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EGG PRODUCTION IN FOLDS

A report on the results obtained
on the University Farm with special
reference to the year September 1st
1950 to August 31st 1951

by

R. B. SHAW,
Head of Poultry Husbandry Section
and
E. W. NIGHTALL, N.D.P., Lecturer



University of Nottingham School of Agriculture
Sutton Bonington
Loughborough.

Price - 1s. 6d.

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EGG PRODUCTION IN FOLDS.

GENERAL.

Folds were first used on the University Farm in 1949-50. As the full complement of thirty eight folds were not occupied until the autumn of 1950, it was thought inadvisable to publish the results of the first year.

The fold selected for the project was the "McArthur", a strong but perhaps rather heavy outfit. Each unit holds twenty five birds and is moved lengthwise each day with the aid of a carriage mounted on pneumatic tyred wheels. It was soon evident that if undue strain on the attendant is to be avoided, a fold of this type should be used on a flat well drained field devoid of large grass tufts. This requirement may not arise until a spell of wet weather arrives when the weight of the fold is increased by several pounds and has to be moved over wet grass and soil.

Rotation leys are not very suitable unless the sward is dense as the birds soon punish the limited amount of grass and get down to the soil too readily. These conditions contribute to the soiling of the eggs. New leys on lightish land do not allow one to leave the folds unmoved on Sundays. Even one days occupation tends to leave a rather bare patch and a dirty one in wet weather. Sunday moving ensures even manuring as the field is used later for crop experiments. The herbage in this particular year consisted of Cocksfoot S 37 and White Clover S 100, an excellent mixture for cattle but not ideally suitable for folding poultry. On some farms the same ground is traversed two to four times per year, but so far we have not used any piece of land more than once in the year. With more frequent use there should be a sufficient time lapse between periods of use to allow the ground to freshen up and grass to grow.

The full complement of birds is 950 and this appears to be the maximum number which can be managed satisfactorily by one man under our conditions. The man in charge has to fetch the water, see to the grinding of the grain and mixing of the dry mash at the farm buildings which may be some considerable distance from the fold field. The water has to be carted every two or three days and the grinding and mixing of the foods done thrice per fortnight. There is the alternative system of one man managing 70 to 75 folds but having no responsibilities away from the unit such as grinding and mixing foods.

Home grown foods are used augmented by the purchase of barley and fish meal. The folds are moved first thing in the morning followed by the making of moist mash, using hot water in very cold weather. The birds are given the moist mash about 9 to 9.30 a.m. and the amount is regulated according to the age and condition of the birds, but on the average the mash is available for about two hours.

Water vessels are replenished after the mash has been fed. This gives the poultryman an opportunity to check up on the mash consumption without involving a special journey. Any required adjustment of amounts can then be made at subsequent feeds.

Usually the remainder of the morning is devoted to egg cleaning. Far too much time has to be employed on this task. A reduction could possibly be made by using a washing machine, but as there is a marked difference of opinion on the efficacy of these washers and as egg washing is not favoured officially a machine has not been utilised so far. Generally $1\frac{1}{2}$ to $2\frac{1}{2}$ hours daily is required to complete this operation combined with packing, as ninety per cent of the eggs require cleaning most of the year, with a reduction to thirty five per cent under the best conditions. The main contributory causes of dirty eggs are :

- (1) The birds carrying wet or dirt on their feet to the nests.
- (2) Certain birds make a habit of using and soiling the nests each night.
- (3) In wet weather the hands of the attendant become soiled in handling the padlocks and opening the nests, thus some of the eggs become hand soiled.

Wet weather is not the only factor in egg soiling. In the summer and autumn heavy dew also supplies the wet conditions which soil the eggs indirectly.

In the absence of a means of preventing eggs becoming dirty it would be a great benefit if a quick and efficient method of cleaning soiled or stained eggs was introduced to the poultry industry. It must be a process which does not spoil the appearance of the eggs or their keeping qualities.

Cleaning can be executed at a high standard however, as on several occasions not a single fold egg has been graded as dirty or stained in consignments averaging 209 dozen sent to an egg packing station. At other times the deductions have been mostly at the rate of 1 to 2% with the highest deduction at 4.4% (see table 3 for average).

Various methods of cleaning eggs have been tried. More recently preference has been given to the use of a damp cloth and bicarbonate of soda over the use of wire wool. About 20% of the eggs have to be soaked in warm water. After five to ten minutes the eggs are removed, those badly stained being scrubbed with wire wool and all eggs rubbed with a damp cloth followed by a dry cloth.

Straw is used in the nests. Sawdust was given a trial with disappointing results. A great deal of attention must be given to the nests and every day there are a few to be cleaned.

The afternoon is devoted to the various jobs which have to be done regularly such as nest cleaning, taking round shell and grit, repairs to equipment, water carting, food mixing in the farm buildings, followed by collecting the eggs and feeding.

MODIFICATIONS IN DESIGN OF FOLD.

