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Forthcoming conferences

Rural History 2021

The fifth biennial conference of the European Rural History Organisation (EURHO), Rural History 2021, will take place in Uppsala, Sweden. This postponed conference will be held on Monday 20 to Thursday 23 June 2022.

British Agricultural History Society Winter Conference, 2022

This conference will (provisionally) be held on Saturday 3 December 2022 at a London venue to be confirmed.

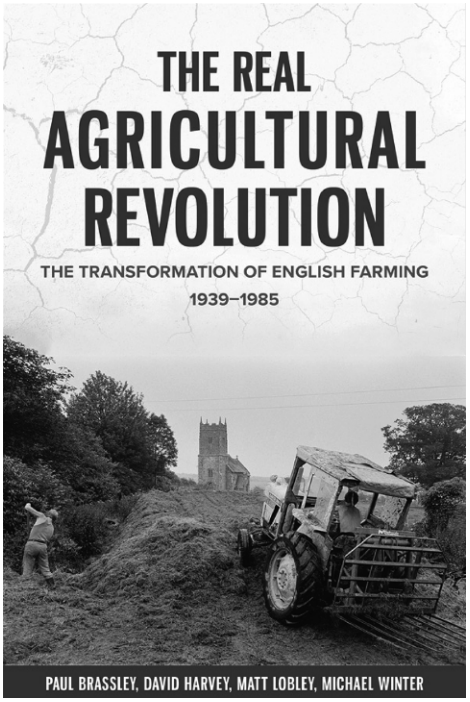
British Agricultural History Society Spring Conference, 2023

This conference will (provisionally) be held on Friday 14 and Saturday 15 April 2023, at a venue to be confirmed.

Further details of all these conferences will be available from the Society's website at www.bahs.org.uk

Joan Thirsk Memorial Prize

The Joan Thirsk Memorial Prize was awarded at this year's Spring Conference to Paul Brassley, David Harvey, Matt Lobley, and Michael Winter, for their book, *The real Agricultural Revolution: The transformation of English farming, 1939–1985*, published by The Boydell Press.



On presenting the prize, Professor Clare Griffiths said: 'The Joan Thirsk Memorial Prize is awarded by the Society in memory of Joan Thirsk, who was of course known to many of you personally, and whose work is familiar to and valued by so many more. The Prize is given annually to the author of a book on any aspect of the rural or agrarian history of Britain and Ireland. It has been awarded since 2017, and even in that relatively short time it has generated a very distinguished list of prize winners, about which you can read more on the BAHS website.

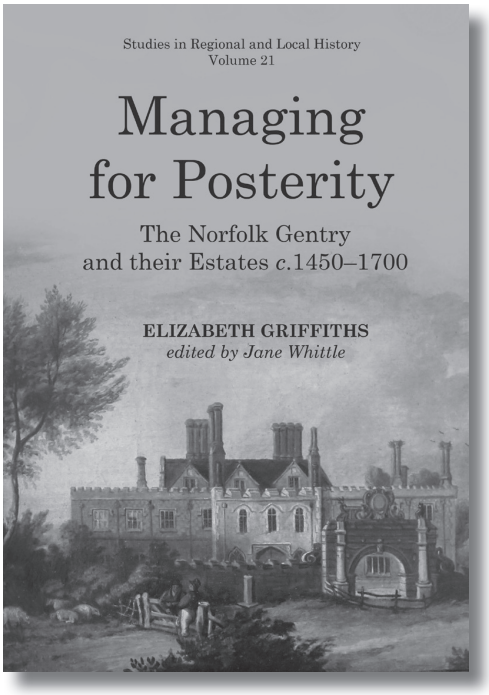
'This tradition continues, I'm very happy to say, and this year's judges enjoyed many hours of both enjoyable and instructive reading as we worked our way through the submissions. I was joined in these endeavours by my fellow judges Nicola Verdon and Paul Warde. The standard of the submissions was very high this year, but one book did shine through, and we were unanimous in our decision. This is the first occasion on which the prize has been awarded to a book with more than one author.

'The real Agricultural Revolution will surely prove to be indispensable reading for anyone studying the history of British agriculture in the twentieth century. It is a book which impressed us with its scholarship, its use of original primary research across a great range of source materials, and the way in which it combines attention to the particular and the regional with an ability to contextualise historical experience and tell a wider and more far-reaching story, a story which it sets out with eloquence and engaging argument. Above all, it succeeds in making a significant contribution to the field, not only in adding to our sum of knowledge, but in providing new insights as to how we may interpret and better understand an important period in the history of British farming, and the complicated processes by which changes in agricultural practice take shape as a consequence of the decisions and actions taken by myriad individuals.'

Managing for Posterity

The Norfolk Gentry and their Estates c.1450–1700

by Elizabeth Griffiths, edited by Jane Whittle



Securing the long-term survival and status of the family has always been the principal concern of the English aristocracy and gentry. Central to that ambition has been the successful management of their landed estates, whilst failure in this regard could spell ruination for an entire family. In the sixteenth century, the task became more difficult as price inflation reduced the value of rents; improved management skills were called for. In Norfolk, estates began to change hands rapidly as the unaware or simply incompetent failed to grasp the issues, while the more astute and enterprising landowners capitalised on their neighbours' misfortunes.

When Sir Hamon Le Strange inherited his family's ancient estate at Hunstanton in 1604 it was much depleted and heavily encumbered. The outlook was bleak: such circumstances often led to the disappearance of families as landowners. However, within a generation, he and his remarkable wife Alice had modernised the estate and secured the family's future. After 700 years, the Le Stranges still survive and prosper on their estate at Hunstanton, making them the longest surviving gentry family in Norfolk. The first part of this book presents new research into the secret of their rare success. A key aspect of their strategy was a belief in the power (and economic value) of knowledge: Hamon and Alice wanted to ensure that their improvements would endure for posterity. To this end, they curated their knowledge through meticulous record-keeping and carefully handed it down to their successors. This behaviour, instilled in the family, not only facilitated on-going reforms, but helped future generations overcome the inevitable reversals and challenges they also faced.

