

The Mechanization of the Harvest in South-West Lancashire, 1850–1914

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THIS study of mechanization in south-west Lancashire arose out of a desire to understand the development of rural society in that area, rather than as an examination of mechanization itself. However, it is felt that it is important in its own right for a number of reasons. Detailed accounts in particular areas, focussing on the reactions of farmers to new machinery as opposed to discussions of the technical problems of innovation, are rare. Those that do exist tend to concentrate on the early years of the nineteenth century, whereas this survey extends up to the First World War.¹ These accounts are also particularly concerned with the application of machinery to the planting, harvesting and threshing of grain crops, but in south-west Lancashire the potato crop was of great importance. In contrast to the corn growing areas of the south and east, south-west Lancashire was a high-wage, high-productivity district with a strong reliance on Irish labour at times of peak labour demand. It was also an area of small farmers, and all these factors would be expected to have an impact on the pattern of mechanization.

South-west Lancashire is a flat plain between Mersey and Ribble, centred on Ormskirk. It was largely reclaimed from peat moss during the nineteenth century, and its fertile soil and long growing season offered extremely favourable conditions for farmers.²

It was above all an area of intensive arable cultivation devoted to the production of cash crops for readily accessible urban markets. The figures in Table 1 show a steady decline in the area under permanent grass, as the area under rotation was expanded to cope with the heavy demand for vegetables and hay to feed the growing human and animal populations of Liverpool and the south Lancashire towns. Potatoes occupied about 20 per cent of the total area, and over 60 per cent of the total area under grass was cut for hay. Wheat shows a decline from 12.82 per cent of the total area to 8.14 per cent in 1890, being replaced by oats, whose straw found a ready market in the stables and dairies of Liverpool.

TABLE 1
Percentage of total area under cultivation

	Grain crops	Green crops	Rotated grass	Permanent grass
1849		47.46		47.95
1870	33.28	22.77	20.87	21.89
1890	32.69	19.73	25.22	21.67
1910	36.00	24.31	19.11	18.26

Sources 1849: S Lewis, *Topographical Dictionary of England*, London, 1849. Details given for nine south-west parishes. 1870, 1890, 1910: PRO MAF 68 parish agricultural returns for Sefton and West Lancashire.

The competition of nearby towns meant that agricultural wages were high. In 1859, 'a man of the agricultural class . . . considered himself well paid and a big wage if he got ten or twelve shillings for his week's wage'.³

¹J R Walton, 'A Study in the Diffusion of Agricultural Machinery in the Nineteenth Century', *University of Oxford School of Geography Research Paper*, 5, 1973; S Macdonald, 'The Progress of the early Threshing Machine', *Agric Hist Rev*, XXIII, 1975, pp 63–77.

²For the 'improvement' of south-west Lancashire in the early nineteenth century see T W Fletcher, 'The Agrarian Revolution in Arable Lancashire', *Trans Lanca and Ches Antiq Soc*, 72, 1962, pp 93–122.

³Thomas Barnes, *Changes from 1860 to 1910 along the banks of the River Mersey*, p 97, typescript at Crosby Hall, Little Crosby.

Wages increased steeply from this level and by 1870 stood at at least 16s for labourers. Lancashire farmers were at this time much agitated by the 'Labour Question', but the agent to the county's largest landowner, Lord Derby, felt there was little they could do about it. He could not see

how the labour question is to be met except by paying a market price for it — or when practicable doing without it. The wages around this place have risen considerably & are paid Farmers giving 16/- or 18/- to Labourers and £1 to Teamsmen.⁴

The evidence from this date onwards indicates a much slower rise towards a general level of 20s for labourers by 1913. In 1891, for example, teamsmen on Mount Pleasant Farm, Speke, were getting 20s a week, labourers 18s. Wilson Fox reported an average rate during the 1890s of 18–20s a week in west Lancashire and 16–18s a week in Sefton. By 1903 wages in Sefton had come up to those in west Lancashire at 18–20s, where they remained until raised by the strike of 1913.⁵