The makers of the folds readily agreed to certain modifications which had been found desirable in earlier trials. Extra food troughs were provided ; the door above the troughs was made to slide instead of being hinged and a handle fixed to each door. An extra door was made on the top of the fold near the area which could be shut off to make the birds more readily available for handling. This obviated the need to walk to the end of the fold to replace a bird in the fold after handling. Half the folds had their nest boxes on the right side and half on the left side so that on placing two such folds side by side two sets of nests were readily accessible for cleaning or egg collecting in alternate gangways, instead of the necessity of visiting each gangway as was the case previously. The shell and grit box was made much larger and placed midway along the fold as it had been found that when placed at the end of the pen which has to be raised by the attendant, the latter had too heavy a load to move. An alteration was also made to the broody coop. The centre partition was taken away so that the slats of the coop could be removed easily and quickly for scrubbing.

The hinged arm of the moving carriage was raised two inches by fitting longer sides. This had the effect of increasing the clearance of the fold when moving and enabling the fold to avoid tufty grass and slightly rougher ground. If this gives insufficient clearance a wedge can be placed between the top of moving arm and the handles of the folds. This will further increase the height of the fold when negotiating a rough piece of ground.

WATER CARTING.

Five thirty-gallon round corrugated water tanks were conveniently placed near the folds and water transferred in buckets from the tanks to the water container hanging in each fold. The water for the tanks was got from a tap on one side of the field and moved across the field in old milk churns placed on the dray. The water for the mash mixing was contained in a hundred gallon tank which stood on a specially made low set trolley fitted with pneumatic tyres. It was the intention that this tank would be taken round to water each fold but the pony decided otherwise. To some extent the equipment for watering has had to be duplicated.

FEEDING.

Moist mash was fed in the morning and grain in the late afternoon. No dry mash or pellets were used.

It is not always possible to use home grown foods in the most favoured proportion. This is governed by two factors, namely the quantity and quality of each grain. In our case insufficient wheat was available and there was a period when the oats were not suitable

for poultry. After a wet harvest one has to be specially careful that no mouldy wheat finds its way to the poultry.

During the period under review the following layers mash was fed :

INGREDIENTS	Layers	Growers
	cwts	cwts
Ground Wheat (coarse)	1½	1
Ground Barley (fine)	2½	1
Ground Oats (fine)	2½	1
Grass Meal	¾	¾
Fish Meal	¾	¾
Steamed Bone Flour	18 lbs	3 lbs
Limestone Flour	22 lbs	7 lbs
Manganesed Salt	4 lbs	2 lbs
Cod Liver Oil	4 pints	1½ pints
	8 cwts 44 lbs + Cod liver oil	3 cwts 68 lbs + Cod liver oil

The amount of layers mash shown was the maximum quantity for the mixing machine.

The Growers' mash was used in the summer of 1950 to most of the birds as with additional folds arriving on the farm many of the pullets were drafted into the folds at the age of 12 to 16 weeks. Cod Liver oil was omitted from the layers mash during the summer of 1951.

The manganesed salt is made up of ½ lb. hydrated manganese sulphate mixed into 10 lbs. common salt. The cod liver oil used contained 800 units vitamin A and 200 units vitamin D per gramme.

GRAIN (cwts)				
LAYERS				GROWERS
	Sept. 1st to Feb. 16th	Feb. 17th to May 10th	May 11th to Aug. 31st	
Barley	1	1	1	Barley 1
Wheat	1	1	1	Wheat 1
Oats	—	½	1	

The grain mixture had to be altered on the dates shown in accordance with supplies available. The grain was fed on the ground. Shell and grit were available at all times.

To obtain information about the condition of the birds a random sample of birds was handled occasionally and any fold containing a majority of birds either too fat or too thin was earmarked for special treatment. It was found that the condition of the birds

could be controlled to a high degree according to the length of time the moist mash was in front of the birds daily. During their first four months of production pullets require heavy feeding which is provided by having moist mash in front of them for two to three hours. Later the birds tend to become over-fat unless the feeding time is reduced by at least fifty per cent. These remarks apply to heavy breeds much more than to light or light x heavy breeds.

The moist mash was made in a special long metal trough which took half the amount of mash required i.e. two lots of mash had to be made each morning. A large shovel was used for turning the mash over. The mash was taken round in a barrow.

The birds seemed to prefer a coarse mash but this is not thought to be the most economical type of mash to feed. More recently a very suitable looking mash has been made by employing a coarse grinding of wheat, a medium grinding of barley and a fine grinding of oats.

One wooden trough occupies the entire width of the fold at the end and two shorter troughs run from the end along each side so that the mash can be placed in all three troughs with one movement or sweep of the bucket. A little does get on to the ground but the birds seem to make a special point of eating this and no mash is visible on the ground later in the day or when the folds are moved next morning.

Only in one fold was there very evident feather pecking. It may have been coincidence but this occurred after these particular birds had been deprived of shell and grit for several days. Several visitors expressed surprise that we were not seriously troubled with feather eating.

BREEDS AND CROSSES.

The pullets were home bred and reared. They were passed into the folds in batches from April to November and each breed or cross was represented as follows :—

<i>Breed or Cross</i>	<i>Number</i>
Light Sussex	142
Rhode Island Red	188
R.I. Red x L. Sussex	348
Brown Leghorn x L. Sussex	148
Brown Leghorn x R.I. Red	124
	<hr/>
	950
	<hr/>

CULLING.

