



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Salaries & wages Agricultural

November, 1957

REPORT No. 103

UNIVERSITY OF BRISTOL

Department of Economics (Agricultural Economics)
Bristol II. Province



WORK STUDY IN THE POULTRY HOUSE

A Case Study of Labour used on a Poultry
Enterprise in South Devon

by

V. H. BEYNON, B.Sc.

and

J. E. HARRISON, M.Sc.

Price Two Shillings and Sixpence

I, COURTENAY PARK,
NEWTON ABBOT.

*23P
Proc.*

CONTENTS

	<u>Page</u>
INTRODUCTION	1
DESCRIPTION OF POULTRY ENTERPRISE AND RESULTS ACHIEVED	3
SUMMARY OF CHANGES	5
ORIGINAL METHODS USED:-	
Details of Work Routine	6
Flow Process Chart	9
String Diagram	14
CRITICAL EXAMINATION	15
IMPROVED METHODS USED:-	
Details of Work Routine	19
Flow Process Chart	21
String Diagram	24

INTRODUCTION

The place of Work Study in the scheme of agricultural advisory work is not, as yet, clearly defined but it is all too clear that whatever is finally decided the number of work study advisers who are likely to be available to aid farmers will be very few, relative to the task to be tackled. In view of this, it is most essential that the farming community and their advisers, whatever their particular speciality may be, should become work study conscious. Perhaps it should be left to the specialised work study practitioner to seek substantial savings in labour requirements or to synthesise major reorganisation in work routine; nevertheless, there is no reason why the average person should not take note of some of the methods that can be used to reduce the daily toil. It is hoped that this short report, which concerns the possibility of saving time in poultry units, will therefore be of some interest and practical value.

One of the main objectives of work study is to reduce the labour input or cost of performing a specified job. The drive for increased efficiency in agriculture and the drift from the land emphasise the necessity for some such tool to further these ends. Work study has been used in industry for most of this century and the results obtained have confirmed the value of its methods. It seems strange that it has taken so long for agriculturists to appreciate its potentiality, for substantial improvements in productivity, labour relations and costs have characterised its progress elsewhere. However, it must be readily admitted that there may be less scope for work study in agriculture than in industry generally because of farmers' preoccupation with living things and the relative lack of repetitive tasks. The motto of the British Productivity Council is "There is always a better way", and considering the range in labour utilized for similar tasks disclosed in farm costings there is some justification for concluding that there is a great opportunity for devising better ways of using labour on our farms. Such tasks as feeding pigs and poultry, milking, and cleaning up after milking are repetitive and very often economies may be effected, at no capital cost, merely by a simple adjustment of the working procedure.

Farming is now an industry with very high overhead or fixed costs and although most farmers perhaps fail to appreciate the fact, labour accounts for a large proportion of these fixed costs. A high fixed cost industry does not inevitably mean the production of high cost products, but it may well find difficulty in lowering cost of production. Only by efficient use of all resources, resulting in either increased production or lower costs or both, can such an industry survive. In British agriculture, labour and power costs amount to more than £650mill. annually, (including the value of farmers own labour) equivalent to nearly half of the total farm costs. This vast sum indicates the size of the field that work study can cultivate.

With the clamour for a working week of 40 hours or less in industry, farm workers are naturally going to ask for shorter working hours. Unless more expensive overtime is to be worked, there is an obvious need to cut down labour requirements, and if repetitive tasks can be organised efficiently then the benefits will be felt throughout the year. There is a further difficulty which may present itself. It seems that if present trends continue, in 20 years time the farm labour force, excluding farmers, will be only about two thirds of its present size; obviously in such circumstances unless methods of using less labour were found fairly rapidly then essential work would just not get done. There also seems little doubt that farm wage rates will continue to increase in line with those in industry, and as numbers employed fall, the gap between industrial and agricultural wages will become steadily smaller. If the volume of work performed can be reduced, particularly if it is heavy or objectionable work, then there is every reason for expecting the quality of the remainder of the work to be improved. As numbers of workers fall the farmer who is obviously taking steps to become more progressive, who is planning his work thoughtfully, and making his workers tasks as simple and pleasant as possible will be the man to attract the best quality labour, not only from other farmers but from other industries as well. Even where no workers are employed, if the time needed to complete a task can be lessened then the farmer can have more time for thinking, planning or indeed even leisure, for there is no particular virtue in work as an end in itself.

On most farms the problem will be to decide which of the hundred and one different jobs performed during the year should be studied. Care should be taken to avoid spending a lot of time examining a job, and probably succeeding in saving time, only to discover that the saving is really of little importance as far as the overall farm programme is concerned. Every farm plan has its labour requirement peaks and troughs, and one of the objects of work study is to iron these out. It is wise, therefore, to devote some time to ascertaining which section of the farm economy is most worthy of study. A task such as feeding pigs, which has to be completed every day is far more likely to be a worthwhile subject for study than say carting farmyard manure which in any case is frequently done during a slack period.

DESCRIPTION OF POULTRY ENTERPRISE AND RESULTS ACHIEVED

There are very few farms in this country without a poultry enterprise involving feeding, watering and egg collecting each day. The case study presented here considers the work routine followed in a small deep litter unit and describes how the application of the techniques of work study achieved considerable saving in the time needed to complete several essential tasks.