While farm servants are generally associated with pastoral districts they were still of importance in south-west Lancashire in 1851. In one parish, Aughton, they outnumbered 'outside' labourers by 115 to 103.⁶ It will be argued that these were the first to suffer from the introduction of machinery. Casual labour was also of great importance in the area. In 1850 William Rothwell observed that were it not for the Irish, the farmers could not get their work done in the busy seasons, as the manufacturing population cannot leave their employment on account of the machinery, which would have to stop. Forty years ago they could leave their looms, spinning jennies, etc, at any season for a few weeks.

It is difficult to establish piece rates as these would often be a matter for negotiation between farmer and labourer, but the evidence available suggests that the rate for

digging potatoes was in 1871 1d per score yards. This was up to 1½d in 1878, but had fallen back to 1d in 1879 because of the bad harvest. In 1903 it was back at 1½d. The rate for casual workers on the corn harvest at Mount Pleasant Farm in 1891 appears to have been 3s 6d a day.⁷

The primary method adopted to assess rates of adoption of machinery was the use of farm sale notices, as pioneered by J R Walton.⁸ The principal farming paper for south-west Lancashire from the 1850s onwards was the *Ormskirk Advertiser*, which included in its title the claim to be the *Agricultural Intelligencer for West Lancashire*. As this study was intended to supplement wider research there was a limit on time available and a sample was taken comprising the following five-year periods: 1857–61, 1867–71, 1877–81, and 1887–91. A check was also made on the situation in 1913. The number of notices appearing was about 35 a year in the earliest period, rising to between 40 and 50 later. Reasons given for sales fall into four categories with the death or retirement of the farmer being the major ones, the other two being leaving the farm, and distraint for rent or some equivalent forced sale. A check was made of the size range of farms represented in notices from the parish of Aughton against data derived from the 1871 census returns. It was found that larger farms were over-represented, farms over 100 acres being only 5.8 per cent of the total number of farms in 1871, but 13.2 per cent of those represented in sale notices. This may well have the effect of exaggerating the trend towards mechanization.

With the buoyant demand for hay and the high price of labour, grass mowers might be expected to enjoy rapid adoption. Other conditions had to be fulfilled, however, before

⁴Liverpool RO, Derby papers 920DER (15), Hale correspondence, 26 April 1872.

⁵Liverpool, RO, Speke papers 920SPE 7/1, Wages book, Mount Pleasant Farm, 1891; Board of Trade, *Report on Wages, Earnings and Conditions of Employment of Agricultural Labourers in the UK, 1900*, Cd 346, p 113, 1905, Cd 2376, p 146.

⁶PRO Census, 1851. HO/107.

⁷William Rothwell, *Report of the Agriculture of the County of Lancaster*, Warrington, 1850, Appendix, p 51; Lancs RO, Hesketh Papers, DDHe 62/33, Accounts of Park Farm Rufford, 1871; *Ormskirk Advertiser*, 2 Oct 1879; *Report on Wages, etc*, 1905, p 146; Speke papers 7/1.

⁸Walton, *op cit*.

they could be used. Fields were 'laid out more in five and six drill butts, the reason for laying them like that, as if it was a wet season it would help drain the land'. Before the mower could be successfully used, adequate under drainage, making possible the flatter cultivation of fields was essential. The first appearance of a mower in the district was noted in 1860 when John Bullen of Ince Blundell cut 60 acres of clover and old meadow grass with a machine made by Burgess and Key.⁹ The first machine to appear in the sale notices also came in this year, at the sale of Messrs Thomas Barton and Son of Thornton Farm and Dovecote Farm, Walton. This was the only machine to appear in the year, as was that of James Musker of Walton the following year. By 1867 there were five mowers, representing 14.2 per cent of all sales.¹⁰ Again sellers were concentrated

Over the period 1867-71 combined machines figure in 15.5 per cent of all sales, mowers in only 6.6 per cent. This dominance is maintained in later periods. In 1877-81, for example, combined machines appear in 59.5 per cent of notices, mowers in a mere 8.2 per cent. This was despite the technical difficulties involved in cutting the two crops:

the crop corn was stiffer to cut than hay and could not be left lying loose on the ground . . . wide angled triangular knives with saw edges were found least liable to choke in grain crops, compared with the smooth-edged, sharp-pointed knives that worked best on grass.

