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Poultry  
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EDINBURGH AND EAST OF SCOTLAND COLLEGE OF AGRICULTURE

SECOND REPORT

on

ECONOMIC ASPECTS OF THE POULTRY INDUSTRY

- I. The Present Position of the Poultry Industry  
(as at 1 January 1938).
- II. The Financial Results of 12 Specialist Poultry Farms  
for the year ended 30th September 1937.

by

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July, 1938.



## THE PRESENT POSITION OF THE POULTRY INDUSTRY.

as at 1 January 1938.

### I. SUPPLY.

Until very recently, it was possible to point with justifiable pride to the continuous and rapid post-war expansion of the British poultry industry, as evidence at once of its amazing vigour and technical efficiency, and of the Home producer's persistent efforts to secure an increasingly large share of the Home market. On the one hand, the productive efficiency of the individual hen had markedly improved since pre-war days, official statistics estimating the number of eggs laid per bird in England and Wales to have risen from 75 in 1913, to 100 in 1925, and 120 in 1931; whilst in Scotland the official estimate shewed a similar rise from 84 in 1913, to 100 in 1925, and to 118 in 1931 - the latest available year\*. On the other hand, by reason of the bigger number of birds carried on general farms, small family farms, and poultry holdings alike, the fowl population of the country increased rapidly in the years after the war. By 1924 the wastage of the war years had been more than made good; and in the 10 years 1924-1933 the poultry population of the country practically doubled. In 1934, for the first time since the war, this forward movement was checked. It has since become apparent that, temporarily at any rate, the poultry industry has passed its zenith; and due largely to the inadequate financial returns secured by many poultry keepers, and to the serious increase in mortality amongst both laying and growing stock, we have since that date, witnessed a steady and significant decline in the number of birds carried.

The June 4th agricultural returns shew the following statistics regarding the poultry population of Great Britain on holdings of 1 acre and above:-

#### FOWL POPULATION OF GREAT BRITAIN (thousands omitted)

	1913	1924	1934	1935	1936	1937
England & Wales	29,026	30,755	61,310	58,290	57,444	52,555
Scotland	4,054	5,366 <sup>⊙</sup>	8,029	7,788	7,850	7,300
Great Britain	33,080	(36,121)	69,339	66,078	65,294	59,855

⊙ 1925

It will be seen that the decline was more pronounced in 1937 than in either of the two previous years, the poultry stocks of the whole country falling by more than 8%; the decline was rather more marked in England and Wales than in Scotland: since the peak year 1934 the poultry population of Great Britain has fallen by nearly 14%, i.e. by practically one-seventh.

What share of our total supplies of eggs in shell does the British poultry industry now provide? To ascertain this it is necessary to ascertain the total imports of the United Kingdom and the production of eggs in Northern Ireland as well as Great Britain on holdings of 1 acre and over, and to include an estimate of the production of "back-yarders" in the whole of the United Kingdom.

#### EGG SUPPLIES OF UNITED KINGDOM./

\* If these figures appear to be surprisingly low, it must be remembered that the bulk of our Home egg production still comes from general farms rather than from specialist poultry holdings: if the specialised poultry keeper shews no higher flock averages to-day than those cited above, he is, in the absence of extenuating circumstances, unlikely to survive long.

## EGG SUPPLIES OF UNITED KINGDOM.

I. QUANTITIES	1924	1930	1934	1935	1936	1937
		In Million Eggs				
Foreign Imports	1777 <sup>a</sup>	2474 <sup>a</sup>	1552 <sup>b</sup>	1795 <sup>b</sup>	2393 <sup>b</sup>	2533 <sup>b</sup>
Empire "	624 <sup>a</sup>	698 <sup>a</sup>	696 <sup>b</sup>	578 <sup>b</sup>	565 <sup>b</sup>	435 <sup>b</sup>
Total "	2401	3172	2248	2373	2958	2968
Home Production	2590 <sup>c</sup>	3885 <sup>a</sup>	4817 <sup>c</sup>	4661 <sup>c</sup>	4525 <sup>c</sup>	3777 <sup>d</sup> <del>4250</del>
TOTAL	4991	7057	7065	7034	7483	<del>6743</del> <del>7218</del>
II. PERCENTAGES	Proportion of Total Supplies					
Foreign Imports	36%	35%	22%	25%	32%	35%
Empire "	12	10	10	8	8	6
Total "	48	45	32	33	40	41
Home Production	52	55	68	67	60	56
TOTAL	100%	100%	100%	100%	100%	100%

- a. Report of the Reorganisation Commission of the Poultry Industry.  
b. Trade and Navigation Returns.  
c. Report of Imperial Economic Committee on Dairy Produce, 1936.  
d. Provisional figures only.

It will be seen from the above table that in 1924 British farmers and poultry keepers produced 52% of the nation's egg supplies. By 1930, a period of marked expansion of the industry, this proportion had increased only to 55%, for this period witnessed also a very rapid simultaneous increase in imports. Egg imports, in fact, reached their peak in 1930, when they totalled 3172 millions (26,500,000 great hundreds), valued at £16,377,000. From that time onwards imports declined rapidly for a variety of causes - falling prices, the imposition of tariffs (although these proved but a temporary check), and the special tax on imports from Eire following difficulties over the land annuities. By 1933, imports had declined to 2204 millions (a decline of 29%); and with the Home industry still expanding, its share of the Home market had risen to 68%. With prices still being unremunerative, relief was sought early in 1934 by means of voluntary agreements aiming at the quantitative regulation of imports from foreign countries, which continued also in 1935; but these "gentlemen's agreements" proved so ineffective, that this method of control was then abandoned, and since January 1936 there has been no restriction either legal or voluntary, on egg imports, except the tariffs.

