	173	25	.....	411	.....	.....	10
Charlottetown, P.E.I.	80	207	.....	.....	287	.....	.....	.....
Ottawa, Ont.	264	760	94	.....	1,118	.....	24	60
Totals.	3,509	1,428	1,794	465	7,196	36	39	81

EXPERIMENTAL WORK AT THE CENTRAL FARM

Investigational work at Ottawa has been conducted along various lines, largely upon feeding problems. Chick feeds, feeds to promote growth, and feeds for egg production, all have received attention. The further information obtained

points to the value of variety in the ration, and to the fact that home-grown grains may be used to replace prepared commercial feeds under certain conditions, also that milk is very valuable as a drink and as a substitute for beef scrap or other source of animal protein.

These feeding experiments with laying hens are included in a series that will continue at least five years. The main idea of the series is to see whether one can lessen the cost of feeding by substituting cheaper home-grown grains for more expensive feeds in the ration.



SPROUTING OATS

Two methods of sprouting.

1. The tray method with seven trays, one for each day of the week.
2. The tub method; the sprouting oats are dumped into the next tub each day.

Experiments with a view to increase of fertility and hatchability of eggs and livability of chicks are receiving attention. The usual losses to Canada from eggs that are not fertile, or that fail to hatch, and from chicks that die during the brooding period are enormous.

FOUR METHODS OF FEEDING GROWING CHICKENS

This experiment is to gain information upon the methods of feeding chickens upon range. Four methods are used: (1) hopper-fed with grain and mash; (2) hand feeding of the grain, and mash in hoppers; (3) hand feeding of grain, dry mash in hopper and a wet mash fed twice a day; (4) dry mash in hopper and wet mash twice a day, no grain feed.

STOCK AND HOUSING

On August 1, 1922, 208 May-hatched chicks, which, until this date, had been fed and housed in exactly the same way, were placed in colony houses and yards,

divided into four equal lots, each, consisting of thirty-nine Leghorns, nine Barred Rocks, and four White Wyandottes. These lots were housed in separate colony houses, which were placed in large runs containing an abundance of green feed, alfafa and mammoth red clover. The birds were on free range during the entire experiment.

RATIONS

The rations were as follows:—

(1) A commercial scratch grain, valued at $43 per ton, of which the manufacturing company's analysis was: protein, 10 per cent; fat, 3 per cent; fibre, 6 per cent.

(2) A home-made mash valued at $45 per ton, composed of equal parts by weight of bran, middlings, cornmeal, and ground oats, with one-half part of tankage. The nutritive analysis of this mash was: dry matter, 89·6 per cent; digestible protein, 15·5 per cent; fat, 4·6 per cent; total digestible matter, 70·2 per cent, with a nutritvie ratio of 1:3:5.

(3) Buttermilk, water, grit, oyster shell, and charcoal. (These were kept constantly before the birds in all four lots.)

METHODS OF FEEDING

Lot No. 1 was hopper fed, that is to say, the birds had scratch grain, dry mash, and the other rations constantly before them. In addition, they were given a small quantity of wet mash (containing the same ingredients as the dry mash, but moistened with milk) once a day.

Lot No. 2 was fed in exactly the same manner as No. 1 except that the scratch grain, instead of being kept before the birds, was fed twice a day, by hand.

Lot No. 3 was also fed the scratch grain by hand twice a day, but no dry mash was kept before the birds. They received, however, a wet green mash twice a day, made by mixing chopped green feed with twice its bulk of dry mash and moistening with milk. This mash was made twenty-four hours previous, in order to ferment it.

Lot No. 4 received no whole grain whatever, but dry mash was kept constantly before the birds, and they were given wet mash twice a day.

The following table gives the results of the four lots:—

CHICKS—METHODS OF FEEDING

Lot	No. of chicks	Weights		Gain	Feed consumed		Total	Pounds of Feed for pound of gain	Cost	
		Beginning of experiment	End of experiment		Scratch grain	Mash			Total	of 1 pound gain
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb. oz.	$	c.
1	52	42	122	80	289	138	427	5 5	8·77	10·9
2	52	43	133	90	193	179	369	4 1	7·40	8·2
3	52	41	132½	91½	185	243	428	4 10	8·47	9·2
4	52	41	132	91	.....	447	447	4 14	8·27	9·1

NOTE.—In the above table no allowance has been made for the milk, grit, charcoal and oyster shell consumed.

Remarks.—As will be noted by the above table, lot No. 2, fed the scratch grain by hand, gave the best results, for while the total gain in weight was slightly less, the birds ate decidedly less feed, and consequently the cost for one pound of gain was lower. These birds, too, were in far the best condition at the end of the experiment.

Lot No. 3, fed wet green mash and no whole grain, gained the most weight by a narrow margin, but the cost per pound of gain was higher than for lots 2 and 4, and the birds were in the poorest condition of any when the experiment finished, being fat and lazy.

Lot No. 4 made good gains and were in good condition.

Lot No. 1 did not thrive at all well, drank practically no milk and did not relish the wet mash.

From this it may be inferred that the best results are obtained from feeding the scratch grain by hand, giving a wet mash once a day, and keeping dry mash, together with milk, water, grit, charcoal and oyster shells constantly before the birds. As these are the results of only one year's experiment, however, they must be verified by future experiments before a definite statement can be made.

It may here be said that hand feeding has not always given the best results.

DUCK FEEDING EXPERIMENTS

Duck feeding experiments have already been conducted from time to time at the Central Farm. Last year, experiments were undertaken to determine costs and the relative value of certain breeds for the growing of green ducks (for details see Annual Report for 1921).

During the summer of 1922, further experiments were carried on along these lines, and also one to determine the value of green feed in the growing of market ducks.

METHODS OF CONDUCTING EXPERIMENTS

The experiments were each carried on for twelve weeks. During the first four weeks, the ducklings were housed in the pipe brooder house and were then transferred to suitable yards with trees for shade and a rough shelter to protect them during inclement weather.

The mash used was composed of equal parts by weight of wheat, bran, middlings, cornmeal and finely-ground oats, with one-half part of beef scrap and 5 per cent sand.

The mash was valued at $44 per ton and its analysis gave 14·2 per cent of digestible protein, 4·8 per cent of fat, 72·9 per cent of total digestible nutrients and a nutritive ratio of 1:4.1. The mash was mixed with milk for the first two weeks, after which water was used. Drinking water was also supplied. At first the birds were fed five times daily, but, for the greater part of the experiment, they were fed three times a day.

The ducklings used were sixty Pekins hatched June 15, divided into two lots of thirty each, which will be referred to as lots A and B, twenty-four Indian Runners, also hatched June 15 and which will be referred to as lot C, and twenty-five Muscovies, hatched June 25, and which will be referred to as lot D. The different lots were weighed when taken from the incubators and each day during the experiment, and careful records kept of all the feed consumed.

GREEN FEED VS. NO GREEN FEED IN THE GROWING OF MARKET DUCKS

For this experiment, lots A and B previously referred to were used.

Both lots were fed and handled identically, except that lot A was given all green feed the ducklings would consume which amounted to about one-third the bulk of all the feed given, no green feed was supplied lot B.