In order to provide accommodation for the rest of the 1951 hatched pullets the remainder of the yearling hens were sold in September and October 1950. In November a culling of the January and February hatched pullets was undertaken and 23 birds withdrawn for table purposes. During the next three months only 12 birds were

removed and except for the month of April the rate of culling was substantially increased during the remaining months. The depletion of stock has to be more rigorous during the summer to provide accommodation for the young pullets.

(For number of birds disposed of each month see table 4).

Culling is much facilitated when a grid is available with which to confine the birds to a section of the pen. As the grids are interchangeable there is no need to have a grid for each fold. If someone gets into the fenced off section and hands the birds out to the culler the work can be done expeditiously.

Whenever the occupants of any particular fold are failing in egg production without apparent reason, the birds should be examined with a view to culling them. There is however, no sense in culling severely unless there is a special reason for doing so. Sometimes birds are out of lay for a short period only. All points in the birds favour should be thought of before making a decision to cull.

MOVING OF FOLDS.

The type of fold in use measures 18 feet by 5 feet including house. When the fold is moved forward the house section is placed on part of the run just vacated by the birds. It is therefore moved forward the length of the run only. This economises in land which is helpful when the field is rather small. In this investigation 38 folds covered 18.4 acres in 52 weeks, but allowance must be made for stretches along the edge of the field which are required for turning the folds round but which are not used by the birds. The folds are moved forward in a double line. This makes the unit more compact and allows the greater part of the field to be fenced off for larger stock.

38 folds cover 0.35 acres in 1 week.

38 folds cover 1.0 acres in 2.82 weeks.

1 fold covers 1.0 acres in 107.30 weeks.

BROODINESS.

The management of broodies tends to delay the stockman unduly when doing his rounds of egg collecting, feeding and watering. The broody coops attached to each fold are used so that one can quickly get the birds from the fold to the coop and later return them to their original folds. In this way there is no mixing up of birds and less fighting and one is aware of the exact number of birds in each fold.

Where a high proportion of broodies has to be treated the method which best simplifies the management is to place the broodies in a fold (without nests) earmarked for this purpose and shut the broodies in the run during the daytime. This system was not used here.

Although the Rhode Island Red x Light Sussex is deservedly popular, if it is desired to reduce broodiness to a minimum, then there is a lot to be said for a Light Heavy cross such as White, Black or Brown Leghorn x Rhode Island Red or a Brown or White Leghorn x Light Sussex. There is also an advantage in the smaller appetites of

these birds. It is said that Light x heavy birds are more prone to feather eating but so far this has not been our experience.

MORTALITY

Including seven yearlings that died during September and October, 1950 there were ninety nine casualties during the year, twenty two of which were birds trapped under the moving folds. A cross bar in some of the folds was mainly responsible for trapping the birds and these bars have since been removed without apparent detriment to the strength or rigidity of the folds. Eleven of these birds had to be destroyed but the remainder were suitable for table purposes.

Thirteen of the seventy seven birds that died under more normal circumstances were not examined. Of the sixty four examined twenty three had died from egg peritonitis in one form or another, six from Lymphomatosis and the remainder, except for six with no lesions, from one of the following:—Haemorrhage, multiple tumours, pneumonia, septicaemia, visceral gout, rupture of liver, malignant growths in intestines, impaction of crop or gizzard, fatty infiltration of heart and liver.

Apart from these casualties the birds looked very healthy throughout the year and seemed to thrive under fold conditions.

MORTALITY RATE
Based on the number of birds in stock on the first day of each month the rate of mortality was 10.22%. If accidental deaths are ignored the mortality rate was 8.94%.

TABLE 1.
EGG PRODUCTION FROM SEPTEMBER 1ST, 1950 TO AUGUST 31ST, 1951.

FIGURES RELATING TO ALL THE BIRDS IN THE FOLDS				AVERAGE PRODUCTION PER BIRD			
Month	Aver. No. of birds	No. of eggs produced	Aver. prod. per bird	Hatched Jan.-Apr. 1950	Hatched Aug. 1949	Hatched Jan-Apr. 1949	Hatched Jan-Feb. 1951
				Group 3	Group 2	Group 1	
1950							
Sept.	856.53	11,897	13.89	13.75	15.2	12.2	
Oct.	851.77	11,934	14.01	14.19	12.78	10.98	
Nov.	923.03	10,069	10.91	10.91			
Dec.	914.46	12,247	13.39	13.39			
1951							
Jan.	915.00	12,492	13.65	13.65			
Feb.	896.40	12,874	14.36	14.36			
Mar.	857.00	17,020	19.86	19.86			
April	847.70	17,425	20.55	20.55			
May	801.08	15,375	19.19	19.19			
June	756.07	12,533	16.57	16.86			8.54
July	776.50	11,086	14.28	15.18			10.24
Aug.	805.10	11,349	14.09	14.95			13.09
TOTAL		156,301	184.75	186.84			

Group 3 only was in the folds for the full twelve months but the number of birds was much reduced towards the end of the period. Table 1 indicates that the average production per bird in this group was 186.84 and during the four winter months October to January the average number of eggs laid per bird was 52.14. This might well have been improved upon as it was found in the autumn that the birds were being underfed, hence the low production in November.