Ever since 1934, our total imports of eggs have increased year by year; whilst Home production, and, curiously enough, Empire imports have continuously declined; Foreign imports have uninterruptedly increased. By 1937, the Home industry again provided less than 60% of our egg supplies; the result of ten year's endeavour had been lost, and the industry was slipping still further back. Foreign imports of eggs in 1937 ~~again~~ amounted to 38% of our total supplies.

It/

It is noticeable that although total egg imports in 1937 did not quite equal those of the peak year 1930, foreign imports were higher than in 1930. It is to be observed also, that whilst imports from both Eire and Australia have been progressively declining in recent years Denmark has been strengthening her already strong hold on the British market again, as the following figures shew, and Holland is following suit.

Egg Imports into United Kingdom from certain countries 1934-1937.

	Eire Australia Denmark Holland				Eire Australia Denmark Holland			
	- In Million Eggs -				Proportion of Total Imports			
1934	383	252	766	113.	17%	11%	34%	5%
1935	287	231	788	321	12	10	33	13
1936	307	196	958	456	10	7	32	15
1937	234	152	1199	517	8	5	40	17

In view of the heavy decline in imports from Australia (which had been rapidly expanding up to 1934), it is of interest to turn to the Annual Report of the Department of Agriculture for South Australia for the year ended 30th June 1937, as illustrating the cause of this changed tendency in a representative Australian State.

"The year ending 30th June 1937" says the Chief Poultry Adviser, "will be well remembered by poultry breeders for the reason of the almost total collapse of the English Egg Market for Australian eggs during the export season. The English market touched the unprecedented low level for Australian eggs of 6/3d. per long hundred, which figure, in Australian currency, was a return of only 4½d. per dozen to the producer, and when it is considered that the overall charges for the shipment of eggs to Great Britain for the season 1936, including cases, fillers, freight, insurance etc. was 5d. per dozen, it left practically no return for the producer, especially seeing that the cost of production\* had considerably increased during the year. With these factors ruling, the volume of production has shewn a decrease."

Taking a broad view of the whole supply situation, it is clear that poultry keepers not only in this country but also in Europe and far-off Australia, are desperately anxious that they should not be out-manoeuvred in the British egg market, which to-day is witnessing international competition of unprecedented intensity. At the moment, nearly one egg out of every two bought by the British housewife comes from overseas. And the conclusion is irresistible that, whilst in happier circumstances and more stable conditions, we could obtain 100 per cent of our supplies direct from British farms and holdings, with their bloom and quality still on them, we are rapidly losing the ground gained in the expansionist years after the war.

Moreover, if our poultrymen have been nursing a hope that the present unhappy conflict in China might result in a diminution in the imports of liquid eggs (drawn largely from the Yangtse Valley) which are regarded as an added threat to the Home market, they will find no encouragement in the annual statistics published by the Board of/

\* Figures cited in the report, drawn from the Parafield Poultry Station, shew that between 1933-34 and 1936-37 the cost of food per bird rose by 50%, from 4/6 to 6/9.

of Trade. Our imports were as follows:-

		1935	1936	1937
Liquid eggs	cwt.	787,415	887,425	883,881

Indeed, in December 1937 our imports of liquid eggs were substantially in excess of those in the last month of either 1936 or 1935.

## II. DEMAND.

Meantime, however, two factors have to some extent helped the position and prospects of the poultry industry - the marked improvement in the quality of Home eggs largely due to the stimulus of the National Mark campaign, and the improved demand following upon the recent revival of trade and unemployment throughout the country.

The National Mark egg scheme, launched under the Agricultural Produce (Grading and Marking) Act 1928, may be described as a voluntary State-aided publicity campaign designed to improve both the quality and method of marketing of the British egg. In England and Wales statutory grades for National Mark eggs were established on 1 February 1929, followed shortly afterwards by a similar development in Scotland. The following figures will give some indication of the measure of success achieved south of the border.

### National Mark Eggs in England and Wales.

	1931	1933	1935	1936	1937
	- - -		Millions	- - -	
Total throughput of N.M. Stations ..... Fresh eggs	310.7	445.4	549.4	516	502
Total throughput under National Mark	233.8	356.3	457.2	417	424
Proportion packed under National Mark	75%	80%	83%	81%	85%
Number of authorised packing stations	140	156	192	195	195

Up to 1935, the Scheme had seven years of uninterrupted progress, both the quantity of eggs handled at National Mark stations and the proportion thereof deemed to be of sufficiently high quality to be eligible to be packed under National Mark labels shewing increases every year. Since then, however, the total quantity handled at the National Mark packing stations has declined .. this being attributed by the "Journal of the Ministry of Agriculture" (March 1938 p. 1218) so far as 1937 is concerned,

"largely to the economic difficulties that have faced the industry during the past year."

Perhaps for the same reason the number of authorised packing stations remained stationary during 1937; but it is re-assuring to see that the percentage of eggs handled which was eligible for the Mark in 1937 (85%) shewed an advance on previous years, after the rather disturbing fall in 1936. There can be no doubt that the Scheme has helped materially to enhance the reputation of English eggs with both distributor and consumer alike, even though only about 14% of the egg production of England and Wales is still sold through National Mark channels; and National Mark Egg Central Ltd., formed in February 1930, has been of material assistance as a "clearing house" for the packing stations.

