DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

POULTRY DIVISION

INTERIM REPORT OF THE DOMINION POULTRY HUSBANDMAN

F. C. ELFORD

FOR THE YEAR 1921

Experimental House—Where the feeding experiments with laying hens were conducted.

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

CONTENTS

REPORT OF THE POULTRY DIVISION

FOR THE YEAR 1921

The progress made in the year's work in the Poultry Division has been very satisfactory. The new administration building at Ottawa has greatly improved office facilities and the incubator room in the basement has given good results. By means of the new mammoth incubator, chicks have been hatched in sufficient numbers to provide pullets to fill all the laying houses. This is the first year since 1917 that it has been possible to hatch enough early pullets to furnish sufficient material for selection in the breeding work and uniform birds for experimental purposes. The pedigree work at Ottawa has developed to such an extent that all eggs set this spring were from pedigree parents, and sisters only were used in the feeding experiments conducted in the experimental house.

Better and more capable men are available for the Branch Farm plants, and as a consequence, the results of the work are more and more encouraging. More experimental work is possible, and the yearly selection by pedigree breeding is proving its value in better individual and flock production.

The demand for stock and eggs is increasing each year, but the Farm system has not the supply available to meet more than a portion of this demand.

The poultry survey work in Quebec, under Mr. W. W. Lee, who was appointed in June, has developed considerably. The birds in the laying contests have increased from 2,480 last year to 2,640 this year. A number of special poultry exhibits have been made, and the Farm Egg and Poultry Account service seems to be more popular than ever.

THE STOCK

At the Central plant three breeds of poultry are kept: Barred Rocks, White Wyandottes and White Leghorns.

At the Branch Farms the aim is to keep one breed only at each Farm. Upon small plants, the best experimental work can be done when one variety only is kept, and gradually each Farm is selecting the variety that has proven the best for the locality, and is eliminating the others.

The number of birds upon the Farm system, both breeders and layers, is given by Farms in the following table:—

POULTRY UPON THE FARM SYSTEM, JANUARY 1, 1922

Farm	Barred Rocks	Wyandottes	Leghorns	R.I. Reds	Turkeys	Geese	Ducks	Total
Agassiz, B.C.	157	.....	234	.....	.....	.....	.....	391
Brandon, Man.	229	158	.....	.....	.....	.....	.....	387
Cap Rouge, Que.	339	.....	.....	.....	.....	.....	.....	339
Charlottetown, P.E.I.	339	.....	.....	.....	.....	.....	.....	339
Fredericton, N.B.	131	107	.....	.....	.....	.....	.....	238
Indian Head, Sask.	.....	396	.....	.....	.....	.....	.....	396
Invermere, B.C.	61	90	.....	.....	16	.....	.....	173
Kapuskasing, Ont.	125	.....	.....	.....	2	4	5	136
Kentville, N.S.	180	69	.....	.....	.....	.....	.....	249
Lacombe, Alta.	64	166	.....	56	2	9	14	311
La Ferme, Que.	152	.....	.....	.....	.....	3	4	159
Lethbridge, Alta.	300	.....	.....	.....	.....	.....	.....	300
Lennoxville, Que.	286	.....	.....	.....	.....	.....	.....	286
Morden, Man.	201	.....	.....	63	.....	.....	.....	264
Nappan, N.S.	226	.....	46	.....	.....	.....	.....	272
Rosthern, Sask.	168	.....	.....	.....	.....	.....	.....	168
Scott, Sask.	252	.....	.....	.....	.....	.....	.....	252
Sidney, B.C.	.....	585	.....	.....	.....	.....	.....	585
Summerland, B.C.	.....	483	.....	.....	.....	.....	.....	483
Ste. Anne, Que.	88	79	.....	11	.....	.....	.....	178
Ottawa, Ont.	204	141	669	.....	.....	33	109	1,156
Totals.	3,508	2,274	949	130	20	49	132	7,062

45592—2½

PRICES FOR POULTRY PRODUCTS

Egg prices kept up well during the year in comparison with the prices paid for other farm products, which lowered very materially in most instances. Early in the spring, however, the price of eggs fell, but it is hoped that this has not led to any reduction in the number of chicks hatched or in the extent of poultry operations carried on throughout Canada, for it must be remembered that the prices of feed have also lowered very materially during the past year, which leaves still a satisfactory margin of profit between the cost of production and the selling price. It rests with the poultry keeper so to study the problems of cheaper production and of the marketing of a high quality product that this margin may be retained.

Below are given the prices obtained for eggs sold from the various Experimental Farms and Stations month by month throughout the poultry year:—

TABLE SHOWING RETAIL PRICE RECEIVED FOR EGGS AT EACH FARM

Farm	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Average
Agassiz, B.C.	80	60	60	40	30	30	22	30	35	40	42	60	44
Sidney, B.C.	90	72	66	42	33	30	28	33	42	42	45	62	49
Invermere, B.C.	80	80	75	70	50	45	40	35	40	40	48	52	54·5
Summerland, B.C.	90	75	70	60	38	36	40	45	47	50	52	60	55
Lacombe, Alta.	40	50	50	40	20	25	20	20	25	25	30	30	31
Indian Head, Sask.	62	62	67	67	47	29	29	26	29	34	38	38	44
Scott, Sask.	60	63	70	64	25	23	22	29	22	25	35	40	38·2
Rosthern, Sask.	40	60	60	50	50	35	15	15	17	.....	.....	.....	38
Brandon, Man.	65	65	65	63	36	28	28	28	28	32	35	45	43·2
Morden, Man.	60	60	60	60	35	30	33	24	25	29	30	30	39·6
Cap Rouge, Que.	68	61	87	68	47	34	36	33	39	46	47	51	51·4
Lennoxville, Que.	79	90	76	70	58	39	35	40	40	45	45	50	55·5
Ste. Anne, Que.	65	65	80	80	50	33	33	30	35	40	40	40	49·2
La Ferme, Que.	.....	.....	.....	90	80	50	50	50	45	45	45	45	55·5
Fredericton, N.B.	60	70	70	70	55	45	35	35	45	45	45	50	52
Nappan, N.S.	70	70	74	74	50	27	29	30	33	38	40	45	48·3
Kentville, N.S.	50	50	50	51	45	28	28	29	35	40	40	40	40·5
Charlottetown, P.E.I.	51	60	60	50	35	21	20	25	28	29	31	30	36·6
Average	65·3	65·4	67	61·6	43·5	32·6	30·1	31	33·8	37·9	40·4	51	46
Ottawa	85	$1.00	95	80	55	45	45	45	48	50	50	60	63·2
British Columbia	85	71·7	67·7	53	37·7	35·2	32·5	35·7	41	43	46·7	58·5	50·6
Prairie	54·5	60	62	57·3	35·5	28·3	24·5	23·6	24·3	29	33·6	36·6	39
Quebec	70·7	72	81	77	58·7	39	38·5	38·2	39·7	44	44	46·5	52·9
Maritime	57·7	62·5	63·5	61·2	46·2	30·2	28	29·7	35·2	38	39	41·2	44·3

As a comparison between the above prices and those received by the Farms in 1915, the following average yearly prices for that year are given: Agassiz, 35½ cents; Invermere, 48 cents; Lacombe, 25 cents; Indian Head, 27 cents; Brandon, 21 cents; Kentville, 22 cents; Charlottetown, 25 cents; Ottawa, 36 cents. The average for all Farms was 29½ cents. The average for the branch Farms named was 28·7 cents in 1915, and 43·8 cents in 1921, an increase of about 52½ per cent. The Ottawa price increased 75·5 per cent in the seven years.

The average market price for the province may be above or below the price received at the Branch Farms. In some instances, distance from the best market in the province may account for this.

INCUBATION

Projects 1 to 7.—Incubation on the Farm system is conducted almost entirely by artificial means; occasionally a few choice eggs may be put under hens, but for large numbers of chicks, only the artificial method is used. Where still larger numbers of chicks are required, the tendency is to use mammoth machines. The increasing demand for custom hatching and day-old chicks is an added reason for the use of larger sized incubators.

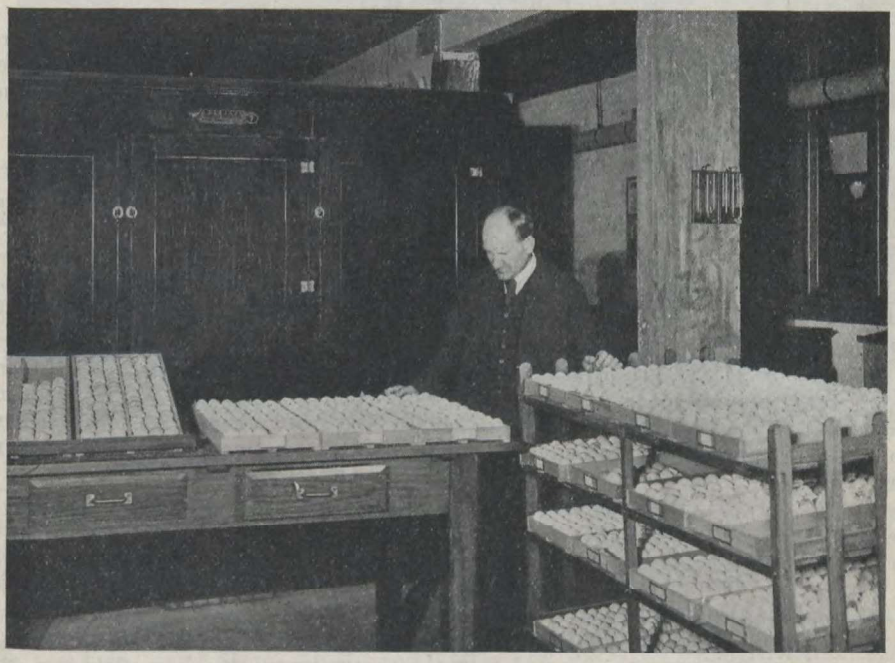
Most makes and sizes of incubators are tested on the Farm system, varying in capacity from the small incubator with a capacity of fewer than 100 eggs to the mammoth machine holding over 10,000 eggs. The variation in cost of operating the lamp machine of 250-egg capacity, the small mammoth of 2,400 eggs, and the 10,000-egg size is given in the following table:—

TOTAL COST OF SEASON'S HATCH WITH 10,000, 2,400, AND 250 EGG INCUBATORS—TOTAL OF FOUR HATCHES, 40,000 EGGS

—	One Incubator capacity 10,000 eggs	Four Incubators capacity 2,500 eggs each	Forty Incubators capacity 250 eggs each
	$ cts.	$ cts.	$ cts.
Interest on capital invested	280 00	280 00	378 00
Depreciation on buildings and incubators	300 00	300 00	390 00
Insurance on equipment and against loss	200 00	200 00	270 00
Labour	100 00	200 00	400 00
Fuel	40 00	64 00	120 00
Electric current	32 00	80 00	
Total cost	952 00	1,124 00	1,558 00
Cost to hatch 100 eggs	2 38	2 81	3 89

The use of a large number of small machines entails a greater expense for cellar, equipment, labour and fuel.