A high proportion of the birds in group 3 were hatched in January and February and some autumn moulting did occur.

The average production for all the birds in the folds during the twelve months was 184.75. The average daily production rate was 50.38%. During the first two months a considerable number of folds still contained yearling hens and during the final three months more and more young pullets were moved in.

Early in the summer two or three folds were emptied and cleaned at one time but later the number was increased. This policy of emptying and restocking the folds gradually allowed the total number of laying birds occupying the folds to be maintained at a fairly high figure. It also permitted the fold stockman to deal with most of the cleaning himself.

In case it should be thought that the figures shown in the table are an indication of maximum results to be expected from fold birds, here are the averages of a group of birds housed in the folds during the previous year. This group is comparable except that the year starts in October.

TABLE 2.

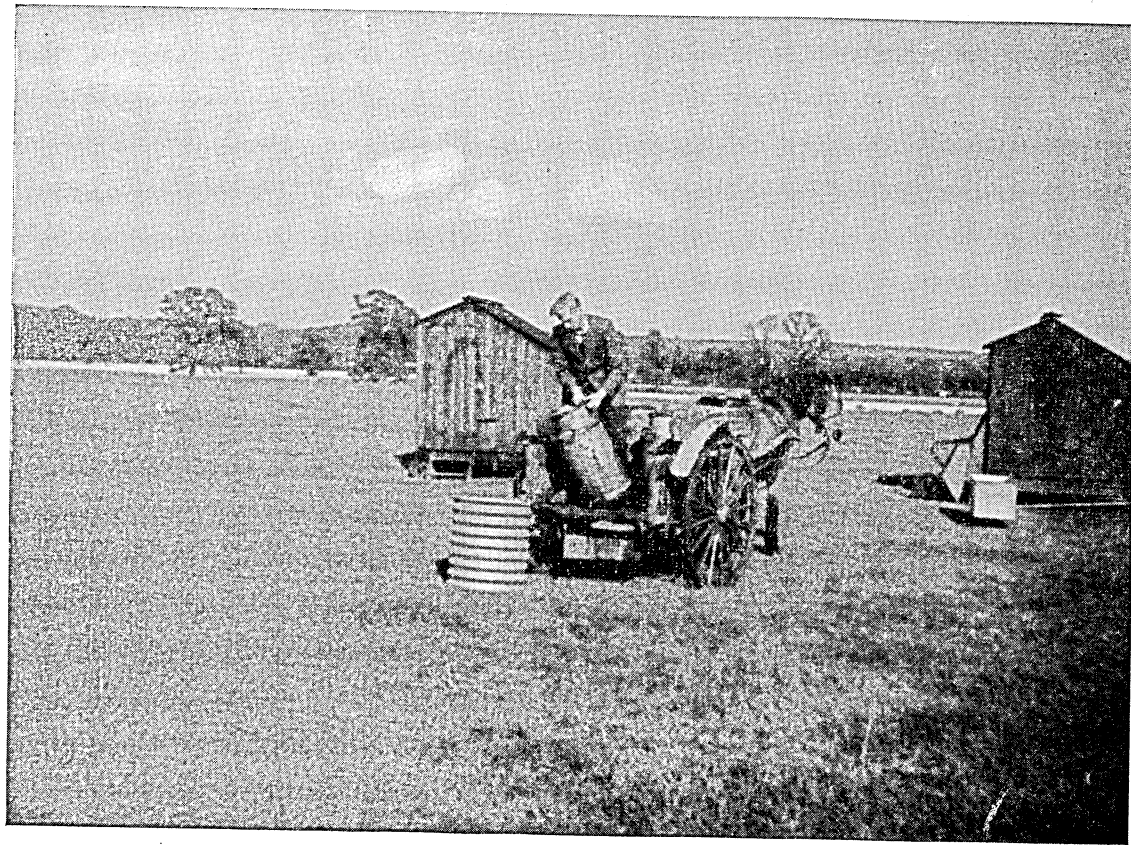
EGG PRODUCTION FROM OCTOBER 1ST, 1949 TO SEPTEMBER 30TH, 1950.

	Average No. of Birds	Average production per bird
1949		
October	341.45	9.90
November	310.80	13.01
December	303.45	15.75
1950		
January	298.60	17.25
February	293.00	16.58
March	290.00	22.26
April	288.33	21.39
May	278.30	20.76
June	267.00	17.89
July	185.50	17.98
August	119.30	15.45
September	87.56	12.21
	TOTAL AVERAGE	200.43
The average per bird for the four winter months October to January was 55.91		