Whilst/

Whilst, in Scotland, the National Mark egg Scheme has made but a negligible amount of progress - one can cite only isolated instances of Scottish Stations working on any considerable scale - in England and Wales, it has had a substantial degree of success in face of the highly-organised competition from our overseas suppliers, especially Denmark and Holland. Nor can its achievements be measured by figures only - for National Mark eggs have set the pace for quality, appearance and methods of packing. Indirectly they have raised the tone of the whole of the British egg market, and helped to stimulate the demand for British eggs in fields previously almost inaccessible to them. Incidentally, it is interesting to note that some of the largest, most progressive and most successful National Mark packing stations are producer-owned, and any profits made by them return to the farmers and poultry keepers supplying these stations, e.g. Stonegate and South Eastern Farmers Cooperative Society, Sussex, and Framlingham and Eastern Counties Cooperative Egg and Poultry Society, Norfolk.

Notwithstanding such tangible evidence of the improved quality of Home eggs, it would be difficult to see much scope for an increased outlet for them in competition with much lower-priced imported eggs unless the housewife could afford to buy the better article produced by the British farmer. For it is reasonable to expect that the family expenditure per head on a commodity like eggs increases in the higher ranges of income. It has been estimated\* from a close study of family budgets in relation to the nation's food supply made in 1934, that egg consumption per head per annum changes as follows:-

Income per head per week	Under 10/-	10/- to 15/-	15/- to 20/-	20/- to 30/-
Food Expenditure per head per week	" 4/-	6/-	8/-	10/-
No. of eggs consumed per head per annum	78	109	135	166

Fortunately during the past two years (1936 and 1937) trade reports and statistics from all sides indicate a marked revival in British industry. The production of coal was higher in 1937 than it had been since 1930; the output of pig-iron and steel shewed an even bigger expansion; Clydeside and other shipbuilding centres are now a hive of industry; and it is well-known that when the miner, the steel worker, the engineer and the docker are in good work the trade of the whole country moves at a quicker tempo.

In 1937 too, the percentage of insured workers out of employment was lower than ever it had been since 1929; and as a further indication of trade revival, all of the main railway lines shewed an increase in traffic receipts over 1936, which itself was much better than 1935. Wholesale and retail prices too are rising to provide a further stimulus for greater business activity, and additional evidence of this is provided by the banking statistics, which shew that in 1937 there were more banknotes in circulation than there have been for years past. With more purchasing power in the hands of the people, and with the wheels of industry revolving briskly and enjoying the added impetus given by the Government's re-armament programme, the stage is set for a greater demand for both eggs and poultry, commodities which are at once a necessity and yet, unfortunately, to many of our population, still a luxury. Can the poultry industry produce the goods at prices which the public can afford to pay, whilst ensuring a reasonable livelihood for the producer?

III./

\* A paper by E.M.H.Lloyd in "Proceedings of Agricultural Economics Society" Vol. IV, No. 2, 1936.

### III. THE OUTLOOK.

Let us turn to the internal conditions of the poultry industry and briefly and impartially review the present circumstances in which the practical poultry keeper is striving to make ends meet.

Up to 1934, it was true to say that no branch of our agriculture had shewn such amazing vitality as the poultry industry. One needs but refer to the high degree of specialisation now practised in the industry; the immense amount of capital, labour and brains that had gone into the invention and perfection of innumerable appliances for hatching, rearing and housing birds; to appreciate the progress made. Side by side with this, the scientific management of the poultry flock had made remarkable strides in the practice of culling, the science of breeding, the art of successful feeding. It is no exaggeration to say that the momentum of the industry is such that the up-to-date methods of to-day are considered almost obsolete to-morrow. And even since 1934 we have witnessed the impact of two almost revolutionary developments upon the organisation of the industry - the installation of layers' batteries, and chick-sexing: both so new, so provocative, that they are sure to raise heated controversies whenever these subjects are mentioned amongst poultry keepers.

Yet notwithstanding the rapid development in the technique of poultry management the poultry keeper to-day is, if anything, financially more vulnerable now than he has been for years. The year 1937 must undoubtedly have been the most difficult that the industry has experienced since the war, a testing time so searching that most poultry men will feel well content if they have managed to earn their bread and butter from their flock during the year.

The main troubles have been:-

1. The recent relationship between egg prices and food prices.
2. Lower vitality of stock, coupled with the increasing incidence of disease.
3. Lack of effective organisation of the industry.

Since foodstuffs account for a large proportion of the total costs of commercial egg production, varying between extremes of 50% and 90%, the importance of the relationship between egg prices and food prices will be apparent: where a small poultry man is entirely dependent on his flock for his livelihood, the margin between his weekly takings for eggs and his merchant's weekly bill for poultry foods is all that he has to live on, after meeting his intermittent outlay on rent, replacements of live and dead stock, and miscellaneous expenses. Whilst during the past four years egg prices have shewn a welcome upward tendency, this has been completely overshadowed by the big rise in feeding stuffs prices which set in late in 1936, when wheat prices began to soar. We get a clearer view of this if we compare monthly egg prices averaged out over the whole year with the average cost of a hypothetical but representative poultry ration over the past four years, in each case taking the average prices of 1934 ("the standard year") as equal to 100.

#### Egg Prices & Poultry Foods : A 4-yr. Comparison.

	Eggs <sup>1</sup>	Poultry Foods <sup>2</sup>
1934	100	100
1935	106	98
1936	115	112
1937	117	147

1. Based on average price of National Mark Eggs (Standard Grade) per 120 at Glasgow. ( $13/4 = 100$ )

2. " " " " per cwt. of a hypothetical poultry ration at Glasgow. ( $6/1 = 100$ )

(Market Report of Department of Agriculture for Scotland.)



