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Modernising British farming: the Oxford University Institute for Agricultural Research at College Farm, Long Wittenham, 1931–1942

In 2019 Gabriel Hemery¹ of the Sylva Foundation asked me to research the history of the last remaining Dutch barn to be converted for use by that charity on its site (formerly College Farm) at Long Wittenham.² I went through the notes, reports and correspondence kept at St John's College, the former owner of the farm. My brief was to acquire enough information to mount a modest display in the barn which would interest the general public. It was only when I examined my photographs of selected papers at home that I realised there was a story in them which might interest other Oxfordshire historians. Unfortunately my smart-phone camera could not produce from foilscape documents text legible on my computer screen, unless page numbers in the original photos were omitted. However, the documents had been indexed with great efficiency, so that the section-heads in the endnotes will take the reader to within a page or two of any reference. There remain two whole volumes of accounts and costings for anyone who wishes to test the validity of the verdict on the project by the farm manager, Dunstan Skilbeck, which appears at the end of this article.

THE GREAT DEPRESSION in British agriculture is variously dated by historians within the last three decades of C19. In fact, agriculture would not fully recover until after the Second World War.³ Developments in mechanised cultivation on the other side of the Atlantic, as well as the advent of fast, cheap transport by steamship to Liverpool caused a dramatic fall in grain prices. By the beginning of the 1930s, many British farms were becoming run-down or were falling vacant. Landowners like St John's College had difficulty finding tenants who could make their farms pay. A field station was therefore established on college-owned land at Long Wittenham to test agricultural methods and machinery considered novel at the time.⁴

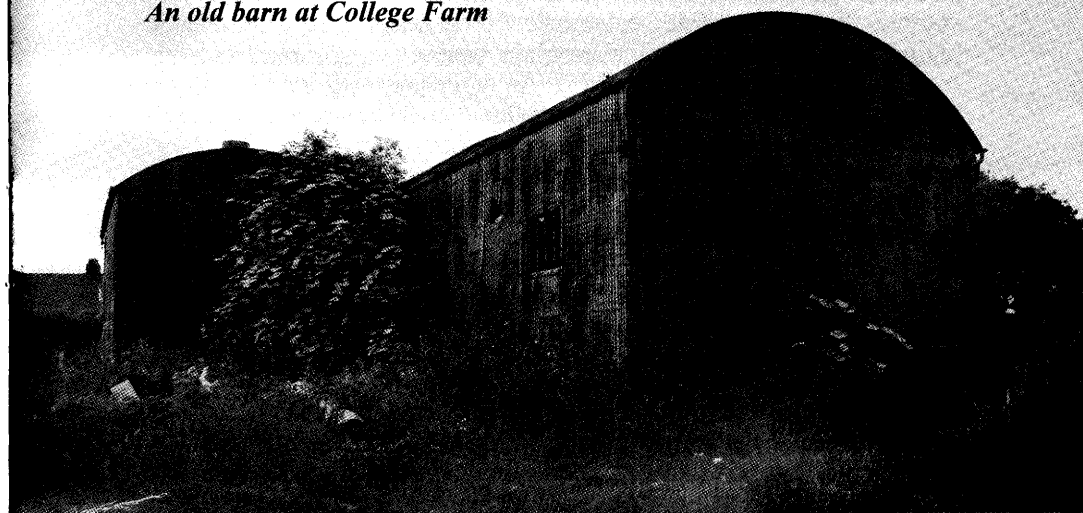
The opening up of America's Midwest in the 1860s prompted prairie farmers, who lacked access to labour, to develop machinery, e.g. the reaper-binder, whereby one man did the work of two. The USA also witnessed a dramatic increase in railways, and railway companies

encouraged farmer-settlers by promising to transport their crops for less than cost for an initial period.⁵ Due to technological progress in shipping, there were for the first time plenty of cheap steamships to transport crops across the seas. Thus, imports of vast amounts of American wheat flooded the market, undercut, and overwhelmed British wheat farmers.⁶ By 1914 Britain was dependent on imports for four-fifths of her wheat and 40 per cent of her meat.⁷