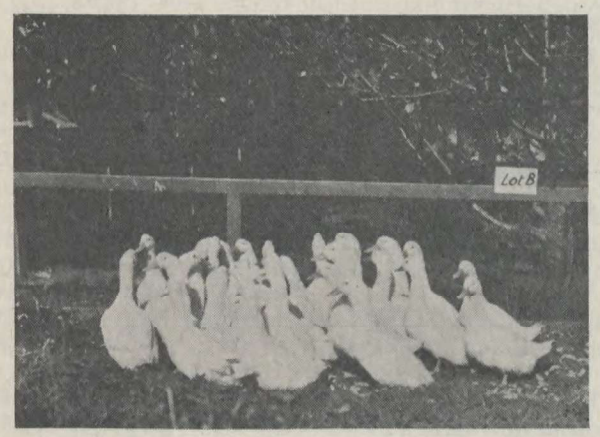
The following table gives the weekly and the total results:—

Green Feed vs. No Green Feed with lots A and B Ducklings

	At beginning	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	8th week	9th week	10th week	11th week	12th week	Total
Number	30	30	30	30	30	30	30	30	29	29	28	28	28	
Lot A. Pekins (Green Feed)—	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
Average weight	1·6	3·8	8·4	15·4	1 6·6	1 14·0	2 8·0	3 3·0	3 12·0	4 3·0	4 14·0	5 4·0	5 7·0	.....
Average gain	.....	2·1	4·6	7·0	7·2	7·4	10·0	11·0	9·0	7·0	11·0	6·0	3·0	.....
Feed consumed average	.....	5·3	9·6	1 2·0	1 6·5	1 15·0	2 12·8	2 2·0	2 9·9	2 6·0	3 9·1	3 2·3	1 14·3	25 2·0
Pounds feed for 1 pound gain	2 9·0	2 0·0	2 8·0	3 11·0	4 3·0	4 0·0	3 10·0	5 4·0	5 10·0	7 0·0	8 0·0	13 0·0	4 12·0	
Average cost of feed	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$ 0 55
Average cost of ducklings at 25c. as day old	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0 27
Value per duck at 35c. per pound	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1 89
Average profit over cost of feed and duckling	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1 07
Number	30	30	30	30	30	30	30	30	30	30	30	30	30	
Lot B.—Pekins (no Green feed)	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
Average weight	1·5	4·0	8·8	1 0·0	1 8·0	1 15·6	2 10·0	3 8·0	4 2·0	4 9·0	5 2·0	5 8·0	5 10·0	.....
Average gain	.....	2·4	4·8	7·7	7·9	7·6	10·4	14·0	10·0	7·0	9·0	6·0	2·0	.....
Average feed consumed	.....	5·8	11·2	1 4·0	1 12·8	2	2 10·6	2 8·0	2 11·7	2 12·8	3 2·0	3 0·5	2 0·0	25 0·0
Pounds feed for 1 pound gain	2 7·0	2 5·0	2 12·0	3 9·0	4 3·0	4 2·0	2 15·0	4 5·0	6 4·0	9 0·0	13 6·0	4 8·0		
Average cost of feed	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$ 0 55
Average cost of ducklings at 25c. as day old	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0 25
Value per duck at 35c. per pound	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1 96
Average profit over cost of feed and ducklings	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1 16

Remarks.—It will be noted that, despite the fact that no charge was made for the green feed that was fed lot A, lot B gave a considerably better profit over cost of feed, and also that, contrary to what might reasonably have been expected, they made better growth and had a more thrifty appearance at the end of the test. Needless to say, these results cannot be taken as conclusive and further tests along the same line will be carried on in the near future.

Lot A. Pekins (which were fed green feed). Photographed at 12 weeks of age, when they averaged 5 lbs. 7 oz. each.



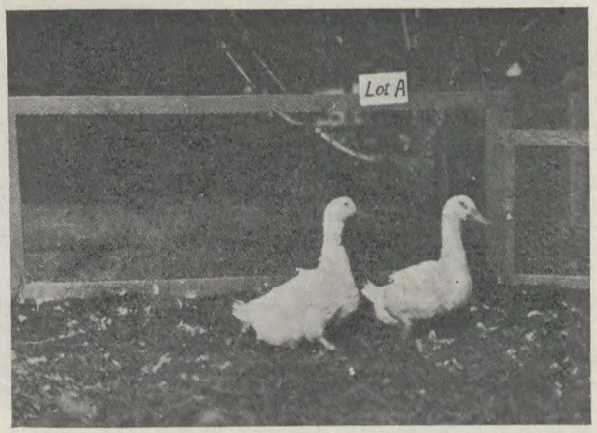
Lot B. Pekins (which were not fed any green feed). Photographed at 12 weeks of age, when they averaged 5 lbs. 10 oz. each.

COMPARISON OF BREEDS FOR THE PRODUCTION OF GREEN DUCKS

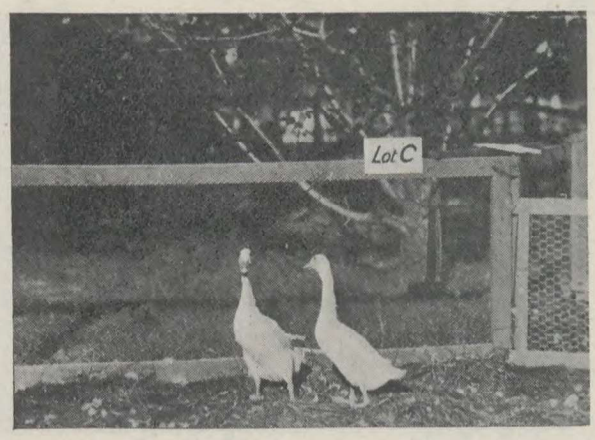
For this experiment lots A (thirty Pekins), C (twenty-four Runners), D (twenty-five Muscovies) previously referred to, were used. All lots were fed and handled in the same way and in the following tables the figures are arranged so that the different lots may be readily compared. No charge is shown for green feed, although the three lots were given all they would consume in the mash.

	At beginning	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	8th week	9th week	10th week	11th week	12th week	Total
Number	30	30	30	30	30	30	30	30	29	29	28	28	28	
Lot A.—Pekins—														
Average weight	lb. oz. 1·6	lb. oz. 3·8	lb. oz. 8·4	lb. oz. 15·4	lb. oz. 1 6·6	lb. oz. 1 14·0	lb. oz. 2 8·0	lb. oz. 3 3·0	lb. oz. 3 12·0	lb. oz. 4 3·0	lb. oz. 4 14·0	lb. oz. 5 4·0	lb. oz. 5 7·0	lb. oz.
Average gain		2·1	4·6	7·0	7·2	7·4	10·0	11·0	9·0	7·0	11·0	6·0	3·0	
Average feed consumed		5·3	9·6	1 2·0	1 6·5	1 15·0	2 12·8	2 2·0	2 9·9	2 6·0	3 9·1	3 2·3	1 14·3	25 2·0
Pounds feed for 1 pound gain		2 9·0	2 0·0	2 8·0	3 11·0	4 3·0	4 0·0	3 10·0	5 4·0	5 10·0	7 0·0	8 0·0	13 0·0	4 12·0
Average cost of feed														$ 0·55
Average cost of ducklings at 25c. as day old														0·27
Value per duck at 35c. per pound														1·89
Average profit over cost of feed and duckling														1·07
Number	24	23	23	23	23	23	21	21	21	21	21	21	21	
Lot C.—Indian Runners—														
Average weight	b. oz 1·6	b. oz. 4·2	b. oz. 8·4	b. oz. 1 0·1	b. oz. 1 7·1	lb. oz. 1 13·6	lb. oz. 2 5·0	lb. oz. 2 13·0	lb. oz. 3 4·0	lb. oz. 3 8·0	lb. oz. 3 14·0	lb. oz. 4 0·0	lb. oz. 4 2·0	lb. oz.
Average gain		2·6	4·2	7·6	7·0	6·5	7·3	8·0	7·0	4·0	·6	0 ·2	2·0	
Average feed consumed		6·3	11·1	1 4·8	1 15·3	2 2·8	1 13·7	2 11·4	2 3·8	2 3·8	2 14·5	2 10·6	1 14·5	23 7·
Pounds feed for 1 pound gain		2 8·0	2 7·0	2 11·0	4 4·0	5 4·0	7 1·0	5 3·0	5 1·0	7 13·0	8 6·0	24 14·0	16 0·0	5 15·0
Average cost of feed														$ 0·52
Average cost of ducklings at 25c. day old														0·29
Value per duck														1·44
Average profit over cost of feed and duckling														0·63
Number	25	24	24	21	21	21	20	20	20	20	20	20	20	
Lot D.—Muscovies—														
Average weight	lb. oz. 1·5	lb. oz. 2·2	lb. oz. 3·9	lb. oz. 6·3	lb. oz. 10·0	lb. oz. 1 0·1	lb. oz. 1 8·0	lb. oz. 2 4·0	lb. oz. 2 14·0	lb. oz. 3 12·0	lb. oz. 4 10·0	lb. oz. 5 4·0	lb. oz. 5 11·0	lb. oz.
Average gain		0·7	1·7	2·3	3·7	6·1	7·8	12·0	10·0	14·0	14·0	10·0	5·0	
Average feed consumed		1·3	4·6	7·6	11·1	1 5·3	15·8	1 1·8	1 10·2	2 6·4	2 12·8	2 8·0	2 8·8	18 5·0
Pounds feed for 1 pound gain		2 0·0	2 5·0	4 3·0	3 1·0	3 8·0	2 10·0	3 0·0	2 15·0	2 11·0	3 5·0	3 13·0	5 11·0	3 5·0
Average cost of feed														$ 0·41
Average cost of ducklings at 25c. as day old														0·31
Value per duck at 35c. per pound														1·99
Average profit over cost of feed and duckling														1·27

Remarks.—Lot D (Muscovies) showed a much more economical growth than did either lot A (Pekins) or lot C (Runners). They were much more docile, were not as voracious feeders, eating in a much more leisurely manner, but their growth indicated that they made good use of all they consumed. Their maximum growth was spread over a considerably longer space of time than was the case in either of the other breeds, in fact, although the test ended at the end of the twelfth week, they continued to make economical gains and twelve days later had reached an average weight of 6 pounds 12 ounces.