It will be seen that in 1935 the poultry keeper was relatively better off than in 1934, and even in 1936 taken as a whole the rise in egg prices fully kept pace with the rise in food costs as compared with 1934. Whilst egg prices continued their slight upward tendency in 1937, poultry foods mounted much more rapidly in price - wheat, sharps and maize meal in particular, although wheat prices fell somewhat in the closing months of the year from the peak figure of £11 per ton which they at one time touched. Even so, although the egg prices index shewn above rose only 2 points during the year, the food prices were 35 points higher than in 1936, representing an increase of one-third on the poultry farm's food bill as compared with the previous year, or £2 per ton. In other words, foods and eggs no longer shewed any semblance of the relationship that had previously ruled in the years immediately preceding 1937.

Not only that, but the cost of housing materials and poultry appliances of all kinds is moving upward with the increase in the price of timber, steel, etc.; stock replacements too are costing more money; and wages are rising. It is clear that on all sides the poultry man must continue to reckon with an era of rising costs.

As evidence of the serious inroads made by death and disease into the position of the poultry industry in recent years, one needs merely to point to the recent "Report of the Poultry Technical Committee of Great Britain" which, after visiting poultry farms in many parts of the country during 1937, says

"the position in every area was similar - an industry not only hard hit by economic conditions but struggling under an almost impossible handicap of diseased or weakly stock."

Giving figures shewing the rising tide of mortality at the leading laying trials in recent years, and quoting further direct evidence collected by them, the Commission say that

"... the mortality incidence is of profound importance in its effect on the economic position of the poultry industry. Grievous losses are being experienced in every poultry-keeping area, often so great as to compel the poultry farmer to give up his business."

"This unhappy position is in our view associated with the unprecedented demand for stock, hatching eggs and day-old-chicks in post-war years arising from the too-rapid expansion of the poultry population, under the stimulus of high egg prices. Stock of low vitality and stamina, due to unsuitable breeding methods adopted in an effort to meet this demand, has permeated the industry. The expansion has also led to over-crowding, with its attendant ill effects; to bad methods of husbandry, particularly on the part of "new comers" with insufficient knowledge and poultry experience; and to specialisation in many directions, especially in the hatching of day-old-chicks for supplying to the commercial egg producer."

Calling for prompt and drastic measures to cope with this state of affairs, the Commission state that "the rise in the scope and importance of the industry has not been accompanied by an increase in scientific research on a scale at all commensurate with the requirements;" and they suggest means for providing, with Government assistance, facilities for more scientific research into urgent problems of poultry mortality, and for establishing a nucleus of clean, disease-free stock, thus building up the industry anew on solid and durable foundations based on the maintenance of healthy and vigorous flocks.

There can be no doubt that, in the control and elimination of disease, is to be found the greatest advance awaiting the industry on the production side. Meantime almost all producers are doomed to fight/

fight an uphill battle against disease, whilst in extreme cases they may see themselves bereft of both their livelihood and the savings of a lifetime. Circumstances undoubtedly favour the man who is doing his own breeding, and has the untold advantages of good quality stock and clean ground. Where mortality is heavy, one could cite instances of this depreciation of the flock adding 2d. or 3d. on to the cost of every dozen eggs produced on the holding.

With disease still so rampant, and egg prices failing to keep pace with mounting costs, the risks of poultry-keeping are greater than ever, and the profits more and more uncertain. Undoubtedly many specialist poultry keepers are being squeezed out of business, particularly small men with but slender capital resources, who are compelled to suffer the added loss of selling out their live and dead stock on a dull and somewhat uneasy market; whilst venturing uncertainly into the unknown and perhaps equally hazardous fields of market gardening, and the rearing of turkeys and ducks etc. Even the largest and hitherto most successful poultrymen feel some misgiving about their immediate future: and if there is one lesson that has been forcibly driven home during the past 12 months it is the extreme vulnerability of the specialist poultry farm, entirely dependent on purchased foodstuffs. It has been a bitter time for any one but newly started, who has had no time to get well established. And even amongst the experienced poultry keepers, all too many have realised the mistakes they have made during past years of putting all their profits back into their business so that they could expand - expand - expand, leaving themselves with a deplorable lack of financial reserves to meet the inevitable rainy day.

But it is doing the poultry industry a disservice to proclaim, as some alarmists have been doing, that the poultry industry is threatened with immediate extinction, and that poultry keepers will be unable to carry on much longer unless direct Government financial assistance is forthcoming. Some men, perhaps many, both large and small, are still making a very useful living from their poultry, and their margin of profit is such as to make them feel no qualms about their ability to tide over the present lean period, unless disease sweeps them off their feet; it may be that they are examples of the survival of the fittest - the fact remains that they are still in business, working away with their poultry quietly and competently. The efficient man, enjoying a good outlet for his produce can still make a living provided he has reasonable luck with his stock replacement, for that is to-day the vital factor.

Poultry-keeping without frills can still be made to pay: nor is there any royal road to success, nor any size of business more likely to pull through than any other. But more than ever before the personal element counts; and it behoves every man to make a most searching enquiry into the organisation of his poultry business to see whether he can cut down his costs in any way, or develop any sideline to his business as a means of supplementing his income without any equivalent rise in costs.