The effect on many farms belonging to St John's verged on ruinous. Before 1931 the college had tried a policy of rent remissions, as well as paying out of its own coffers for repairs and improvements which were properly the responsibility of tenants.⁸ This expensive policy, however, did not prevent the bankruptcy of several large tenants—which, of course, involved the college in further losses of rent—while the farms were left in such disorder that it was hard to find new tenants for them, even at nominal rents. Labour costs tended to exceed the value of arable produce, so mechanisation, whereby a few men with tractors could replace a large number of men and horses, was identified as a fruitful area of research. At the same time, it was deemed desirable to find ways to keep as many workers as possible on the land, a laudable but perhaps unrealistic aim in the face of competition from better wages in town-based industries.

The College Farm at Long Wittenham was formed out of two parcels

An old barn at College Farm



of land acquired from struggling tenants. Mr C. F. Lay showed serious signs of financial collapse, so it was arranged to relieve him of 346 of his 472 acres of arable. 'I well remember going to the sale of the outgoing tenant,' wrote farm manager Dunstan Skilbeck¹⁰ in 1960. 'The jumble of old horse-drawn equipment was sold for a song; all the horses were sold for a few pounds apiece, and at the end of the day the farm labourers, a motley collection, asked me for jobs under the new management.' But they were, felt Skilbeck, 'too unadaptable' save for the thatcher.¹¹ A short while later, Mr W. J. Frearson was also on the brink of failing. Of his 221 arable acres 133 were added to the college's new farm, and St John's offered the use of the farm to the Oxford University School of Rural Economy if it would undertake the management on mechanised lines. The Professor of Rural Economy (later Sir) James Scott Watson¹² accepted and farming began in 1932.

There had been no systematic instruction in agriculture at the university until 1908, when the School of Rural Economy was established in buildings erected on Parks Road, with much of the finance being provided by St John's; the university's Institute for Research in Agricultural Economics was formed as part of the school in 1912. This was a joint venture by the university and the Board of Agriculture, and was partly financed by an annual grant from the Development Commission.¹³

College Farm's priority was to address Britain's laggardly approach to mechanisation. Combines were in use in the USA as early as the 1840s, and two thirds of the Californian wheat crop was said to be combined by the 1880s.¹⁴ But in Britain combines were extremely rare, and few farmers had seen them in operation. An agreement was reached by the Farm Committee of St John's with the International Harvester Company of Illinois to trial a combine harvester on the first crop in 1933.¹⁵ College Farm would pay 15 shillings per acre, with the company providing one fully-trained assistant, and the college supplying its own tractor. At the end of the season the college would have the option to purchase the harvester at a favourable rate. Grain-storage and drying facilities were needed, and it was agreed to accept the estimate of Messrs Curtis & Co. to build a Dutch barn (possibly one of the two still on site) for £70, plus a drying plant for £340.¹⁶ (*See photo on page 43.*)

By the following month the construction of the drying plant was under way¹⁷ and the harvester had arrived. To defeat an infestation of charlock 15 acres of spring barley were sprayed with 7.5 per cent

sulphuric acid. Hardly surprisingly, 95 per cent of the charlock was 'annihilated' but, as the Minister of Agriculture lamented, so was the barley. However, the minister was too hasty; the crop recovered and the charlock did not and, as it turned out, the harvest was delayed by only a few days. Arrangements were made for harvest labour, viz. three regular farm workers, two International Harvester Company operators (loaned without cost), one agricultural student, and one skilled combine operator—a total of seven men.¹⁸ Although the advent of the new-fangled machine caused much head-shaking among the local farming veterans, it performed so well on its first outing that the farm decided to buy it for £436 10s.¹⁹ Other machinery followed. And, by the time of the farm's second harvest in 1934, an 'innovative continuous-drying method had been devised in conjunction with the institute, replacing the former 'batch' method and thus speeding up the process.²⁰