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The second part of the book collects together four related papers from Elizabeth Griffiths' research about the Le Stranges, Hobarts and Wyndhams, republished from the *Agricultural History Review* and edited from two Norfolk Record Society volumes. For anyone interested in early modern rural society and agriculture and the history of Norfolk gentry estates, this volume will be essential reading, offering as it does new perspectives on the history of estate management, notably the role of women, the relationship with local communities and sustainability in agriculture.

Elizabeth Griffiths was an honorary research fellow at University of Exeter and co-author, with Jane Whittle, of *Consumption and Gender in the Early Seventeenth Century Household: The World of Alice Le Strange* (OUP, 2012). She passed away in April 2020 while this volume was in preparation. It has been compiled and edited by her friend and research collaborator, **Jane Whittle**, Professor of Economic and Social History at the University of Exeter and Series Editor of *Studies in Regional and Local History*.

University of Hertfordshire UH Press

The life and afterlife of the Craven Heifer: on the biography of a famed beast*

by Carl J. Griffin

Abstract

The mania for agricultural 'improvement' in England at the turn of the nineteenth century extended in often paradoxical ways to livestock. At once the pursuit of perfection was a matter of yields – deadweights, number of progeny, milk volumes – and fitter and stronger animals. However, the same imperatives also encouraged the breeding of outlandishly large but often unfit animals. Such cattle, sheep, and pigs became status symbols, evidence of their owners' success, their celebrity further fuelled by paintings that distended their proportions in cartoonish ways and through being toured and exhibited to the public. (In)famous and ubiquitous yet curiously little studied, this paper takes one such famed animal – the so-called Craven Heifer, born on the Bolton Abbey Estate in 1807 – and through a study of its life, reception, and afterlife attempts to better understand the complex histories of celebrity farm animals.

In May 2008 the story of Chilli, a Friesian bullock six feet six inches tall, took British print, television, and online news media by storm. Believing him to be the tallest cow in Britain, Chilli's owners had applied to Guinness World Records to have their claim verified. For a moment, Chilli was not only the most famous bovine in Britain but also one of the most featured living things.[1] Abandoned as a young calf in 1999 at the door of an animal rescue shelter at Ferne near Chard, Somerset, Chilli had proceeded to grow at a prodigious rate, overtaking the height of Britain's previous tallest living cow, the Colonel, who had been raised

* An earlier version of this paper was presented in March 2021 as part of the Animal History Group's seminar series. I would like to thank the organizers of the series and those who attended the seminar for their comments and encouragement. My thanks also go to Hilary Matthews and Hilda Kean for their encouragement and suggestion of references, to Suzanne Beech for reading an early version of the paper, to Jim Spencer of Hansons Auctioneers for access to auction catalogues and for permission to reproduce a copy of the tour handbill, to Bonhams for permission to reproduce Fryer's painting and to Aidan Haley of Chatsworth House archives for details of the Bolton Abbey Estate papers. The final version of the paper has been significantly sharpened thanks to the perceptive reading of the initial submission by Paul Warde and the two anonymous referees. Richard Hoyle alerted me to the Hansons' auction. This was the spark that fired my particular interest in the Craven Heifer and as such I would like to acknowledge and thank Richard. Any errors and interpretative infelicities are, of course, mine and mine alone.

[1] For example, see *The Guardian*, 12 May 2008; 'Bullock could be record breaker', BBC News online, http://news.bbc.co.uk/1/hi/england/somerset/7397623.stm (accessed 9 Sept. 2021).

by large cow specialist Arthur Duckett at nearby Alstone. Chilli's celebrity soon drew crowds (and funds) to the shelter, but a year later, on the advice of vets, he was euthanized, his huge size placing a massive strain on his joints leading to crippling arthritis. Chilli's demise was also widely covered, the grim reality hidden behind such noble headlines as 'Chilli the giant cow dies'.[2] Truly, as the *Farmers Weekly* put it, Chilli had been a 'media phenomenon'.[3]

The story of Chilli, and indeed that of other 'giant' cows in the recent past, bears remarkable parallels to the case of gigantic livestock at the turn of the nineteenth century. A boom in livestock breeding in the final decades of the eighteenth century, in part fuelled by a huge increase in the demand for meat and in part due to the fashionable nature of agricultural improvement, gave rise to the cultish status of celebrated and often prodigiously large farm animals. Cattle such as The Durham Ox, Comet, The White Heifer that Travelled, Duchess, Red Rose, the Ketton Ox, the Lincolnshire Ox, amongst many others, found fame not just through being exhibited at agricultural and private shows – and in the case of some animals through being toured whereby members of the public would pay to see the famed beast – but also through portraiture.[4] The names and likenesses of some of these remarkable beasts lives on through pub names – one directory of pubs listing eleven pubs currently trading and a further eight recently closed named after the Durham Ox – and in a revived interest in early nineteenth century farm animal portraiture.[5] But the animals themselves remain obscure, their lives hidden behind the almost comedic condescension of posterity that has become their lot due to their portraits so often grotesquely exaggerating their physical form.

This paper seeks to remedy this by telling the life one such celebrated cow, the Craven Heifer. Born in the Craven District of North Yorkshire in March 1807, the Craven Heifer gained notoriety by virtue of her gargantuan size, at her peak weighing 312 stones, and measuring some 11ft 4ins in length and over 7ft in height making her the supposedly the largest heifer in England. Beyond offering for the first time a systematic biography of a once famous farm animal, and thus taking the remarkably sparse historiography on giant Georgian and Victorian livestock in new directions,[6] the focus on the Craven Heifer also offers a way of understanding both the place (and places) of livestock beyond the farmyard and field but also the one-time mania for such extraordinary animals.