But is it right, is it reasonable, that the individual poultry-keeper should be so entirely dependent on his own resources? Would it not have been better for all if, during the recent period of stress, they had had a vigorous, powerful organisation in being - "the poultry-keeper's parliament" - with 100% membership able to direct the destinies of the industry, to make representations to Government, to build for the future, instead of just pursuing a policy of drift? The time is surely abundantly ripe for an organised campaign of self-help; for it has been made clear that if any more comprehensive and enduring regulation of imports is to be attempted by the Government, it must go hand in hand with the grading and orderly marketing/

marketing of our Home production. Yet, although the National Mark egg campaign has performed good pioneering work during the past eight years, experience has shewn that, on a voluntary basis, it is inadequate to cope with the problem of grading up the quality of all our Home supplies; and, in the face of overseas competition, it will require to be supplemented by more drastic measures if the British egg is to enjoy its rightful place in the British market. Furthermore, whilst there is still ample room for the development of commercial egg production in Great Britain, any marked expansion would be attended by serious dangers to the level of prices unless accompanied by an adequate organisation to control the supplies of eggs reaching the British market from all sources.

Hence, organisation still holds the key - not perhaps to unbounded and endless prosperity - but, at any rate, to the reasonably safe prospect of a decent livelihood for the average poultry-keeper, with the opportunities for expansion. It is for the latter himself to take the initiative.

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Dr. AVERAGE TRADING AND PROFIT & LOSS ACCOUNT OF 10\* POULTRY FARMS FOR YEAR ENDED 30th SEPTEMBER 1937. Cr.

Average size of flock per farm over the year .. 941 laying birds : initial flock .. 1250-1300 hens and pullets.

	No.	£	£		No.	£	£
<u>To Valuation 1 October 1936</u>				<u>By Valuation 30 September 1937</u>			
Poultry		306		Poultry		303	
Eggs		12		Eggs		12	
Foodstuffs		16		Foodstuffs		14	
Houses & Equipment		419		Houses & Equipment		387	
Stores & Sundries		5	758	Stores & Sundries		5	721
<u>To Purchases</u>				<u>By Sales</u>			
Poultry - Stock birds, day-old chicks, etc.		10		Commercial Eggs - Wholesale	doz. 6692	470	
Eggs for re-sale	doz. 294	22		Retail	" 3067	266	736
Housing & Appliances, etc.		30	62	Table Poultry -			111
				Hens, cockerels, etc.			
<u>To Expenses</u>				Breeding Poultry -			
Feeding Stuffs bought	T. c. 53 134	447		Day-old chicks		32	
Cod Liver Oil		3		Hatching eggs		32	
Rent of Grazing		31		Pullets & cockerels		6	70
Wages & State Insurances		73					7
Family Labour unpaid		79		<u>By Miscellaneous Receipts</u>			
Repairs, renewals & small tools		11		<u>By Produce consumed in house</u>			
Coal, oil, light & power		16		Eggs	doz. 171	11	
Car Expenses & Carriage		31		Poultry		4	15
Stationery, postages & sundries		17	708				
<u>To Net Profit</u>			132				
			£1660				£1660

Note. Bank Interest and charges have been excluded from the above table.

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\* See Paragraph IV FINANCIAL RETURNS



THE FINANCIAL RESULTS OF 12 SPECIALIST POULTRY FARMS  
FOR THE YEAR ENDED 30 SEPTEMBER 1937.

I. GENERAL NOTE ON THE FARMS.

This report covers 12 specialist poultry farms widely scattered over the College area - 6 of them being situated in the Lothians, 3 in Fife, 2 in Angus, and 1 in Berwickshire - the study of whose organisation and accounts was continued during the year ended 30th September 1937 as part of our ordinary advisory work in agricultural economics. The average flock kept worked out at 968 laying birds over the whole year; a careful scrutiny of our records shews that to maintain an average flock of that size there would require to be an initial flock of fully 1300 hens and pullets on hand at the beginning of the poultryman's year (1st October). There was a considerable variation in the size of the average flocks carried, the distribution being as follows:-

	Under 500 layers	500/1000 layers	1000/2000 layers	Over 2000 layers	TOTAL
No. of farms	2	6	2	2	12

It will be seen that, notwithstanding the wide range in the size of the farms, most of them carried flocks of 500-1000 laying birds, thus forming typical one-man units.

In most cases these poultry farmers are working on a very limited area of ground (usually under 10 acres, and as low as 1 acre on one farm), although it is a sign of the times that three of them now have from 30 to 60 acres for their poultry; incidentally, only four of the twelve holdings are rented from the Department of Agriculture for Scotland. Most of the farms are run on semi-intensive lines, although there is now a tendency to regard layers' batteries on a moderate scale as a useful supplement to their existing organisation and equipment. On these farms as a whole, Rhode Island Reds and White Leghorns vie in popularity with each other, whilst White Wyandottes and various sex-linked crosses lag a good way behind.

As a group, they are pre-eminently concerned with the production of commercial eggs, which account for 81 per cent of their total income, whilst the disposal of table poultry (inseparably connected with egg production) accounts for a further 13 per cent; and the sale of breeding stock - stock cockerels and breeding pullets, day-old chicks and hatching eggs - accounts for the remaining 6 per cent. Although two or three of the farms undoubtedly lay themselves out to some extent to cater for the sale of breeding stock, in no case is this sufficiently substantial as to overshadow the essential characteristics of a commercial egg farm.