These points have led one writer to claim with regard to reaping machines that 'It became necessary to divide the machines into three classes; side delivery, those without side delivery, and combined reaper-grass mowers. The last combination was never perfected and mowing machines became a separate item.'¹¹ It seems that in south-west Lancashire farmers' ideas of what constituted 'perfection' diverged considerably from those of engineers. As noted above the area was one of small farmers. In 1870 80.62 per cent of farms were under 50 acres, with a further 14.02 per cent under 100 acres. Such farms would, except for the smallest, grow roughly similar small acreages of hay and grain crops. For example, John Pilkington of Burscough in 1868 grew on his 57 acres 13 acres of wheat, 11 acres of oats and 13 acres of clover.¹² Such acreages would justify mechanization, but not the acquisition of two separate machines. It seems that farmers were willing to sacrifice a certain amount of technical efficiency in return for economy.

As some farmers had both mower and combined machines it makes more sense to look at the proportion of farms having some mechanical means of getting in the hay harvest rather than at particular machines. This proportion was climbing over the first

TABLE 2
Percentage of notices in which machines appear

	Mower	Reaper	Combined machine	Self binder
1857-61	1.2	—	—	—
1867-71	7.7	2.2	16.2	—
1877-81	8.2	3.8	59.5	—
1887-91	17.6	2.7	71.8	—
1913	45.1	0.3	32.2	45.1

	Haymaker	Horse hay rake	Potato digger
1857-61	—	—	—
1867-71	15.0	13.5	—
1877-81	15.7	40.3	1.6
1887-91	15.2	56.1	3.6
1913	0.9	74.1	22.2

in areas around Liverpool, the next three adopters being in Aintree, Toxteth Park and Kirkby.

An important point has to be made here, and that is the dominance after this year of the combined reaping and mowing machine.

⁹Barnes, *op cit*, p 103; *Orms Adv*, 13 Sept 1860.

¹⁰See Table 2.

¹¹C S Orwin and E H Whetham, *History of British Agriculture 1846-1914*, Newton Abbot, 1971, p 111; M Partridge, *Farm Tools Through the Ages*, Reading, 1973, p 130.

¹²Figures on farm size from PRO MAF 68 Agricultural returns, 1870; *Jour Manchester and Liverpool Agric Soc*, 1868, p 49.

period, from 17.1 per cent in 1867 to 42.2 per cent in 1871, the average over the five years being 26.5 per cent. The figure had reached majority adoption by 1877 at 64.4 per cent, climbing to a full three-quarters of notices examined by 1881. The period between initial and majority adoption was thus about 15 years.

Binns noted in 1851 that 'A few machines for spreading mown grass have been observed', and rates of adoption of hay making machinery ('rowers' and 'tedders') and of horse hay rakes over the period 1857-61 were 15 per cent and 13.5 per cent respectively. Mechanical means of making hay did not prove popular with farmers, however, and the appearance of such machines in sale notices remained constant at around 15 per cent throughout our period. Hay making was one of the few aspects of Lancashire's agriculture to be singled out for praise by agricultural writers. Binns, for example, remarked that 'Its excellence consists in making the grass into hay in the least possible time.' Presumably farmers felt that such machinery would effect little improvement, and indeed might damage the hay. By contrast, collection of the crop could be speeded up significantly by the use of the hay rake, and by 1877 it figured in 48.8 per cent of sale notices. Its use reached the majority of farmers in the period 1887-91, when it averaged 56.1 per cent. Walton found a similar resistance to haymaking machinery in Oxfordshire, with adoption rates of between 10 and 20 per cent. Majority adoption of hay rakes seems to have come somewhat sooner, about 1880, but the tempo of adoption appears to have been broadly similar.¹³