However, in the small machines, the infertile eggs, and those with dead germs, are removed at the seventh and fourteenth days. Should there be a large number



Incubator Mammoth Eggs placed in trays, ready to be put into the Incubator.

removed, where several small machines are being run it may be possible to clear one machine entirely for a fresh setting, thus increasing the total capacity of the incubating plant and lowering somewhat the cost of hatching. With the one Mammoth machine this economy is not possible.

APRIL BEST MONTH TO HATCH

On the Experimental Farms, April hatches continue to show the best results, both in number and vigour of the chicks hatched, and in the egg production from the pullets raised.

A summary has been compiled of hatches obtained in the three breeding months at a number of the Farms. The results are similar to previous findings. The percentages are not high, as they include experimental and pedigree work in incubation, both of which tend to lower the average results.

SUMMARY OF HATCHES BY MONTHS

Month	Number eggs	Percent fertile	Percent fertile hatched	Total eggs for one chick	Total eggs for one chick July 1
March	5,769	68·6	53·2	3·7	10·9
April	15,540	82·1	45·1	2·4	4·0
May	12,614	81·6	52·0	2·7	6·4

APRIL PULLETS BEST LAYERS

This has been borne out in an experiment on the Station at Kentville, N.S., where a three-year test with Barred Rocks and Wyandottes gave a 48·5 per cent better egg yield, for the five winter months (November 1 to April 1), from the April hatched pullets than from those hatched in May.

HENS VS. PULLETS

The summary of hatching results this year is similar to those offered before, and emphasizes the value of using year-old birds for breeding. The pullets included were well matured, but through the winter had been fed more heavily for egg production than had the hens.

HATCHING FROM HENS VS. FROM PULLETS

—	Number eggs	Percent fertile	Percent fertile hatched	Total eggs for one chick	Total eggs for one chick July 1
Hens	15,770	82·4	53	2·3	3·0
Pullets	17,881	70·0	51	4·2	7·7

In a test at the Experimental Station at Sidney, B.C., the mortality among chicks bred from pullets was very marked, when compared with the mortality among chicks bred from hens. Four hundred chicks bred from hens and four hundred chicks bred from pullets were brooded and fed in the same manner, with the following results:—

MORTALITY OF CHICKS FROM HENS VS. FROM PULLETS

Age.	Number chicks	Mortality first week	Mortality second week	Mortality third week	Totals
Hens	400	13	18	7	38
Pullets	400	49	144	75	268

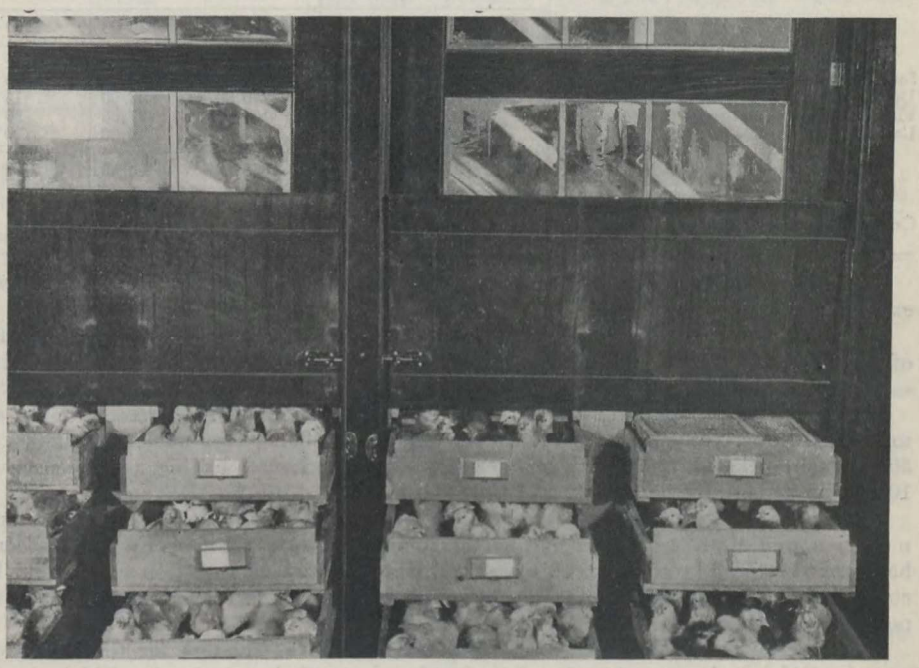
NOTE.—The high mortality among the Sidney pullet hatched chicks is quite unusual, but all chicks were brooded in similar brooders, and had the same treatment, the only difference being the age of the mothers.

SHIPPING EGGS VS. SHIPPING DAY-OLD CHICKS

Some experiments have been made on the relative advantage of shipping hatching eggs as against day-old chicks, but the figures are not yet complete. The evidence so far indicates, that for reasonable distances, the shipping of day-old chicks is just as satisfactory as the shipping of hatching eggs. For distances requiring more than thirty-six hours, and with changes in transit, it is better to ship eggs. Further data upon this will be available later.

INFLUENCE OF CLIMATE UPON REARING

It has long been contended that an equitable climate like that prevailing on Vancouver island, B.C., is much better for the growth of young chicks than is a climate with higher temperature similar to that experienced on the prairies in the summer.



Mammoth Incubator Chicks in hatching trays ready to be taken out.

To get some information on this subject, eggs and chicks were sent from the Sidney Station upon Vancouver island to Lacombe Station, Alta. These were reared at Lacombe, and on November 1 were compared with a shipment of pullets from the same hatches, but reared at Sidney.

One year's work upon this showed the growth to be greater upon the prairie than on Vancouver island, and though this work is being conducted further, the indications are that the prairie poultrymen need not feel that they are handicapped because of their warm days. The longer day experienced on the prairies in all probability offsets the disadvantages of the higher temperature.

BROODING

Projects 8 to 12.—No changes have been made in the brooding experimental work, except that a new brooder house, using colony brooders, has been built at Brandon, a description of which will be found under "Housing."

The interim report of last year (1920) gave a few figures on the relative cost of brooding by four different methods; this year further figures covering cost of housing are added.

COST OF BROODING ONE CHICK BASED ON 1,500 CHICK CAPACITY BROODING OUTFIT

—	Pipe system, 1,500 capacity	Colony system, 3 stoves, 3 houses, 500 each	Electro-planes, 30 planes, 50 chicks each	Radiator lamps, 3 hovers, 500 each	Hens, 75 coops, 20 chicks each
Approximate cost of building	$2,000 00	$300 00	$2,000 00	$300 00	$150 00
Approximate cost of brooder	350 00	75 00	360 00	30 00	
	$2,350 00	$375 00	$2,360 00	$330 00	$150 00
Interest on outlay for buildings	$ 164 50	$ 26 25	$ 165 20	$ 23 10	$ 10 50
Depreciation	230 00	37 50	230 00	33 00	15 00
Fuel or feed for one brood (8 weeks)	64 00	16 00	153 60	97 30	30 00
Labour	120 00	40 00	120 00	40 00	120 00
Total	$ 578 50	$119 75	$ 668 80	$193 40	$175 50
Cost to brood one chick	c. 38·6	c. 8	c. 44·5	c. 12·9	c. 11·7

The essential factor in profitable brooding is economy in labour and in overhead expense.

The chick, up to this stage, is of small value, and may be swamped in expense of production if the above items are not reduced to the minimum commensurate with safety and successful raising.

The cost of production is reduced as the size of the colony increases, up to an undecided limit. Experience points to the best results being obtainable in colonies of 500 to 600 chicks equipped with brooder stoves, and in houses having a floor space of 10 feet by 12 feet.

If the first batch went into the brooders before the middle of March, the accommodation would be again available by the middle of May, not too late for a second hatch of the light breeds. In this case, the interest and depreciation cost would be cut in half or distributed over twice the number of chicks, reducing the cost 25 to 30 per cent per chick.

In the colony system the houses would be utilized as shelters for the chicks on range and for laying quarters in winter, and a share of the overhead would be borne by the layers, also reducing the brooder cost in this case.

FEEDING BROODER CHICKS

During the spring and summer of 1921, a number of experiments on the feeding and management of brooder chicks were conducted upon the poultry plant, Experimental Farm, Ottawa. The details are given herewith.

DRINK FOR BROODER CHICKS

The object of this experiment was to find out the value of milk compared with water for chicks during the first three weeks. The experiment also tested the relative value of whole milk, skim-milk, buttermilk, city water, and artesian water from the Farm well.

The experiment was divided into two distinct tests, both of which are given in detail, followed by a summary of the two. Each test lasted 21 days, the first starting May 9, the second May 30, and each having 375 chicks divided into five lots of 75 chicks.

The pipe system brooder house was used for the experiment, and care was exercised to see that the conditions under which the chicks were kept were as nearly equal as possible.

All lots of chicks received exactly the same feed, and under the same conditions, except for the liquid they were given to drink, which was: Lot 1, city water (chlorinated); lot 2, farm water (artesian well); lot 3, buttermilk (Ottawa city dairy); lot 4, skim-milk (O.C.D.); lot 5, whole milk (farm dairy).