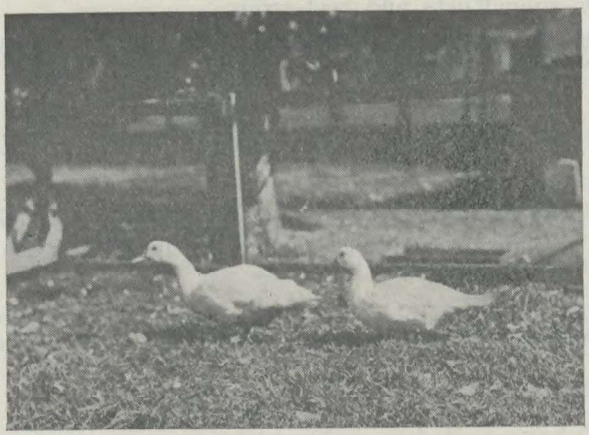
A representative pair of Pekins from Lot A. Photograph taken when they were 12 weeks of age, when the flock averaged 5 lbs. 7 oz. each.



A representative pair of Runners from Lot C. Photograph taken when they were 12 weeks of age, when the flock averaged 4 lbs. 2 oz. each.

These figures indicate: (1) The advisability of marketing the Runners at an earlier date than the Pekins, and the Pekins at an earlier date than the Muscovies. (2) That when marketed at twelve weeks of age the cost per pound of gain was the lowest for lot D (Muscovies), being only 7 cents, as compared with 10 cents for lot A (Pekins) and 13 cents for lot C (Indian Runners). (3) That the profit over cost of stock and feed was highest for lot D (Muscovies), being $1.27, as against $1.07 for lot B (Pekins) and .63 for lot C (Indian Runners).

The results in this experiment bear out those obtained in the previous experiments already referred to, in which Muscovy ducks gave an average profit of $1.41 over cost of stock and feed, while Pekins gave only an average of $1.22. This experiment will be repeated in order to see if the results obtained will be verified.



A representative pair of Muscovies from Lot D. Photograph taken when they were 12 weeks of age, when the flock averaged 5 lbs. 11 oz. each.

FEEDING LAYING HENS

The feed cost of producing a dozen eggs, especially during the winter months, has an important bearing upon the profits to be made in the poultry industry. In order to obtain reliable information on this subject, experiments on feeding form a regular part of the poultry work conducted on the Experimental Farms. (For details of previous experiments conducted at the Central Farm, see the Report of the Dominion Poultry Husbandman for 1921).

Many of these experiments are by no means complete, but a few of the results obtained to date are given. In order to provide against, as far as possible, any variation in individuals, such experiments, to be of value, must be conducted with a large number of birds.

DIFFERENT MASHES FOR EGG PRODUCTION

There are various highly-advertised commercial laying mashes on the market, and in order to test their respective economic values as compared with a home-mixed mash, experiments were conducted at the Central Farm during the six winter months, November to April inclusive.

Stock and Housing.—The stock selected for this purpose comprised ninety White Leghorn pullets, which were divided into six equal lots. They were placed in the experimental house, each pen of fifteen being kept under exactly similar conditions.

Feed and Methods of Feeding.—The pens fed commercial mash were designated Nos. 1, 2, 3, and 4 respectively, Nos. 5 and 6 being those pens fed the home-mixed mashes. A commercial scratch grain, made by the same company as the mash, and designated by the same number, was fed with mashes nos. 1, 3 and 4, and, as the manufacturers of No. 2 mash do not make a scratch feed, scratch grain No. 4 was fed with this mash, and also with the home-mixed mash.

As the manufacturers of Mashes Nos. 1 and 3 recommend that mash and scratch be fed in equal quantities, an attempt was made to regulate the feed in all pens. This was found to be impracticable however, and, consequently, the usual method of giving sufficient grain in the litter to induce exercise and keeping the mash constantly before the birds was followed in all pens.

The home-mixed mash consisted of equal parts by weight of bran, middlings, cornmeal, finely ground oats and beef-scrap.

The average prices per hundredweight, paid for the various mashes and scratch grains were as follows.

No. 1 Mash	$ 4·62	No. 1 Scratch	$ 3·75
No. 2 Mash	5·42	No. 3 Scratch	3·75
No. 3 Mash	4·64	No. 4 Scratch	3·50
No. 4 Mash	3·50		
Home Mixed Mash	2·62		

These prices varied from month to month, however, and consequently the monthly figures given in the table correspond with the prices actually paid during that month.

Tables.—The following tables show the results obtained from the use of each mash, by months, and a summary covering the entire experiment:—

TABLE No. 1. No. 1 Mash and No. 1 Scratch Feed

Month	Mash	Value	Grain	Value	Beef scrap		Milk		Green feed		Shell		Total weight	Grain and mash	Total Feed	No. Eggs laid	Value
	lb.		lb.		lb.	value	lb.	value	lb.	value	lb.	value	lb.	value	value		
		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.	$ c.		$ c.
November	39	1 95	44	1 65	3	0 19	75	0 38	45	0 23	4	0 0	83	3 60	4 47	35	2 48
December	38	1 81	55	2 06	7	0 44	.....	.....	42	0 21	8	0 14	93	3 87	4 66	184	15 34
January	55	2 61	58	2 18	6	0 38	.....	.....	42	0 21	5	0 09	113	4 79	5 4.	221	17 50
February	46	2 19	56	2 10	8	0 50	.....	.....	42	0 21	8	0 14	102	4 29	5 14	160	11 33
March	31	1 4.	84	3 15	10	0·62	155	0 78	22	0 77	7	0 12	115	4 62	6 91	168	7 70
April	36	1 35	73	2 73	9	0 56	155	0 78	22	0 77	7	0 12	109	4 08	6 31	181	6 79
Total and averages	245	11 38	370	13 87	43	2 69	385	1 94	215	2 40	39	0 68	615	25 25	32 96	949	61 14

TABLE No. 2. No. 2 Mash and No. 4 Scratch Feed

Month	Mash	Value	Grain	Value	Beef scrap		Milk		Green feed		Shell		Total weight	Grain and mash	Total Feed	No. Eggs laid	Value
	lb.		lb.		lb.	value	lb.	value	lb.	value	lb.	value	lb.	value	value		
		$. c.		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.	$ c.		$
November	59	3 83	42	1 35	3	0 19	113	68	45	0 23	5	0 09	101	5 18	6 37	33	2 33
December	52	2 86	53	1 67	7	0 44	.....	.....	42	0 21	10	0 18	105	4 53	5 36	149	12 41
January	54	2 97	78	2 30	10	0 63	.....	.....	42	0 21	3	0 05	132	5 27	6 16	186	14 73
February	41	2 26	63	1 80	17	1 06	.....	.....	42	0 21	7	0 12	104	4 06	5 45	161	11 40
March	29	1 38	85	2 42	7	0 44	155	0 78	22	0 77	9	0 16	114	3 80	5 95	174	7 98
April	27	1 28	71	1 88	7	0 44	155	0 78	22	0 77	6	0 11	98	3 16	5 26	164	6 15
Totals and averages	262	14 58	392	11 42	51	3 20	423	2 24	215	2 40	40	0 71	654	26 00	34 55	867	55 00

