ROTHAMSTED RESEARCH

Husbandry in England

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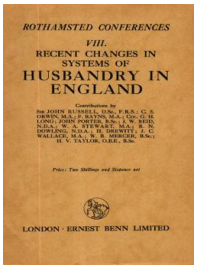

Recent Changes in Systems of Husbandry in England

Sir J. Russell

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RECENT CHANGES IN SYSTEMS OF HUSBANDRY IN ENGLAND

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The farming of England as it was known and praised in the nineteenth century was based on the four-course rotation, finally settled at the end of the eighteenth century by the experiments of Lord Townshend and of Coke, both of Norfolk: the rotation was Roots, Barley, Clover, Wheat, and it had the advantage of producing beef, bread, bacon and beer—the necessary and sufficient foods of the Englishman of the time—along with wool and hides to make his clothes and boots. The system enabled each region to be self-supporting for all necessary agricultural products, and in addition it had the technical advantages of producing good yields permanently, of distributing the labour pretty equally over the year, and of facilitating clean and effective cultivation. It required two conditions: cheap labour and an abundant and remunerative demand for wheat and meat. These conditions held through the first seventy years of the nineteenth century, and hence the system remained successful.

As North and South America, Australia and New Zealand developed they put great amounts of wheat on to our markets, and when, later, the refrigerator was developed it became possible to transport beef, mutton and dairy produce without deterioration from any part of the world to this country. Thus the old monopoly possessed by the British farmer was broken, and the two products on which he had relied for the success of his system were being brought to our markets in enormous quantities at prices with which he could not compete. The four-course system thus received its first blow.

The second came after the war. With the establishment of the Wages Boards a scale of wages was made compulsory which, though low enough in all conscience, is still far ahead of anything paid in England in the past, or on the Continent to-day. Labour is no longer either cheap or abundant. The system has therefore received a second blow, and is now staggering apparently to a fall.

In the Eastern and South-Eastern parts of the country the four-course system still dominates agriculture, and in consequence these regions are suffering severely. In the West and North the system plays a part of minor importance; instead agriculture is dominated by grass-land husbandry, which is less depressed. In places also the farms are so small as to be run by the farmer and his family, and as there are no outgoings for wages, and no statutory limit to the hours worked, it has been possible to survive. Mr Mercer

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gives an illustration from North Cheshire. Wherever one turns in Great Britain agriculture is most depressed in those regions where the four-course rotation is the chief feature of the farm: it has suffered less where other systems are in vogue. The conclusion seems inevitable that the four-course system is no longer suited to British conditions.

Efforts have been made from time to time to improve the position by intensifying the system, but these have not succeeded in practice.

Improvement is therefore being sought in a change of system: many progressive farmers have already experimented in several directions. As the Eastern part of England was and is most closely associated with the four-course system, it is here that the shocks have been most felt, and here that the most significance attaches to the attempts to get away from it. After the first shock in the nineties many farms were given up in Essex and taken over by Scotsmen, who introduced dairying and potato-growing, and at present, after this second shock, new settlers are again coming in.

The purpose of this Conference is to collect information about the changes so far made and the problems connected therewith and still awaiting solution.

Certain changes in the system have justified themselves so far that they are spreading. They fall into two main classes:

(1) Attempts to reduce expenditure (*a*) by laying land down to grass, sometimes badly and regardless of its suitability; (*b*) by replacing the costly hoed crops (*e.g.* swedes) by broadcasted or closely drilled crops, such as broadcast rape and turnips, silage mixtures, marrow-stem kale, which give as much, or nearly as much, animal food per acre, but at less cost; (*c*) by replacing wheat and barley by a lengthening of the one-year clover ley, using instead a two- or three-year mixture.

(2) Attempts to increase the gross cash output of the farm. Among methods adopted have been (*a*) replacement of the swede crop by the more lucrative potato, brussels sprout, cabbage, or sugar-beet crops; (*b*) specializing in one group of paying products—*e.g.* milk — extending everywhere and largely produced in the North, West and Near South-West of England; potatoes, as in South Lincolnshire; fruit or market-garden produce, as in parts of Norfolk, Kent, Bedford, Worcester, Hereford, etc.; (*c*) developing products that used to be regarded as side-lines of little or no importance to the ordinary farmer—*e.g.* poultry, fruit and vegetables, even mushrooms and flowers.

Certain readjustments of the rotation are being made. Winter-sown oats, having the advantage of escaping frit-fly, are being substituted for spring-sown sorts. Winter-sown barleys also are being tried.

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The gross effect of these changes is shown in several directions:

(1) A great decline in the area of arable land, even after allowing for what is taken up for expansions of the towns.

(2) A decline in the proportion of arable to grass-land.

(3) A decline in production of wheat, barley, oats, swedes and mangolds.

(4) An increase in the area under grass and bare fallow.

(5) An increase in potatoes, sugar-beet, brussels sprouts and other market-garden produce, in small fruit and in orchard fruit, in glass-house products.