[2] *Chard and Ilminster News*, 29 Oct. 2009. On the Colonel see: 'Britain's biggest steer weighs in at 261 stone', *Wales Online*, 1 Apr. 2003, https://www.walesonline.co.uk/news/local-news/britains-biggest-steer-weighs-261-2456941 (accessed 9 Sept. 2021).

[3] *Farmers Weekly*, 4 Nov. 2009.

[4] E. Moncrieff, S. Joseph and I. Joseph, *Farm animal portraits* (1996); J. Schinto, 'Good breeding: British livestock portraits, 1780–1900', *Gastronomica* 6 (2006), pp. 30–35. The early years of the agricultural show, remarkably, still awaits systematic analysis. For an excellent study of the mid-nineteenth century show see: L. Miskell, 'Putting on a show: the Royal Agricultural Society of England and the Victorian town, c. 1840–1876', *AgHR* 60 (2012), pp. 37–59. Helena Lim's doctoral thesis on the emergence of the 'premium system' also offers important analysis of the role of showing for premiums at agricultural shows: H. Lim, 'Stimulus to innovation: the Premium System as a method of encouraging agricultural improvement, 1754–1870' (unpublished PhD thesis, University of Bath, 1997), esp. chs 2 and 4.

[5] WhatPub?, https://whatpub.com/, search for 'Durham Ox' (accessed 9 Sept. 2021).

[6] For writings on giant livestock see: H. Ritvo, *The animal estate: the English and other creatures in the Victorian age* (1987), pp. 45–6, 56, 58–60; M. Quinn, 'Corpulent cattle and milk machines: nature, art and the ideal type', *Society and Animals* 1 (1993), pp. 145–57. See also: E. Pawley, 'The point of perfection: cattle portraiture, bloodlines, and the meaning of breeding, 1760–1860', *J. of the Early Republic* 36 (2016), pp. 37–72; Moncrieff *et al.*, *Farm animal portraits*, esp. chs 2 and 6.

Drawing inspiration from works of animal studies that have followed individual animals, not least the work of geographers Phil Howell and Chris Bear,[7] this paper offers a corrective to agrarian histories in which the individual farm animal has been altogether lost, subsumed into an amorphous animal collective. Indeed, a narrowly socio-economic view of the function of agrarian history serves to not only ignore the agency and subjectivities of animals but also the vital role that animals' being and presence played in determining the very form and practices of agriculture past and present.[8] Of course, the very process of the industrialization of the making of meat – this driven by the need to feed Britain's rapidly growing industrial population – acted, as Timothy Pachirat has noted, to denude individual animals of their distinguishing features and characters.[9] The archive shadows this process, individual animals relegated to numbers in ledgers. Historians have duly followed course.

This is not to say that all work in agrarian history has relegated the animal to the status of a thing to be acted upon – the subject of improvement rather than the subject itself – for some notable studies have concentrated on the history of specific livestock breeds. Indeed, recent work by Rebecca Woods has shown the importance of focusing not on the species – cattle and sheep in the case of her landmark book – but on the breed to better understand the scales and plays of ecological imperialism.[10] The pioneering work of Harriet Ritvo, Hilda Kean and the wider animal studies movement has also inspired a renewed attention on the places of animals in agricultural history, human-animal relations, violences enacted against animals on farms, and animal health and welfare, the work of Abigail Woods and Karen Sayer blazing a trail.[11] We also do well to remember that works of agricultural history on the general theme of improvement have long since mentioned the breeding exploits of such famed individuals as Robert Bakewell, the Leicestershire farmer who as much

[7] P. Howell, 'Flush and the banditti: dog-stealing in Victorian London', in C. Philo and C. Wilbert (eds), *Animal spaces, beastly places: new geographies of human-animal relations* (2000), pp. 35–55; C. Bear, 'Being Angelica? Exploring individual animal geographies', *Area* 43 (2011), pp. 297–304.

[8] On the importance of taking the non-human seriously in writing agrarian histories see: A. Way, W. T. Okie, R. Funes-Monzote, S. Nance, G. N. Rosenberg, J. Specht, and S. Swart, 'Roundtable: animal history in a time of crisis', *Ag. Hist.* 94 (2020), pp. 444–84.

[9] T. Pachirat, *Every twelve seconds* (2011).

[10] G. Bowie, 'New sheep for old – changes in sheep farming in Hampshire, 1792–1879', *AgHR* 35 (1987), pp. 15–24; S. W. Martins, 'From black-face to white-face: an aspect of the agricultural revolution in Norfolk', *AgHR* 41 (1993), pp. 20–30; J. P. Boxall, 'The Sussex breed of cattle in the nineteenth century', *AgHR* 20 (1972), pp. 17–29; J. R. Walton, 'The diffusion of the improved Shorthorn breed of cattle in Britain during the eighteenth and nineteenth centuries', *Trans. Institute of British Geographers* 9 (1984), pp. 22–36; R. Woods, *The herds shot round the world: Native breeds and the British Empire, 1800–1900* (2017).