With the emphasis on combined reaping and mowing machines noted above one would not expect to find a high proportion of reaping machines, and this is borne out by analysis of the notices. Before mechanization 'grain [was] mostly cut with the sickle or reaping hook, and sometimes with the scythe;

the latter mode is gaining ground'. The continuing use of the sickle was largely due to Irish harvesters who brought their sickles with them. Even at this time a desire to be more independent of casual labour was a reason given for the importance of reaping machines. 'It is hardly possible', asserted an inspector for the Manchester and Liverpool Agricultural Society, 'to over estimate their importance when we bear in mind the now greatly diminished amount of extra assistance obtainable from Irish labourers and others at times of harvest'.¹⁴

The first recorded use of a reaping machine to be found was in 1853 when a one-horse machine manufactured by Harker of Northwich and costing £10 was bought for use on the home farm of the Earl of Sefton at Croxteth Park. Unfortunately, the agent had to report that 'The machine, to my great disappointment, so far has not acted well', and this was also the experience of the Manchester and Liverpool Agricultural Society when they held a trial of reapers at Warrington in the following year. The land was soft and uneven, and the crop full of grass and weeds, but also the four machines were technically poor. It had to be reported that 'it was manifest to all present that further and considerable improvements are required in the Mechanism of these Reapers before they can be substituted for the old fashioned kind — the sickle'. After a further three trials the Society felt able to declare that 'The using of these machines is now becoming general in this part of the country'.¹⁵ An examination of the sale notices indicates that this claim was wide of the mark.

No reapers appear in the notices for the period 1857-61, and in the second period they appear only in 1867 and 1871 when they were in 5.7 and 4.4 per cent of notices respectively. The characteristics of some of

¹³J Binns, *Notes on the Agriculture of Lancashire*, Preston, 1851, pp 45, 88; Walton, *op cit*, pp 8-9.

¹⁴Binns, *op cit*, p 45; *Jour Manchester and Liverpool Agric Soc*, 1857, p 22.

¹⁵Lancs RO, Molyneux Papers, DDM 6/250, 17 Aug 1853, 6/251, 27 Aug 1853; *Jour Manchester and Liverpool Agric Soc*, 1854, p 20, 1857, p 22.

the early adopters can be looked at more closely. Peter Almond of Lunt farmed 121 acres and in addition to his Forshaws reaper used a Burgess and Key mower, two-horse hay rakes and a 'raker and rower'. Richard Rimmer had accumulated sufficient money to be retiring at the age of 59 in 1871. He had come to his farm twenty years earlier, when he had a capital of £3000 and was 'universally spoken of as a painstaking industrious Man — though a man devoid of much education'. On his 300-acre Gore House Farm in Altcar he used two reapers, one made by Nicholson, two mowers, a hay tedder and a hay rake. John Fairhurst, besides farming 152 acres at Woolands near Ormskirk, was also the owner of the Ormskirk Steam Corn Mill. His other business interests included the drying of chicory, of which he grew 52 acres, and an agricultural machinery agency selling steam engines and threshing machines direct from the manufacturers. While his farm was mainly arable, he was also a breeder of pedigree cattle, one of which, a bull named Inkerman, was exported to Venezuela in 1857. He had two 'Eclipse' reapers by Samuelson, a mower, horse hay rake, hay-maker, 10-row corn drill and a subsoil plough, but obviously over-reached himself, as his sale in 1871 was due to his bankruptcy.¹⁶

The adoption of reaping machines remained confined to such farmers in later years. In 1877–81 the average proportion of sales in which they appeared was only 3.8 per cent, in 1887–91 2.7 per cent. Taking figures for reapers and combined machines together, it appears that 19.3 per cent of farmers had some mechanical means of harvesting grain in the years 1867–71, a proportion which had increased to 61.1 per cent by 1877–81.