DETAIL OF DRINK EXPERIMENT WITH BROODER CHICKS

Experiment No. 1

—	Lot 1 City water		Lot 2 Well water		Lot 3 Buttermilk		Lot 4 Skim milk		Lot 5 Whole milk	
	lbs.	oz.	lbs.	oz.	lbs.	oz.	lbs.	oz.	lbs.	oz.
Total weights	5	2	5	2	5	2	5	2	5	2
Weight per chick	.....	1·09	.....	1·09	.....	1·09	.....	1·09	.....	1·09
Mortality	38	.....	33	.....	14	.....	24	.....	21	.....
Live chicks end of experiment	37	.....	42	.....	61	.....	51	.....	54	.....
Weights end of experiment	4	13	5	5	12	1	10	4	10	8
Weight per chick	.....	2·08	.....	2·02	.....	3·16	.....	3·21	.....	3·11
Gains per chick	.....	0·99	.....	0·93	.....	2·07	.....	2·12	.....	2·02
General condition of chicks	Fair		Fairly good		Very good		Very good		Very good	

Experiment No. 2

Weight	4	12	4	12	4	12	4	12	4	12
Weight per chick	.....	1·01	.....	1·01	.....	1·01	.....	1·01	.....	1·01
Mortality	39	.....	33	.....	21	.....	36	.....	11	.....
Live chicks end of experiment	36	....	42	....	54	....	39	....	64	....
Weights end of experiment	7	2	8	3	11	14	8	8	13	0
Weight per chick	.....	3·16	.....	3·12	.....	3·52	.....	3·36	.....	3·39
Gain per chick	.....	2·15	.....	2·11	.....	2·51	.....	2·35	.....	2·38
General condition of chick	Poor		Fair		Very good		Very good		Very good	

SUMMARY OF TWO DRINK EXPERIMENTS

	Lot 1 City water	Lot 2 Well water	Lot 3 Buttermilk	Lot 4 Skim-milk	Lot 5 Whole milk
Total alive out of 150 chicks	73	84	115	90	118
Per cent alive	48·7	56	76·7	60	78·7

Summary.—Taking the mortality only, the various drinks would be placed thus, in order of merit: Whole milk, buttermilk, skim-milk, farm water, city water.

The mortality throughout was heavier than the average mortality on the farm for the whole season, but the variations between the lots were sufficient to demonstrate the value of milk over water for brooder chicks. No record was kept of the amount of milk consumed, as it was purely a matter of mortality, but a difference of 30 per cent in mortality in favour of milk would be more than ample compensation for the extra cost.

HOME MIXED VS. COMMERCIAL FEEDS FOR BROODER CHICKS

To ascertain the relative values of certain commercial chick feeds, as compared with the standard ration used on the Experimental Farm at Ottawa, 375 chicks just out of the incubator, 275 Leghorns and 100 Rocks, were divided into five equal lots. In each lot were 55 White Leghorns and 20 Barred Rocks. The chicks were hatched May 23 and care was exercised to see that they were equally divided as to size, weight and vigour. The five feeds used were: No. 1, home-mixed scratch and home-made mash which included boiled eggs (one egg to each pound of mash); No. 2, same as 1, without eggs; No. 3, commercial mash No. 1, and home-mixed scratch; No. 4, commercial scratch No. 2 and commercial mash No. 2; No. 5, commercial scratch No. 3, and commercial mash No. 3. All five lots were given buttermilk to drink.

Scratch feeds were fed in two inches of a litter of wood shavings in the runs of the brooder house. Dry mashes were fed in chick dry mash hoppers. The home-mixed mash consisted of one part each of the following: Cornmeal, shorts, oat flour, middlings and beef meal.

The values of the feeds were: Home-mixed mash, $2.70 per 100 pounds; eggs, 40 cents per dozen; commercial mash, No. 1, $4.75 per 100 pounds; commercial mash, No. 2, $3.50 per 100 pounds; commercial mash, No. 3, $4.10 per 100 pounds; home-mixed scratch feed, $3.75 per 100 pounds; commercial scratch, No. 2, $3.75 per 100 pounds; commercial scratch, No. 3, $3.75 per 100 pounds; buttermilk, 5 cents per gallon.

The experiment started on May 24 and continued until June 14, a period of twenty-one days.

DETAIL OF FEEDING MIXTURES TO BABY CHICKS

	Lot No. 1	Lot No. 2	Lot No. 3	Lot No. 4	Lot No. 5
Amount of Feed fed—					
Mash	20 lbs.	19 lbs. 12 oz.	20 lbs. 8 oz.	21 lbs.	25 lbs.
Grain	15 " 8 oz.	14 " 12 "	16 "	15 "	16 "
Buttermilk	7 gals.	7 gals.	7 gals.	7 gals.	7 gals.
Eggs	16				
Total cost	$2 00	$1 43	$1 93	$1 65	$1 93
Results of Feeding—	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.
Gain per lot	17 10	14 5	13 6	14 11	12 3
Total cost feed	$2 00	$1 43	$1 93	$1 65	$1 93
Cost gains per pound	11·3c.	9·9c.	14·4c.	11·2c.	15c.
Mortality	4	3	3	5	9
Chicks alive	71	72	72	70	66
Cost feed per each chick	2·8c.	1·9c.	2·6c.	2·3c.	2·9c

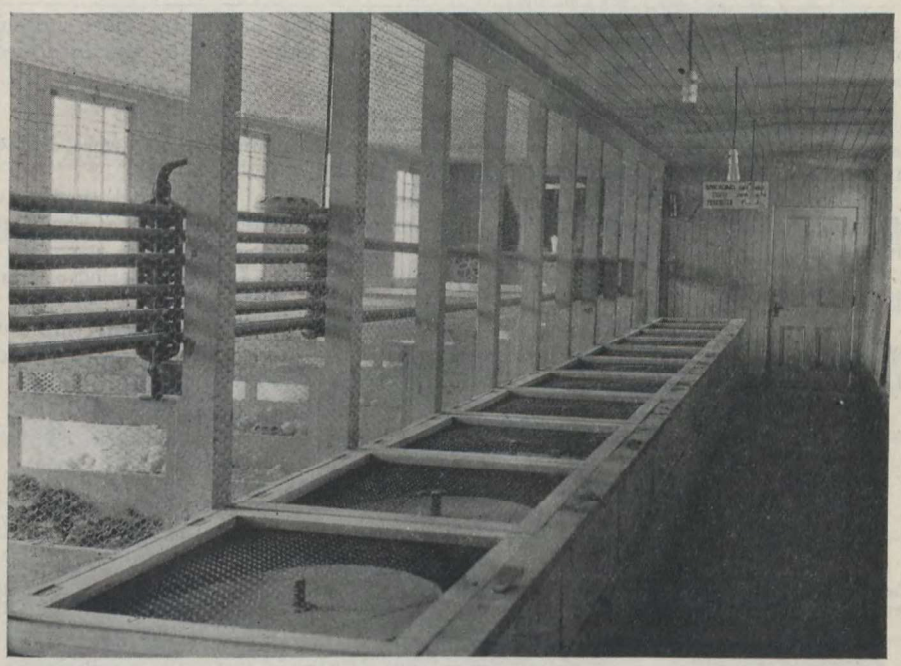
Summary.—The home-mixed feeds without eggs gave the cheapest feed and gains. The vital question in chick feeding, however, is not the cheapness of feed but minimum mortality and maximum growth. A live vigorous chick is the main thing. Taking these two factors into consideration, the home-made mixtures with eggs were the most satisfactory ration used. The lot thus fed lost only one more chick than lots 2 and 3 and was markedly superior in weight over all other lots. This corroborates last year's results as to the value of eggs in the chick ration. It would not be wise, however, to recommend that every person who has chicks mix his own feed, for this would be impractical with small numbers if ready mixed feeds were available, but where large numbers of chicks are fed it would certainly be well to consider the use of home-mixed feed.

FEEDING

Projects 13 to 27.—A number of feeding experiments were conducted upon the Central Farm plant during the year, details of which are given. Those dealing with baby chicks appear under "Brooding."

FEEDING BROILERS FOR MARKET

The demand for broilers grows each year and the methods used in feeding the birds become more and more important. Three experiments on the feeding of broilers were conducted, and included the comparison of heavy breeds and light breeds, crate and pen feeding, commercial fattening mash and a home-made mash.



Pipe Brooder House in which the Chick Feeding Experiments were conducted.

Experiment No. 1.—Heavy vs. Light Breeds: Fattening in yards.

The experiment was conducted in a small house 10 by 18 feet, divided into two pens 10 by 9 feet with half glass and half cotton front, and small wire yards to the front of the house. It started May 27 and ended June 10, a period of fourteen days. One hundred and thirty cockerels were used, consisting of 14 Barred Rocks, 10 White Wyandottes, and 106 White Leghorns, all the birds being hatched, reared and fed together up to the time of starting the experiment.

The feed given was a commercial fattening mash, costing three cents a pound. The mash was mixed with buttermilk (5 cents per gallon) in the proportion of one part mash to two parts milk, by weight.

RESULTS OF FEEDING HEAVY AND LIGHT BREEDS OF BROILERS

	No. Birds	First weight		Feed eaten		Finished weight		Gain	
		Total	Average	Mash	B. milk	Total	Average	Total	Average
		lbs. oz.	oz.	lbs.	lbs.	lbs.	oz.	lbs. oz.	oz.
Heavy	24	26 0	17·3	60	120	52	34·6	26 0	17·3
Light	106	103 8	15·6	200	400	188	28·3	84 8	12·7

	Value gain		Cost of feeding				Profits	
	Total	Average	Mash	B. milk	Total	Average	Total	Average
	$ cts.	c.	$ cts.	$ cts.	$ cts.	c.	$ cts.	$ cts.
Heavy	13 00	54·1	1 80	0 60	2 40	10·0	10 60	44·1
Light	42 25	39·8	6 00	2 00	8 00	7·5	34 25	32·3

These figures show, that in pen feeding, the heavy breeds are more suitable for fattening than the light breeds. Nevertheless. the gains made by the light birds show that they can profitably be fattened as broilers.

Experiment No. 2—Yard vs. Crate Fattening.

Eighty-four White Leghorn cockerels weighing 112 pounds in all, were divided into two equal lots of 42, weighing 56 pounds to the lot.

The cockerels in lot No. 1 were allowed the liberty of a pen and small yard adjoining, and lot No. 2 were confined in a commercial fattening crate of the usual dimensions.

The experiment started on June 20 and continued until July 5, a period of fourteen days.

The birds were fed twice a day all that they would consume in twenty minutes. The feed was a commercial fattening mash mixed with buttermilk, in the proportion of one part of mash to two of milk, by weight.

TABLE SHOWING COMPARISON OF YARDS AND CRATES IN FEEDING BROILERS (WHITE LEGHORNS)

	No. Birds	First weight		Feed eaten		Finished weight		Gain		Value gain	
		Total	Avge	Mash	Avge	Total	Avge	Total	Avge	Total	Avge
		lbs.	oz.	lbs.	oz.	lbs.	oz.	lbs.	oz.	$ cts.	c.
Yard	42	56	21·3	80	30·4	69	26·2	13	4·9	6 50	15·4
Crates	42	56	21·3	78	29·7	71	27·1	15	5·7	7 50	17·8

	Cost of feeding				Profits	
	Mash	B. milk	Total	Average	Total	Average
	$ cts.	c.	$ cts.	c.	$ cts.	c.
Yard	2 40	0·80	3 20	7·6	3 30	7·8
Crates	2 34	0·78	3 12	7·4	4 38	10·4

Summary.—The figures indicate that Leghorn cockerels, weighing about one and a half pounds each when started, can be more profitably fed in crates than in yards. The quality of the flesh also gave the crates first place.