TABLE No. 3. No. 3 Mash and No. 3 Scratch Feed

Month	Mash	Value	Grain	Value	Beef scrap		Milk		Green feed		Shell		Total weight	Grain and mash	Total Feed	No. Eggs laid	Value
	lb.		lb.		lb.	value	lb.	value	lb.	value	lb.	value	lb.	value	value		
		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.	$ c.		$ c.
November	16	0 80	43	1 61	3	0 19	75	38	45	0 23	4	0 07	59	2 41	3 28	7	0 50
December	48	1 80	53	1 98	8	0 50	.....	.....	40	0 20	8	0 14	101	3 78	4 62	146	12 17
January	47	2 23	62	2 33	7	0 43	.....	.....	40	0 20	6	0 11	109	4 56	5 30	219	17 24
February	37	1 76	86	3 23	8	0 50	.....	.....	40	0 20	3	0 05	123	4 99	5 74	158	11 20
March	27	1 15	78	2 93	4	0 25	155	0 78	22	0 77	8	0 14	105	4 08	6 02	158	7 24
April	31	1 32	68	2 55	7	0 44	155	0 78	22	0 77	8	0 14	99	3 87	6 00	160	6 00
Totals and averages	206	9 06	390	14 63	37	2 31	385	1 94	209	2 37	37	0 65	596	23 69	30 96	848	54 45

TABLE No. 4. No. 4 Mash and No. 4 Scratch Feed

Month	Mash	Value	Grain	Value	Beef scrap		Milk		Green feed		Shell		Total weight	Grain and mash	Total Feed	No. Eggs laid	Value Eggs
	lb.		lb.		lb.	value	lb.	value	lb.	value	lb.	value	lb.	value	value		
		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.	$ c.		$ c.
November	33	1 08	44	1 42	3	0 19	75	0 38	45	0 23	2	0 04	77	2 50	3 34	11	0 78
December	39	1 11	50	1 58	4	0 25	.....	.....	41	0 21	9	0 16	89	2 69	3 31	168	14 00
January	38	1 05	69	2 04	4	0 25	.....	.....	41	0 21	2	0 04	107	3 09	3 59	197	15 60
February	34	0 96	62	1 76	2	0 13	.....	.....	41	0 21	5	0 09	96	2 72	3 15	128	9 07
March	27	0 76	75	2 13	7	0 44	155	0 78	22	0 77	8	0 14	102	2 89	5 02	160	7 34
April	28	74	71	1 88	6	0 38	155	0 78	22	0 77	9	0 16	99	2 62	4 71	213	7 99
Totals and averages	198	5 70	371	10 81	26	1 64	385	1 94	212	2 40	35	0 63	570	16 81	23 12	877	54 78

TABLE No. 5. HOME MIXED MASH AND No. 4 SCRATCH FEED

Month	Mash	Value	Grain	Value	Beef scrap		Milk		Green feed		Shell		Total weight	Grain and mash	Total Feed	No. Eggs laid	Value Eggs
	lb.		lb.		lb.	value	lb.	value	lb.	value	lb.	value	lb.	value	value		
		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.	$ c.		$ c.
November	28	0 85	44	2 14	3	0 19	75	0 38	45	0 23	4	0 07	72	2 99	3 86	29	2 06
December	33	1 01	55	1 73	7	0 44	.....	.....	38	0 19	9	0 16	88	2 74	3 53	186	15 50
January	42	1 14	75	2 21	10	0 63	.....	.....	38	0 19	10	0 18	117	3 35	4 35	197	15 60
February	40	1 14	38	1 08	15	0 94	.....	.....	38	0 19	7	0 12	78	2 22	3 47	145	10 27
March	30	0 81	91	2 59	12	0 75	155	0 78	22	0 77	7	0 12	121	3 40	5 82	181	8 30
April	37	1 00	75	1 99	8	0 56	155	0 78	22	0 77	7	0 12	112	2 99	5 22	183	6 86
Totals and averages	198	5 95	378	11 74	55	3 51	385	1 94	203	2 34	44	0 77	588	17 69	26 25	921	58 59

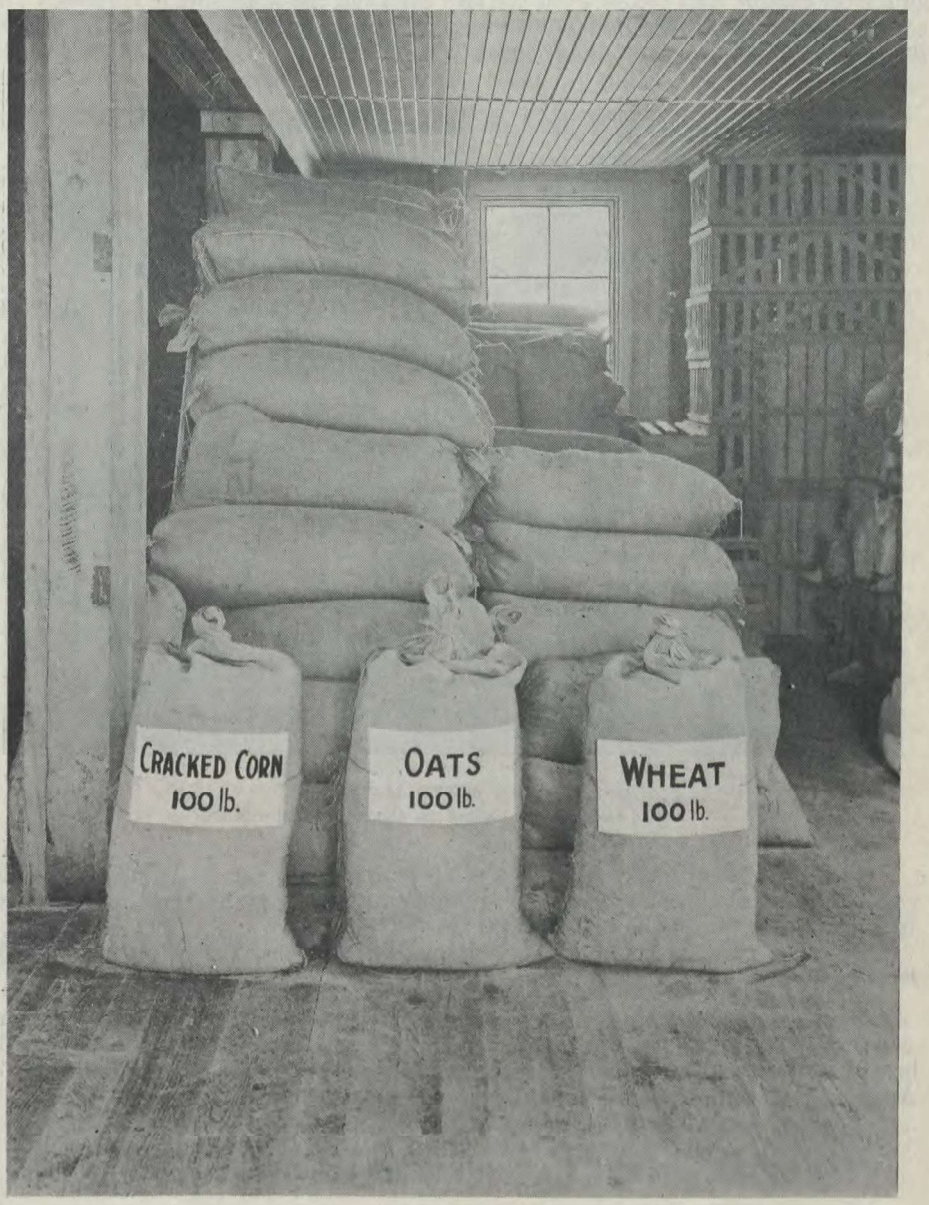
TABLE No. 6. HOME MIXED MASH AND No. 4 SCRATCH FEED

Month	Mash	Value	Grain	Value	Beef scrap		Milk		Green feed		Shell		Total weight	Grain and mash	Total Feed	No. Eggs laid	Value Eggs
	lb.		lb.		lb.	value	lb.	value	lb.	value	lb.	value	lb.	value	value		
		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.	$ c.		$ c.
November	35	1 12	62	1 95	3	0 19	75	38	45	0 23	3	0 05	97	3 07	3 92	39	2 76
December	31	0 95	57	1 80	7	0 44	.....	.....	46	0 23	9	0 16	88	2 75	3 58	154	12 83
January	54	1 46	75	2 21	6	0 38	.....	.....	46	0 23	3	0 05	129	3 67	4 33	205	12 23
February	44	1 19	65	1 85	4	0 25	.....	.....	46	0 23	9	0 16	109	3 04	3 68	197	13 88
March	37	1 00	91	2 59	4	0 25	155	0 78	22	0 77	8	0 14	128	3 59	5 53	247	11 32
April	34	0 92	68	1 80	5	0 31	155	0 78	22	0 77	8	0 14	102	2 72	4 72	228	8 55
Totals and averages	235	6 64	418	12 20	29	1 82	385	1 94	227	2 46	40	0 70	653	18 84	25 76	1,070	61 57

TABLE giving in detail yield, and cost of production of eggs and relative value of various poultry feeds for six winter months.