(6) A great increase in production of milk, of cows in milk and heifers in calf.

(7) An increase in number of smaller-framed sheep, giving the small joints now demanded; generally a shortening of the life of the animals killed for food; replacement of arable Down or Down cross sheep by the grass sheep, often a cross with Scotch black-faced, Kerry, Clun, Grey-faced, Masham, etc.

(8) A great increase in poultry and egg production.

The data are given in the following Table, giving the statistics for England and Wales[1]:

	1908	1927
	Million Acres	
Total land area of England and Wales	37·13	37·13
Total cultivated:		
Above one acre	27·35	25·59
One acre or less, including allotments	[0·30]	0·30[2]
Common, mountain, heath, rough grazing	3·72	5·13[3]
Woods and plantations	1·90[4]	1·88[5]
Area of cities, towns, buildings, roads, railways, villages, country houses and gardens, etc.	3·86	4·23
Permanent pasture	15·94	15·28 (59·7)
Arable	11·41	10·31 (40·3)
Wheat	1·58	1·64
Barley	1·47	1·05
Oats	2·16	1·75
Swedes and turnips	1·11	0·72
Mangolds	0·43	0·30

[1] *Agricultural Statistics*, 1927 (Ministry of Agriculture).
[2] *Agricultural Output*, 1925 (Cmd. 2815).
[3] Of this area about three-quarters form part of individual holdings and one-quarter is mountain or heath grazed in common.
[4] Figures for 1905.
[5] Figures for 1924.

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	1908	1927
	Million Acres	
Potatoes	0·42	0·51
Sugar-beet	...	0·22
Orchards	0·25	0·25
Bare fallow	0·30	0·42
Clover and rotation grass:		
Hay	1·81	1·59
Grazed	1·06	0·87
	Millions	
Cows and heifers in milk	1·83	2·09
Cows and heifers in calf	0·50	0·69
Milk (thousand million gallons)	0·97	1·15
Bullocks and other cattle	3·40	3·49
Total cattle	5·73	6·27
Sheep	19·68	17·07
Wool (million lb.)	68·00	56·00
Pigs	2·68	2·69
Meat production (million cwt.)	17·59[1]	15·41
Fowls	28·25	39·49
Eggs (thousand million)	15·01	18·32

The details of the changes as they are being worked out in the various regions are given in the following papers. The problems which arise out of these developments, and which call for investigation, are:

(1) The most effective scheme of manuring and cultivation of the cash crops—potatoes, sugar-beet, brussels sprouts, etc.

(2) The cultivation, manuring and finding of suitable varieties of fodder crops requiring but little labour, such as broadcast rape and turnips, and marrow-stem kale.

(3) The provision of winter keep in place of the old swedes, so as to avoid the necessity for selling of stock in autumn at low price and the purchase of stock in spring at high price.

(4) The lengthening of the one-year ley: (*a*) replacement of ordinary red clover by a mixture; (*b*) if possible, the hastening of development of wild white clover, or some similar plant, so that its benefits may be felt in two years instead of having to wait for three or more; (*c*) the improvement of lucerne culture.

(5) The improvement of grass-land, especially to increase the early and the late growth of grass.

(6) The provision of lime.

(7) The more effective use of home-grown feeding-stuffs;

[1] Average for 1908-1913.

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replacement of expensive imported cakes by cheaper home-grown cereals, grass, hay, etc.

(8) An investigation jointly with the proper medical authorities into the question whether freshly produced foods—milk, butter, meat, fruit, vegetables taken fresh from the farm — have any dietetic advantage over goods grown in distant regions, and therefore kept for some considerable time before use.

THE RELATIVE ADVANTAGES OF INTENSIFICATION OR EXTENSIFICATION OF FARMING

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The problem of intensification or extensification of agriculture seems to me to open up a discussion of every economic aspect of agricultural economics. I must be excused, therefore, from dealing with all the questions which it raises, and I propose to concentrate upon making certain distinctions in the various aspects of the problem which seem to me to be important.

The first aspect of the problem with which I should like to deal is the claim, which is much too frequently and too thoughtlessly made, for greater production per acre, for its own sake. I say "too frequently" because its constant reiteration may easily lead to wrong policies, and I say "too thoughtlessly" because it ignores the whole economic basis of production—namely, that output must be related to cost of production, as represented by the labour and capital expended upon each acre of land, and by prices. This advocacy of greater physical production per acre is, of course, based upon the experience of the arable-land decline in the eighties and nineties and, again, since the war. The implication is that the movement is abnormal and unhealthy. Let us ignore for the moment the non-economic considerations of national health and national defence and consider the widest possible economic basis of the use of land for agriculture. Viewing the question from the economic standpoint, I might venture the statement that the degree of productivity of land in agriculture depends ultimately upon the ratio of population to the available land. The classical economists had this aspect clearly in their minds, for the problem in their time was one of immediate importance. The population of Great Britain was increasing with great rapidity. The available agricultural area was, in their view, limited mainly to our national boundaries.

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