Experiment No. 3.—Commercial Mash vs. Home Mixtures.

There are good commercial fattening mixtures on the market that it might be advisable to buy under some conditions, but, as the following figures show, a good home-mixed feed that will give good results can be made.

Forty-two Barred Rock and 42 White Leghorn cockerels were used, being divided into two lots of 21 Barred Rocks and 21 White Leghorns each.

Both lots of cockerels were put in a commercial fattening crate in the basement of the feed house, and fed twice daily.

One lot of birds was fed on a commercial fattening mash, while the other lot was fed on a home-mixed mash which consisted of one part cornmeal, one part feed flour, one part middlings and 15 per cent tankage. Each mash was mixed with buttermilk in the proportion of one part mash to two parts of buttermilk by weight.

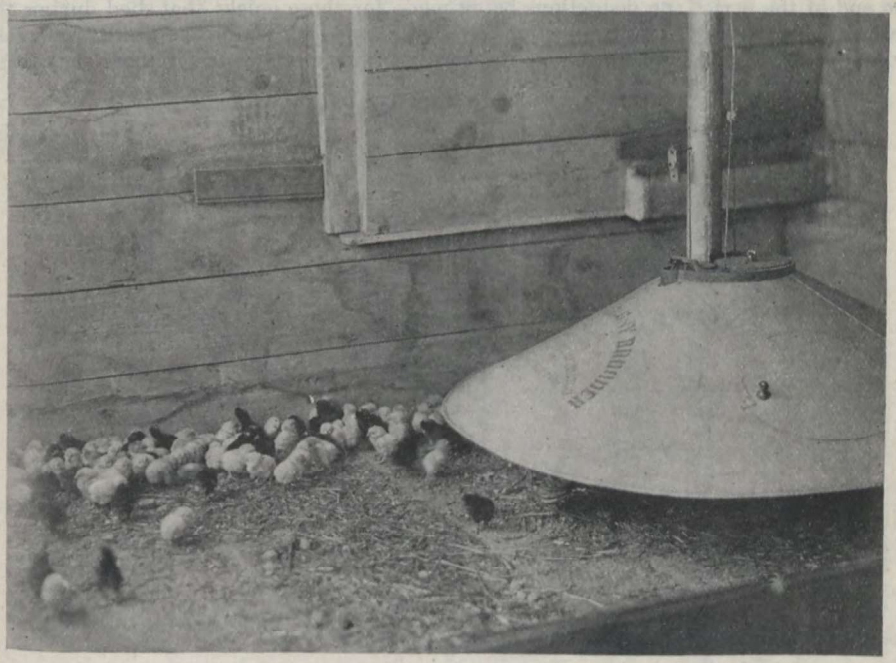
The experiment was started on August 19, and continued until September 2, a period of fourteen days.

TABLE SHOWING RELATIVE VALUE OF A COMMERCIAL AND A HOME MIXED MASH IN FATTENING BROILERS

	No. Birds	First weight		Feed eaten		Finished weight		Gain		Value gain	
		Total	Average	Mash	B. milk	Total	Average	Total	Average	Total	Average
		lbs.	oz.	lbs.	lbs.	lbs. oz.	oz.	lbs. oz.	oz.	$ cts.	c.
Commercial.....	42	60	22·8	57	104	78 3	29·8	18 3	7·0	9 09	21·6
Home mixed....	42	60	22·8	57	114	88 8	33·7	28 8	10·9	14 25	33·9

	Cost of feeds				Profits	
	Mash	B. milk	Total	Average	Total	Avergae
	$ cts.	cts.	$ cts.	cts.	$ cts.	cts.
Commercial.....	1 56	0·52	2 08	4·9	7 01	16·7
Home mixed.....	1 25	0·57	1 82	4·3	12 43	29·6

Summary.—The figures show that the home--made mixtures produced a cheaper gain than did the commercial mixtures.



Interior, Colony Brooder House.

FEED COST OF REARING PULLETS

In order to ascertain the cost of feeding pullets from the time they were hatched until the time they were put into laying quarters (September 22), accurate figures were kept upon the poultry plant of the Experimental Farm, Ottawa, during the season of 1921. One thousand seven hundred and nineteen chicks were taken from the incubator from four different hatches. At the end of eight weeks the cockerels were marketed as broilers. The cost for feed was calculated on the remaining pullets till they were put into their laying houses in September. The chicks averaged about 50 per cent White Leghorns and 25 per cent Barred Rocks and White Wyandottes.

The experiment was divided into three periods as follows:—

First Period.—From the date the chicks were hatched until they were about three weeks old. During this period the chicks were in the pipe brooder house.

Second Period.—From three weeks of age until about eight weeks, when the cockerels were separated and the pullets were put on range. During this period the birds were in colony houses heated by coal-burning brooder stoves.

Third Period.—From the time the pullets went on to the range until they were placed in their laying quarters. During this period the birds were in colony houses without heat.

The birds were fed as noted in the following tables.

The chick mash consisted of equal parts cornmeal, shorts, oat chop, middlings, and beef scrap.

The mash used for pullets on range consisted of equal parts cornmeal, shorts, oat chop, and 20 per cent scrap. The value of the chick mash was 2·7 cents per pound and the mash fed to the pullets cost 2·1 cents per pound.

The cost of feed for each period is based on the total number of chicks alive at the end of the period, no deductions being made for those chicks that died during the period. The amount of feed consumed by those that died during the first three weeks would be very small, and would not materially influence the cost for those that lived.

FEED COST OF REARING PULLETS

First Period, Three Weeks, in Pipe Brooder House

Lot	Number at start	Dead	Alive	Per cent Died	Grain	Cost	Mash	Cost	Milk	Cost	Eggs	Cost	Total Cost
					lbs.	$ cts.	lbs.	$ cts.	gals.	$ cts.		$ cts.	$ cts.
1	442	25	417	5·6	90	3 37	120	3 24	42	2 10	96	3 20	11 91
2	446	31	415	6·9	98	3 67	128	3 45	46	2 30	102	3 40	12 82
3	342	18	324	5·2	70	2 62	93	2 51	33	1 65	84	2 80	9 58
4	617	54	563	8·7	125	4 68	160	4 32	60	3 00	120	4 00	16 00
Totals	1,847	128	1,719	6·8	383	14 34	501	13 52	181	9 05	402	13 40	50 31

Note.—The 1,719 chicks left at the end of the period cost $50.31, or one chick cost 2·9 cents.

Second Period, Six Weeks, in Heated Colony House

Lot	Time	Chicks received		Pullets		Cockerels		No. Died	Per cent	Missing	Grain	Cost	Mash	Cost	Milk	Cost	Total Cost
		No.	Weight	No.	Weight	No.	Weight										
			lbs.		lbs.		lbs.				lbs.	$ cts.	lbs.	$ cts.	gals.	$ cts.	$ cts.
1	From April 15 to June 1.	417	61 25	177 June 1	219	206 June 1	211	5	1·2	29	Chick: 211 Wheat: 110 Scratch: 265	7 91 2 75 7 95	Blatch: 105 Home: 200	4 99 4 50	216	10 80	38 90
2	From April 21 to June 6.	415	51 0	100 June 6	81	155 June 6	107	31	7·4	129	Chick: 205 Wheat: 110 Scratch: 65	7 68 2 75 1 95	Blatch: 50 Home: 140	2 37 3 15	142	7 10	25 00
3	From April 30 to June 6.	324	38 0	84 June 6	57	103 June 6	70	29	8·9	108	Chick: 204 Wheat: 70	7 65 1 75	Home: 165	3 71	95	4 75	17 86
4	From April 30 to June 15.	563	49 5	162	93	166	103	60	10·6	175	Chick: 271 Wheat: 70	10 16 1 75	Home: 235	5 29	117	5 85	23 05
	Totals	1,719	199 75	523	450	630	491	125	7·2	441	1,581	52 30	895	24 01	570	28 50	104 81

Note.—The 1,153 chicks left at the end of the period cost $104.81, or one chick cost 9·1 cents for feed. The 441 chicks reported missing were taken wholesale by rats and cats, before the enemy was put under control. Also in lots 2, 3 and 4 an outbreak of Coccidiosis occurred caused by infected yards. The chicks turned out 45·4 per cent pullets and 54·6 per cent cockerels.

THIRD PERIOD, JUNE 6 TO SEPTEMBER 22, THREE AND ONE-HALF MONTHS. ON RANGE WITH PLENTY OF GREEN FEED AND SHADE

Lot	Date	Pullets received		Mortality		Missing	Pullets returned		Grain	Cost	Mash	Cost	Milk	Cost	Total Cost
		No.	Weight lbs.	No.	%		No.	Weight lbs.	lbs.	$ cts.	lbs.	$ cts.	gals.	$ cts.	$ cts.
1	From June 1 to Sept. 22	177	219	.....	.....	.....	177	580	1,710	42 75	370	7 77	240	12 00	62 52
2—From lots 2 and 3, Home plant.	From June 6 to Sept. 22.	184	138	5	2·7	8	171	535	1,325	33 12	450	9 45	224	11 20	53 77
3—From Lot 4, Home plant.	From June 15 to Sept. 22.	162	93	3	1·8	12	147	462	1,175	29 37	350	7 35	200	10 00	46 72
Totals	.....	523	450	8	1·5	20	495	1,577	4,210	105 24	1,170	24 57	664	33 20	163 01

NOTE.—The 495 pullets taken off range cost $163.01, or one pullet cost 32·9 cents, while on range from June 6 to September 22, 3½ months. The 20 pullets reported missing were taken between June 15 and July 1. No trace of the pullets could be found that would indicate they had been killed by any animal on the plant. It was therefore concluded that the pullets were stolen.

SUMMARY OF THREE PERIODS

Period	Number chicks	Per cent died, including missing	Alive end of period	Gain during period	Cost of feed	Cost per live chick	Cost per pound gain
				lbs.	$	cts.	cts.
1st, 3 weeks	1,847	6·8	1,719	61·25	50 31	·02·9	82·1
2nd, 6 weeks	1,719	32·9	1,153	741·25	104 81	·09·1	14·1
3rd, 3½ months	523 (pullets)	5·3	495	1,127·	163 01	·32·9	14·4

NOTE.—Though there were more cockerels than pullets, for the purpose of convenience in estimating the cost of the pullets, it is assumed that they were evenly divided. With that understanding the pullets cost half of the total feed for the first two periods and all of the feed for the third period—the cockerels being sold at the end of the second period—that is, the 495 pullets cost for feed, a total of $240.57 or 48·6 cents each, or 15·7 cents per pound. The average weight of the pullets was 3·2 pounds.