Apart from the obvious desire to eliminate unnecessary work, the study aimed at streamlining the various tasks so that a larger number of birds could be handled at no additional labour cost. The poultry unit consisted of 600 birds but for the purpose of this study only 400 were involved. These were housed in two units of approximately similar size in an old farm building, divided into two by a narrow central area containing a table, sacks of feed and corn and into which the nesting boxes from each pen opened. The doors into each pen opened into the central passage and were kept closed by a small wooden catch. The grain fed was scattered around each pen by hand, and mash was tipped from buckets filled from sacks in the central area into four troughs in each pen, making three journeys in all into each pen for feeding. Broody hens were kept in cages placed on top of the nest boxes and were fed from the central passage. The nest boxes were in two tiers and the shutters opening upwards were awkward to keep open as they were not fitted with clips of any sort. The time spent each day in feeding, watering, collecting eggs, and dealing with broody hens was about 25 minutes.

Before describing the procedure followed in attempting to improve this work routine it should be noted that the labour required per laying bird per annum was already below the average for birds in deep litter units.

Before examining the existing work pattern every action of the worker during this time was recorded and a note was also made of the weights carried, the gates and shutters opened and closed and objects picked up and put down. Only a methodical examination of this kind can provide a complete picture of the task being studied. In this particular example over 200 actions were being performed by the worker and he was walking about 1/6th of a mile. The string diagram (see pages 14 & 24) is a valuable method of discovering at which points movements are concentrated indicating where possible scope exists for economies. On this farm, the worker was frequently passing through the gates into the pens and the record indicated that, when doing this, he had to put down his buckets to open or close the door. The examination also showed that the worker collected eggs in a very awkward crouching position, resting the flaps on his head and placing the eggs in a tray on the floor.

The next step in the work study process is to discuss how the main operations of the enterprise studied - in this case feeding, watering, collecting eggs, and dealing with broodies - were being done and whether they were necessary. Possible alternative methods of doing each operation were listed and the merits of each discussed to decide which should be implemented. This is an essential part of the technique, and is designed so that the best possible combination of methods is adopted. By applying the technique in this instance a new working procedure was evolved, a procedure resulting in quite substantial economies. It should be emphasised that the only costs incurred in installing the new work routine were for a water trough brush, pulleys for the pen doors and catches for the nest box flaps, involving a total of only a few shillings. The worker now completes his task in about half the time previously taken and walks 442 feet instead of 790 feet in order to do it. The actual number of operations performed have been reduced from over 200 to 93.

It is hoped that the changes listed may prove beneficial to other poultry keepers, because there can be no doubt about the value of the exercise on this particular farm. Now not only can the farmer increase his flock without incurring additional labour costs but he can also devote much more time to management. The management of flocks cannot be stressed too much, for timely spotting of disease or cannibalism is absolutely vital if serious losses are to be avoided in deep litter units. It is only by organising the operations sensibly that adequate time can be devoted to thorough inspection.

Summary of the Changes Effected as a Result of Work
Study Investigation of Poultry Enterprize

Original Method

The $\frac{1}{2}$ cwt. sacks of mash were delivered to the food store across the yard, 26 feet away from the deep litter houses, and four were carried over each day.

The mash was tipped into 2 buckets and two journeys were made into each pen to fill the four troughs in each.

The mash troughs were situated across the pens.

Grain was kept in a sack in a corner of the central area, 19 feet away from the doors into each pen.

The pen doors opened into the central area and had to be opened and closed after each passage, and the catches on the doors were awkward to use.

The water troughs were cleaned out by a small brush which had to be carried from the table in the central area.

The nest boxes consisted of two floors on either side, raised from the ground two feet. Wire netting prevented the birds from getting out beneath the nest boxes but straw and litter passed through, necessitating sweeping the central area each day.

The nest box flaps opened upwards and were kept open during egg collection by resting them on the operator's head. The egg trays were placed on the floor and during collection the operator crouched in a most awkward position.

The broody coops rested on top of the nest boxes and opened only into the central passage. When they were emptied birds had to be carried to the pen door and liberated.

Improved Method

Mash is delivered directly into the central passage.

A sack is carried into each pen every day and emptied directly into the troughs.

The troughs are arranged lengthways or in tandem.

The grain is stored in a 40 gallon bin in the central area, and a bucket is left inside this.

The pen doors open into the pen. A weight suspended on rope enables each pen door to close automatically after the worker has passed through them.

A brush is hung up over each water trough.

A board has been placed against the wire to prevent litter being pushed out of the pens.

The nest box flaps open downwards, controlled by a chain to allow egg trays to rest on them during collection.

The broody coops open into the pens as well as into the central passage to allow quick release of the birds.

ORIGINAL METHOD

Details of Work Routine

The farmer arrives at the sliding door, pushes it open, and walks to a bucket which he picks up, and takes to a sack of corn situated at the other side of the building opposite the sliding door. The bucket is placed on the ground and then filled by hand with corn from a sack. The farmer then picks up the bucket, proceeds to the gate of Pen B, on his way taking a brush from the table. He opens gate B, walks through, closes the gate, and then moves to the far end of pen B, throwing corn on the litter as he goes. He puts down the bucket at the water trough, pulls out the plug, and brushes out the sediment from the trough, and shakes the brush. Having replaced the plug, and picked up the bucket, the farmer returns (50 feet) to the nest box situated inside the pen at the same time looking for eggs and inspecting the hens. The bucket is put down, and the farmer then opens the flap of the nest box, collects the eggs which he places in the bucket and shuts the flap. He then walks to the gate, opens it, walks through and shuts it, and then proceeds to the table where he deposits the brush. An egg tray is obtained from the table, placed on the floor and the eggs from the bucket placed on it. The brush is retrieved as the farmer moves to the gate of Pen A, which he opens, then walks through, the gate closing after him by gravity. He goes to the far end of Pen A, throwing corn on the litter, returning to the water trough where he deposits the bucket, pulls out the plug, and brushes the trough clean. Having replaced the plug and picked up the bucket, the farmer returns to the gate picking up any eggs which may have been laid on the litter. He pushes open the gate and walks (12 feet) through to the table where he puts down the brush, deposits the bucket on the floor, and places the eggs on a tray on the table.