The average capital invested in these poultry farms at the commencement of the year, when the average initial flock numbered 1652 birds, was as follows:

	Per farm £	Per bird s. d.	Per cent %
Poultry	439	5. 7	39
Housing, Equipment, etc.	714	8. 8	57
Produce, i.e. Foodstuffs & Eggs	51	7	4
	<u>£1204</u>	<u>14.10</u>	<u>100%</u>

The average capital per bird was 14/10d., although this varied between very wide limits i.e. from less than 10/- to over 30/-; this wide variation is in part due to the fact that one poultryman may put unduly conservative values per head on his birds whilst another may give them rather a high valuation; and in part to the fact that the "going-concern" value of the housing and equipment of established poultry farms has been, for our purpose, probably (and quite rightly) placed at rather low figures, whilst a poultry farm fully stocked up with new equipment is naturally heavily capitalised. One could hardly stock and equip a new poultry venture to-day at 14/10d. per head.

With but one exception, all these farms hatch practically all the stock they require for replacement purposes, some of them using small 100-150 egg incubators, others working on a sufficiently large scale to render a mammoth incubator a necessity. Not all the farms kept a detailed record of hatching results, and in view of the small numbers of farms dealt with in this report it would be unwise to draw any comparison between the large and the small incubator; but since the season's hatching results are so vital a factor in the financial results of the year's working that they may almost be described as the pivot upon which the success of the whole organisation rests, the following hatching results for Spring 1937 are appended.

Farm No.		1	2	3	4	5	6	7	8
Chicks hatched as % of TOTAL EGGS SET		72	70	69	69	65	59	58	52
" " " " " FERTILE " "		86	82	84	-	73	61	-	68

Speaking generally, hatching results with small incubators are not so high, or so uniform, as might be thought; and systematic record-keeping shows that the actual achievement of many small poultrykeepers falls considerably below their own expectations in this respect.

The composition of the laying flock seems to be changing somewhat of late, and many farms are carrying rather a smaller proportion of pullets than was the case three or four years ago; unfortunately, on some farms, this has been forced upon the poultryman by heavy mortality amongst pullets due to fowl paralysis. The proportion of pullets in the initial flocks on hand on the 12 farms at the commencement of the year under review averaged out at about 49%, and varied as follows:-

Proportion of pullets at 1 October	Over 60%	50%-60%	40%-50%	30%-40%
No. of farms	2	4	3	3

It is rather surprising to find that on three out of the twelve farms birds over 1 year old outnumber the pullets by two to one.

## II. EGG PRODUCTION & PRICES.

Commercial egg production being of primary importance on these farms, information relating thereto is given in the appended table.

Average/

	Average No. of Eggs per Bird	Percentage Production	Seasonal Distribution of	
			a) Total Eggs Laid	b) Cash Income from Commercial Eggs
October 1936	9.0	= 29	5 $\frac{1}{2}$ }	8 $\frac{1}{2}$ }
November	7.6	= 25	4 $\frac{1}{2}$ }	8
December	9.1	= 29 $\frac{1}{2}$	5 $\frac{1}{2}$ }	8 $\frac{1}{2}$ }
January 1937	10.3	= 33	6	6 $\frac{1}{2}$ }
February	10.2	= 36 $\frac{1}{2}$	5 $\frac{1}{2}$ }	5 $\frac{1}{2}$ }
March	13.8	= 44 $\frac{1}{2}$	8 $\frac{1}{2}$ }	7
April	16.1	= 54	11 }	8
May	15.6	= 50	13 }	9
June	13.3	= 44 $\frac{1}{2}$	11 $\frac{1}{2}$	9 $\frac{1}{2}$
July	12.3	= 39 $\frac{1}{2}$	10 $\frac{1}{2}$	9
August	11.9	= 38 $\frac{1}{2}$	10	9
September	10.9	= 36 $\frac{1}{2}$	8 $\frac{1}{2}$	11 $\frac{1}{2}$
TOTAL	140.1	= 38 $\frac{1}{2}$ %	100%	100%

Adding the monthly average production figures together, it will be seen that the average number of eggs per bird per annum was 140.1, which does not quite represent a 40 per cent production throughout the year. These figures shew a marked decline from those published by us relating to the year ended 30th September 1934, when the average production was 167.3 eggs per bird; there have however in the meantime been several changes in the composition of this group of farms, whilst one or two of the farms then in their heyday are now heavily handicapped by the prevalence of disease. During the year 1936-37, the flock average ranged from 170.3 eggs per bird to 105.2 eggs per bird\*. April stands out, as usual, as marking the peak of production, although taking all the farms together they only averaged 54% production; and as usual November saw egg production at its lowest.

Owing to the influence of supply and demand, the three winter months (October, November and December) again offer a strange contrast with the three spring months (March, April and May); whereas the former account for only 15 $\frac{1}{2}$ % of the total quantity of eggs laid, they account for 25% of the year's income therefrom; the three spring months on the other hand, account for more than double that proportion of the egg supply, but contribute practically the same proportion of the income from eggs.

The following table gives the average prices realised for commercial eggs wholesale and retail, and the proportions so sold.

Average/

\* Note: It may be stated that, to arrive at these figures of monthly egg production per bird from the total number of eggs laid, the average number of adult hens is ascertained by striking the mean of the number on hand at the beginning and end of each month, after drafting in pullets as and when they reach the laying stage, and giving effect to purchases, deaths, and sales.