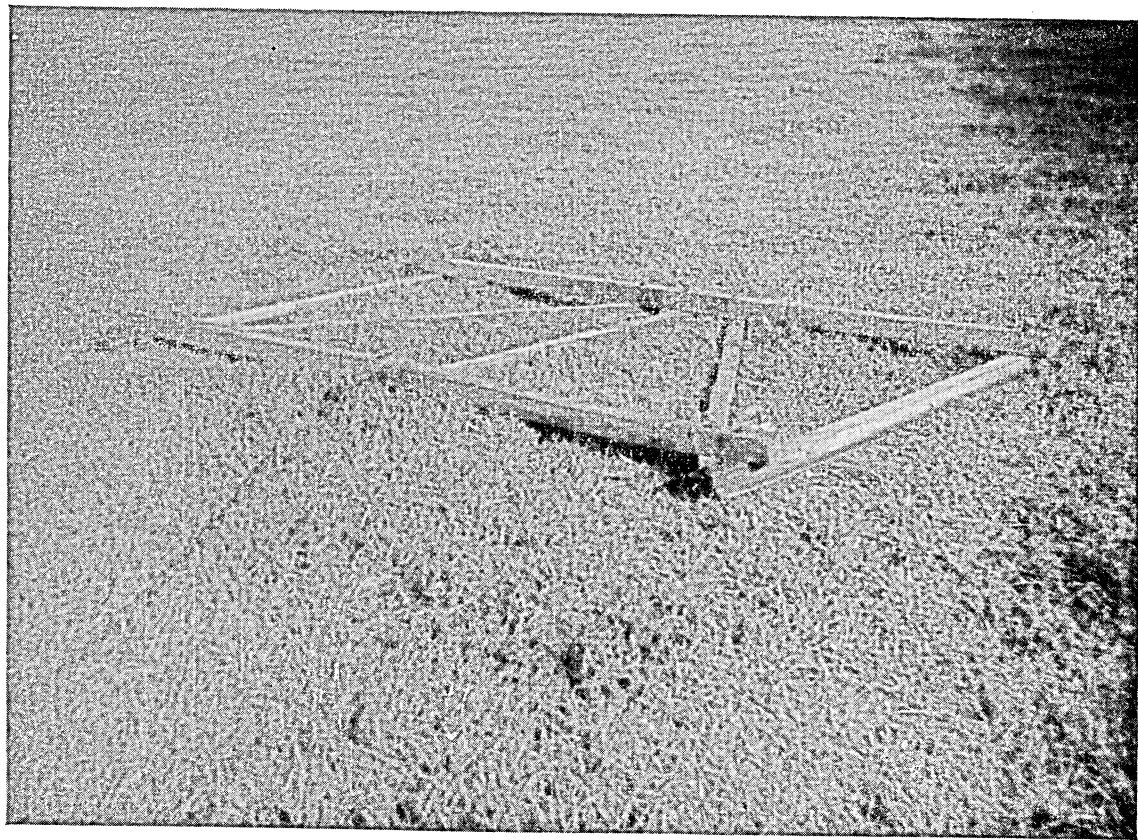
Back rows of folds. Note appearance of ground vacated by front rows.

By Courtesy of "Poultry Farmer".



Filling a water tank. Beyond are the stores, mash mixing trough and barrow.

By Courtesy of "Poultry Farmer".



Home-made skid for moving two folds from field to field.

By Courtesy of "Poultry Farmer".



The double line of folds and food store.



Mash feeding time. Note water vessel suspended from roof.

The birds referred to in Table 2 were hatched January to April, 1949. Autumn moulting did occur but not seriously.

Another group of birds was hatched in August, 1949 and the first egg was laid on January 20th, 1950. From January 20th to September 30th, these birds averaged 151.35 eggs per bird in 36 weeks.

Throughout the two years the eggs have been of good size and the external shape and texture most satisfactory. There have been very few soft or shell-less eggs and the proportion of seconds or rejects as recorded at Egg Packing Station has been low. Incidents of egg eating have been surprisingly few.

The number of eggs broken in cleaning was 1%.

Unless care is exercised in transporting the eggs from the folds to the egg store there is an abnormal number of cracks.

During the year 1950-51 the rainfall was excessive and the rain was sometimes accompanied by a low temperature which made conditions unpleasant for the attendant. Snow occurred on several days and there were periods of severe frost.

TABLE 3.

CANDLING RESULTS AT EGG PACKING STATION Eggs produced Sept. 1st 1950—Aug. 31st 1951	
Good Eggs	94.60
Seconds	2.60
Dirty	2.77
Rejects	.03

TABLE 4.

INCOME MONTH BY MONTH
SEPTEMBER 1ST 1950 TO AUGUST 31ST, 1951.

No. of Eggs Sold		Receipts	Month	No. of Birds sold for Table	Receipts
Dozens	Odd	£ s. d.			£ s. d.
587	4	129 16 10½	September	113	58 10 8
1130	2	278 16 10	October	193	107 14 8
782	9	194 5 10	November	23	14 12 0
871	4	214 11 8	December	2	1 11 3
1145	8	252 19 7½	January	3	2 5 0
1039	3	227 10 11½	February	7	4 14 3
1156	9	210 12 5	March	34	20 19 3
1390	4	238 19 9½	April	5	4 2 1
1552	2	266 7 10½	May	63	37 6 0
1024	11	191 14 7	June	58	33 11 6
860	3	188 1 6	July	172	90 1 7
1344	10	312 19 3	August	174	80 14 10
12885	9	2706 17 2½		847	456 3 1

As there is a time lag between sending eggs to the Packing Station and receiving payment the egg receipts as shown in table 4 do not relate to the quantity of eggs shown in the adjacent columns.

The average egg income per week was £52/1/1.