The pig enterprise

With no outlet for the straw created by the arable crop in 1932–33, the decision was taken to open a second department to raise pigs, using straw for bedding. The reasoning was that pigs bred quickly and were easily convertible into cash after a few months. Again, the British had lagged behind. In Denmark, state intervention and co-operation between government and producers underpinned high and consistent levels of quality throughout the supply chain, and had ensured the dominance of Danish bacon in Britain between the late C19 and early C20.²¹ In this country, by contrast, a C19 legacy of a lack of coordination had affected the supply of appropriate pigs and the production of bacon that was uniform in quality. Now, a new Ministry of Agriculture and Fisheries scheme for the national organisation of bacon production appeared well-timed to ensure a market at a profitable price for quality pork from College Farm. Output was estimated at around 450 pigs per year. St John's College welcomed the opportunity of supporting a government initiative which would at the same time solve the farm's problem of excess straw. One significant voice—Dr Charles Orwin,²² Director of the Institute—raised the problem of the difficulty of finding a market for the pigs.²³

None of the existing buildings was suitable for pigs, so new ones had to be provided. Two types of housing manufactured by Wilmot of Bristol were tested against one another: the normal type with pitched roof for the fattening house and the flatter-roofed typed for the breeding house, the latter having the advantage of being cheaper and likely to

keep young piglets warmer in winter. The unit was to run on the 'Scandinavian' principle, i.e. employing one man at full capacity. Mangolds and kale were planted for the pigs.

Another option for the disposal of excess straw was explored in conjunction with ICI.²⁴ Comparisons were to be made between different treatments and the manurial value each yielded, e.g., simply ploughing the straw in, dressing it with ammonium sulphate and then ploughing it in, burning it on the ground, etc. Ploughing crude wheat-straw straight in was quickly abandoned because it made subsequent drilling operations more difficult and consequently compromised the crop. (Barley-straw was more compliant.) Eventually another new machine—a pick-up baler—proved to be the answer. Another Dutch barn was built to store the straw and the combine.

But now a new issue arose. Just as the straw from the wheat created a need, so did the manure from the proposed solution—the pig unit. Since this had been created at some cost, a profitable use for the waste produced by the pigs had to be found. Market gardening was selected as a logical way to capitalise on the supply of manure. The resulting produce could be consumed partially by the college, and the remainder sold or sent for canning. Twenty acres of market garden crops were introduced: blackcurrants, strawberries, raspberries, Brussels sprouts, savoy cabbages, carrots, etc.

The principals

Among the principals connected with the project, Dr Charles S. Orwin, Director of the Institute, was perhaps most in favour of the kind of specialisation with which we are familiar today in the form, for example, of prairie-type corn-growing and industrial scale pig-rearing. Indeed, his book *The Future of Farming* (OUP, 1930) was a plea for the application to British agriculture of modern methods of industrial efficiency—the large unit, involving the grubbing-up of hedgerows, the use of modern machinery and artificial fertilisers, and specialisation in one type of produce. He challenged the assumption that traditional methods were unchangeable, and that reform should comprise only the best adjustment that could be made within the scope of the old methods. But the latter type of 'reform' was precisely the approach taken at College Farm by Professor Scott Watson and Dunstan Skilbeck. In a report dated October 1934, St John's Bursar, Ronald Hart-Synnot, tried to reconcile the two views:

For some years Mr Orwin has been directing attention to the success obtained by specialised farms as distinguished from the normal mixed farm. The policy adopted by the Professor and Mr Skilbeck involves the gradual building up on the same area of land of a number of specialised departments, each of which provides whole-time employment for one skilled man, and is financially self-supporting. The various departments, in addition, are mutually helpful. By such means may eventually be established the equivalent of a mixed farm.²⁵