The adoption of harvesting machinery must have been in part a response to the considerable increase in agricultural wages in the years

since 1860. It had the effect of considerably reducing the workforce. In 1851, for example, Robert Neilson employed 35 men on his 300-acre Halewood Farm. By 1871 the figure was down to 19. It is noticeable that, whereas there were six farm servants living in the house in 1851, there were none in 1871. The use of the opportunity afforded by machinery to dispose of farm servants is confirmed by the position in Aughton. There were now only 64 farm servants, while the number of labourers had risen to 144. A similar situation was noted in the neighbouring parish of Lydiate where a decline in population was attributed to 'the general introduction of machinery for farm purposes . . . comparatively few young men are now kept on farms; those that are engaged are chiefly "datal-workmen" (day labourers)'. The new machinery had caused some decrease in the number of men employed full time, but still required many casual labourers. There were 10 people binding oats behind a reaper in Maghull in 1869. The next phase of mechanization was drastically to alter this situation.¹⁷

There are no figures for the number of Irish migrant labourers who worked in Lancashire. The figures available at national level indicate a decline from 38,000 in 1880 to 23,000 by 1890, rising again to 32,000 in 1900 but dropping back to 18,500 by 1910. In 1897 the *Ormskirk Advertiser* complained that 'The comparative dearth of labour is very freely commented on throughout the district. Irish harvesters, in particular, were hardly ever known to be so scarce'. There is evidence that those who continued to come across were aware of their stronger bargaining position. There are reports of strikes by Irish labourers in Speke in 1891 and in Cheshire in 1900.¹⁸ It is very possible that there were others; by

¹⁶ *Orms Adv.*, 2 Nov 1871, PRO Census 1861 RG/9/2726; *Orms Adv.*, 19 Jan 1871, Molyneux Papers DDM 6/216, 13 Aug 1851, Census 1861 RG/9/2759; *Orms Adv.*, 6 Apr 1871, 24 Sept 1857, *Jour Manchester and Liverpool Agric Soc.*, 1867, pp 43–4; Lancs RO, DX/1960, Handbill.

¹⁷ Census 1851 HO/107/2193, 1871 RG/10/3854; 1871 RG/10; T E Gibson, *Lydiate Hall*, Edinburgh, 1876, p 301; *Orms Adv.*, 19 Aug 1869.

¹⁸ J Handley, *The Irish in Modern Scotland*, Cork, 1947, p 171; *Orms Adv.*, 22 July 1897; Speke papers, 10/6, 8 Oct 1891; *Manchester Evening News*, 20 and 25 July 1900.

their nature they were shortlived and unlikely to be reported. At Speke, wages paid to casual labourers in 1891 amounted to £85 16s 1d (£53 3s 4d for the harvest, £30 12s 9d for potatoes dug by piece work) or 15 per cent of the total wages bill. Considerable savings were offered by the self binder which 'enables the farmer to get through his work with less work than heretofore, and with comparative independence'. In addition to these incentives to adopt the self binder and potato digger, Lancashire farmers were feeling threatened by agricultural depression. In the early 1890s the price of one of their staple products, hay, was reduced by an influx of imports from America. They had also seen the effects of depression in the rest of England. Their papers contained letters from Lancashire farmers who had seized the chance of cheap rents to move to Essex. All these factors encouraged the adoption of machinery in the 20 years following 1890.¹⁹

The self binder had of course been available much earlier. The first major trial of self binding machines in England took place at Aigburth near Liverpool in 1877 in connection with the show of the Royal Agricultural Society. The first farmer to have been found to adopt the machine in south-west Lancashire was Robert Neilson of Halewood. In 1882 he cut all his oats with a Woods self binder using wire: 'Mr Neilson does not object to that, only he uses a superior kind of wire, furnished by Rylands of Warrington.' Neilson was possibly the best known farmer in Lancashire, having used steam for ploughing since 1867 and making his own gas to power a threshing mill and bone mill. He was a JP and was on the committee of the Liverpool Farmers Club. The first exhibition of a self binder at the Ormskirk show was in 1884, when a machine newly purchased by Edward Threlfall of Halsall was displayed. In 1888 Henry Whitehead, who farmed 400 acres at Hesketh