He then walks (5 feet) to the sliding door where the bags of mash are situated, picks up one bag, fills two buckets with mash, and replaces the bag on the floor. He then opens gate B, picks up the buckets, walks through the gate, puts the buckets down, and closes the gate. The farmer then picks up the buckets, walks to the first trough, puts down one bucket and pours mash into the trough from the other. He then picks up the full bucket, walks to the second trough, puts down the empty bucket and pours mash into the trough from the other. He then picks up the empty bucket, returns to the gate, opens it, walks through, closes it, and places the two buckets on the floor. Another bag of mash is then opened, picked up, the two buckets are filled and the bag replaced. The farmer then opens gate B, picks up the two buckets, walks through the gate, puts down the buckets, and closes the gate. The buckets are then picked up and carried to the third trough, where one is placed on the floor while the other is emptied into the trough. The full bucket is then picked up and

carried to the fourth trough, where the empty bucket is deposited while the trough is filled. The empty bucket is then picked up and the farmer returns to the gate, opens it, walks through, closes it and places the two buckets on the floor. The buckets are then filled from two half empty bags and are carried to the gate of Pen A. The buckets are put down, and the gate pulled open. The farmer then picks up the buckets and carries them to the first trough, puts down one bucket, and pours mash into the trough from the other. He then picks up the full bucket, walks to the second trough, puts down the empty bucket and pours mash into the trough from the other. He then picks up the empty bucket, returns to the mash bags, and places the two buckets on the floor. He opens a sack, lifts it, and fills the two buckets, which he picks up and carries to the gate of Pen A. The buckets are placed on the floor while the gate is pulled open, and are then picked up and carried to the third trough. One bucket is placed on the floor, while the other is emptied into the trough. The full bucket is then picked up and the farmer walks to the fourth trough. He puts down the empty bucket and pours mash into the trough from the other. He then picks up the empty bucket, returns to the central passage, deposits the two empty buckets on the floor and shuts the gate of Pen A.

The farmer then proceeds (12 feet) to the end of the nesting boxes of Pen A and kneels down. Picking up trays from the table, which he then places on the floor, he opens up the flap of the lower nest boxes, holding the flap open with his head while he collects the eggs and examines the birds. The flap is then closed, and the top flap opened and held open with his head while he again collects eggs and examines the birds. He closes the flap and moves (8 feet) to the other end of the nest boxes A at the same time carrying the egg trays, which he puts down on the floor. In a kneeling position, he opens the flap of the bottom box, holding the flap open with his head while he collects eggs and examines the birds. He then closes the flap and opens the top flap, balancing it on his head while he collects the eggs and examines the birds. He then closes the flap, and sorts out the eggs on the trays. He then picks up the trays and rises, turns round and places them on the table. The dirty eggs are placed on another tray and he then walks (12 feet) to the far end of nesting boxes B where he kneels down. He opens the bottom box, holding flap on his head while he examines the birds and collects the eggs which he places on a tray previously placed on floor. He closes the flap and opens top box again balancing the flap on his head while he collects eggs and examines birds. He then closes the flap and moves (8 feet) to the other end of the nesting boxes B with the tray which he puts down on the floor. He kneels down, opens bottom box balancing flap on his head, while he collects the eggs and examines the birds. He closes the flap and opens top box balancing the flap on his head while he collects the eggs and examines the birds. He then closes the flap and sorts the eggs on tray putting the dirty eggs aside. He rises, picking up the tray, turns and puts it on the table, the dirty eggs

being placed on a separate tray.

He turns, inspects the broodies situated in a cage above nesting boxes B, and pulls out a mash trough which is carried (16 feet) to mash sack, filled and returned to the broody coop and replaced. He picks up a watering can from the table and fills the water trough in the broody coop, replacing the can on the table. He then walks to the broodies above nesting boxes A, inspects, takes out the mash trough, which is taken to the mash sacks, filled and replaced. He picks up the watering can from the table, fills the trough in the broody coop and replaces the can.

He picks up a broom from the corner and brushes (50 feet) the floor on either side of the table. The brush is put down, the litter and straw placed in bucket which he picks up and carries to the gate of pen B. The farmer walks through and pours the contents of the bucket on the litter, walks back, shuts the gate, puts down the bucket, and picks up the empty bags which are taken to the feed store. He jumps up into the store, puts down the empty sacks and moves full sacks to the edge. He jumps down and carries two sacks back to the poultry house, places them on the floor. Finally the farmer picks up the bucket, walks through the sliding door and shuts it.

METHOD STUDY

FLOW PROCESS CHART

ORIGINAL

.....Man..... TYPE

JOB Feeding & Watering Hens, Collecting Eggs
& looking after broodies

STARTING AT Push open door....

OPERATOR

ENDING AT Slides door shut...