And, to be fair, while prairie-style wheat production and factory-farming of meat might be possible in certain parts of the country, soil variations and unhelpful terrain in many areas of Britain are not necessarily conducive to such an approach. It was hoped that a variety of complementary departments, each overseen by a skilled worker, and each independently profitable, would provide a way forward for modern agriculture in these areas. 'If, by intensifying production through the addition of more self-supporting departments, the number of highly-paid workmen can also be increased,' continued Hart-Synnot, 'the criticism that agricultural machinery necessarily reduces agricultural employment is likely to prove false.' It was a big 'if'.

At the end of the first year, College Farm was earning St John's a higher return than most of its other investments. Net trading profit for the year 1933-34 was £120, and the rental income from reorganised allocation of land to tenants and now superfluous cottages had risen by £200. However, having been blighted with disease, the pig herd made what Professor Watson described as a miserable loss in that first year.²⁶ A small profit was achieved in subsequent years, but any gains were always negated by almost constant losses from market gardening, he continued. Three reasons were identified for this failure. Firstly, in spite of expert advice to the contrary (these 'experts' are not identified by Professor Watson), the soft fruit was planted in a frost pocket. Secondly, the land was not of sufficiently good quality anyway, frost pocket or no; and thirdly, while the market garden was intended to provide productive employment in slack periods, it proved difficult in reality to turn competent tractor-drivers, however willing, into efficient planters of cabbages or pickers of sprouts.

Indeed, even Orwin, that great proponent of mechanisation, pointed out in a letter of 1936 to Bursar Hart-Synnot:

The job [of mechanisation] is not done when the farmer has bought a tractor and got rid of some horses. The capital cost has got to be justified by the

labour saved. Productive work must be found to occupy the labour force in the time saved by the greater speed of mechanical power, and there may be problems in connections with the maintenance of soil fertility which will arise under a system of continuous corn growing²⁷

And do we not still grapple today with these problems predicted by the far-sighted Orwin, as we deal with the effects of fertiliser run-off from fields into natural water courses, and when farmers not only offer far less employment to rural-dwellers, but find it necessary to spend extra hours themselves diversifying into the bed-and-breakfast trade, or to added-value products such as ice-cream, niche yoghurt and posh crisps?

The outbreak of the war in 1939 provided the institute staff with opportunities for advising the ministry on numbers of tractors needed, The outbreak of the war in 1939 provided the institute staff with

A rubber tyre is test-fitted to a tractor at College Farm, Long Wittenham, at some date in the 1930s; a spiked tyre, apparently superseded, is at left. The man in the jacket and tie is probably the farm manager, Dunstan Skilbeck. Photo from St John's College.



opportunities for advising the ministry on numbers of tractors needed, power requirements, servicing, training, and mechanisation for various crops. But, as Scott Watson revealed writing in 1947, it also compelled the farm committee to tailor considerably its plans for a six-course rotation, though he felt this worth pursuing post-war. Instead, the immediate needs of the war required that soft fruits be abandoned in favour mainly of potatoes, and it created the conditions in which this approach paid off. The potato acreage was expanded, Hereford steers produced the necessary manure for the potatoes, and wheat and barley were grown for seed, bringing in a few more shillings a quarter. The pig herd was reduced to a small pedigree nucleus and eventually liquidated in 1941-42. Watson admits that, thanks to the moves towards mechanisation, war conditions were kind to the farm in terms of profit. Summarising the financial results of the experiment, he concluded:

Interest charges [on the capital supplied by the college] amounted to just £200, so that the College made a modest return, over and above full rent and normal interest, of £80 per year—about 6.5 per cent on the capital against the 4.5 per cent which was charged against the account...

The point being, said Watson, that

it proved possible, in a period of rather extreme depression, to achieve our aims. These were to pay decent wages and provide reasonable living conditions for the farm staff; to pay a fair rent; and to earn interest on the working capital employed. This was achieved by the simple means of employing competent workers and by making carefully selected investments in the necessary modern tools and equipment.