[11] Ritvo, *The animal estate*; H. Kean, *Animal rights: Political and social change in Britain since 1800* (1998); E. Fudge, 'A left-handed blow: writing the history of animals', in N. Rothfels (ed.), *Representing animals* (2002), pp. 3–18. On such recent work see: K. Sayer, 'Vermin landscapes: Suffolk, England, shaped by plague, rat and flea (1906–1920)', in C. Lynteris (ed.), *Framing animals as epidemic villains* (2019), pp. 27–64; A. Woods, 'Rethinking the history of modern agriculture: British pig production, *c.* 1910–65', *Twentieth Century British History* 23 (2012), pp. 165–91; *Idem.*, 'From cruelty to welfare: the emergence of farm animal welfare in Britain, 1964–71', *Endeavour* 36 (2012), pp. 14–22; C. Griffin, 'Animal maiming, intimacy and the politics of shared life: the bestial and the beastly in eighteenth- and early nineteenth-century England', *Trans. Institute of British Geographers* 37 (2012), pp. 301–16; *id.*, 'Topologies of tenderness and violence: human–animal relations in Georgian England', in H. Kean and P. Howell (eds), *The Routledge Companion to animal–human history* (2018), pp. 322–44.

perfected the arts of self-publicity as he did the principles of improved livestock through interbreeding.[12]

As it will be seen, there can be no doubt that the life of the Craven Heifer was in many ways very different to that of most cattle kept by British farmers. Most cows were not raised as curiosities or to be shown. Nor were they were subjected to the wretched paradox of pampering and torturous touring. Rather, they lived their lives in the byres, barns, commons, and fields, roamed feral in the open spaces of the globe, or were engaged as beasts of burden at the plough or in front of the cart and wagon. To claim the Craven Heifer can be read as an 'every cow' is thus an evident fallacy. Yet to research a famed beast, however apart from the rest of the species, is still to study an *individual*, their life no less important than any other animal. Indeed, celebrity animals might live very different lives to other members of their species but they represented a distinct form of individual that in itself is worthy attention. We also do well to remember that the very visibility of celebrity cattle, whether through touring or the reproduction of prints, meant that to large parts of the (particularly urban) population such animals did become a proxy for all cows. The Craven Heifer might be placed apart, but her innate 'cow-ness' – biologically and behaviourally – mattered and continues to matter.

There is also a critical methodological point in that writing the life of an individual farm animal is necessarily circumscribed by the paucity of material. Celebrity cattle, like the Craven Heifer, leave a fuller, if not fulsome, archive; an archive dominated by her enrolment in human circuits but that occasionally speaks to her own agency and experience. Their study gives us arguably our only way of writing of the existence of an actual cow from the period. The example of the Craven Heifer also allows us to think through the 'afterlife' of an individual animal, the paper going on to analyse the way her representations and fame continue(d) way beyond her untimely slaughter in early 1813. Before the paper plots the life and then afterlife of the Craven Heifer, it is important to briefly place the existence of this extraordinary cow into its wider context, taking stock of existing scholarship both on the mania for giant livestock in Georgian and early Victorian Britain and the wider set of works on breeding and cattle-rearing more generally.

I

Adam Smith is not usually held up as an expert on the livestock trade in Georgian Britain, but in an obscure section of his seminal *The Wealth of Nations*, first published in 1776, he relates a series of significant structural shifts that had taken place in the market for cattle. Urbanization outside of London had led to a reworking of the market: '[I]n the neighbourhood of a great town, the demand for milk, and for forage to horses, frequently contribute, together with the

[12] For an 'early' and a more recent example see: J. Thirsk, 'The content and sources of English agrarian history after 1500', *AgHR* 3 (1955): p. 79; P. M. Jones, *Agricultural enlightenment: knowledge, technology, and nature, 1750–1840* (2016), esp. pp. 67 and 90–1. For specific studies on animal breeders and animal breeding see: H. C. Pawson, *Robert Bakewell: Pioneer livestock breeder* (1957). For more recent work on Bakewell and other subsequent breeders see: D. Wykes, 'Robert Bakewell (1725–1795) of Dishley: farmer and livestock improver', *AgHR* 52 (2004), pp. 38–55; M. E. Derry, *Masterminding nature: The breeding of animals, 1750–2010* (2015), esp. ch. 1. Ongoing work by Hilary Matthews on the connections and conviviality between breeders for the period will have a transformative effect on our understanding of these men and their motivations.

high price of butcher's meat, to raise the value of grass above what may be called its natural proportion to that of corn.' This rising demand for meat and milk in urban centres thereby not only altered the economics of fattening cattle for slaughter and dairying on the urban fringe but also increased demand for cattle rearing at a distance, drawing in even the Highlands of Scotland into the English meat market.[13] We know that this growing demand for beef also acted to promote imports of cattle from Ireland, thus reversing earlier attempts to control and even ban such imports, as evidenced in the 1667 Irish Cattle Act.[14] The effects of the shifting contours of demand were not just geographical. Rising consumption encouraged greater stocking levels, the better prevention and treatment of murrains – the outbreaks of the 1740s having both decimated stock levels across Europe and also led to a dip in consumer demand for beef that was not reversed until the late 1750s[15] – and, critically, advanced attempts to improve deadweight yields.[16] The market thereby had a huge impact on driving agricultural change and in making the 'improvement' of cattle a subject worthy of serious attention and investment.

If 'improvement' went hand-in-hand with expansion and growth, as Peter Jones has recently asserted, agricultural improvement had many other drivers. Demand was but one facet alongside sustained economic growth – evident across Europe from the late 1760s – and what Jones labels 'Agricultural Enlightenment', 'the production and diffusion of knowledge, the transfer of skills, the role of technology, and, not least, the actions of the State'.[17] If we do well to remember that, as Nicholas Russell has so artfully shown, the art and science of animal breeding can be traced back to the 1530s, in relation to beef cattle it was not until the 1750s and 1760s that agriculturalists systematically used breeding to encourage certain attributes and to increase yields relative to feeding costs, the limits to breeding knowledge the major barrier to breed 'improvement'. Indeed, if the 'novelty' of famed breeder Robert Bakewell's interbreeding method in the improvement of horses and livestock has been overplayed, his ability to standardize, articulate, and proselytize the approach positioned him as the figurehead for animal advancement.[18] By taking the desired attributes of successful animals, and in particular successful sires, the Bakewellian method, as Margaret Derry has recently put it, took on a Foucauldian biopolitical emphasis on population rather than the individual, 'stamping type and creating lines that truly bred'. Consistency and predictability mattered.[19]

[13] A. Smith, *An inquiry into the nature and causes of the wealth of nations* (2 vols, 1904, World's Classics edn), I, pp. 169–71.