CHARTED BY

Item	Detail	Sym- bol	Distance	Time	Notes
1.	Push open door.	0	ft.		
2.	Walks to bucket.	→	3		
3.	Picks up bucket.	0			
4.	Walks to corn in sack.	→	13		
5.	Puts down bucket.	0			
6.	Fills by hands from sack, bending down.	0			
7.	Picks up bucket.	0			
8.	Walks to Pen B gate picking up brush from table on way.	→	16		
9.	Opens gate.	0			
10.	Walks through.	→			
11.	Closes gate.	0			
12.	Throws grain all around pen walking to far end.	→ 0	48		
13.	Puts down bucket at water trough.	0			
14.	Pulls out plug.	0			
15.	Brushes out mash from trough.	0			
16.	Shakes brush.	0			
17.	Puts back plug.	0			
18.	Picks up bucket	0			
19.	Walks back to inner nest box looking for eggs and inspects hen.	□→	50		
20.	Puts down bucket.	0			
21.	Opens shutter and collects eggs, puts in bucket.	0			
22.	Closes shutter.	0			
23.	Picks up bucket.	0			
24.	Walks to gate.	→	16		
25.	Opens gate.	0			
26.	Walks through.	→			
27.	Shuts gate.	0			
28.	Walks to table.	→	5		
29.	Puts down brush.	0			
30.	Picks up tray.	0			
31.	Puts on floor.	0			
32.	Puts eggs in tray.	0			
33.	Picks up brush	0			
34.	Walks to gate of Pen A.	→	5		
35.	Opens gate which shuts by gravity	0			
36.	Walks through and throws corn around all pen	→ 0	53		
37.	Returns to water trough.	→	28		
38.	Puts down bucket	0			
39.	Pulls out plug (rh), puts to lh	0			
40.	Brushes out trough	0			

Item	Detail	Sym- bol	Distance	Time	Notes
			ft.		
41.	Replaces plug.	0			
42.	Picks up bucket.	0			
43.	Returns to gate picking up odd eggs and through it.	↘	12		
44.	Walks to table.	↘			
45.	Puts down brush.	0			
46.	Puts bucket on floor.	0			
47.	Puts odd eggs on tray.	0			
48.	Walks to mash sacks.	↘	5		
49.	Picks up bag.	0			
50.	Pours mash in 2 buckets - filling.	0			
51.	Puts down sack.	0			
52.	Opens gate B.	0			
53.	Picks up buckets.	0			
54.	Walks to gate B and through.	↘	1		
55.	Puts down bucket.	0			
56.	Closes gate B.	0			
57.	Picks up buckets	0			
58.	Walks to 1st trough	↘	9		
59.	Puts down 1 bucket	0			
60.	Pours mash in from second bucket	↘	7		
61.	Picks up full bucket.	0			
62.	Walks to 2nd trough.	↘	9		
63.	Puts down empty bucket.	0			
64.	Pours full bucket into trough.	↘	7		
65.	Picks up empty bucket.	0			
66.	Returns to gate.	↘	18		
67.	Opens gate	0			
68.	Walks through gate	↘	1		
69.	Closes gate	0			
70.	Puts down buckets.	0			
71.	Opens mash sack.	0			
72.	Picks up sack and fills the buckets	0			
73.	Puts down sack	0			
74.	Opens gate	0			
75.	Picks up buckets	0			
76.	Walks through	↘	1		
77.	Puts down buckets	0			
78.	Gate closed	0			
79.	Picks up buckets	0			
80.	Walks to trough 3.	↘	28		
81.	Puts down 1 bucket	0			
82.	Fills feed trough.	↘	7		
83.	Picks up full bucket	0			
84.	Walks to trough 4	↘	10		
85.	Puts down empty bucket	0			
86.	Fills feed trough 4.	↘	7		
87.	Picks up empty bucket	0			
88.	Walks to gate, buckets in hand	↘	38		

Item	Detail	Sym- bol	Distance	Time	Notes
			ft.		
89.	Opens gate	0			
90.	Walks through	↘	1		
91.	Closes gate	0			
92.	Puts down buckets	0			
93.	Fills up buckets with 2 half empty sacks	0			
94.	Picks up buckets	0			
95.	Walks to Pen A.	↘	8		
96.	Puts down buckets	0			
97.	Opens gate.	0			
98.	Picks up buckets	0			
99.	Walks through gate to 1st trough	↘	6		
100.	Puts down 1 bucket	0			
101.	Fills 1st trough	↘	7		
102.	Picks up full bucket	0			
103.	Walks to 2nd trough	↘	6		
104.	Puts down empty bucket	0			
105.	Fills 2nd trough	↘	7		
106.	Picks up empty bucket	0			
107.	Walks to gate and through it to mash	↘	20		
108.	Puts down buckets	0			
109.	Opens sack of mash	0			
110.	Picks up and fills 2 buckets	0			
111.	Picks up bucket.	0			
112.	Walks to gate A.	↘	8		
113.	Puts down buckets.	0			
114.	Pulls open gate	0			
115.	Walks through gate to trough 3 (gate closes)	↘	20		
116.	Puts down full bucket	0			
117.	Fills trough 3	↘	7		
118.	Picks up full bucket	0			
119.	Walks to trough 4.	↘	10		
120.	Puts down empty bucket	0			
121.	Fills trough 4.	↘	7		
122.	Picks up empty bucket	0			
123.	Walks back to gate and pushes open	↘	30		
124.	Puts down buckets	0	6		
125.	Shuts gate	0			
126.	Walks to end of nesting boxes (A) and kneels down.	↘	12		
127.	Picks up tray and puts it on floor.	0			
128.	Opens bottom box, leaving flap on head	0			
129.	Collects eggs and examines birds	□			
130.	Closes flap	0			
131.	Opens top box, leaving flap on head	0			
132.	Collects eggs and examines birds.	□			
133.	Closes flap.	0			
134.	Moves to other end of nest boxes with tray	↘	8		
135.	Puts down trays and kneels.	0			
136.	Opens bottom box, leaving flap on head.	0			
137.	Collects eggs and examines birds.	□			