In 1960, Dunstan Skilbeck (by then Principal of Wye College in Kent, the rural arm of London University) wrote that the experiment 'amply justified itself'. While it was not easy in the early 1930s to produce wheat profitably when it was selling at less than £1 a quarter, he said, College Farm finances generally showed a modest profit—though not enough to provide a living wage for a farmer and his family. Many visitors were influenced by its innovative practices including the use of combines, the continuous corn-drier, and of artificial fertilisers.

The farm helped to pave the way for the introduction of techniques which passed into common use. War conditions then propelled British agriculture into a more modern age. (During the first three years of the war, even the despised market garden netted £150 a year.) In the early 1930s, doubts were uttered in the village as to whether these new methods would ever catch on, but 30 years later the English horse

population had fallen from 600,000 to 60,000, meaning that land could be taken out of hay, oats, and beans and put down to wheat. And there were 375,000 tractors and 50,000 combines at work on English farms, meaning that fewer workers were needed.

Under the heavier demands of war, the institute became a branch of the Ministry of Agriculture in 1942 and it moved to Askham Bryan, four miles west of York (although College Farm itself remained the property of St John's). The reasons for the move are unclear; perhaps it simply suited the ministry.

Conclusion

Agricultural innovations take a while to implement on the ground, but the work at Long Wittenham contributed to meeting both the immediate emergency of the war years, and to facilitating the subsequent boom in British agriculture of the 1950s and '60s. □

Notes and references

Abbreviation: SJC, St John's College, Oxford

1. Dr Gabriel Hemery, Chief Executive of the Sylva Foundation, a tree and forestry charity which he co-founded in 2009.
2. National Grid Reference SU550939. The village (in Berkshire until the re-organisation of 1974) is on the right bank of the Thames and 'occupies for the most part a level plain of drift gravel overlying Gault Clay, with Alluvium', 'Parishes: Long Wittenham', in *The Victoria County History of the County of Berkshire: Volume 4*, eds. William Page and P. H. Ditchfield, London, 1924, pp 384–390.
3. T. W. Fletcher, 'The Great Depression of English Agriculture 1873-1896, in P. J. Perry (ed.), *British Agriculture 1875-1914*; London, 1973, p 31.
4. MUN XII.38/2, SJC, *History of the College Farm, Long Wittenham*.
5. R.C.K. Ensor, *England 1870-1914*, Oxford 1936, p 117.
6. Ensor, op.cit., p 115.
7. Ibid.
8. R. Hart-Synnot, 'Report to the Estate Committee by the Bursar upon the farm experiment at Long Wittenham, October 1934', MUN XII.38/1 SJC, *History of the College Farm, Long Wittenham*. Hart-Synnot (1879-1976), b. Newry, Northern Ireland, Bursar SJC 1920-49.
9. Ibid.

10. Ibid.

11. D. Skilbeck, 'St John's College Farm, Long Wittenham, December 1960', MUN XII.38/1 SJC, *History of the College Farm, Long Wittenham*.

12. James Anderson Scott Watson KB CBE FRSE MC LLD (1889-1966). Son of a Dundee farmer; at Edinburgh University was Britain's first ever Professor of Agriculture 1922. Sibthorpiian Professor of Rural Economy at Oxford 1925, and later Chief Scientific Adviser to Ministry of Agriculture.

13 The Development Commission was a permanent royal commission, set up under the Development and Road Improvement Funds Act 1909 to advise on and administer the Development Fund which was voted annually by parliament to benefit the rural economy of England. A body of eight commissioners considered applications for advances from the fund which were made by way of loan, or partly by grant and partly by loan. Functions relating to agricultural research, advisory and education services were transferred to the Ministry of Agriculture, Fisheries and Food on 1 April 1946.