The cost of coal for brooding is not included, but during the six weeks in heated colony houses, for an average of 1,435 chicks, the coal burned was 1,175 pounds, costing $8.81. Six weeks could be taken as an average time required for brooding chicks and this amount of anthracite coal, chestnut size, might be taken as a guide for similar climates. This means a consumption of coal per chick of eight-tenths of a pound and at the cost here ($15 per ton) of a trifle over half a cent per chick.

FEEDING LAYERS

Experiments were conducted to obtain figures on the comparative value of:

(1) Beef scrap vs. tankage;

(2) Beef scrap vs. milk;

(3) Milk vs. water;

(4) Dry mash vs. wet mash;

(5) Commercial vs. home mixed mash;

(6) Three different methods of feeding the grain ration.

The experiments continued for the five winter months.

Because the birds used in each individual experiment were sisters, and of the same age (though late hatched) it is extremely important that the experiments should not be confused, the one with the other. For instance, the birds fed on beef scrap in experiment No. 1, cannot be compared with those fed on beef scrap in experiment No. 2, for they are not sisters, and consequently any variation may be due to the birds themselves. The same is true of the two pens in which milk was fed.

In each pen there were 15 June-hatched White Leghorns, and the feeding was done in a continuous house giving between 4 and 5 square feet of floor space per bird.

The beef scrap used in the experiments contained 60 per cent protein, and cost 6 cents per pound. The tankage contained 50 per cent protein, costing 3 cents per pound. The milk was buttermilk obtained from the Ottawa City Dairy, costing 50 cents per 100 pounds. The tankage was not very palatable, which accounts for the low quantity consumed in experiment No. 1.

Experiment 1.—Beef Scrap vs. Tankage

Beef scrap and digestible tankage supplied in hoppers to which the birds had free access.

Month	Beef Scrap—Pen 1							Tankage—Pen 2						
	Total eggs laid	Value	Cost of feed—animal feed	Cost of animal feed	Total Cost of feed	Cost per doz. eggs	Profit over cost	Total eggs laid	Value	Cost of feed—animal feed	Cost of animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost
		$ c.	$ c.	c.	$ c.	c.	$ c.		$ c.	$ c.	c.	$ c.	c.	$ c.
December.	202	15 97	3 27	0·42	3 69	21·9	12 28	156	12 35	3 69	.....	3 69	28·3	8 66
January...	227	16 46	3 75	0·48	4 23	22·3	12 23	114	8 26	3 66	9	3 75	39·4	4 51
February..	176	9 53	3 07	0·54	3 61	24·6	5 92	88	4 77	3 06	3	3 09	42·1	1 68
March.....	223	9 85	3 15	0·66	3 81	20·5	6 04	94	4 46	3 78	6	3 84	49·0	0 62
April.....	183	6 86	3 69	0·24	3 93	25·7	2 93	124	4 65	3 02	15	3 17	30·6	1 48
Total....	1,011	58 67	16 93	2·34	19 27	22·8	39 40	576	34 49	17 21	33	17 54	36·5	16 95

Experiment 2.—Beef-scrap vs. Milk.

Beef-scrap in hoppers in pen 3, and in pen 4 all the milk the birds would drink, but no beef-scrap either in hoppers or mash.

Month	Beef Scrap—Pen 3							Milk—Pen 4						
	Total eggs laid	Value	Cost of feed—animal feed	Cost of animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost	Total eggs laid	Value	Cost of feed—animal feed	Cost of animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost
		$ c.	$ c.	c.	$ c.	c.	$ c.		$ c.	$ c.	c.	$ c.	c.	$ c.
December.	183	14 49	3 02	0·54	3 56	23·0	10 93	288	22 80	2 27	0·68	2 95	12·2	19 85
January....	201	14 57	2 53	0·54	3 07	18·3	11 50	279	20 25	2 81	0·68	3 49	15	16 76
February..	147	7 96	2 30	0·48	2 78	22·7	5 18	212	11 48	2 44	0·68	3 12	17·6	8 36
March.....	159	7 55	3 06	0·78	3 84	28·9	3 71	210	9 97	3 11	0·68	3 79	21·6	6 18
April.....	146	5 47	2 71	0·18	2 89	23·7	2 58	184	6 90	2 59	0·68	3 27	20·7	3 63
Total....	836	50 04	13 62	2·52	16 14	23·1	33 09	1,173	71 40	13.22	3·40	16 62	17	54 78

According to these figures, one could afford to pay as high as $1.34 per 100 pounds for the milk, and still produce eggs as cheaply as with beef-scrap at 6 cents per pound.

Experiment 3.—Milk vs. Water.

Milk to drink in pen 5. Water in pen 6. Other feed the same.

Month	Milk—Pen 5							Water—Pen 6						
	Total eggs laid	Value	Cost of feed—animal feed	Cost of animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost	Total eggs laid	Value	Cost of feed—animal feed	Cost of animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost
		$ c.	$ c.	c.	$ c.	c.	$ c.		$ c.	$ c.	c.	$ c.	c.	$ c.
December.	282	22 32	2 32	0·68	3 00	12·7	19 32	273	21 61	3 50	.....	3 50	15·3	18 11
January....	289	20 95	3 18	0·68	3 86	16·0	17 09	254	18 41	3 33	.....	3 33	15·7	15 08
February..	216	14 04	2 98	0·68	3 66	20·4	10 38	209	13 58	3 42	.....	3 42	19·6	10 16
March.....	233	11 07	3 71	0·68	4 39	22·6	5 68	186	10 60	3 14	.....	3 14	20·2	7 46
April.....	234	10 53	3 16	0·68	3 84	19·7	6 69	190	8 55	2 72	.....	2 72	17·1	5 83
Total....	1,254	78 91	15 35	3·40	18 75	17·9	60 16	1,112	72 75	16 11	.....	16 11	17·4	56 64

NOTE.—The milk fed pen produced 142 more eggs, with an increased value of $6.16. The cost of the milk was $3.40 and the increased net revenue was $3.53.

Experiment 4.—Dry mash vs. dry and wet mash.

Dry mash in hoppers to pen 7. Dry mash in hoppers to pen 8, and a moist mash of same material fed twice a day. Other feed similar.

Month	Dry Mash—Pen 7							Dry and Wet Mash—Pen 8						
	Total eggs laid	Value	Cost of feed—animal feed	Cost of animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost	Total eggs laid	Value	Cost of feed—animal feed	Cost of animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost
		$ c.	$ c.	c.	$ c.	c.	$ c.		$ c.	$ c.	c.	$ c.	c.	$ c.
December.	227	17 99	.....	.....	4 07	21·5	13 92	223	17 65	.....	.....	3 36	18·0	14 29
January....	265	19 21	.....	.....	4 05	18·3	15 16	264	19 14	.....	.....	3 45	15·6	15 69
February..	190	10 29	.....	.....	5 72	36·1	4 57	190	10 29	.....	.....	3 27	20·6	7·02
March.....	243	11 54	.....	.....	4 69	23·1	6 85	205	9 73	.....	.....	3 86	22·5	5 87
April.....	214	8 02	.....	.....	3 55	19·9	4 47	202	7 57	.....	.....	3 48	20·6	4 09
Total....	1,139	67 05	.....	.....	22 08	23·2	44 97	1,084	64 38	.....	.....	17 42	19·2	46 96

NOTE.—The wet mash pen, in this case produced less eggs, but gave a slightly increased profit.

Experiment 5.—Commercial vs. Home-mixed mash.

Commercial dry mash fed in hopper to pen 9. Home-mixed mash composed of one part shorts, one part bran, one part cornmeal, one part middlings and 1 part beef scrap, fed in hopper to pen 10.

Month	Commercial Mash—Pen 9							Home Mixed Mash—Pen 10						
	Total eggs laid	Value	Cost of feed—animal feed	Cost of animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost	Total eggs laid	Value	Cost of feed—animal feed	Cost of animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost
		$ c.	$ c.	c.	$ c.	c.	$ c.		$ c.	$ c.	c.	$ c.	c.	$ c.
December.	228	18 05	.....	.....	3 63	19·1	14 42	200	15 83	.....	.....	3 06	18·3	12 77
January....	216	15 66	.....	.....	3 69	20·5	11 97	223	16 16	.....	.....	3 40	18·3	12 76
February..	179	9 69	.....	.....	3 40	22·8	6 29	207	11 21	.....	.....	3 27	18·9	7 94
March.....	250	11 87	.....	.....	4 20	20·1	7 67	252	11 97	.....	.....	3 49	16·6	8 48
April.....	205	7 68	.....	.....	3 14	18·3	4 54	252	9 45	.....	.....	3 06	14·5	6 39
Total....	1,078	62 95	.....	.....	18 06	20·1	44 89	1,134	64 62	.....	.....	16 28	17·2	48 34

NOTE.—The home mixed mash produced 56 more eggs at a decreased cost of nearly 3 cents per dozen.

Experiment 6.—Methods of Feeding the Grain.

In pen 11 the grain was fed in the usual way, thrown in the litter by hand. Pen 12 was fed by means of an automatic feeder, which was operated by the hens themselves. Pen 13 was fed by putting the grain in an open hopper to which the hens had free access.