Item	Detail	Sym- bol	Distance	Time	Notes
			ft.		
138.	Closes flap	0			
139.	Opens top box, leaving flap on hand.	0			
140.	Collects eggs and examines birds	□0			
141.	Closes flap	0			
142.	Sorts eggs on trays - dirty on one side.	0			
143.	Picks up trays and rises	0			
144.	Turns and puts on table.	0			
145.	Puts dirty eggs on another tray	0			
146.	Walks to nesting boxes (B)	→	12		
147.	Kneels down	0			
148.	Opens bottom box, leaving flap on head	0			
149.	Collects eggs and examines birds.	□0			
150.	Closes flap	0			
151.	Opens top box, leaving flap on head.	0			
152.	Collects eggs and examines birds.	□0			
153.	Closes flap	0			
154.	Moves to other end of nest boxes with tray	→	8		
155.	Puts down tray and kneels	0			
156.	Opens bottom box, leaving flap on head.	0			
157.	Collects eggs and examines birds.	□0			
158.	Closes flap.	0			
159.	Opens top box, leaving flap on head.	0			
160.	Collects eggs and examines birds.	□0			
161.	Closes flap.	0			
162.	Sorts eggs on tray - dirty on one side.	0			
163.	Picks up tray and rises.	0			
164.	Turns and puts it on table.	0			
165.	Puts dirty eggs on another tray	0			
166.	Turns and inspects broodies at B.	□			
167.	Takes out one mash trough	0			
168.	Walks to mash sack.	→	16		
169.	Fills trough	0			
170.	Returns to broody coops and replaces	→	16		
171.	Picks up water can.	0			
172.	Fills water trough in broody coop	0			
173.	Puts down water can.	0			
174.	Walks to A.	↖	28		
175.	Inspects broodies at A.	□			
176.	Takes out one mash trough	0			
177.	Walks to mash sack.	→	16		
178.	Fills trough	0			
179.	Returns to broody coops and replaces	→	16		
180.	Picks up water can.	0			
181.	Fills water trough in broody coop.	0			
182.	Puts down water can.	0			
183.	Picks up broom	0			
184.	Brushes out centre.	→	50		
185.	Puts down brush	0			
186.	Puts straw etc. in bucket	0			

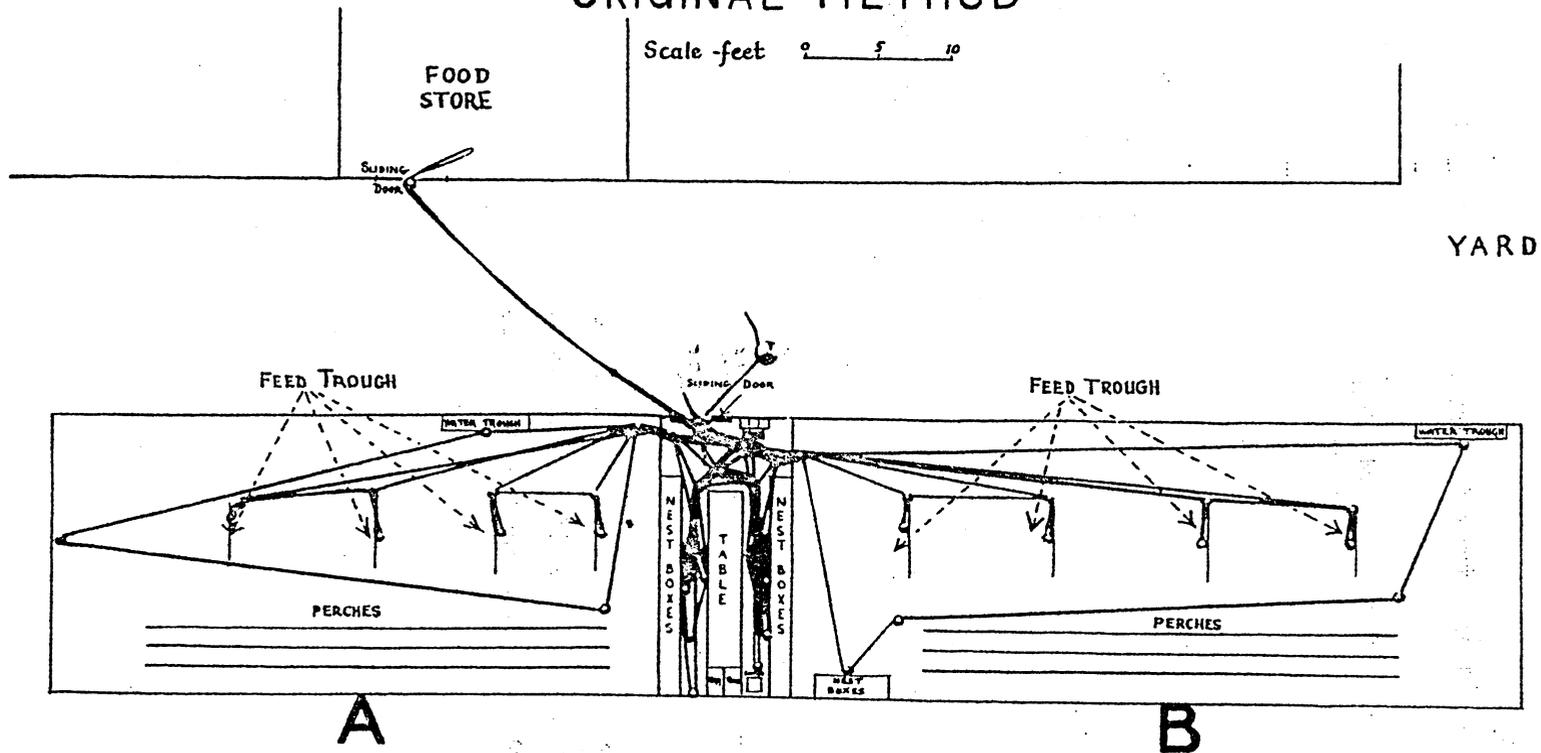
Item	Detail	Sym- bol	Distance	Time	Notes
187.	Picks up bucket	0	ft.		
188.	Opens door Pen B.	0			
189.	Walks through and throws straw in pen.	→	8		
190.	Walks out	→			
191.	Shuts gate	0			
192.	Puts down bucket and picks up empty bags	0			
193.	Walks to feed store with paper bags.	→	30		
194.	Jumps up into granary	→			
195.	Puts bags on floor.	0			
196.	Moves sacks to edge.	0			
197.	Jumps down.	→			
198.	Carries 2 bags to poultry house.	→0	30		
199.	Drops on floor.	0			
200.	Picks up bucket.	0			
201.	Walks through door.	→			
202.	Slides door shut.	0			