Pen	Rations	Mash	Value	Grain	Value	Beef scrap		Milk		Green feed		Shell		Total grain and mash		Total feed	Eggs laid	Grain and mash to produce 1 doz.	Cost of feed to produce 1 doz.	Eggs laid	Profit for 6 winter
		lb.	$ cts.	lb.	$ cts.	lb.	value $ cts.	lb.	value $ cts.	lb.	value $ cts.	lb.	value $ cts.	wht.	value $ cts.	value $ cts.	No.	lb.	$ cts.	value $ cts.	$ cts.
	No. 1 mash																				
8	No. 1 scratch	245	11 38	370	13 87	43	2 69	385	1 94	215	2 40	39	0 68	615	25 25	32 96	949	7 7	41·6	61 14	28 18
	No. 2 mash																				
9	No. 4 scratch	262	14 58	392	11 43	51	3 20	423	2 24	215	2 40	40	0 71	654	26 00	34 55	867	9·0	50·0	55·0	18 27
	No. 3 mash																				
10	No. 4 scratch	206	9 06	390	14 63	37	2 31	385	1 94	209	2 37	37	0 65	596	23 69	30 96	848	8·4	43·6	54 45	23 49
	No. 4 mash																				
11	No. 4 scratch	198	5 70	371	10 81	26	1 64	385	1 94	212	2 40	35	0 63	570	16 81	23 12	877	7·8	36·2	54 78	28 25
	Home made mash																				
12	No. 4 scratch	210	5 95	378	13 21	55	3 51	385	1 94	203	2 34	44	0 77	588	17 69	26 25	921	7·6	36·0	58 59	30 87
	Home made mash																				
13	No. 4 scratch	235	6 64	418	12 20	29	1 82	385	1 94	227	2 43	40	0 70	653	18 84	25 76	1070	7·3	26·4	61 57	37 50

(1) The most eggs were produced by the home-made mash (pen 13) and taking the average of the two home-made mashes (pens 12 and 13) the production is 995 eggs against the best of the commercial mashes), pen 8 went 949 eggs.



HOME MIXED GRAIN

As fed in the Home Mixed vs. Commercial experiments.

(2) The pounds of grain and mash required to produce one dozen eggs is interesting, again the average of the two home-made mashes come the lowest, 7·45 pounds to produce 12 eggs.

(3) The value of the eggs laid gives No. 13 with the home-made mash the highest, here the average of the two pens fed the home-made mash is slightly less than pen 9 fed the commercial mash and the commercial scratch.

(4) The last column of the summary answers the vital question, the greatest gain over cost of feed comes from the two pens fed the home-made mashes. The average profit from the four commercial fed pens was $24.55 while that from the two pens fed the home-made mash was $34.18.

HOME MIXED MASH
As fed in the Home Mixed vs. Commercial experiments.

(5) The cost of feed required to produce one dozen eggs is influenced by the value and quantity of feed and the number of eggs laid; in the profit another factor appears, the value of the eggs.

(6) The relative value of the eggs in this experiment is determined by the time of laying.

Further Experiments.—At the present time a series of experiments are being conducted at the Central Farm and a number of them being duplicated at the branch Farms. The present experiments will not be completed until the end of April and therefore will be included in the next report.

BREEDING

The pullets that are reared each year are put into the laying houses in October so as to be ready for the commencement of the poultry year, November 1. These are trap-nested and the individual production for each, from the time the first egg is laid, is recorded. Those that do not lay 90 eggs by the following 1st of June are eliminated (if there is no other reason why they should be

retained) and again at the end of the year another culling is made, when only those that have laid 150 eggs or more are retained for breeding. Valuable breeders are kept for breeding just as long as they will produce chicks, but even the good layers are not retained if they show they are unable to reproduce.

Extensive breeding work is being carried on with Barred Plymouth Rocks and Single Comb White Leghorns, and a certain amount with White Wyandottes, as well as with several varieties of ducks and geese. In the two breeds first named, definite high producing lines are being established and valuable data are being collected on the influence of sire and dam on number, size and colour of eggs.

None but pedigreed chicks are being raised and only cockerels from high-producing dams are retained for breeding purposes. Each season an increasingly large number of these high-class males is being sold to farmers at nominal prices, which will inevitably help in gradually raising the standard of production throughout the country.

A striking demonstration of the value of the male in breeding for egg production was shown in pen 55 of the Canadian egg laying contest for 1921-22. A tested male No. 645, a son of a 249-egg hen, whose sire's dam laid 220 eggs, dam's dam laid 240 eggs, sire's dam's dam laid 223 eggs, dam's sire's dam laid 229 eggs, and sire's dam's sire's dam laid 229 eggs, was mated to a number of females, among which were several that had produced less than 200 eggs in their first year of laying. A number of daughters from these matings were put into pen 55 in the Canadian egg-laying contest and the following table shows the results:—

TABLE SHOWING THE VALUE OF THE MALE IN BREEDING FOR HIGH PRODUCTION

Sire	Dam	Dam's Production	Daughter	Daughter's Production
645	C323	172	C551	193
	C252	156	C552	Died before completing her record.
	C463	162	C553	196
	C323	172	C554	224
	C252	156	C555	200
	C323	172	C556	217
	C...	...	C557	Of a different line
	C323	172	C558	212
	C565	151	C559	208
	C494	181	C560	235
	C494	181	spare C910	208

NOTE.—Eliminating the two birds in the table the records of which are incomplete, the average production of the mothers was 169 and that of the daughters was 210. As other factors were the same, it may be presumed that the sire was responsible for this increase.

At the branch farms good work in the production of high-laying strains is being conducted.

The high production that has been obtained from the Wyandottes in British Columbia has been referred to in previous reports. During the past year, a Barred Rock pen in the British Columbia contest, bred by the Agassiz Experimental Farm, laid a total of 2,601 eggs in the 52 weeks. This, as far as we know, is the world's official record for a 10-bird pen of Plymouth Rocks.

DISEASES

For several years the Health of Animals Branch has co-operated with this division to conduct investigations in poultry diseases. In December, 1921, Dr. C. H. Weaver was placed in charge of this work, and adds the following very brief summary.

The activities of the pathological work can be expressed as routine and research.

ROUTINE

Routine comprises the examination by autopsy and laboratory methods of specimens submitted by the public and by the Experimental Farms system. These are usually dead or ailing fowl, but occasionally certain organs only are furnished.

This work is quite heavy and time-consuming, but its maintenance seems to be well merited, as, by this, a direct service is rendered the industry, apparently appreciated by those engaged in poultry culture.

Furthermore, routine examination of outside specimens gives some indication at least of the prevalence of disease in the country, and furnishes information which is a valuable guide in selecting the most urgent problems for research.

A plant survey has been under way during the latter part of the year to determine exactly the health conditions of the fowl of the Central Farm, and particularly the nature and extent of worm infestation. Through this, we have learned that a portion of the premises is unsuitable for poultry culture, and will have to be abandoned, temporarily at least.