Month	Hand Fed Grain—Pen 11							Automatic Feeder—Pen 12							Grain in Hopper —Pen 13						
	Total eggs laid	Value	Cost of feed—Animal feed	Cost of Animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost	Total eggs laid	Value	Cost of feed—Animal feed	Cost of Animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost	Total eggs laid	Value	Cost of feed—Animal feed	Cost of Animal feed	Total cost of feed	Cost per doz. eggs	Profit over cost
		$ cts.	$ cts.		$ cts.	cts.			$ cts.	$ cts.			$ cts.			$ cts.	$ cts.		$ cts.	cts.	
December	268	21 21	3 46	0·54	4 00	17·8	17·21	262	20 74	4 06	0·36	4 42	20·2	16·32	255	24 62	3 14	0·12	3 26	15·3	21·36
January	286	20 73	3 22	0·54	3 76	15·7	16·97	304	22 04	3 19	0·36	3 55	14	18·49	293	25 49	3 15	0·24	3 39	13·8	22·10
February	176	9 53	2 98	0·48	3 46	23·6	6·07	236	15 34	3 18	0·36	3 54	18	11·80	224	14 56	3 28	0·42	3 70	19·8	10·86
March	195	9 26	3 74	0·78	4 52	27·8	4·74	284	16 18	3 34	0·36	3 70	15·6	12·48	203	11 57	2 77	0·30	3 07	18·1	8·50
April	150	5 62	3 51	0·24	3 75	30·0	1·87	222	8 32	2 87	0·12	2 99	16·1	5·33	157	7 06	2 51	0·30	2 81	21·4	4·25
Total	1,075	66 35	16 91	2 58	19 49	21·7	46·86	1,308	82 62	16 64	1·56	18 20	16·7	64·42	1,132	83·30	14 85	1·38	16 23	17·2	67·07

SUMMARY

Experiment No.	Pen No.	Total eggs laid	Value	Cost of feed—Animal feed	Cost of Animal feed	Total cost of feed	Cost per dozen eggs	Profit over cost
			$ cts.	$ cts.	c.	$ cts.	c.	$ cts.
1 Beef-scrap	1	1,011	58 67	16 93	2·34	19 27	22·8	39 40
vs. Tankage	2	576	34 49	17 21	0·33	17 54	36·5	16 95
2 Beef-scrap	3	836	50 04	13 62	2·52	16 14	23·1	33 90
vs. Milk.	4	1,173	71 40	13 22	3·40	16 62	17·0	54 78
3 Milk	5	1,254	78 91	15 35	3·40	18 75	17·9	60 16
vs. Water.	6	1,112	72·75	16 11	.....	16 11	17·4	56 64
4 Dry mash	7	1,139	67 05	.....	.....	22 08	23·2	44 97
vs. Dry and wet mash.	8	1,084	64 38	.....	.....	17 42	19·2	46 96
5 Commercial mash	9	1,078	62 95	.....	.....	18 06	20·1	44 89
vs. Home mixed mash	10	1,134	64 62	.....	.....	16 28	17·2	48 34
6 Hand fed grain	11	1,075	66 35	16 91	2·58	19 49	21·6	46 86
vs. Automatic feeder	12	1,038	82 62	16 64	1·56	18 20	16·7	64 42
vs. Grain in hopper	13	1,132	83 30	14 85	1·38	16 23	17·2	67 07

NOTE.—This summary is not for the purpose of comparing one experiment with another, for as stated at the beginning, only the birds in the pens of each individual experiment are comparable.

DUCK FEEDING EXPERIMENTS

Project 48.—Experiments were conducted to find out the cost of rearing and fattening ducks of various breeds. The experiments were carried on in the pipe brooder house until the ducks could do without the heat, after which they were transferred to colony houses having suitable yards.

COST OF REARING MUSCOVY DUCKS

The experiment was started on June 13, and continued till September 5, a period of twelve weeks. Eleven Muscovy ducklings just out of the incubator were used. The mash was composed of a mixture of equal parts bran, cornmeal, oat chop, and 10 per cent beef scrap. This mash was mixed with buttermilk in the ratio of one part mash to one and a quarter parts buttermilk.

FEED AND GAIN PER WEEK FOR MUSCOVY DUCKS FOR TWELVE WEEKS FROM JUNE 13 TO SEPTEMBER 5

Date	No. weeks	No.	Weight	Gain	Gain per duck	Feed	
						Mash	Buttermilk
			lbs. oz.	lbs. oz.	ounces	lbs. oz.	lbs. oz.
June 13		11	1 9				
June 20	1	11	3 2	1 9	2·27	1 0	1 4
June 27	2	11	5 8	2 6	3·45	4 8	5 0
July 4	3	11	8 14	3 6	4·90	7 5	9 2
July 11	4	11	13 0	4 2	6·0	12 7	15 9
July 18	5	11	20 6	7 6	10·7	17 10	22 0
July 25	6	11	27 7	7 1	10·2	25 10	32 0
Aug. 1	7	11	36 5	8 14	12·9	32 3	40 3
Aug. 8	8	11	45 0	8 11	12·6	39 6	49 3
Aug. 15	9	11	52 2	7 2	10·3	37 1	46 4
Aug. 22	10	11	57 0	4 14	7·09	35 3	43 15
Aug. 29	11	11	60 1	3 1	4·45	32 1	40 1
Sept. 5	12	11	62 10	2 9	3·72	33 3	41 7
Totals	12	11	62 10	61 1		277 9	346 0

SUMMARY

The average weight per duck at the end of the feeding was 5·76 pounds.
One pound of gain required 4·5 pounds of the mash.

Value of ducks at 40 cents a pound was		$ 25 05
Cost of ducklings at 25 cents each	$ 2 75	
Cost of feed for period	6 72	
		9 47
Balance over cost of ducklings and feed		$ 15 58
Balance per duck		1 41

COST OF REARING PEKIN DUCKS

The experiment was started on May 6 with 25 Pekin ducklings, and continued until July 15, a period of ten weeks.

The mash used for feeding was the same as that used for the Muscovy ducks, consisting of equal parts bran, cornmeal, oat chop, and 10 per cent beef scrap, mixed with buttermilk at the ratio of one part of mash to one and a quarter parts buttermilk.

The ducks were started in the pipe brooder house, and at the age of four weeks were transferred to a yard.

FEED AND WEIGHT BY MONTHS, OF TWENTY-FIVE PEKIN DUCKS FOR TEN WEEKS, MAY 6 TO JULY 14

Date	No.	Weight	Gain	Average gain	Feed		Cost of feed
					Mash	Milk	
		lbs.	lbs.	lbs.			$ cts.
May 6	25	2					
June 6	22	40·5	38·5	1·75	77	96·25	1 83
July 6	22	101·0	60·5	2·75	201	250·0	4 87
July 14	22	102·0	1·0	0·04	70	87·5	1 78
Totals	22	102·0	100·0	4·54	348	433·75	8 48

SUMMARY

Total gains during the 10 weeks, 100 pounds; Average gain per duck, 4·54 pounds; Pounds of mash for 1 pound gain, 3·48; Pounds of milk for 1 pound gain, 4·33.

Cost of mash and milk for 1 pound gain		8·48 cents.
Value of ducks, 102 pounds at 40 cents per pound		$ 40 80
Cost of feed	$ 8 48	
Cost of ducklings at 25 cents each	5 50	
		13 98
Balance over cost of feed and ducklings		$ 26 82
Balance per duck		1 22

Summary.—Only one pound of gain during the last two weeks. If the ducks had been marketed at the end of the eighth week, the cost of gain per pound for mash and milk would have been 6·7 cents. It would have been more profitable to market at eight weeks of age.

CRATE VS. YARD FATTENING OF DUCKS

The object of the experiment was to compare the fattening of ducks in crates as against yard fattening, and to draw some conclusions as to which would be the more profitable method of finishing green ducks for market.

The ducks were selected from a flock of Pekins eight weeks of age. There were 18 ducks weighing 66 pounds, which were divided into two equal lots of 33 pounds. The test started on July 19 and was completed on August 2, a period of fourteen days. The ducks in the crates were in the basement of the plant feed house, while the yard ducks were in an enclosed run.

The mash used was composed of one part oat chop, two parts cornmeal, one and a half parts bran, and 15 per cent beef scrap, mixed with buttermilk in the ratio of one part mash to one and a quarter parts milk, by weight.

COMPARISON IN DETAIL OF YARD AND CRATE FEEDING OF PEKIN DUCKS FOR MARKET

	Yard Feeding	Crate Feeding
Weight at beginning	33·0 lbs.	33·0 lbs.
Weight at end	46·5 "	39·5 "
Feed consumed	43·0 "	30·0 "
Gains made	13·5 "	6·5 "
One pound gain required	3·18 " mash	4·61 " mash
Buttermilk	53·0 "	37·0 "
Value of feed	$0 90	$0 63
Value of milk	0 26	0 18
Total cost of feed	$1 16	$0 81
Value of gains made	5 40	2 60
Profit made on flock	4 24	1 79
Profit per duck	47c	19·9c

The above figures go to show that ducks can be finished for market in yards more economically than in crates.

The ducks were valued at 40 cents per pound live weight. The fattening mash cost at the rate of 2·1 cents per pound. The ducks in the crates were very nervous for a few days, but during the last ten days they came along better, while the yard ducks continued on steadily, eating their feed regularly each day. They seemed much more contented than the ducks in the crates.

BREEDING

Projects 28 to 31.—Pedigree breeding has now been followed at Ottawa for seven or eight years, and from two to six years at most of the Branch Farms. At the present time all the chicks hatched at Ottawa are pedigreed, as are also the most of those hatched at the older Farms, including Sidney, Agassiz, and Summerland, B.C., Lethbridge, Alta., Indian Head, Sask., Brandon, Man., Lennoxville, Que., and Kentville, N.S.

The other Farms are practising it to a greater or lesser extent, and just as soon as a uniform flock has been established on these, pedigree breeding will be followed throughout the system.

HOUSING

BROODER HOUSE FOR COLONY STOVES

Projects 32 to 38.—The new type of brooder house built at Brandon, Man., this year, promises to be a satisfactory system for brooding chicks by colony stoves. It is a permanent house, 12 feet deep by 56 feet, built on a cement floor foundation and divided into four 12 by 12 pens, having a small feed room at the one end. Two brick chimneys are built so that the pipes from two stoves connect with the one chimney. Such a house has certain advantages over the colony house, in that the work can be done more conveniently, and it is easier to keep the fires even, in cold and windy weather. It has the disadvantage, however, that it cannot be moved to new land giving fresh range, as can the colony house.

The permanent house makes a good place for a nursery, using the colony house for the chicks when they get larger and require more range.

BREEDING HOUSE

The breeding houses built at Kentville, N.S., and at Brandon, Man., which have now been used for two years, are giving satisfaction. This type of house is 12 feet deep, and is divided into pens 6 feet wide, large enough to accommodate a breeding pen. The house built at Kentville has a shed roof, the one at Brandon a double roof. It has been found that the double roof is preferable.

LAYING HOUSE

A laying house 16 feet deep by 100 feet long was built at Agassiz, B.C., and has now been used for two winters. For laying purposes it has proven most satisfactory. Since the building was completed, it has been divided into small pens to accommodate the B.C. Laying Contest, but could with equal satisfaction be used for large pens of layers.

Plans of these two types of houses are not included in Bulletin No. 87, "Poultry House Construction," but blue prints may be had upon application to the Poultry Division, Ottawa, or to the superintendent of the Farms where the houses are used.

LAYING CONTESTS

The Egg Laying Contests conducted by this division are ten in number, one for each province, and the "Canadian" open to the whole Dominion.

These contests started in November, 1918, when one was held at the Prince Edward Island Station, Charlottetown. In November, 1919, the "Canadian" was started at Ottawa, and a provincial contest at Lethbridge, Alta.; Indian Head, Sask.; Brandon, Man.; Cap Rouge, Que.; and Nappan, N.S. In 1920, additional provincial contests were started at Agassiz, B.C.; Ottawa, Ont.; Fredericton, N.B.; and in November, 1921, all were continued with an increased number of entrants.