Bank, had a machine.²⁰ These are all isolated examples, as is the first machine to turn up in the sale notices. This was in 1890 when the executors of Robert Swift of the 138-acre Clock House Farm, Bickerstaffe, advertised a Woods machine for sale. In the same year the *Ormskirk Advertiser* noted that 'Within the past few days we have witnessed the operations of several self-binding harvesters in Aughton, Scarisbrick, and Halsall, and, on the whole, they did their work remarkably well.' By 1913 they considered that the self binder had been widely adopted; 'wherever one may travel now in the Ormskirk district it is very rare indeed for a mower and reaper to be seen at work'.²¹ A check of sale notices for that year reveals self binders being offered for sale in 45.1 per cent of the sales, which, while indicating widespread adoption, does not prove the demise of the combined machine.

Prior to the 1890s there was a lack of interest in the possible application of machinery to the harvesting of potatoes. At the show of the Manchester and Liverpool Agricultural Society in 1857 Col Wilson-Patten drew his audience's attention to the need for potato diggers. A machine exhibited at the show gave him some hope. Yet when the first machine turned up in the sale notices 21 years later it is an isolated example. Technical reasons were partly to blame. In 1877 the Ormskirk and Southport Agricultural Society organized a trial of potato diggers which proved unsatisfactory. Those picking behind the machines held up the potatoes in derision and asked 'if such work was ever done with the fork?' The conclusion was that 'The result of the trial will scarcely warrant blacksmiths in giving up making potato forks yet.'²²

Interest seems to have been too low to stimulate innovation within the area itself, the closest successful manufacturer being J S Warburton of Preston. There were no

¹⁹Speke papers 7/1; *Orms Adv.*, 21 Aug 1890; RC Agricultural Depression, *Minutes of Evidence*, 1894, c8541, Q27261.

²⁰'Mechanics on the Farm', *Field*, 1882, p 545, *Orms Adv.*, 16 Aug 1894; *Orms Adv.*, 31 July 1880, 18 Feb 1909.

²¹*Orms Adv.*, 21 Aug 1890, 28 Aug 1913.

²²*Orms Adv.*, 17 Sept 1857, 30 Aug 1877.

diggers from Lancashire exhibited at the 1877 Liverpool Royal Show. Similarly, at a major trial of diggers at the 1881 Newcastle Royal Show machines were entered from Scotland, Wales, Lincoln, and Berwick-on-Tweed, but none from Lancashire. There were no local manufacturers to compare with Wilson of Tarleton who made combined machines. There was some change in the 1890s when a Bickerstaffe farmer, Robert Rosebotham, had a digger of his invention taken up by Powell Brothers and Whittaker of Wrexham. At the same time Haslam and Mawdesley of Walton had started making diggers. In 1895 1000 farmers are reported to have attended a trial of diggers.²³

The first adopters to show up on the sale notices were in 1878, at Moor Hall Farm, Aughton (132 acres) and Reed's Farm, Rainford (100 acres). Over the period 1877-81 diggers appear in only 1.6 per cent of all notices, and in the period 1887-91 in 3.6 per cent. One reason for this low level of adoption was the fact that much of the potato crop was grown by small farmers. Besides having little capital, relatively small acreages under potatoes and adequate supplies of family labour, they often tended to concentrate on early potatoes. With this crop harvesting was a question of raising small amounts as soon as possible and without damage. In addition, the usual practice was to plant savoys or cabbages in between the rows of early potatoes thus rendering the use of a potato digger out of the question.