[14] J. Thirsk, 'Agricultural policy: public debate and legislation, 1640–1750', in J. Thirsk (ed.), T*he agrarian history of England and Wales*, V, *1640–1750* (2 vols, 1985), II, p. 353.

[15] C. Mounsey, '"Strong in zeal but impotent in head": British responses to the cattle plagues of the eighteenth century', in S. Booth and C. Mounsey (eds), *Reconsidering extinction in terms of the history of global bioethics* (2021), pp. 97–111; J. Broad, 'Cattle plague in eighteenth-century England', *AgHR* 31 (1983), pp. 104–15. As John Beckett puts it, the panzootic led to a 'consumer revulsion to beef': J. V. Beckett, 'TS Ashton Prize Essay for 1980: regional variation and the agricultural depression, 1730–50', *EcHR* 35 (1982), p. 44.

[16] On these dynamics see: G. E. Fussell and C. Goodman, 'Eighteenth-century traffic in live-stock', *Econ. Hist.* 3 (1936), pp. 214–36; Ritvo, *Animal estate*, pp. 46–7; D. Stead, 'Risk and risk management in English agriculture, c. 1750–1850', *EcHR* 57 (2004), pp. 334–61; T. Almeroth-Williams, *City of beasts: how animals shaped Georgian London* (2019), ch. 4.

[17] Jones, *Agricultural enlightenment*, pp. 1–2.

[18] Russell makes the point that such innovation was at first a product of the dairy industry, the beef industry a distant second: N. Russell, *Like engend'ring like: heredity and animal breeding in early modern England* (1986), ch. 6.

[19] Derry, *Masterminding nature*, p. 18.

Arguably the most important aspect of this approach was a shift to the utilitarian understanding that, in the words of a twentieth-century textbook, 'the real purpose of cattle' was to 'convert roughage to meat, milk, and by-products'.[20] The holy grail for livestock breeders was thus to produce animals whose attributes met the demands of the market. And, on those terms, it arguably worked. Sir John Sinclair, founding chair of the Board of Agriculture, noted that the average weight of beeves sold at Smithfield rose from 370lbs in 1710 to 800lbs in 1795, the year of Bakewell's death and a year of near famine conditions in much of England. Sheep in the same period reportedly increasing from 28lbs to 80lbs. Such figures were necessarily boosterish, tending to underestimate the size of cattle at the start of the eighteenth century as much as selectively representing certain 'improved' breeds of cattle at the century's end.[21] We also do well to remember that, notwithstanding centuries of efforts to try and standardize weights, variations between (and even within) regions, over time, and also in the way which individuals and organizations interpreted weights means that such comparisons over nearly a century are likely to be flawed.[22] It is also important to note that by 1795 the Bakewellian ideal of efficient and reliable meat machines was not universally understood and practised. As late as 1786 it was possible for an agricultural writer to assert that for cattle 'no true standard of shape was recognized. Size was the only criterion of merit… The pail and the plough set the standard; the butcher was ignored.'[23]

The point can easily be overplayed. By the turn of the nineteenth century a transformation had occurred in the purpose, yield, and sheer number of cattle in England. Further, as Fussell noted, beef beasts also matured quicker and were thus slaughtered earlier.[24] Cattle bred for beef also grew significantly in size in the final decades of the eighteenth century, although the increased mean hid a huge degree of variation. Indeed, we do well to remember that for Bakewell size was of tertiary importance to shape and yield, the rougher pastures in the neighbourhood of his farm at Dishley near Loughborough, Leicestershire, not well suited to feeding the largest animals. In relation to cattle the point held regardless of local conditions, Bakewell being 'an advocate for small bone in all kinds of cattle'.[25]

Bone did not pay. It had negligible value. As Arthur Young wrote of Bakewell's approach in 1771, 'the value lies in the barrel, not in the legs'.[26] And the barrel needed to be covered with fat for that was what consumers demanded, fat being high in calorific value and thus 'an important commodity'. By the time that Young visited Dishley again in 1785, Bakewell had refined his method of producing animals, with, by the standards of the early twenty-first century, 'enormous masses of fat over the hip bones, around the tail head and on the ribs behind the shoulder'.[27] These attributes were notoriously distorted in the portraits that

[20] H. M. Briggs and D. M. Briggs, *Modern breeds of livestock* (1958, 4th edn, 1980) cited in Quinn, 'Corpulent cattle', p. 146.

[21] G. E. Fussell, 'The size of English cattle in the eighteenth century', *Ag. Hist.* 3 (1929), pp. 160–81.

[22] On these dynamics see: M. Cooper and J. Grozier (eds), *Precise dimensions; A history of units from 1791–2018* (2017); J. Hoppit, 'Reforming Britain's weights and measures, 1660–1824', *EHR*, *108* (1993), pp. 82–104.

[23] 'Baby Beef', *JRASE* 85 (1926), p. 179, cited in Fussell, 'Size of English cattle', p. 163.

[24] *Ibid*., p. 181.

[25] J. Monk, *General view of the agriculture of the County of Leicester: with observations on the means of their improvement* (1794), p. 28.

[26] A. Young, *The farmer's tour through the east of England* (4 vols, 1771), I, p. 112.

[27] Moncrieff *et al*., *Farm animal portraits*, p. 169.