14. Paul Brassley, 'Output and technical change in twentieth-century British agriculture', *Agricultural History Review*, Vol 48(I), pp 60–84, 2000.

15. Minutes: A meeting of the Farm Committee in MUN XII.38/1, SJC, *History of the College Farm, Long Wittenham* shows that the committee on 10 May 1933 comprised the President of SJC, the Revd Frederick William Hall (1931–1933); Mr Hugh Mcilwain Last 1896-1957, classical scholar and fellow of SJC who took 'particular interest in the agricultural and financial policy of the college' (*ODNB*) and was later Camden Professor of Ancient History and Principal of Brasenose the Bursar, Professor Watson (see note 13), and Mr Orwin (see note 23); Mr Skilbeck (see note 11) attended.

16. 'Minutes: A meeting of the Farm Committee, 10 May 1933', MUN XII.38/1, SJC, *History of the College Farm, Long Wittenham*. For comparison, a new tractor that year was budgeted at £400.

17. 'St John's College Farm, Long Wittenham, Farm Report, 20 June 1933', MUN XII.38/1, SJC, *History of the College Farm, Long Wittenham*. The drying plant was still functioning in December 1960.

18. 'Minutes: A meeting of the Farm Committee, 10 May 1933', MUN XII.38/1, SJC, *History of the College Farm, Long Wittenham*. The author's own enquiries of two local farmers of longstanding produced a debate as to whether the maximum number of men required today would be one or two.

19. R. Hart-Synnot, 'College Farm, Long Wittenham, Bursar's Notes of

discussion with Professor Watson and Mr Skilbeck, 5 September 1933', MUN XII.38/1, SJC, *History of the College Farm, Long Wittenham*. A machine intended to last for four or five years in fact ran for 14 harvests, and was later sold for a mere £10 less than the purchase price during the war.

20. With batch drying a certain volume of grain (fixed by the capacity of the dryer) is dried to the required moisture level, and must be unloaded before the next batch is processed. With continuous drying the grain flows uninterruptedly through a dryer; several buffer bins are required to hold the discharged grain. The operator must understand grain-drying management to be able to programme the dryer to work at maximum efficiency. Continuous drying costs less to operate than batch drying and a uniform grain-moisture content is obtained; also the capacity of the continuous-flow dryer is higher than that of the batch dryer if the same dryer and drying conditions are used.

21. D. Higgins and M. Mordhurst, 'Bringing Home the "Danish" Bacon: Food Chains, National Branding and Danish Supremacy over the British Bacon Market, c. 1900–1938', *Enterprise & Society* 16(1), pp 141–185, 2015.

22. Charles Stewart Orwin (1876–1955). Agricultural economist and historian. Born in Horsham, Sussex, son of a schoolmaster. Director of the Oxford University Institute for Agricultural Research in Economics.

23. D. Skilbeck, 'Proposed Bacon Production Unit, Long Wittenham, 30 October 1933', MUN XII.38/1, St John's College, Oxford, *History of the College Farm, Long Wittenham*.

24. D. Skilbeck, 'St John's College Farm, Long Wittenham, June 1934', MUN XII.38/1, SJC, *History of the College Farm, Long Wittenham*.

25. R. Hart-Synnot, 'Report to the Estate Committee by the Bursar upon the farm experiment at Long Wittenham, October 1934', MUN XII.38/1, SJC, *History of the College Farm, Long Wittenham*.

26. Professor J. A. Scott Watson, *British Management Review*, Vol VI, number 2.

27. C. S. Orwin, 'Letter to the Bursar of St John's College from C. S. Orwin, 4 June 1936', MUN XII.38/1, SJC, *History of the College Farm, Long Wittenham*.

28. Scott Watson, op.cit. (see note 26).

29. Ibid.

30. D. Skilbeck, "St John's College Farm, Long Wittenham, December 1960", MUN XII.38/1, SJC, *History of the College Farm, Long Wittenham*.