The establishment of a hospital service, with suitable isolation and quarantine, was instituted early in December to cope with a virulent outbreak of chicken-pox and roup. This service is of value particularly to the contests, assisting, as it does, in the prevention of the spread of disease and hastening recovery of those afflicted.

Records from the routine work are giving valuable information on such diseases as intestinal parasitism, leg-weakness, paralysis, nutritional diseases, etc., and should assist the research work of these diseases when time will permit of their more thorough study.

A change has been made in the method of handling the correspondence dealing with disease, even to reporting upon specimens received for examination. This was formerly handled by the pathologist, but the time so consumed had to be taken from investigational work. Persons submitting specimens will, therefore, understand that the reports which they receive from the staff of the Division are based on the results of the laboratory examinations as heretofore, and are made in this way with the object of facilitating, as far as possible, the pathological work.

RESEARCH

The main work of the past winter has been in connection with vaccines. A vaccine which is used rather extensively in the American Pacific States and which seems to be giving good results there was used as a basis. A polyvalent bacterin (killed bacterial culture) prepared by a commercial firm was also tested. These were employed as directed and with suitable controls, but were of no effect in controlling disease. This fails to substantiate the apparent beneficial results as formerly reported. It is apparent that the use of vaccines in these diseases is still in the experimental stage, and should be considered as such by poultrymen until their proper sphere is clearly established by experimental means.

Considerable preliminary work has been done toward isolating and identifying the virus or bacteria causing disease in poultry. The field of investigation is becoming more clearly defined and encouraging progress may be reported.

In addition to this, and because of the severe handicap under which poultrymen suffer, such troubles as roup, internal parasites and chick diseases were given continued consideration. Because of the apparent increase of these among Canadian flocks and the loss incurred thereby, arrangements are being made to do more to eliminate this personal and national loss.

EGG LAYING CONTESTS

During the year egg laying contests have been conducted in each province of Canada and, in addition to the provincial contests, the Canadian contest was conducted at Ottawa, Ont. These contests were conducted at the following Experimental Farms and Stations. The number of pens in each case is also given:—

	Pens
Canadian Egg Laying Contest, Experimental Farm, Ottawa	60
Prince Edward Island Egg Laying Contest, Experimental Station, Charlottetown, P.E.I.	20
Nova Scotia Egg Laying Contest, Experimental Farm, Nappan, N.S.	20
New Brunswick Egg Laying Contest, Experimental Station, Fredericton, N.B.	20
Quebec Egg Laying Contest, Experimental Station, Cap Rouge, Que.	20
Ontario Egg Laying Contest, Experimental Farm, Ottawa, Ont.	28
Manitoba Egg Laying Contest, Experimental Farm, Brandon, Man.	19
Saskatchewan Egg Laying Contest, Experimental Farm, Indian Head, Sask.	18
Alberta Egg Laying Contest, Experimental Station, Lethbridge, Alta.	29
British Columbia Egg Laying Contest, Experimental Farm, Agassiz, B.C.	29
Total	263

Ten birds to a pen make a total of 2,630 birds. The average egg production per bird was 146·3 and the average cost (for feed only) per dozen was 18 cents.

RECORD OF PERFORMANCE AA

Certificates of Record of Performance are given birds qualifying in this contest. The qualification for Record of Performance is that the bird, being typical of the breed and free from standard disqualifications, lay 150 eggs or over, averaging 24 ounces to the dozen.

For Advanced Record of Performance the standard qualifications of the breed are the same, but her production must be 225 eggs or more.

In the 1921-22 contests 1,058 birds qualified for Record of Performance "AA" and 153 birds qualified for Advanced Record of Performance "AA," making a total of 1,211 birds that laid 150 eggs or over, or 46 per cent of the total number.

November 1, 1922, a new series of laying contests started, and one new contest was added. This new contest is at the Lennoxville, Que., Experimental Station, and the contest which was held at Cap Rouge was transferred to the Station at Ste. Anne de la Pocatière. In the present eleven contests, there are 300 pens of ten birds each, in all 3,000 birds, in competition at the end of the period ending November, 1922.

INSPECTION OF BIRDS FOR CONTESTS AND REGISTRATION

Owners who have made application for entrance to laying contests must have their plants and birds undergo a rigid inspection before the birds are accepted. This inspection is necessary to eliminate birds that are not sufficiently developed and birds that may be suffering from contagious diseases. It saves time and expense to have the elimination of pens thus take place before they are sent in to the contest.

This year, for the first time, inspection was given birds that qualified for registration in the last egg laying contests. These were inspected by the present staff, those in Ontario being done from this office, the Maritime birds by Mr. J. G. Morger, while the staff of the Western Experimental Farms looked after those within their own provinces.

REGISTRATION

The most outstanding development of the year has been the actual registration of poultry. This is important, not only because it is new in Canada, and because Canada is the first country that has attempted registration of poultry in a national way, but more because of what registration means to the poultry industry.

The medium of registration is the series of egg laying contests operated throughout Canada by this division. Birds qualifying in the contests ending October 30, 1922, were the first to be given registration. The qualifications briefly are that the birds—1. Be typical of the breeds they represent. 2. Have no standard disqualifications. 3. Lay 200 or more eggs weighing 24 oz. to the dozen within the contest year—52 weeks.

Registration is a part of the work of the Canadian National Poultry Record Association, the contests and inspection being handled by this division and the registrations by the Canadian National Live Stock Records.

The number of birds already qualified for registration is 400, divided into breeds as follows: Barred Plymouth Rocks, 199, Single Comb White Leghorns, 134; White Wyandottes, 30; Single Comb Anconas, 19; Single Comb Rhode Island Reds, 9; Buff Orpingtons, 5; Rose Comb Rhode Island Reds, 2; Andalusians, 2.

The qualified birds according to the contests in which they were entered are: Canadian, 136; British Columbia, 55; Alberta, 44; Saskatchewan, 13; Manitoba, 22; Ontario, 76; Quebec, 1; New Brunswick, 25; Nova Scotia, 20; Prince Edward Island, 8.

FIELD WORK IN QUEBEC

In addition to the French correspondence of the division, which continues to increase steadily, under this heading are included the following phases of work: (1) Extension work; (2) French Monthly Report Form service; and (3) Visits to the branch farms in Quebec and northern Ontario.

(1) FIELD WORK

The field work in the Province of Quebec has been continued along the lines indicated in the last year's report, but has been increased in several respects. It naturally divides itself under two heads: (*a*) Survey work, and (*b*) Co-operative work with other agencies.

(*a*) *Survey Work.*—The survey work in the three counties of Rimouski, Montcalm and Northern Pontiac has beeen enlarged to include four additional parishes, one in Rimouski, one in Montcalm, and two in northern Pontiac. Additional farmers in the parishes previously covered, who have recently commenced keeping pure-bred poultry, are also being visited, bringing the total of such farmers up to ninety-seven, as compared with sixty-six last year.

A conscientious effort is made to help the farmers solve their poultry problems, and to make their operations more profitable. By this means, much information of value to the division is obtained, and the farmers are brought into close touch with the work of the Experimental Farms.

In accordance with the co-operative policy outlined last year, particular emphasis has been placed upon culling work, and this is dealt with in greater detail under the heading of "Co-operative work". It is interesting to note, that twelve modern poultry houses have been built in these three counties during the year, and several others remodelled.

Upon special requests from local breeders, visits have also been made to St. Laurent, St. Timothee, Laprairie, St. Rose, Lachine, Three Rivers and Levis, either to investigate outbreaks of disease or to give advice regarding special poultry problems.

(*b*) *Co-operative Work with Other Agencies.*—As in the past, the division has co-operated extensively with the various agencies engaged in poultry work in Quebec, which were enumerated in last year's report. The division was represented at the fall fairs at Amos, O'Brien and Macamic, and also at the poultry shows at Quebec, St. Jerome, St. Hyacinthe and St. Jacques and at the short course at Lac à la Tortue.

In addition, by special request of the Ontario Department of Agriculture, a member of the staff conducted a short course on poultry keeping, in French, at Verner, Ont.