The greater interest in the 1890s might have been encouraged by the switch by some larger farmers to a bigger acreage of main crop potatoes, as early potatoes were under competition from imports. However, a correspondent in the *Ormskirk Advertiser* pointed out that

If potatoes happened to be very high, and one wanted to get the high prices, well, then, the potato getter might have something to say for itself, but I will back a

potato to fetch more in March than in September, so there is nothing to be got by speed.²⁴

The main reason for the new interest in potato diggers was the scarcity of casual labour and a desire to reduce costs. In 1891 the agent to the Speke estate reported that

The Irish labour is this year giving us a deal of trouble, there appears to be no means of satisfying them, I have had 9 men struck work today at Mount Pleasant farm, this is the seed time this year, fortunately I have the Potato Digger otherwise I should be in quite a fix.

Once a digger was used, considerable savings on labour could be made, as the type of labour required was qualitatively different, and could be done by either women or school children. The Speke agent observed that 'on account of the wet weather I have been unable to use the Potato Digger & the men have been digging by the piece, but I now have a large staff of women as well as men, picking up after the digger'. He considered the saving to be made by using the digger to be £20. One further change was required to make full use of such machinery: the shifting of school holidays to coincide with the peak period of harvesting in October, which was achieved in Aughton by 1898. Potato diggers were then adopted by a considerable number of larger farmers, appearing in 22.2 per cent of sale notices in 1913, when it was reported that 'this system seems to be greatly on the increase in the Ormskirk district'.²⁵

It has been argued that the main reason for the adoption of machinery was high wages and an uncertain supply of casual labour. An additional reason for the change in the last decade of the nineteenth century may have been a drop in the number of farms under 50 acres, which amounted to 62.59 per cent of the total number of farms in 1910. The savings which could be made by large farmers are indicated by the drop in the annual wage bill on Speke Home Farm from £671 in 1892

²⁴*Orms Adv*, 21 Sept 1893.

²⁵Speke papers 10/6, 8 Oct 1891, 2 Nov 1891, 14 Nov 1892; Lancs RO, SMAu 1/3 Aughton school log, 29 Sept 1898; *Orms Adv*, 16 Oct 1913.

²³*JRASE*, 1881, p 222; *Orms Adv*, 24 Jan, 16 May, 26 Sept, 1895.

to £523 in 1898.²⁶ The first wave of mechanization coincided with a steep rise in wage rates. Its result was a drop in the number of full-time men employed, and particularly in the numbers of farm servants. The next target for economies, under the stimulus of a fear of economic depression, was Irish labour. The self binder and the potato digger lessened the reliance on casual labour and threw a greater burden of work on the permanent workers. This was to be of importance in the unionization of the area's workers and the strike of 1913.

There were other factors which affected the detail of the adoption of machinery. The clearest case of this was the combined machine. The particular conditions of south-west Lancashire, small farmers producing crops for immediate sale, meant the widespread adoption of a machine which, if not technically efficient compared to separate mowers and reapers, could cut economically their small acreages of grain and hay. It would

be interesting to see if the combined machine enjoyed similar success in other areas.

The need for further studies of the experience in clearly defined regions is also illustrated by the adoption of the potato digger. The knowledge that potato spinners were patented in 1855 means little when it is discovered that, in one important potato growing area, serious adoption by farmers does not begin until the late 1890s. This study also confirms the view expressed by Walton that, if the years from 1880 to the First World War were not ones of significant innovation, they were ones which saw important growth in the use of machinery.²⁷ The changes which were made then had important effects for rural society. They helped to prepare the ground for Lancashire's 'Revolt of the Fields'.

²⁶PRO MAF 68; Speke papers 4/1 Home Farm Accounts.

²⁷Walton, *op cit*, p 9. See also David Morgan, 'The Place of Harvesters in Nineteenth-century Village Life', in R Samuel (ed), *Village Life and Labour*, 1975. Morgan's claim that 'mechanical aids to harvesting were slow to be accepted in English agricultural practice' (p 61), seems to be contradicted by the experience of south-west Lancashire.

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