	Average prices per dozen eggs		Proportion sold	
	Wholesale	Retail	Wholesale	Retail
	s. d.	s. d.	%	%
October 1936	1. 9 $\frac{3}{4}$	1. 10 $\frac{1}{2}$	79	21
November	2. 2 $\frac{1}{4}$	2. 5 $\frac{1}{4}$	75	25
December	2. - $\frac{3}{4}$	2. 3 $\frac{1}{2}$	76	24
January 1937	1. 8	1. 10	75	25
February	1. 6 $\frac{1}{2}$	1. 8 $\frac{1}{2}$	74	26
March	1. 3	1. 4	76	24
April	1. - $\frac{3}{4}$	1. 2 $\frac{3}{4}$	77	23
May	1. - $\frac{1}{2}$	1. 3	81	19
June	1. 1 $\frac{1}{2}$	1. 4 $\frac{1}{2}$	84	16
July	1. 4 $\frac{1}{2}$	1. 6 $\frac{3}{4}$	80	20
August	1. 6 $\frac{1}{4}$	1. 9 $\frac{1}{4}$	80	20
September	1. 8 $\frac{3}{4}$	2. -	82	18
TOTAL	1. 5 $\frac{1}{2}$	1. 8 $\frac{1}{2}$	79%	21%

These figures shew clearly the major movements of egg prices during the year under review: after ruling at quite favourable levels in October, November and December 1936, they fell precipitously in January 1937, but, curiously enough, held better during April and May than in previous years, and consequently, on the average did not fall below 1/- per dozen wholesale in any single month; whilst they picked up rapidly during the following autumn. Taking the year as a whole, poultrykeepers had no reason to complain of the price of their eggs during 1936-37. Naturally, there is considerable variation from farm to farm, according to circumstances and locality, but on the whole, egg prices were satisfactory, and shewed a continuance of the improvement noticeable during the previous year. Taking the 8 farms whose records are continuous for the past three years, the average price received by them per dozen eggs sold wholesale has been as follows:-

1934-35	1935-36	1936-37
1/3	1/4	1/5

Retail prices have of course moved in sympathy, shewing similar (but not identical) seasonal movements and year-to-year trends.

As might perhaps be expected, the average figures given relating to the proportion of eggs sold wholesale and retail hide considerable differences amongst the individual farms. Three of them are so situated they have no retail outlets at all; six others sell less than one-sixth of their commercial eggs retail; two of them sell about half wholesale and half retail; and only one finds a retail market for almost all his commercial eggs. On all the farms the eggs are graded, but not necessarily to National Mark standards.

### III. COSTS OF PRODUCTION.

In all cases the accounts analysed have been subject to certain uniform adjustments, so as to make all the farms comparable; as set out below.

i)/



- i) Depreciation has been charged as follows on the written-down value of the deadstock:-

Fixtures & Fittings	.....	*5% p.a.
Motor Cars & Lorries	.....	*15% "
Wirenetting & Fencing	.....	33 $\frac{1}{3}$ % "
Housing & Equipment	.....	*10% "

\* plus the additional one-tenth obsolescence allowance then allowed by the Inland Revenue.

- ii) Bank Overdraft Interest (which shewed on only two accounts) has been excluded, on the ground that it is a cost of financing the poultry business, not of running it.
- iii) Distributive Costs incurred in connection with the retail side of the business (usually an appropriate portion of the wages and the car expenses) have been excluded.
- iv) Interest on Capital also has been excluded.
- v) Family Labour of the Poultryman and his Wife.

Where manual work necessary for the day-to-day attendance upon the flock has been undertaken either wholly or in part by the poultryman and/or his wife, an appropriate charge has been made for such labour, dependent upon the size of the flock and the time so spent, thus making even the smallest farm comparable with large farms worked entirely by hired labour.

The effect of these adjustments is to arrive at figures which represent the cost of producing and selling wholesale one dozen commercial eggs, and maintaining one laying bird for a year.

vi) Gross Costs and Net Costs.

In computing GROSS COSTS per dozen eggs and per hen, all costs incidental to running the whole poultry farm (adjusted as above stated) have been charged to commercial egg production: to arrive at NET COSTS, we must deduct therefrom the output or gross profit on poultry (i.e. the surplus of final livestock valuation plus sales of poultry over the initial livestock valuation plus purchases of poultry). Poultry are thus treated as a by-product, which lowers the cost of the main product, eggs. In no case was there an actual depreciation of poultry, which of course, would have increased the cost of egg production.

Costs of Production.

	Per Laying Bird p.a. s. d.	Per Dozen Eggs s. d.	Per Cent %
Feeding Stuffs	11. $\frac{1}{4}$	11 $\frac{1}{2}$	59
Rent of Grazing	6 $\frac{3}{4}$	$\frac{3}{4}$	4
Labour - paid	2. -	2	10
family	1. 9 $\frac{1}{2}$	1 $\frac{3}{4}$	9
Other Costs	1. 4 $\frac{3}{4}$	1 $\frac{1}{2}$	8
Upkeep of Housing & Equipment	1. 10 $\frac{3}{4}$	2	10
GROSS COST	18. 8	1. 7 $\frac{1}{2}$	100%
Less Output of Poultry	4. 5 $\frac{1}{2}$	4 $\frac{3}{4}$	-
NET COST	14. 2 $\frac{1}{2}$	1. 2 $\frac{3}{4}$	-

After/

After including family manual labour, the effective net cost of maintaining a hen for a whole year works out at an average of  $14/2\frac{1}{2}$ , and the net cost of producing and putting on the wholesale market a dozen eggs works out at  $1/2\frac{3}{4}$ . There is a considerable range in such figures, the net cost per dozen eggs varying between extremes of  $10\frac{1}{4}$ d. a dozen on a highly successful medium-sized unit and  $1/11\frac{1}{4}$ d. on a rather large farm shewing a heavy loss owing partly to the theft of stock and other fortuitous circumstances.