DISTANCE WALKED = 790 ft.

□ = Inspect 2
 → = Transport 45
 0 = Operation 135
 D = Delay 0
 0 → = Operation/Transport 11
 0 □ = Operation/Inspection 8
 □ → = Inspection/Transport 1

WORK ROUTINE ON POULTRY

ORIGINAL METHOD



METHOD STUDY - CRITICAL EXAMINATION

Feeding Mash and Grain to Hens

Primary Questions		Secondary Question	
Purpose. What is Achieved?	Is it necessary? Yes Why?	(Alternatives) What else could be done?	(Selected alternatives) What else should be done?
Provision of feed.	To maintain life.	Nothing	Nothing.
Place. Where is it done? Grain scattered in pens. Mash fed in troughs in pens.	Why there? Birds there. Disadvantages: Too many journeys required on present system	Where else Could it be done? Nowhere else.	Where Should it be done? Nowhere else
Sequence. When is it done? Each morning. After: Entering building Before: Grain - cleaning out water trough. Mash - after this.	Why then? Fits in well with other operations.	When else Could it be done? Any time	When Should it be done? As now
Person. Who does it? Farmer	Why that person? No one else avail- able.	Who else Could do it? No one	Who should do it? Farmer
Means. How is it done? Grain: Bucket filled from sack in central area. $\frac{1}{2}$ scattered around each pen on floor. Mash: tipped into two buckets from sack and carried into each pen. Two journeys per pen. Doors to open and to close on each journey. (Doors open into cent- ral passage). Troughs lying across pen.	Why that way? Grain: so as to inspect hens and keep them busy, away from troughs. Mash: No reason.	How else could it be done? Fit weights or catches to pen doors. Feed hoppers bought and filled period- ically with mash. Hoppers built on walls, and filled periodically. Feed scoop used to fill buckets. Store grain in 40 gall.drum. Store mash sacks in central area. Put food trou- ghs in single line or in parallel. Fill troughs from mash (cont.)	How Should it be done? Put food troughs in parallel. Fill directly from sacks. Store mash sacks in central passage. Store grain in drum. Fix weight on door for automatic clos- ing. Convert to open into pen. sacks. Feed grain and mash together Store mash on central table or on top of nest boxes. Feed mash first.

METHOD STUDY - CRITICAL EXAMINATION

Cleaning out Water Troughs

Primary Questions		Secondary Questions	
<p>Purpose. What is Achieved? To supply clean water to birds.</p>	<p>Is it necessary? Yes Why? Mash from birds beaks drops into water trough and clogs up overflow bung.</p>	<p>(Alternatives) What else could be done? Nothing</p>	<p>(Selected alternatives) What else should be done? Nothing</p>
<p>Place. Where is it done? In Pens</p>	<p>Why there? Troughs there</p>	<p>Where else Could it be done? Nowhere else.</p>	<p>Where Should it be done? Nowhere else.</p>
<p>Sequence. When is it done? Each morning After: Feeding grain Before: Feeding mash</p>	<p>Why then? Essential because water gets very dirty every day. Farmer is empty handed at this time and is adjacent to trough.</p>	<p>When else Could it be done? Any time during poultry work.</p>	<p>When Should it be done? As now.</p>
<p>Person. Who does it? Farmer</p>	<p>Why that person? No one else available.</p>	<p>Who else Could do it? No one</p>	<p>Who should do it? No one</p>
<p>Means. How it is done? Brush carried from central area. When feeding grain. Plug pulled out and mash and dirt brushed out. Plug then replaced.</p>	<p>Why that way? No other way considered.</p>	<p>How else Could it be done? Fix cistern with chain for rapid cleaning. Fix ball valve to each trough. Hang a brush at each trough. Fix tube on to tap and clean out by water pressure.</p>	<p>How Should it be done? Hang up brush by each trough.</p>

METHOD STUDY - CRITICAL EXAMINATION

Collecting eggs and examining birds.