The co-operative programme of the Provincial Poultry Association, to which reference was made last year, has been put into effect, with exceedingly satisfactory results. At the outset, a short course on " Selection for Production " was held at Macdonald College, at which three members of the staff of the division assisted. This course, which was entirely bi-lingual, was most successful, and attracted a large attendance. It was followed by the annual provincial course for poultry judges, wherein the same members of the staff assisted.

The culling campaign, conducted during the summer, was far-reaching in its results; twenty-nine counties were covered, six hundred and ninety-nine flocks, containing over thirty thousand birds being visited, and over ten thousand non-productive hens eliminated. In the districts where the Provincial Poultry service has instructors, this work was done by them, but in the other districts it was done through co-operation between the Agronomy service, Macdonald and Oka Agricultural Colleges, the Poultry Division of the Live Stock Branch (Federal) and this division. In the majority of cases, the expenses of the campaign were paid by the Provincial Poultry Service, a member of the staff of which directed the work.

This division, in co-operation with the district representatives, assumed direct responsibility for the work in three counties, 62 flocks, containing 187 birds, being visited.

(2) FRENCH MONTHLY REPORT FORM SERVICE

This work really supplements the survey work, reference to which has already been made, for, through it, valuable data are obtained from, and information given to, farmers who cannot be visited personally. In some cases, however, farmers who receive visits prefer to take advantage of this service in addition.

Sixty-eight French-Canadian farmers are now making regular monthly reports on the operation of their poultry plants. As soon as each report is received, a circular letter containing practical hints for the following month is forwarded to the farmer, who is thus encouraged to send in his reports promptly and regularly. This is followed by a personal letter, provided that a study of the report reveals any conditions which need comment.

The following table gives a summary of the reports received from forty-eight farmers in different parts of Quebec:—

TABLE SHOWING RESULTS BY BREEDS, OF THE POULTRY OPERATIONS ON 48 FARMS IN QUEBEC FOR THE YEAR ENDING OCTOBER 31, 1922

Breed	Number of flocks	Number of hens	Total eggs laid	Average production per hen	Receipts				Expenditure				Total profit	Average profit per hen
					Eggs	Meat	Prizes (net)	Total	Feed	Stock	Equipment	Total		
					$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Barred Rocks	15	434	43,394	99·9	1,535 20	818 99	166 50	2,520 69	876 24	208 58	18 40	1,103 22	1,417 47	3 26
Rhode Island Reds	14	663	57,541	86·7	1,968 07	905 66	.....	2,873 73	1,407 56	11 79	6 50	1,525 85	1,347 88	2 03
Mixed	10	386	28,745	74·5	835 01	211 84	.....	1,046 85	223 30	53 91	0 24	277 45	769 40	1 99
White Leghorns	4	100	9,949	99·4	374 06	82 58	.....	456 64	174 91	11 53	.....	186 44	270 20	2 70
Chanteclers	2	63	7,709	122·0	257 78	134 48	52 85	445 11	203 22	37 67	.....	240 89	204 22	3 24
White Wyandottes	2	103	14,758	143·2	574 17	310 94	.....	885 11	269 42	119 45	.....	388 87	496 24	4 81
White Rocks	1	48	5,813	121·0	195 96	59 15	.....	255 11	103 79	.....	.....	103 79	151 32	3 15
Total	48	1,797	167,909	93·5	5,740 25	2,523 64	219 35	8,483 24	3,258 44	542 93	25 14	3,826 51	4,656 51	2 54

Remarks.—As will be noticed by the foregoing table, the average number of hens per farm was 37. The largest flock contained 243 birds and the smallest only 3. The average production per hen was 93·5 eggs, the highest being 164, and the lowest 30. The average price paid for scratch grain was $2.18 per hundredweight, and for mash $2.83 per hundredweight. The average cost of feeding a hen was $1.81, and the average price received for eggs, 41 cents per dozen. The average profit per bird was $2.54, the highest being $13.80 and the lowest 57 cents.

It is worthy of note that the mixed, or mongrel flocks, had the lowest production, and gave least profit over cost of feed.

(3) VISITS TO BRANCH FARMS

Advisory and supervisory visits are made to the branch farms in Quebec and northern Ontario, in order to standardize the poultry work, especially along experimental lines. At least four, and in some cases as many as six or seven, such visits are made during the year.

An interesting outcome of the establishment of the poultry plant on the branch Stations at La Ferme and Kapuskasing, has been the increased interest taken in poultry by the farmers in the Abitibi and in northern Ontario. There are three factors which make these districts an almost unique field, and this a most opportune time for the promotion of poultry keeping: (*a*) the increasing local demand for, and inadequate supply of, eggs and dressed poultry for private and commercial trade; (*b*) the small number of fowls on the farms, making the introduction of bred-to-lay stock much easier, by obviating the difficulty usually experienced in eliminating flocks of mongrels; and (*c*) the fact that in newly colonized sections such as these, where the clearing of the land is a lengthy and difficult process, it is imperative that the farmer should have an additional source of revenue (which poultry would provide) to help tide him over the first few years. Owing, however, to the isolated situation of most of the farms and the extreme distance from poultry breeding centres, an adequate local supply of hatching eggs and breeding stock is essential.

The additions to the poultry plants at these two branch Stations will undoubtedly help to meet this demand, and the fact that the experiments being conducted are adapted to local conditions makes it possible for the farmers to get information suited to their particular needs. In this connection, it may be mentioned that a log poultry house, of a type that can easily be built by the settlers, has been erected upon each of these Stations.

Two years ago, when the poultry work at these Stations was inaugurated, there was only one small flock of pure-bred poultry in the Abitibi district, whereas to-day, as a result of the survey work undertaken, and the incentive provided by the results obtained at the Stations, there are twenty such flocks.

SURVEY WORK IN THE MARITIME PROVINCES

The poultry promoter for the Maritime Provinces has continued his work and has also made three visits to the Quebec Station and contests. His work has included the inspection of all birds for the contests at Nappan, N.S., Fredericton, N.B., and Charlottetown, P.E.I., also the inspection necessary for registered birds and the registration of hatches. He has spent considerable time upon the Maritime Experimental Farm plants, he has visited a number of fairs with an exhibit, where he has given demonstrations in caponizing, killing and plucking, selection, etc. Assistance has also been given to provincial short courses, and to field days and picnics at the Experimental Farms.

DEMONSTRATIONS AND EXHIBITS AT FAIRS AND POULTRY SHOWS

In the past season, the demand from fair and poultry show officials for the attractive exhibits arranged for the Poultry Division by the Division of Extension

and Publicity increased to such an extent as to cause an overlapping of dates for engagements.

The preparation of additional exhibits to meet this demand was considered worth while, as these have proven a valuable medium for dispensing information and keeping the work of the Division before the farmer.

The numerous requests for plans of buildings and appliances and for information on methods of feeding, incubation and brooding and all cognate points of poultry work denote the keen appreciation of these exhibits by those visitors to the fairs who are interested in the business.

The exhibits consisted of models of the most up-to-date appliances and houses, that had been tested in different provinces, under various conditions, and found satisfactory.

The methods of feeding and the rations recommended were those that had given such good results in the laying contests, and with the experimental flocks on the various Farms.

The illustrations represented, and the legends graphically explained, the various phases of poultry work as carried out on the Experimental Farms system.

In addition, as an incentive to better breeding work, and as an example of the value of a good sire in the reproduction of his dam's high laying qualities, a pen of White Leghorn pullets, all daughters of the same male, were shown below illustrated panels representing the kind and quality of feed they had consumed to produce the excellent return in eggs illustrated on another panel.

This concrete example of the greater profit derived when intelligent and systematic breeding work is practised proved an excellent lesson, easily grasped, and, where necessary, should encourage better breeding work and the use of male birds of tested quality to head the flocks throughout the country.

This and similar exhibits were displayed at Toronto National and Royal fairs, Ottawa, Napanee, Hamilton, Brockville, Amherst, N.S., Brantford, Woodstock, Pictou, N.S., St. Thomas, Peterborough, Belleville, St. Catharines, Simcoe, Windsor, Essex, Maberly, St. Jerome, P.Q., St. Hyacinthe, P.Q., Sherbrooke, P.Q., and Quebec, P.Q.

FARM EGG AND POULTRY ACCOUNTS

The demand for the farm egg and poultry account forms is maintained, showing that the work is popular with those poultrymen and farmers who have the time and the inclination to know more of the possibilities for profit in their poultry flocks.