Bakewell and others commissioned to show off their improved stock – and their prowess as breeders. Cattle and sheep (and to a lesser extent pigs) were painted to accentuate their long straight backs, large hind quarters, and to show that they were covered in fat, especially on the rump. Every other body part was irrelevant hence such representations also often rendered legs as spindly, feet tiny, and heads as comedically small. These paintings also adopted motifs from racehorse portraiture – well established by the mid-eighteenth century – of placing animals in portrait against a distant, large background to create a sense of hugeness.[28] This demand for farm animal portraits fuelled a boom in animal painting: what was once an obscure exercise becoming a respectable – and profitable – business for an artist, though until the 1970s these now familiar representations fell again into obscurity.[29]

To render such animals, and their representations, as mere attempts to assert fatness is arguably to miss a broader set of points. In this hugeness had a paradoxical place. At once the mission of putting meat on the tables of every family in the country encouraged breeding animals of, as Elspeth Moncrieff and the Josephs put it, 'the most extraordinary size and dimensions'.[30] And yet there was a realization that the very biggest – the freakishly big – were invariably animals ill-suited to breeding and were thus left for fatting, or if truly prodigious for showing to the general public. Thus, the showing of 'celebrated' giant animals at Lord Somerville's annual Christmas Smithfield show, the pinnacle fatstock show first held in 1799, was 'contrary to his custom', the showing of giant cattle more akin to a form of entertainment against the serious business of improvement.[31] Indeed, it is important to make the distinction between the two rather different forms of showing. Agricultural and 'private' shows were rarefied occasions, often, as in the case of Somerville's show, having aristocratic patronage and interest, encouraged by 'Farmer' George III's keen interest in agriculture, which made all aspects of farming of fashionable. To have one's stock present inferred a degree of respectability and social cachet, to win a prize was to confer considerable status and add value to the herd and to work of the breeder. As Ritvo put it, these were the 'barons of beef', their motives a confusion of patriotically wanting the English to eat roast beef – in contrast to the French who ate relatively little beef – and to position English agriculture as the leading force in the world. Ordinary farmers were warned not to bother showing their cattle at such shows, the prize invariably being paid in prestige rather than pounds, and the costs of showing their animals in the suitably elaborate way – the 5th duke of Bedford having a mock-up Chinese dairy to frame his bovine beauties – likely to be beyond their reach.[32]

The touring cow – usually a heifer or bullock, castrated animals being better at putting on weight – met a different demand and interest. These animals were not positioned as the

[28] Ibid., ch. 1.

[29] On their role see: Schinto, 'Good breeding', p. 31. The revival of interest in livestock portraits rests in part with husband-and-wife antique dealers turned farm animal portrait collectors Iona and Stephen Joseph whose 1996 co-written volume, *Farm animal portraits*, did much not only to raise the profile but also to make such portraits objects of serious study and scrutiny: Moncrieff *et al.*, *Farm animal portraits*. Sadly, after Stephen's death, the Joseph's important collection was put up for auction at Bonham's, London, and dispersed: *Farmers Weekly*, 26 Mar. 2006; Bonham's, sale catalogue for auction 21 Mar. 2006, https://www.bonhams.com/auctions/14097/?bid_lot_no=2811434#/ (accessed 9 Sept. 2021).

[30] Moncrieff *et al*, *Farm animal portraits*, p. 15.

[31] Ibid., p. 18.

[32] Ritvo, *Animal estate*, p. 53.

very best examples of the breed but instead as the very biggest. If George III's passion for agriculture had legitimized farming as a subject of personal interest for the nobility, there was a desire from the increasingly urban-residing lower classes to both understand and, critically, see animals too. This was manifest in huge demand for works of natural history and to see live animal exhibits. And the demand was well met by shows of the freakish (such as the 'double cow; shown in London in 1748, a monster with the leg, udder, and partial digestive system of a second cow growing on its back),[33] the wild and exotic animals of touring menageries, and also through touring giant cattle. This, in turn, fed into both a representational change and a shift in the purposes of breeding. If fat had been the commercial breeders' aim since the final decades of the eighteenth century, breeding fatter still animals for show – and especially for touring – became a niche if important trend. Public demand to see spectacular mammals in turn creating a market for enormous farm animals from dealers and showmen, saving those beasts which showed prodigious potential and the potential for prodigiousness from the slaughter (if often, as we will see with the Craven Heifer, only for a short while).

II

Bakewell's bovine subject was the Longhorn, an already established breed of cattle that originated in the Craven district of North Yorkshire where since at least the sixteenth century it had been used both as a draught animal and as a dairy cow. And yet the Craven Heifer, the most celebrated beast ever to hail from Craven, was not a local Longhorn but a Shorthorn, a breed that had developed out of the Teeswater and Durham cattle. Thanks to the efforts of brothers Charles and Robert Colling who farmed at Ketton Hall in Brafferton and Barmpton respectively, these being neighbouring parishes in County Durham, the Shorthorn became synonymous with the north east, and thanks to Bakewell's efforts the Longhorn notwithstanding its Yorkshire heritage became associated with the East Midlands.[34] Ultimately, it was the Shorthorn that won out as the go-to beast for agricultural improvers, Arthur Young noting as early as 1811 that the 'particular merit of the Dishley breed is of small consequence, compared with the just principles Bakewell disseminated'.[35]

Unlike the brothers Colling, who by the turn of the nineteenth century already had a reputation as the leading breeders and improvers of the Shorthorn, Rev. William Carr who raised the Craven Heifer was not a known breeder. Indeed, what we know of Carr does little to suggest a keen interest in livestock breeding, rather he came from a long line of clergyman (following his grandfather and father in the curacy of Bolton Abbey), was the duke of Devonshire's steward for his Bolton Abbey estate, and took an active interest in landscape aesthetics and the local dialect for which he compiled a dictionary published in 1824.[36] Nor do

[33] Ibid., p. 10.

[34] P. Stanley, *Robert Bakewell and the Longhorn breed of cattle* (1995), *passim*; Cadwallader Bates, 'The brothers Colling', *JRASE* (3rd series) 10 (1899), pp. 1–30; R. Wallace, *Farm live stock of Great Britain* (1885, 5th edn, 1923), esp. p. 63.