Primary Questions		Secondary Questions	
Purpose. What is Achieved? 1. Eggs Collected 2. Broodies removed and illness noted	Is it necessary? Yes Why? 1. Purpose for which poultry kept. 2. To maintain egg production.	(Alternatives) What else could be done? Nothing	(Selected alternatives) Nothing
Place. Where is it done? In central passage.	Why there? Nest boxes there Advantages: Near to table. Disadvantages: None	Where else Could it be done? Nowhere	Where Should it be done? Nowhere
Sequence. When is it done? Each morning. After: Mash feeding. Before: Feeding and Watering Broodies	Why then? No reason.	When else Could it be done? Any time.	When Should it be done? As now.
Person. Who does it? Farmer	Why that person? No one else available.	Who else Could do it? No one	Who should do it? Farmer
Means. How is it done? Farmer kneels or crouches resting nest box flap on head. Egg tray placed on floor. Nest boxes in two storeys high. Emptied from four sections.	Why that way? Only way possible with nest box flaps opening upwards.	How else Could it be done? Nest box flap to open downwards. Chain on flap to control fall and enable trays to be rested on them. Raise nest boxes. Use plastic basket rather than trays. Wire mesh floor on nesting boxes.	How Should it be done? Open flaps downwards with chain to control fall so as to rest trays on flaps.

METHOD STUDY - CRITICAL EXAMINATION

Feeding, Watering and Inspecting Broodies

Primary Questions		Secondary Questions	
<p>Purpose. What is Achieved? Fed and watered birds. Removed when broody period ended.</p>	<p>Is it necessary? Yes Why? To maintain egg production</p>	<p>(Alternatives) What else could be done? Nothing else</p>	<p>(Selected alternatives) What else should be done? Nothing</p>
<p>Place. Where is it done? In broody coops situated on top of nest boxes.</p>	<p>Why there? Room available. Advantages: Close to other hens. Disadvantages: Coops opening into central passage cause delay in emptying.</p>	<p>Where else Could it be done? Nowhere</p>	<p>Where Should it be done? Nowhere.</p>
<p>Sequence. When is it done? Each morning. After: Collecting eggs. Before: Leaving Poultry</p>	<p>Why then? No reason</p>	<p>When else Could it be done? Anytime</p>	<p>When Should it be done? Mash: When feeding mash to other birds. Water: After collecting eggs.</p>
<p>Person. Who does it? Farmer</p>	<p>Why that person? No one else available</p>	<p>Who else Could do it? No one</p>	<p>Who should do it? No one</p>
<p>Means. How is it done? Water troughs filled from water can kept on central table. Mash troughs removed and filled from mash sack. Four troughs to fill. Coops open only into central passage.</p>	<p>Why that way? Habit</p>	<p>How else Could it be done? Reduce space occupied by broodies. Feed broodies from inside pen. Enable pen to open both ways. Put broodies beneath nesting boxes. Fix automatic water supply. Fix one meal trough per side. Join water trough by gravity pipe.</p>	<p>How Should it be done? Feed broodies from pen. Broody coops to open into pen for easy release. Combine feed troughs.</p>

IMPROVED METHODS

Details of Work Routine

The farmer arrives at the sliding door, pushes it open and walks to the corn bin in the central passage way which contains a bucket. He fills the bucket with corn and then picks it up and carries it through to Pen B, walking to the far end and scattering corn at the same time. The half full bucket is put down near the water trough, the plug is pulled out, and the brush hanging above the trough is taken down and used to clean out the sediment in the trough. The brush is then replaced and the plug is put back. The farmer then picks up the bucket and returns to a nest box in Pen B, looking for eggs and examining the birds as he proceeds. The bucket is put down, and the farmer then opens the flap of the nest box, collects the eggs which he places in the bucket and shuts the flap. He then picks up the bucket, walks to the gate, opens it and walks through to the table where he leaves the eggs. He then walks through the gate to the far end of Pen A, scattering corn, examining birds and picking up any eggs in the litter, returning to the water trough where he puts down the bucket. The plug is removed from the water trough, and the brush suspended above the trough is used to clean out the sediment. The brush and the plug are replaced, the bucket picked up and carried back to the central passage where the eggs are deposited on the table. He walks over to the pile of full $\frac{1}{2}$ cwt. mash sacks, depositing the bucket in the corn bin on the way. He picks one up and walks through to Pen B, stopping near the broodies. The sack is opened and the mash trough of broodies pulled out, filled and replaced. The sack is then carried and the four troughs are filled as he walks round, then returning to the central passage way where he drops the empty sack. He picks up another sack, walks through to Pen A and stops near to the broodies. The sack is opened, the mash trough pulled out, filled and replaced and he walks on around the mash troughs, filling them as he walks, and returns to the central passage way where he drops the empty sack.

The farmer goes to the end of nesting boxes in Pen A picking up egg trays from the table. The flap of the lower nest boxes is pulled down, egg trays are placed on flap and the eggs are collected and birds examined. The trays are picked up and the flap closed. The flap of the upper nest boxes is pulled down, egg trays are placed on the flap and the eggs collected and birds examined. The trays are picked up, the flap closed, and the farmer walks to the other end of nest boxes. The flap of the lower nest boxes is pulled down; the trays are placed on the flaps, the eggs collected and hens examined. The trays are picked up, flap closed and upper flap opened. The trays are placed on upper flap, the eggs are collected and hens examined, and trays picked up, and flap closed. The trays are then placed on the table and the dirty eggs placed on another tray.

The farmer then walks to the other side picking up egg trays from the table. The flap of the lower nest boxes is pulled down, egg trays are placed on flap and the eggs are collected and birds examined. The trays are picked up and the flap closed. The flap of the upper nest boxes is pulled down, egg trays are placed on the flap and the eggs collected and birds examined. The trays are picked up, the flap closed, and the farmer walks to the other end of nest boxes. The flap of the lower nest boxes is pulled down; the trays are placed on the flaps, the eggs collected and hens examined. The trays are picked up, flap closed and upper flap opened. The trays are placed on upper flap, the eggs are collected and hens examined, and trays picked up, and flap closed. The trays are then placed on table, and the dirty eggs are sorted on to a separate tray.