Through the keen interest taken in these contests, attention has been directed to the possibilities of increased production, and they have demonstrated that this problem is not necessarily a question of breed, for most breeds have good layers within the breed, but is rather a question of strain and breeding. The Records of Performance which these contests provide, also establish a confidence among breeders and buyers that must make for permanent success.

FINAL REPORT OF CONTEST YEAR NOVEMBER 1, 1920, TO OCTOBER 30, 1921

Contest	Number of hens	Number of eggs	Average number eggs laid	Cost per dozen	Production of highest pen
				c.	
Canadian	500	72,578	145·1	19·9	2,255
Prince Edward Island	250	29,933	119·7	28·2	1,649
Nova Scotia	220	28,110	127·7	28·3	1,758
New Brunswick	210	31,948	152·0	27·3	1,864
Quebec	200	20,403	102·0	33·9	1,429
Ontario	240	35,480	147·8	20·1	1,848
Manitoba	230	31,327	138·2	18·1	1,838
Saskatchewan	160	19,593	122·4	21·5	1,586
Alberta	210	17,517	131·0	31·0	1,931
British Columbia	260	47,740	183·6	25·8	2,247

NOTE.—Of the 2480 birds in the contests, 985 laid 150 eggs or over, and, of these, 84 laid 225 or over and qualified for Advanced Record of Performance, and the remaining 901 qualified for Record of Performance with 150 eggs and over.

In the following tables detailed information as to the number of birds, by varieties, in all contests, and in individual contests of 1920-21, with the average yield per bird, is given; also the number of birds in each case that have laid 150 eggs or over.

DETAIL FOR BIRDS IN ALL CONTESTS, 1920-21

Breed	Number of birds	Number laying 150 eggs or over	Total eggs laid	Average production per bird
Barred P. Rocks	970	400	134,012	138·1
S.C.W. Leghorns	650	329	99,737	153·4
White Wyandottes	270	101	38,364	142·0
S.C.R. Island Reds	190	36	21,497	113·1
S.C. Anconas	130	49	17,966	138·1
Buff Orpingtons	50	10	5,827	116·5
R.C.R. Island Reds	30	10	4,206	140·2
S.C. Brown Leghorns	30	15	4,161	138·7
White P. Rocks	30	9	3,503	116·7
R.C. Anconas	20	5	2,173	108·6
White Orpingtons	20	3	2,053	102·6
S.L. Wyandottes	20	1	2,045	102·2
Blue Andalusians	10	7	1,726	172·6
R.I. Whites	10	4	1,575	157·5
R.C. Brown Leghorns	10	3	1,364	136·4
Columbian Wyandottes	10	1	1,151	115·1
S.C. Buff Leghorns	10	1	985	98·5
Campines	10	1	860	86·0
Partridge P. Rocks	10	0	486	48·6
Totals	2,480	985	343,691	138·5

DETAIL FOR BIRDS IN PROVINCIAL CONTESTS, 1920-21

Variety	Number of birds	Number laying 150 eggs or over	Total eggs laid	Average production per bird
Canadian Contest—				
White Leghorns	190	104	29,500	155·2
Barred P. Rocks	190	91	27,762	146·1
White Wyandottes	50	16	6,646	132·7
S. C. R. Island Reds	30	9	3,731	124·3
R. C. R. Island Reds	10	0	1,087	108·7
Anconas	10	7	1,647	164·7
White Orpingtons	10	1	1,038	103·8
Buff Orpingtons	10	1	1,167	116·7

DETAIL OF BIRDS IN PROVINCIAL CONTESTS, 1920-21—*Concluded*

Variety	Number of birds	Number laying 150 eggs or over	Total eggs laid	Average production per bird
Prince Edward Island Contest—				
Barred P. Rocks	130	21	14,957	115·0
White Leghorns	90	31	11,571	128·5
White Wyandottes	30	4	3,405	113·5
Nova Scotia Contest—				
Barred P. Rocks	130	54	18,316	140·8
White Leghorns	30	5	3,183	106·1
White Wyandottes	20	2	2,036	101·8
Rhode Island Reds	20	6	2,609	130·4
White Rocks	10	0	535	53·5
Brown Leghorns	10	4	1,431	143·1
New Brunswick Contest—				
Barred P. Rocks	160	97	23,503	146·8
White Wyandottes	30	4	4,695	156·5
White Leghorns	10	4	1,382	138·2
White Rocks	10	2	1,227	122·7
Buff Orpingtons	10	2	1,141	114·1
Ontario Contest—				
White Leghorns	100	54	15,843	158·4
Barred P. Rocks	70	40	11,053	157·9
White Wyandottes	20	7	2,285	114·2
Anconas	20	8	2,799	139·9
Col. Wyandottes	10	1	1,151	115·1
R. C. Brown Leghorns	10	3	1,364	136·4
S. C. Buff Leghorns	10	1	985	98·5
Quebec Contest—				
Barred P. Rocks	120	13	12,574	104·7
Rhode Islands Reds	80	6	7,829	97·8
Manitoba Contest—				
S. C. White Leghorns	50	28	7,583	151·6
Barred P. Rocks	40	20	6,090	152·2
White Wyandottes	40	27	6,786	169·6
Anconas	40	15	5,459	136·4
Rhode Island Reds	10	0	1,223	122·3
S. C. Brown Leghorns	10	3	1,354	135·4
S. L. Wyandottes	10	1	1,065	106·5
Campines	10	1	860	86·0
Buff Orpingtons	10	1	847	84·7
Patridge Rocks	10	0	486	48·6
Saskatchewan Contest—				
S. C. White Leghorns	40	7	5,096	127·4
White Wyandottes	30	11	3,889	129·6
Rhode Island Reds	20	3	2,055	102·7
Barred P. Rocks	20	6	2,575	128·7
S. C. Anconas	20	6	2,552	127·6
R. C. Anconas	10	3	1,129	112,9
Brown Leghorns	10	2	1,272	127·2
White Orpingtons	10	2	1,015	101·5
Alberta Contest—				
Barred P. Rocks	80	39	11,977	149·7
S. C. Anconas	40	13	5,509	137·7
S. C. White Leghorns	20	1	2,006	100·3
S. C. Rhode Island Reds	20	6	2,386	119·3
R. C. Rhode Island Reds	10	3	1,305	130·5
R. C. Anconas	10	2	1,044	104·4
Buff Orpingtons	10	2	1,224	122·4
S. L. Wyandottes (hens)	10	0	980	98·0
White Wyandottes	10	0	1,086	108·6
British Columbia Contest—				
White Leghorns	120	96	23,573	196·4
White Wyandottes	40	30	7,536	188·4
Barred P. Rocks	30	19	5,205	173·5
Brown Leghorns	10	6	1,458	145·8
Blue Andalusians	10	7	1,726	172·6
White P. Rocks	10	7	1,741	174·1
Rhode Island Whites	10	4	1,575	157·5
R. C. Rhode Il. Reds	10	10	1,814	181·4
S. C. Rhode Il. Reds	10	6	1,664	166·4
Buff Orpingtons	10	4	1,448	144·8

DISEASE INVESTIGATIONS

Projects 39 to 43.—Investigations in poultry diseases have been conducted by Dr. A. B. Wickware, of the Health of Animals Branch, Animal Pathologist in charge of poultry diseases, who has devoted considerable time to investigating various troubles among brooder chicks and has paid particular attention to roup and kindred ailments among adult birds. A brief report of his work is herewith given.

EXPERIMENTS BEARING UPON CHICKEN MORTALITY

A series of experiments were outlined with a view to determining some of the causes underlying the mortality of chicks.

These studies were commenced on March 3, one series being a study of the influences affecting fertility, and another, a study of the factors responsible for dead-in-the-shell chicks and the excessive death rate during the first ten days of life.

The experiments are still under way, and it is too early to draw any final conclusions from the results already obtained.

EXPERIMENTS REGARDING ROUP AND CHICKEN-POX

From the standpoint of the practical poultryman, no disorder is of greater importance than is the condition commonly known as roup.

"Roup" is a term used to designate various forms of a disease affecting different parts of the head, including the mouth and throat, and in any one of these forms a distinct menace exists for the members of the flock.

Various remedies and methods for the cure and prevention of roup have been tried in the Poultry Division, the chief aim being to find some drug capable of arresting the disease at its commencement.

For the form of roup affecting the eye, it has been found that if taken at the start, before definite swellings appear, the administration of a teaspoonful of Epsom salts to each fowl, and repeated bathing of the eyes with a solution of boracic acid—one-half teaspoonful dissolved in a teacupful of warm water—will usually effect a cure. Frequently birds in a pen will develop a peculiar rattle in the throat the condition appearing quite suddenly. It has been found that when fowls are thus affected their removal to warm quarters with artificial heat and the administration of a dose of Epsom salts will cause a complete recovery in from twelve to twenty-four hours.

In the forms of roup characterized by the development of white patches within the mouth cavity and the formation of cankerous growths at the entrance to the windpipe, little can be done except to remove the material daily, after which the raw surfaces of the affected parts are cauterized by using a caustic pencil or by the application of tincture of iodine. When the canker extends downward into the windpipe nothing can be done, death usually following from suffocation.

Occasionally a severe form of broncho-pneumonia develops amongst birds. This usually terminates fatally. In such cases the birds show great difficulty in breathing and the comb and wattles appear dark red in colour from the poor circulation. In our experiments it has been found that the immediate removal of such birds to warm quarters, the administration of a dose of Epsom salts to each fowl, great care being taken to prevent strangling, and the giving of six drops of the following remedy (which is best administered in capsule form) three times daily, will usually save many valuable birds:—

Ammonium chloride, 2 drachms.
Potassium iodide, 3 drachms.
Wine of ipecac, 2 drachms.
Spirits of chloroform, 4 drachms.
Syrup simplex, 1 ounce.
Aqua pura (quantum suff.), 6 ounces.

In the United States and latterly in Canada, extensive experiments have been carried on with vaccines for the prevention of roup and chicken-pox, and at the present time studies are under way in this Division to determine the efficacy of various products of our own manufacture. The preliminary experiments along the lines of vaccination have given us very good results, and it is to be hoped that sufficient progress will be made to justify the manufacture of a suitable product for general use. The experimental results obtained will of necessity have to be supplemented by the vaccination of affected flocks during the coming fall and winter months, as some investigators are unstinted in their praise of the virtue of vaccines, while others are equally fervent in their condemnation of the practice.