[35] A. Young, *On the husbandry of three celebrated British farmers, Messrs. Bakewell, Arbuthnot, and Ducket: being a lecture read to the Board of Agriculture, on Thursday, June 6, 1811* (1811), p. 6.

[36] On Carr's genealogy see: 'St Peter's eighteenth century', https://stpetersaddingham.org.uk/st-peters-church-history/st-peters-18th-century/ (accessed 9 Sept. 2021). On Carr's work as a landscape improver see:

we know who bred the Craven Heifer's dam and sire, although given the relative proximity to the Collings' farms – some fifty miles distant – and their reputation for breeding huge cattle, it is likely that the Craven Heifer came from a line of already much 'improved' cattle possibly with a direct lineage to Charles and Robert Colling's. Indeed, it is important to note that whatever the Collings' pre-eminence, as John Walton has argued, the breed was already being 'improved' in the north east before they adopted Bakewellian techniques.[37] Notwithstanding Carr's lack of pedigree as a breeder, the prestige attached to having such improved cattle on one's farm, not least for a clergyman who had a close relationship with his employer the 6th Duke who took a keen interest in agricultural improvement, was such that investing in known breeding stock was a likely strategy.[38]

Some context. On 15 April 1807, one month after the birth of the Craven Heifer, the Durham Ox, then arguably the most famous bovine in Britain and bred by Charles Colling, was slaughtered. An otherwise healthy animal but placed under the strain of both its own huge bodily mass and from having travelled some 3000 miles since it started to be toured by its travelling showman-owner John Day six years previously, the Durham Ox dislocated his hipbone on being led from his specially constructed carriage at Oxford on 19 February. Failing to heal, two months later he was slaughtered, Day erecting a tent around the suffering animal and charging members of the public to witness the Ox's dying moments.[39] For a young animal to show promise, to potentially become the next Durham Ox, was therefore significant: Day having been offered – and refusing – £2000 in July 1801 for the Ox and having reportedly once taken £97 in a single day in ticket sales to view him. Several of the Collings' cattle already showed such potential. Comet, a bull calf to the same inbred parents as the Durham Ox, was born in 1802 – five years after the Durham Ox – and quickly became *the* in-demand bull. Comet was the first bull to sell for 1000 guineas (on the dispersal of Charles Colling's herd on his retirement in 1810) and, in the words of the Collings' biographer, represented 'the high-water mark attained at Ketton'.[40]

Comet's celebrity did not extend to the wider public, but that of his half-sister – having the same sire, Charles Colling's Favourite – did. Born a twin to a bull calf in 1806, and thus a freemartin heifer, she was infertile and rapidly put on weight. As early as autumn 1808 she was reported as 'surpassing any animal ever yet seen for fat'. Harnessing this potential, Robert Colling proceeded to raise her to her 'greatest flesh-taking capacity',[41] and knowing that 'the peregrinations of the Durham Ox had advertised the name of Colling far and wide', sold her to two butchers, Robinson and Spark, who 'carted [her] about the country'. From this the 'Durham Heifer' became known as The White Heifer That Travelled.[42] Yet 'in spite of the loud

Note 36 *continued*
Bolton Abbey, 'Strid Wood and the Strid', https://boltonabbey.com/what-to-see/strid-wood-and-the-strid/ (accessed 9 Sept. 2021); W. Carr, *Horae momenta Cravenae. Or the Craven dialect: exemplified in two dialogues* (1824). On Carr's position as steward, see: *Leeds Mercury*, 5 Oct. 1811.

[37] Walton, 'Diffusion of the improved shorthorn breed', pp. 22–36.

[38] D. Cannadine, 'The landowner as millionaire: the finances of the Dukes of Devonshire, *c.* 1800–*c.* 1926 (continued)', *AgHR* 25 (1977), pp. 77–97.

[39] Ritvo, *Animal estate*, pp. 45–6; *Farmer's Weekly*, 16 August 2002.

[40] Bates, 'Brothers Colling', p. 17.

[41] A. H. Sanders, *Shorthorn cattle: a series of historical sketches, memoirs and records of the breed and its development in the United States and Canada* (1916), p. 43.

[42] Bates, 'Brothers Colling', p. 18; Wallace, *Farm live stock*, p. 61.

advertisement of her being by the same sire as the thousand-guinea Comet', as the Collings' biographer put it, 'she does not seem to have made a sensation equal to that caused by the Ketton ox [the Durham Ox]'.[43] We shall return to her later.

The Craven Heifer was thus born into an (agri)culture that valued prodigious farm animals, and a popular culture that celebrated extraordinary beasts and prized fatty beef. Also born a freemartin, the Craven Heifer was of no use as a breeding animal and thus could only be fattened. And put on fat she did. Carr fed her relentlessly until she weighed 2468lbs – a claimed weight not yet surpassed in Britain – and measured 11ft 2ins in from her rump to her nose. She was also extraordinarily tall, standing at 5ft 2ins to her shoulder and thus over 7ft tall to the tip of her head. Even then she was related to be 'still in a growing and improving state'. Given the average weight for a Shorthorn was 1000 lbs she was not just big but prodigiously so, even surpassing the weight of the White Heifer That Travelled, who weighed 2300lbs immediately prior to her slaughter.[44] So unusually large was she that a special door, twice as wide as was the norm, had to be fitted to her cowshed at Bolton Abbey.[45] We cannot be certain that Carr deliberately fed the young heifer with an eye to her sale as a bovine curiosity. What is clear though is that Carr encouraged her prodigious growth and was thus evidently (at the very least) intrigued as to the likely outcome of her fleshing out, this intrigue grounded in a knowledge of the public interest in, and cachet of, animals such as the Durham Ox and Comet.