He picks up a watering can from the table and turns round, inspecting the broodies. He fills the water trough from the can and then walks round to the other broodies at A and fills their trough. He turns round and puts down the can on the table, walks out through the door and slides it shut.

METHOD STUDY

FLOW PROCESS CHART

IMPROVED

..... Man TYPE

JOB Feeding & Watering Hens, Collecting Eggs

& looking after broodies

STARTING AT Push open door....

OPERATOR

ENDING AT Slide door shut...

CHARTED BY

Item	Detail	Sym- bol	Distance ft.	Time	Notes
1.	Push open door	0			
2.	Walks to corn bin.	→	5		
3.	Fills bucket in bin.	0			
4.	Picks up bucket.	0			
5.	Walks to Pen B gate and through	→	5		
6.	Scatters grain around pen walking to far end	→0	48		
7.	Puts down bucket at water trough	0			
8.	Pulls out plug (lh), and takes down brush (rh)	0			
9.	Brushes out mash from trough	0			
10.	Puts back plug (lh), hangs up brush (rh)	0			
11.	Picks up bucket	0			
12.	Walks back to inner nest box looking for eggs and inspecting hens.	□→	50		
13.	Puts down bucket	0			
14.	Opens shutter and collects eggs, puts in bucket.	0			
15.	Closes shutter	0			
16.	Picks up bucket	0			
17.	Walks through gate to table	→	21		
18.	Puts eggs in tray	0			
19.	Walks to Pen A gate and through	→	5		
20.	Scatters grain around pen, returning to water trough	→0	68		
21.	Puts down bucket	0			
22.	Pulls out plug (rh), gets down brush (lh)	0			
23.	Brushes out trough	0			
24.	Puts back plug (rh), replaces brush (lh)	0			
25.	Picks up bucket	0			
26.	Walks back through gate to centre to table	→	17		
27.	Puts eggs in tray	0			
28.	Walks to mash sacks, dropping bucket in drum on the way.	→0	5		
29.	Picks up ½ cwt. sack of mash	0			
30.	Walks through Pen B gate to broody coop	→	12		
31.	Pulls open sack	0			
32.	Pulls out mash trough	0			
33.	Fills trough	0			
34.	Replaces trough	0			
35.	Walks to feed trough 1 and on to trough 4 filling them on the way.	0→	45		
36.	Walks out of Pen B	→	17		

Item	Detail	Sym- bol	Distance	Time	Notes
			ft.		
37.	Drops old sack, picking up new one	0			
38.	Walks through Pen A gate to broody coop.	→	17		
39.	Pulls open sack.	0			
40.	Pulls out mash trough	0			
41.	Fills trough	0			
42.	Replaces trough	0			
43.	Walks to feed trough 1 and on to trough 4 filling them on the way.	↻	43		
44.	Walks out of Pen A to table throwing sack in corner	→	23		
45.	Picks up egg trays	0			
46.	Walks to one end of nest boxes (A)	→	3		
47.	Opens bottom flap, putting trays on flap	0			
48.	Collects eggs and examines birds	□0			
49.	Picks up egg trays	0			
50.	Closes flap	0			
51.	Opens top flap, putting tray on flap	0			
52.	Collects eggs and examines birds	□0			
53.	Picks up egg trays	0			
54.	Closes flap	0			
55.	Moves to other end of nest boxes with tray	→	8		
56.	Opens bottom flap, putting tray on flap	0			
57.	Collects eggs and examines birds	□0			
58.	Picks up egg tray.	0			
59.	Closes flap	0			
60.	Opens top flap, putting trays on flap	0			
61.	Collects eggs and examines birds	□0			
62.	Picks up egg trays	0			
63.	Closes flap	0			
64.	Turns and puts trays on table	0			
65.	Puts dirty eggs on another tray	0			
66.	Walks to nesting boxes B, picking up trays on way	→0	16		
67.	Opens bottom flap, putting trays on flap	0			
68.	Collects eggs and examines birds	□0			
69.	Picks up egg trays	0			
70.	Closes flap.	0			
71.	Opens top flap, putting tray on flap	0			
72.	Collects eggs and examines birds	□0			
73.	Picks up egg trays	0			
74.	Closes flap	0			
75.	Moves to other end of nest boxes with tray	→	8		
76.	Opens bottom flap, putting tray on flap	0			
77.	Collects eggs and examines birds	□0			
78.	Picks up egg tray	0			
79.	Closes flap	0			
80.	Opens top flap, putting trays on flap	0			
81.	Collects eggs and examines birds	□0			
82.	Picks up egg trays	0			
83.	Closes flap	0			
84.	Turns and puts trays on table	0			

Item	Detail	Sym- bol	Distance	Time	Notes
85.	Puts dirty eggs on another tray	0	ft.		
86.	Picks up water can	0			
87.	Turns and inspects broodies at B	□ 0			
88.	Fills water trough in broody coop	0			
89.	Walks round to other broodies at A.	→	13		
90.	Fills water trough in broody coop.	□ 0			
91.	Turns and puts can on table.	0			
92.	Walks out through door.	→	13		
93.	Slides door shut.	0			
<p style="text-align: center;">DISTANCE WALKED = 442 feet</p> <p> □ = Inspect - → = Transport 14 0 = Operation 62 D = Delay - 0 → = Operation/Transport 6 0 □ = Operation/Inspection 10 □ → = Inspection/Transport 1 </p>					

WORK ROUTINE ON POULTRY

IMPROVED METHOD

Scale - feet 0 5 10

Sliding Door