The egg income per bird calculated on 950 was £2/16/11 $\frac{3}{4}$.

The egg income per bird calculated on 850 was £3/3/8 $\frac{1}{4}$.

The average price received for eggs was 50.41 pence per dozen.

The average price received for each bird sold was 10/8 $\frac{3}{4}$.

The average income per week from sale of culled birds was £8/15/5.

TABLE 5.

LABOUR.

Total man hours involved during the 52 weeks was 3120 $\frac{1}{2}$

Total labour cost was £386-13-2 or an average of 2/5.74d per hour.

ANALYSIS OF LABOUR AND COSTS DURING THE 52 WEEKS.

Task	Average man hours per week	Percentage of total time	Percentage of total labour cost
Weekday routine	24.73	41.25	40.23
Sunday routine	5.57	9.28	12.28
Water carting	3.29	5.49	5.22
Food grinding & mixing	3.90	6.51	6.14
Food carting	2.50	4.16	3.95
Egg cleaning and packing	11.62	19.32	19.24
Annual Fold cleaning	3.18	5.30	5.12
Fold moving (other than daily moves)	1.57	2.61	1.95
Miscellaneous	3.65	6.08	5.87
	60.01	100.00	100.00

The average number of man hours per week devoted to the folds over the 52 weeks was 60.01. This amounted to 3.67 hours per bird calculated on 850 birds, the average number for the year.

The weekday and Sunday routine consists of moving the folds, mixing and distributing the mash, attending to the water vessels in the folds, feeding grain, egg collecting and delivering to the main Poultry section.

For the carting of food, water, eggs, etc., a pony and dray were used.

The large amount of time spent in egg cleaning is discussed elsewhere. Some of this time could profitably be used in the maintenance of the folds and fittings, as repair jobs tend to be delayed.

Of the 165 $\frac{1}{2}$ hours spent on fold cleaning, 44 $\frac{1}{2}$ were at overtime rates of pay.

Miscellaneous includes such items as cleaning nest boxes, distributing shell and grit, repair work to folds and cleaning out food stores.

The moving round of the folds at sides of the field used 81 $\frac{1}{2}$ hours of labour of which half was the time of an extra man.

The fold man is normally relieved every second Sunday.

TABLE 6.
SUMMARY OF FOOD CONSUMPTION AND COSTS (52 WEEKS)

THE PER BIRD FIGURES ARE BASED ON 850 BIRDS, THE AVERAGE NUMBER IN STOCK DURING THE YEAR (CALCULATED ON HEN DAY BASIS)	
GRAIN	
Total amount consumed	329½ cwts
Total consumption per bird	43.4 lbs
Consumption per bird day	1.90 ozs
Total cost	£388 7 9
Cost per cwt	£ 1 3 7
MASH	
Total amount consumed	589 cwts
Total consumption per bird	77.6 lbs.
Consumption per bird day	3.4 ozs
Total cost	£735 10 9
Cost per cwt	£ 1 5 0
TOTAL FOOD consumption, grain and mash, per bird	
	121 lbs
Consumption per bird day, grain and mash	5.30 ozs
Cost of feeding per bird	£ 1 6 5
Food consumed per dozen eggs produced	7.89 lbs
COCKLE SHELL	
Total consumption 25 cwts 19 lbs costing	£ 11 11 8
Per bird consumption 3.32 lbs costing	3½
FLINT GRIT	
Total consumption 15 cwts 16 lbs costing	£ 6 11 5
Per bird consumption 1.99 lbs. costing	1½d.

The grain was charged at market value and not at cost of production.

The purchase of compounds in place of the mash used in this investigation would have involved an increased cost per bird of approximately 4/8d. On some farms however, the elimination of food grinding and mixing would permit the keeping of more birds. Most poultry keepers have also to pay more for their grain.

TABLE 7.

COSTS PER DOZEN EGGS SOLD	
Depreciation and replacement of stock	s. d. 9.256
Food, shell and grit	1 9.271
Water, creosote, fuel, insect powder	.167
Sundries	.075
Labour	7.201
Use of tractor	.059
Rent of food stores and insurance	.052
Hire of pony and dray	.322
Depreciation on equipment	2.816
	<hr/> 3 5.219

TABLE 8.

AVERAGE REVENUE PER WEEK			
EGGS.	£	s.	d.
Margin of egg receipts over cost of food	52	1	1
Margin of egg receipts over food and labour	30	1	10
	22	13	2
POULTRY	8	15	5
Margin of receipts from eggs and poultry over food	38	17	3
Margin of receipts from eggs and poultry over food & labour	31	8	7
Food includes shell and grit			

TABLE 9.

PRODUCTION COSTS—FOOD AND LABOUR.			
PER DOZEN EGGS SOLD	£	s.	d.
Food cost	1	9.27	
Labour		7.20	
PER BIRD			
Labour based on 950 the capacity of the unit	8	1.68	
Labour based on 850 the average number of birds	9	1.17	
Margin over cost of food on 950	2	2	6.50
Margin over cost of food on 850	2	7	6.61
Margin over food and labour on 950	1	14	4.90
Margin over food and labour on 850	1	18	5.40
PER WEEK			
Food and labour	29	7	11 $\frac{3}{4}$

Food costs in Table 9 include shell and grit.