As a rule, the expenditures and receipts of the poultry flock are small in comparison with some of the other operations on the farm, and, being spread over the entire year in small daily items, they lose significance, or may be overlooked and given little consideration.

Where an effort is made to keep accounts of the poultry revenue, results are shown that compare favourably with the profits in any other branch of the farm work. Sometimes, where special effort has been made and more attention given, the poultry flock has proved to be the mainstay of the farm.

If elaborate and accurate accounts are kept of the profit and loss of a small flock, the time involved is out of proportion to the return. A simple system that will show the progress made at any period and from which a fairly accurate balance sheet can be drawn up annually, may be all that is necessary.

As a rule, where this is practised, the results shown are encouraging. The profits on the small outlay invested in the stock, overhead and labour, frequently prove an incentive to greater effort and lead to expansion.

From the simple monthly form provided by the Poultry Division, on request, a facsimile of which is shown below, the yearly balance can be compiled.

FARM, EGG AND POULTRY ACCOUNT

Name.....
Address.....
Province.....

Copies free to those who return duplicate each month to the Poultry Division, Experimental Farm, Ottawa.

Breed.....
No. of matured females.....
Month.....19.....

Date	Eggs laid	Eggs sold, eaten or used for hatching	Price per doz.	Total Value $	Total Value c.	Poultry sold or eaten	Price per head or per lb.	Total Value $	Total Value c.	Weight and kind of feed purchased or taken from farm	Value $	Value c.	Eggs for hatching Stock and appliances purchased	Value $	Value c.	In this column note number of chicks alive at end of month, also water fowl and turkeys, if any.
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
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23																
24																
25																
26																
27																
28																
29																
30																
31																Total receipts $....
Totals..																" expenditure $....
																Profit or loss

Use the back of this form for correspondence, if necessary—Fold at dotted lines—Seal and mail one copy—No stamps required.

On this monthly sheet all eggs and poultry used in the home should be credited to the flock at the prevailing market value. These products amount to a considerable item in the year, and very often the poultry flock does not get the credit for the part it plays in materially reducing the expenses of the household.

In addition to the monthly report, an inventory should be prepared each year on which all feed, stock and equipment on hand should be accounted at its fair value. An allowance of five per cent should be debited for depreciation on permanent buildings, whilst ten per cent should cover deterioration on appliances.

Generally, October 31 is considered the close of the poultry year, and the time to dispose of surplus stock that will not be carried over the winter, therefore this date is favourable for stock taking and balancing accounts for the year.

Providing that a fairly accurate monthly report has been kept, it is a simple matter to draw up a summary by totalling the monthly items and charging them on a balance sheet as under.

BALANCE SHEET

	Dr.	Cr.
To value of inventory Nov. 1, 1921		
To value of stock on hand Nov. 1, 1921		
To Expenditure Nov. 1, 1921 to Oct. 31, 1922		
By value of inventory Oct. 31, 1922		
By receipts Nov. 1, 1921 to Oct. 31, 1922		
Total		
Balance		

SHOWING NUMBER OF HENS PER FARM, EGG YIELD, VALUE OF EGGS AND POULTRY SOLD, COST OF FEED AND EQUIPMENT (NOT INCLUDING BUILDINGS) AND PROFIT PER HEN

Province	Number of hens	Eggs laid number per hen	Value of eggs sold per hen	Value of poultry sold	Feed purchased or used from farm	Stock and appliances purchased	Profit per hen
			$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Quebec	38·8	96·9	3 55	1 57	2 10	1 03	1 99
Maritime	69·2	126·8	4 19	1 75	2 85	0 31	2 78
Ontario	46·0	143·8	4 76	1 47	3 74	1 31	1 18
Prairie	48·3	114·1	2 91	1 74	1 58	0 70	2 37
British Columbia	121·3	147·9	3 77	0 60	2 68	0 21	1 48
Dominion total	64·7	125·9	3 83	1 42	2 59	0 71	1 95

Remarks.—Study of the above averages shows a prospect of profit for the poultry farmer in any province in the Dominion but, though the figures can be relied upon as a fair indication of the conditions in each province, it must be borne in mind that they are compiled from the reports of those poultrymen and farmers who take sufficient interest in their flocks to keep records and accounts. It may be said with truth that this class is more likely to achieve success and that, in consequence, reports from such a source are more encouraging than would be obtained if it were possible to compile the data from all the poultry keepers throughout the country. Still, the table fairly represents the profit available in return for capital and energy expended, when fair intelligence and a little system are applied to the work.

The reports from Ontario include many from backyard poultrymen. This increases the average cost of feed in the province, as it is generally the practice of this class to buy feed in smaller quantities than the farmer and at higher prices. As may be expected, the results are shown to be the reverse in the prairie provinces due to cheaper feeding conditions.

The presence of large specialized poultry farms in the province of British Columbia swells the average number of hens kept on each farm to almost twice the average for any other province.

In the past it was the practice to prepare a balance sheet from the duplicate monthly accounts sent in by correspondents, and to forward it to them, but the practice had to be discontinued owing to the pressure of other work. When a special request is received from a correspondent, a balance sheet is prepared and sent him.

From this account, a fairly accurate estimate can be made of the return received by the owner for his labour, or the labour can be estimated and charged each month, when the balance shown at the end of the year will represent the return on the capital invested in stock and equipment.

The value of this work is twofold, in the information derived from the accounts sent in from all parts of the country, as well as in its help to the poultry keeper.

The actual prices received by the farmer for his products and the prices paid for his feeds are available for the information of any interested person, and the opportunity for successful poultry keeping and the difficulties, if any, that may be present in different localities can also be traced from these reports.

BULLETINS

During the year two bulletins were published, one on "Pigeons" and one on "How to Caponize".

The pigeon bulletin is known as No. 15, new series, and is written by George Robertson and W. W. Lee. It is illustrated and deals with the subject under the following headings: Introduction, Installation of the Pigeon Loft, Hygiene in the Pigeon Loft, Feeds and Feeding, Mating and Breeding, Killing and Dressing Squabs, Preparation of Show Pigeons, Training Homing Pigeons, Choice of a Breed, Breeds, Diseases of Pigeons.

"How to Caponize" is written without argument for or against caponizing, the sole object being to tell how the operation is performed and thus to supply the information that this office is being repeatedly asked for. The circular includes information on the best breeds, the instruments used, and how the operation is performed, and is also illustrated.

LECTURES, ETC.

In addition to visiting the branch Farms, including the Beaverlodge substation in the Grande Prairie district of Alberta, the Dominion Poultry Husbandman attended, and took part in the programme of the annual meeting of the International Instructors and Investigators in Poultry Husbandry, which took place in July at Corvallis, Oregon. He also visited many of the poultry keeping sections throughout the Western States.

Mr. Robertson, Assistant Dominion Poultry Husbandman, as a member of the Revision Committee of the Standard of Perfection of the American Poultry Association, was in attendance at the meetings of this committee during the year, and also attended the annual meeting of the American Poultry Association held at Knoxville, Tenn., in August.

Mr. A. G. Taylor, in charge of the laying contests, assisted in convention meetings at the Agricultural College, Amherst, Mass., in July, and also visited a number of the Eastern United States laying contests. Mr. W. W. Lee assisted in several short courses in the province of Quebec, and one in northern Ontario. Messrs. Robertson, Taylor, Lee, Scott and Desforges assisted in the short course put on by the Kemptville Ontario Agricultural School, and Mr. Scott attended a number of poultry fairs during the winter and also was present with an attractive and instructive exhibit at the Royal Show, held in Toronto. Mr. J. G. Morgan accompanied an exhibit to a number of poultry fairs in the Maritime Provinces, Quebec and Ontario, and also supplied demonstrations at field days held by the superintendents at the various Farms, and assisted in the short course in poultry at Truro Agricultural College.

CO-OPERATION WITH ILLUSTRATION STATIONS

For several years this division has co-operated with the Division of Illustrated Stations by supplying breeding eggs and cockerels to those managers of Stations who were interested in poultry.

This year still further co-operation has been effected in that a number of the Stations have been visited by an officer of this division.