During the past year a partial survey has been made of the Canadian provinces to determine the nature of the parasites affecting poultry, and to estimate if possible, the losses occasioned by the presence of tapeworms and round worms in fowls. Certain species of worms have been found to be very prevalent and to cause great losses during the late fall months.

In our investigations it has been ascertained that the proper rotation of runs and the adoption of strict precautions regarding the cleanliness of the drinking fountains and feeding troughs, will do much to reduce the danger of infection with worms and parasites of various kinds. Where the runs are small, a coating of the surface with air-slaked lime which is subsequently turned under, will reduce the danger from worms by destroying the eggs and young worms which are present in the soil.

In addition to the foregoing, investigations have been conducted for the discovery of remedies for such conditions as prolapsus, vent gleet, etc., and special reports on our findings are published from time to time through various mediums.

EXTENSION WORK

Under "Extension" are grouped such activities of the Poultry Division as exhibits, lectures, survey and inspection work in the province of Quebec and the Maritime Provinces, Egg and Poultry Account service, co-operative work with the Division of Illustration Stations, and the issuing of press articles, bulletins, circulars, etc.

EXTENSION WORK IN THE PROVINCE OF QUEBEC

During this year the position of the assistant charged with this work became vacant, and Mr. W. W. Lee was appointed in June, since which time the work has materially developed. At the present time the work includes (1) Survey work in the province of Quebec; (2) the French Monthly Report Form Service, and (3) co-operative work with other agencies in Quebec province.

SURVEY WORK

The survey work initiated in the province of Quebec several years ago, has been continued, and serves a threefold purpose: (*a*) It constitutes a source of accurate information concerning local conditions and needs, upon which future experimental work can be based; (*b*) it provides a medium for the dissemination of the results of the experimental and research work of the division, and incidentally serves as a point of contact between the farmer and the branch farm for his district; and (*c*) the farmers are given the opportunity of getting personal and first-hand information regarding their poultry work.

This work is being carried on in the three counties of Rimouski, Montcalm, and Pontiac, where over sixty farmers receive periodical visits. The district representatives of these counties have repeatedly expressed their sense of the value of this work.

Special emphasis has been placed upon selection, breeding principles and early hatching, for a preliminary study of the territory indicated that these were the most

important problems in those particular districts. As a direct result of this work, this spring 65 per cent of the farmers visited had chicks in April, a condition heretofore practically unknown in these localities.

In addition to the three districts mentioned, upon special request, and where the circumstances warranted the time involved in making them, visits have been made to other poultry breeders. Care has been taken however, not to duplicate or overlap any work already undertaken by the Provincial Poultry Department.

(2) *Monthly Report Forms.*—This type of survey work, differs from that previously mentioned, by reason of the fact that the information is obtained from monthly report forms and the advice is given by correspondence rather than by personal visits. It also has been greatly extended, for whereas at the beginning of the year, only eleven such reports were being sent in by French Canadian farmers, fifty-five are now being received, and it has been necessary to refuse an equal number, owing to the pressure of other work.

Co-operative Work with Other Agencies.—During the year, numerous requests have been made to the division for co-operation with other agencies, including the Quebec Provincial and several local poultry associations, the agricultural colleges, the "Chantecler" and "Rabbit Breeders" associations, and the district representatives in the province of Quebec. Whenever possible these requests have been complied with, and as a result the division was represented at the poultry shows at Quebec, Three Rivers, St. Jerome, Ste. Scholastique, and Maria.

At the annual meeting of the Provincial Poultry Association, a member of the staff of the division (as a result of a thorough study of the field) presented a five years' co-operative programme for poultry work in Quebec, which was unanimously accepted and is now being put into effect. This programme co-ordinates, in a definite manner, the work of the various agencies concerned with the advancement and improvement of poultry breeding in the province, and will undoubtedly result in an all-round increased efficiency.

DEMONSTRATIONS AT WINTER POULTRY SHOWS

An attractive exhibit consisting of models of poultry appliances, feeds, transparencies and appropriate legends prepared by the Division of Extension and Publicity, was erected at several points in northern Ontario.

Parts of this section are rapidly developing modern poultry activities owing to the proximity of the mining population affording an excellent market for the produce.

The keen interest taken by the public in the exhibit and the desire for information, proved its success and worth, and we have been unable to comply with the many demands for exhibits of this nature, owing to the numbers in which they have been received.

FARM, EGG AND POULTRY ACCOUNT WORK

It is truer with regard to poultry than with most other branches of the farm work, that in too many cases the owner does not know whether his flock has been an expense or a profit. It is in the possibility of bringing the merit of his poultry flock to his attention, and in showing the benefit derived from system and method in his operations, that the Farm, Egg and Poultry Account work has its real worth.

The figures gleaned from the reports sent in in 1920-21 point to the fact that the poultry flock, even in times of depression, continues to show a fair profit.

Unfortunately the high price of feeds at the beginning of the year perturbed the farmers to some extent and resulted in a curtailment of hatching operations, as the reports show a smaller average number of hens per farm, though the rapid decrease in the price of feeds when the season advanced proved the anxiety was unfounded.

AVERAGE NUMBER OF HENS PER FARM, 1920-21, IN EACH ZONE AND IN THE DOMINION

British Columbia	105.3
Quebec	50.0
Prairie Provinces	40.3
Maritime Provinces	39.4
Ontario	35.7
Dominion	54.1

In comparison, no doubt the average in British Columbia is swelled by the large number of exclusive poultry plants, and it should be also mentioned that the small average for Ontario is influenced by the inclusion of a number of small back yard plants in operation in and around the larger cities, more numerous in that province.

COST OF POULTRY FEEDS

That there has been a great decline in the cost of the principal poultry grains during the year is evident.

In the year 1919-20, according to the farmers' reports, the average cost to feed a hen was the highest on record, $4.58. Owing to the decline in prices of feeds, in 1920-21 this was reduced to $2.59 and though there was a very substantial decrease in the average price received for eggs, there was still left to the careful poultryman a fair margin of profit over the cost of feed. This profit varied according to the productiveness of the flock, and the care exercised in purchase and use of feeds, and marketing the poultry products.

TABLE BY ZONES, SHOWING AVERAGE COST OF FEED PER ONE HUNDRED POUNDS, PER MONTH AND YEAR.

—	November	December	January	February	March	April	May	June	July	August	September	October	Average
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Quebec	3 45	3 66	2 79	2 87	2 88	3 27	3 08	2 47	3 09	2 55	2 53	2 30	2 91
Maritime Provinces	3 65	3 45	3 64	3 49	3 38	3 28	3 73	2 94	2 93	2 53	2 60	2 48	3 17
Ontario	3 64	3 65	3 21	3 04	2 95	3 13	2 66	3 09	3 01	2 91	3 18	2 80	3 10
Prairie Provinces	3 34	2 92	2 45	2 67	2 17	1 85	2 79	2 21	1 93	2 12	1 85	2 72	2 42
British Columbia	3 89	3 40	2 13	3 02	2 96	2 97	3 81	2 73	2 78	2 68	2 40	2 34	2 82
Dominion Average	3 59	3 41	2 84	3 01	2 87	2 90	3 01	2 63	2 74	2 55	2 51	2 52	2 88

The highest price received for eggs in the Dominion was reported in the middle of December, 1920, from Smithers, B.C., when the maximum of $1.30 per dozen was reached. Several farmers in Quebec received $1.25 and the lowest maximum price of $1 per dozen was paid in the Prairie Provinces in the season of scarcity.

The lowest market price recorded for some years was received in certain sections of the Prairie Provinces where the minimum of 15 cents per dozen was paid for a short period in the season of glut, but as this is also the season of cheap production, owing to the advantage of unlimited range in this zone, it is quite probable that even at this low figure, eggs were produced at a profit, and it is certain, that at the average price of 45 cents for the year, in those same sections, there was the opportunity for a fair profit even on only moderate production, as the cost of feed was relatively low. The following figures obtained from poultrymen keeping records, offer possibly, some index as to average prices.

MAXIMUM, MINIMUM AND AVERAGE PRICES RECEIVED FOR EGGS IN EACH AREA AND IN THE DOMINION

	Monthly Averages														
	November	December	January	February	March	April	May	June	July	August	September	October	Maximum for year	Minimum for year	Average for year
Quebec	91	98	93	76	48	40	41	46	48	54	55	65	1·25	35	63
Maritime Provinces	80	88	81	65	54	32	32	32	46	41	42	49	1·10	18	54
Ontario	80	86	80	60	42	33	31	34	37	42	46	53	1·10	25	52
Prairie Provinces	69	78	73	58	37	37	23	30	30	34	36	43	1·00	15	45
British Columbia	77	72	68	51	38	32	33	34	39	44	46	56	1·30	20	50
Dominion	79	84	79	62	44	33	32	35	40	43	45	54	1·30	15	53

At the average price received for eggs throughout the Dominion, it would take only 4·9 dozen eggs to pay for feed for one hen for one year and a very moderate yield would show a profit that would increase if a substantial part of the egg yield had been produced in the season of high prices.

With this direct evidence gathered from the farmers' own reports, it seems that one may point with confidence to the poultry flock as being surely one of the most profitable branches of the farm work.

LECTURES

The various members of the staff have been frequently called upon to address gatherings, and when the work of the division permitted, such opportunities were accepted.

This year the Dominion poultry husbandman attended the annual meeting of the Instructors and Investigators in Poultry Husbandry held in New Brunswick, N.J., and Mr. Robertson attended the annual meeting of the American Poultry Association at Seattle, Washington. As a member representing Canada on the Committee for the Revision of the Standard of Perfection, he was also in attendance at a session of that committee held in Chicago in March.

Since the opening of the Agricultural School at Kempville, Ont., the staff of the poultry division has been responsible for the short course and the general course in poultry keeping, given to the students there. This year the lectures were delivered by Mr. A. G. Taylor, assisted by Mr. W. T. Scott, while Mr. Morgan and Mr. Des-Forges gave demonstrations. The examination papers were prepared by the two former.

INSPECTION

Periodical inspection of the eastern laying contests, and the poultry plants upon the maritime Branch Farms, is attended by Mr. J. G. Morgan. He has conducted a limited amount of survey work from the branch farms as centres and inspected the flocks of all applicants to the laying contests at Fredericton, Nappan and Charlottetown. Being an expert demonstrator, his services have been in frequent demand for meetings, fairs, etc. He also assisted at the short course given by the Agricultural College, Truro, N.S.

All pens for which application of entry is made to the Canadian and the Ontario laying contests, are inspected by Mr. Taylor and accepted or rejected according to his inspection. Entries for the Quebec contest are inspected by Mr. Lee. Entries for other laying contests are inspected by the poultryman in charge of the contest.