FINANCIAL RESULTS.

Valuation of the pullets was arrived at by taking the commercial price at which the growing pullets were charged to the Folds plus the cost of bringing the birds to maturity. The pullets were produced in the Poultry Section and transferred to the folds at different ages as folds became available. A slight reduction was made in the value of the early hatched birds as they had produced many eggs by September 1st, 1950. The valuation of the pullets reared in 1951 was higher because the birds were older when moved into the folds and the cost of food and labour in bringing the birds to maturity had increased.

The grain was charged at market price.

The copper boiler, two food and equipment stores, pony and dray or float were hired from the main poultry section.

The cost of labour includes employers share of contributory insurance and relief of man for annual holidays. No charge has been made for extra help involved in culling but this would amount to little when averaged out on a per bird basis. Likewise the general supervision of the unit has not been entered as an expense.

TABLE 10.

FINANCIAL RESULTS 1950-51.									
EXPENDITURE.					INCOME				
				£ s. d.					£ s. d.
Livestock valuation, September 1st 1950					Eggs				
312 yearling hens @ 11/-	.....	171	12	0	Table birds	.....	.....	.....	2706 17 2
513 pullets @ average of 17/9 ea.	.....	455	5	9	Livestock valuation August 31st 1951				
					335 yearling hens @ 11/- ea.	.....	184	5	0
					406 pullets @ average of 24/- ea.	.....	487	4	0
Mash and grain	.....			626 17 9					671 9 0
Shell and grit	.....			1123 18 6					
Water, creosote, paraffin, fuel for boiler	.....			18 3 1					
insect powder	.....			9 0 3					
Sundries including straw and charge for use of	.....							
copper boiler	.....			4 1 0					
Labour	.....			386 13 2					
Use of tractor	.....			3 6 3					
Rent of food stores and insurance of fold unit	.....			2 16 0					
Hire of pony and dray	.....			17 6 6					
Depreciation on equipment, £864 3 0 @ 17½%	.....			151 4 6					
Stock replacements, 456 pullets (1950)	£484 15 0								
411 pullets (1951)	£512 19 0			997 14 0					
Net surplus	.....			493 8 3					
				£3834 9 3					£3834 9 3

The rate of depreciation on the folds and other equipment may seem rather high but it is anticipated that a considerable amount of repair work and replacement of parts will be required within a few years.

Rent has not been charged and no credit has been given for the unexhausted manurial values of foods fed.

Interest on capital has not been included. The amount spent on plant and equipment was £864/3/0 and on live stock £843/2/6. The latter figure represents 950 birds, the full complement of the unit, valued as shown in opening valuation.

The 456 pullets passed into the folds after September 1st 1950, have been accounted for under Stock replacements.

The net surplus per bird calculated on 950, the capacity of the unit was 10s. 4½d.

The net surplus per bird calculated on 850, the average number of birds was 11s. 7½d.

It should be remembered that the cost of feeding was appreciably less than is possible on most poultry farms where home grown feeding stuffs are not available. Other contributory factors in arriving at satisfactory results are (1) good quality home produced stock which does not require much culling. (2) a fairly even flow of eggs throughout the year with a good proportion during the winter months. (3) maintaining the numbers of birds in the folds. The folds should be emptied gradually, thoroughly cleaned and restocked within a few days, always with pullets and preferably with birds near lay. (4) Good general management at all times.

The net surplus is greatly influenced by the average production per bird. This is seen in Table 11 where variations by dozens above and below our own production total of 184.75 eggs per bird are shown. The figures are based on an average of 850 birds throughout the year and our average price of 50.41d per dozen eggs.

TABLE 11.

Average production per bird in 52 weeks	Approximate	
	Surplus per bird	Loss per bird
	s. d.	s. d.
208.75	20 0	
196.75	15 9	
184.75	11 7	
172.75	7 5	
160.75	3 3	
148.75		1 1
136.75		5 3

TABLE 12

FINANCIAL RESULTS PER BIRD, 1950-51. EXPENDITURE AND INCOME PER LAYING BIRD.					
EXPENDITURE				INCOME	
		s.	d.		s. d.
Food, shell and grit	....	26	10½	Commercial eggs	.... 63 8½
Water, creosote etc.	....		2½	Table birds	.... 10 8½
Sundries	....		1		
Labour	....	9	1½		
Use of tractor	....		1		
Rent of food, stores and insurance	....		¾		
Hire of pony and dray	....		5		
Depreciation and replacement of stock	....	22	5		
Depreciation of equipment	....	3	6½		
Net Surplus	....	11	7½		
		74	5		74 5

POINTS IN FAVOUR OF THE FOLD SYSTEM.

1. No shutting up of stock at night except in the case of growers when first moved in. This means that the birds can be left from about 4.30 p.m. to 7.30 a.m., a good point in these days of high labour costs and a shortage of labour.

2. Small groups of 25 birds give scope for good stockmanship to which the birds respond. The birds can be fed more precisely to their requirements than when in large flocks and in this way there can be strict control over body condition.