#### IV. FINANCIAL RETURNS AND FACTORS INFLUENCING THEM.

A simplified profit and loss account set out on page 10 shews the average financial result of 10 of the farms for the year ended 30 September 1937. The remaining two farms, which, by reason of the nature and scale of their business organisation and the financial result of their year's working would have exercised an undue influence on the group average figures, have been entirely excluded from this statement of Profit and Loss. The effect of this is to shew a fairly accurate statistical representation of a family poultry farm, starting its year on 1 October 1936 with 1250-1300 hens and pullets on hand. Such a flock would, on the average have left the poultryman with a net profit of £132 for the year; if we add to this the estimated value of unpaid family labour charged up in this composite statement (£79), we see that the average return to the poultryman would be £209, i.e. £4 per week to cover his own labour and interest on capital; the surplus profit (if any) must have been small.

There was here again much variation. The profits and losses per bird (after charging family labour) worked out in such a way as to shew a net profit of  $1/4\frac{3}{4}$  per bird per annum over the 12 farms - considerably less than three years ago - and were distributed as follows:-

Range	Losses per bird per annum		Profits per bird per annum		
	Over 2/6	Under 2/6	Under 2/6	2/6 to 5/-	Over 5/-
No. of farms	1	3	2	4	2

Recalling how dangerous it is to dogmatise or make unwarranted deductions from a very small number of farms, it is appropriate to ask to what extent the men whose collaboration we enjoy are representative of specialist poultry farmers as a whole. There is little doubt that they are a better-than-average-sample; perhaps the "average producer" would never bother to keep the detailed accounts and records which form the foundation of this study. But, they are, without exception, well-established poultrykeepers, well versed in the technique of poultry management, good practical business men who have come through the hard school of experience; included among them are one or two outstandingly successful men. Yet while some of them still shewed reasonably good profits per bird during the year in question, others shewed equally substantial losses; and the average profit was a very modest one. It is more than ever true to-day to state that commercial egg production by the poultry specialist\* is essentially a business of small profits often jeopardised by heavy incidental risks.

The main factors at work on the individual poultry farm influencing these results were:-

1. The recent relationship between egg prices and food prices.
- 2./

\*None of our records are drawn from general farms on which the poultry are but a sideline.

## 2. Lower vitality of stock, coupled with the increasing incidence of disease.

These factors are more fully dealt with, in a general way, in Part I of this report. The broad statements made therein are however amply supported by evidence from these 12 poultry farms. It has already been shewn that egg prices rose from 1/4 per dozen in 1935-36 to 1/5 per dozen in 1936-37 - a rise of approximately 7%; the cost of purchased foods bought by them rose at the same time from 7/5 per cwt. to 8/8<sup>1</sup>/<sub>2</sub> per cwt. - a rise of nearly 17<sup>1</sup>/<sub>2</sub>%, which more than outweighed the improved egg prices.

Similarly, losses through disease take an appallingly heavy toll of the flock on some farms, eating seriously into the poultryman's returns, and rapidly wasting his capital resources built up with patience, toil, and skill, over a considerable period of years. On three out of the twelve farms the mortality of the adult stock amounted to one-fourth of the initial flock. Fowl paralysis was primarily to blame, and to a poultryman there is no more tragic sight than to see his pullets stricken in their prime with this mysterious disease, whilst he remains powerless to aid either his affected birds or himself. In order to face up to such a calamity the poultryman needs to have accumulated very considerable reserves out of profits, which must for safety's sake be invested outside the poultry business altogether. Rapid expansion, to the absorption of all one's resources, is not the wisest policy.

It may be stated, but with rather different emphasis from our previous report, that the main pointers to success are

- i) Skilful handling and maintenance of the flock at all stages of growth from the incubator to the laying-pen, so as to ensure that replacements are made at an economic price.
- ii) High income per bird - generally associated with high egg production per bird well spaced out over the year, a fair proportion thereof being in the high-priced winter months, and with a good proportion of pullets.
- iii) Careful attention to rationing, whilst ever being on the look-out for cheaper substitutes available in the light of ruling market prices for foodstuffs.
- iv) Optimum utilisation of all available appliances and labour units.  
With both these steadily employed, costs of production are kept low, and capital is turned over more rapidly. Several men have found that a useful supplement to the farm income may be made by utilising their skill and experience to cash the low-priced eggs in the spring months in the alternative form of day-old-chicks.
- v) Accessibility to a good market. Although retailing may be a good help it is not essential to success, and moreover has pitfalls of its own.
- vi) Drastic pruning of all unnecessary expenditure.

It is perhaps natural that with so few farms no particular breed, no particular size of stock, and no particular type of housing or system of management stands out as pre-eminently successful. Indeed it is rather interesting that the smallest flock studied was, (judged by any possible standard of efficiency) quite one of the most successful. Success lies in careful attention to detail in every branch of the management of the poultry farm on both the technical and business/

business sides, as well as in the study of the person employed. Obviously, the personal factor in poultry management must count for a great deal, and often enough, a man good in one sphere of management is good in all.

##### 5. ACKNOWLEDGMENTS.

Grateful acknowledgment is hereby made of the valuable assistance given by the twelve poultrykeepers whose businesses form the subject of study in this report, and whose ready and ungrudging collaboration alone made it possible. Each of them received a report on the working of his own farm at the close of the financial year, and it is hoped that their continued participation in this investigation will be mutually advantageous. Enquiries are invited from other interested poultry farmers in the College area.

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