3. Controlled grazing, the birds being moved on daily to a fresh patch of good quality grass. Other farm stock can use the same field but if desired can be kept away from the folds by the use of electric fencing. The poultry benefit from the use of controlled pasture. The birds are kept away from the farm yard and other parts where they are not wanted.

4. The land derives benefit from the manure and scratching of the birds and provides an earlier growth of grass in the spring for other farm use. It is most noticeable how quickly the grass recovers after poultry and how soon there is a luxuriant sward.

5. No dropping boards or pits to attend to as all the manure is distributed over the land by the birds; no litter to remove.

6. The birds and sometimes lambs are sheltered from wind and rain by the solid sides of the fold, and the house.

7. If the fold is properly constructed it should provide protection from foxes and the covered in run prevents wild birds eating and contaminating the food.

8. Growing stock thrive in folds whether they be table chickens or potential layers. Breeding can also be successfully carried out. Pullet progeny may be grouped in families and information gleaned about the breeding worth of the sires.

9. Control over coccidiosis and other diseases can be exercised by the daily move to a fresh patch of land.

10. The eggs are of good quality.

11. The drinking water does not freeze as readily as in open pens if it is kept in a sheltered part of the fold.

POINTS AGAINST THE FOLD SYSTEM.

1. If the fold is made heavy it will prove too much for the attendant unless there is very efficient gear for moving, or a horse or tractor is available.

2. The folds have to be moved daily but if this operation is made comparatively easy it may not be a disadvantage.

3. The attendant has to be out in all weathers. He tends to find the work monotonous unless relieved from time to time.

4. The difficulty of combining strength and rigidity with lightness in the construction of the folds.

5. A high proportion of the eggs become soiled and an abnormal amount of time has to be spent on cleaning them.

6. It is not usually possible to obtain as high a rate of production in winter as with certain other systems. There may be a set back in production after a heavy fall of snow but much will depend on the quickness with which straw is placed in the folds and the folds left in the same position until conditions improve.

7. The attendant must be strong to move the folds without strain. It is certainly no job for a woman unless a small fold is in use or it is made of very light material.

8. The folds have to be transported from one field to another. This is a relatively big job when the distance is great and travelling along a public road may be involved. The move may upset the birds. A special low set dray to take two or three folds at one time is required for this operation unless the move is to a nearby field. In the latter case home made skids can be used. The time when the folds should be moved may not coincide with a period when labour is available.

9. Folds are not suitable for heavy or sticky land.

GENERAL OBSERVATIONS ON THE FOLD SYSTEM.

1. It is of the utmost importance to have an interested and reliable stockman. Folds are often located far away from the farm buildings and the owner is not likely to visit the unit as frequently as he would visit flocks which are more accessible. One has to depend very much on the man in charge and if he is not conscientious the results will almost certainly be disappointing.

2. The poultry man must be good at organising his work and must plan ahead. It is very much a full time job and every ten minutes must be used to advantage. To have a muddler in charge of folds spells disaster.

3. It is necessary to impress on the poultry man that he must have knowledge of the condition of the birds if he is to feed them properly. He must also exercise keen powers of observation on the behaviour of the birds with regard to health, the extent to which the birds are calm, or nervous, and whether they look hungry, overfed or just right. He must also be quick to notice any feather pecking, egg eating or other vice.

4. It had been expected that the stockman would get tired of the daily moving of the folds. Instead we have found him to be more concerned about the monotony of the routine. To alleviate this we have recently put two men in charge of the folds, each man doing four weeks and then handing over to the other. This arrangement has been very popular and has yielded very good results.

5. Fold birds are so accustomed to being enclosed and out of sight that they are easily frightened if a person suddenly appears at the fold without warning. They can also be badly scared by large dogs which can get so near to them.

6. It is important to have as many parts as possible of the fold removable for cleaning and particularly the floor.

ACKNOWLEDGMENT.

The authors wish to express their thanks to the members of Staff whose ready co-operation made possible the publication of this report.

APPENDIX.

CAPITAL EXPENDITURE

LIST OF EQUIPMENT REQUIRED FOR 950 BIRDS.

38 folds with 24 catching grids, 114 feeding troughs, 38 water buckets.

TO COMPLETE FOLDS (to our requirements)

28 brackets for food troughs

24 troughs for broodies

78 hasps and staples

78 locks

1 carriage for daily moving of folds

Quantity of screws

1 store hut (on skids)

5 round corrugated water tanks, 30 gall.

1 galvanised trough for mash preparation

1 wheel barrow

2 skids, and chains for moving folds

1 shovel for food mixing

1 shovel for coal

1 brush for stores

1 brush for water vessels

1 brush for scrubbing

1 brush (wire)

1 brush for creosoting

3 egg baskets

2 buckets

Numerals for numbering folds

Hammer, screwdriver, pincers, one each

1 oil can.

1 scoop

1 scraper

1 water tank, 100 galls for water cart

1 water tank carrier with 4 pneumatic tyred wheels.

TO COMPLETE EQUIPMENT (possibly at no cost)

1 creosote tin.

1 creosote drum (5 gall. size)

5 old milk churns

Also part time use of pony and dray.

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Printed by
Joseph Smith & Sons (Bakewell) Ltd.
Bakewell, Derbyshire.