Her size and weight evidently attracted interest, for on 23 September 1811 she was sold by Rev. Carr to John Watkinson of nearby Halton East for 200 guineas.[46] The sum is dwarfed by that paid for Comet the previous year but matched the very highest prices for breeding heifers sired by Comet at the dispersal sale of Charles Colling's stock. The price Watkinson paid, then, was a function of what he thought he could make from showing her, Day having paid £250 for the Durham Ox *and* his purpose-built carriage in April 1801.[47] Indeed, in a notice of the sale of the Craven Heifer – the usually sober *Leeds Mercury* evidently amazed at the price: 'Two Hundred Guineas!' – it was related that 'she is intended for public exhibitions'.[48] We know very little about Watkinson. From the notice of his death in the Leeds press in May 1845, it was detailed that he was a farmer and a butcher, perhaps not surprising given the purely agrarian nature of the economy of Halton East.[49] So, at the time of the purchase of the Craven Heifer, Watkinson was *c.*47 years old and evidently willing to add 'showman'

[43] Bates, 'Brothers Colling', p. 22.

[44] Portrait of the Craven Heifer by F. Fryer and engraved by J. Whessell, published Jan. 1812, Museum of English Rural Life, Livestock in Art collection: https://www.reading.ac.uk/Instits/im/online_exhibitions/livestok/cat_ls.html (accessed 13 August 2021). It was related in an advertisement for The White Heifer That Travelled being shown at Shrewsbury, Wem and Oswestry in May 1813 that she then weighed 306 stones at 8lbs to the stone, or just short of the weight of the Craven Heifer in April 1811: *Salopian J.*, 28 Apr. 1813. How accurate such measurements were will forever be lost for history, though what matters in the context of the world of enormous cattle was that the bragging rights as to who had the tallest or heaviest animal were of considerable import.

[45] The cowshed was a single-story section of a larger late seventeenth or early eighteenth-century threshing barn. The unusually large door can still be viewed today. See: 'Duke's Barn, Bolton Abbey' https://britishlistedbuildings.co.uk/101451056-dukes-barn-bolton-abbey#.YRZIMi9Q01J (accessed 13 Aug. 2021).

[46] *Leeds Mercury*, 5 Oct. 1811.

[47] Bates, 'Brothers Colling', p. 15.

[48] *Leeds Mercury*, 5 Oct. 1811

[49] *Leeds Intelligencer*, 3 May 1845.

to his list of other occupations, although perhaps the purchase of the Craven Heifer was also an attempt to add cachet and generate publicity for his farming and butchery businesses.

Watkinson's intended plan to profit from the Craven Heifer was soon publicly manifest. First, he – or rather, as we will see, 'they', although it is likely it was left to Carr – commissioned an oil-on-fabric portrait of the heifer from a local artist. We know from the research undertaken by the auction house Bonham's in advance of a 1982 sale of a copy of the painting that the artist was W. D. Fryer of Knaresborough. This is likely to be the same 'experienced Drawing Master' who the *York Herald* reported in August 1811 was to take residence in the city, something that 'would give much pleasure to those families who are acquainted with Mr. Fryer, as an artist'.[50] As early as 28 October it was advertised that Watkinson was to publish by subscription an engraving of 'the Celebrated Heifer, of the same Dimensions as that of the Durham Ox [2ft x 1ft 6in.]'. Each print was to cost one guinea. The celebrity of the Craven Heifer therein both asserted and seeded through association with the Collings' most famed beast.[51] This was a short gap between commissioning the portrait and advertising the print – indeed we know that Fryer did not complete the painting until 14 October – but given that many beasts were painted (in outline) in the matter of hours after winning a prize at Smithfield and then being slaughtered the next day suggests that artists were prepared to work quickly to secure a commission.[52] Either way, the portrait is of a size typical of cattle portraits at 43 x 60cm and shows the Craven Heifer in portrait, her head slightly askew, shyly looking towards the artist. The setting is a highly stylized landscape with what appears to be the ruins of Bolton Abbey in the background and the River Wharfe passing behind the heifer.[53] The respectable, even aristocratic, provenance of the heifer thus subtly and iconographically asserted (Figure 1).

In the commissioning of the portrait and the engraving, the making of the prints, and in arranging the tour, Watkinson appears to have been a silent presence. Indeed, whilst Watkinson was *publicly* reported to be the sole purchaser of the Craven Heifer, in terms of his attempt to make money from her he did not act alone. In the words of a later report, Watkinson formed a 'small company' to take the heifer on 'an exhibition tour of England'.[54] This comprised several members of the Pickop family of Bolton Abbey, including Henry Pickop who acted as the coordinator of all business from Bolton Abbey, a J. R. Kitchin, and with Carr assuming an important role in arranging the engraving. Henry Pickop, in a letter to Carr, referred to 'my partners', though whether there were any other individuals in Watkinson's company and what their precise financial involvement was is forever lost to history.[55]

[50] *The Times*, 11 Dec. 1982; *York Herald*, 3 Aug. 1811. Demelza Spargo incorrectly suggested the artist might have been either of the watercolourists E. Fryer or T. Fryer: Demelza Spargo (ed.), *This land is our land: aspects of agriculture in English art* (1988), p. 87.

[51] *Leeds Intelligencer*, 28 Oct. 1811.

[52] Letter from Henry Pickop to William Carr, 14 Oct. 1811, Bolton Abbey Estate papers, uncatalogued estate papers.

[53] Spargo, *This land is our land*, p. 87.

[54] *Bradford Observer*, 14 Feb. 1946.

[55] Correspondence between Henry Pickop and William Carr, October 1811, Bolton Abbey Estate, uncatalogued estate papers; Sale catalogue for Lot 179, 'Archive of manuscript correspondence and notes relating to the 1812 tour of the famous Craven Heifer', Hansons Auctioneers, Oct. 2020 [herein 'Hansons' sale catalogue'], https://tinyurl.com/bdemfusx (accessed 16 Aug. 2021).

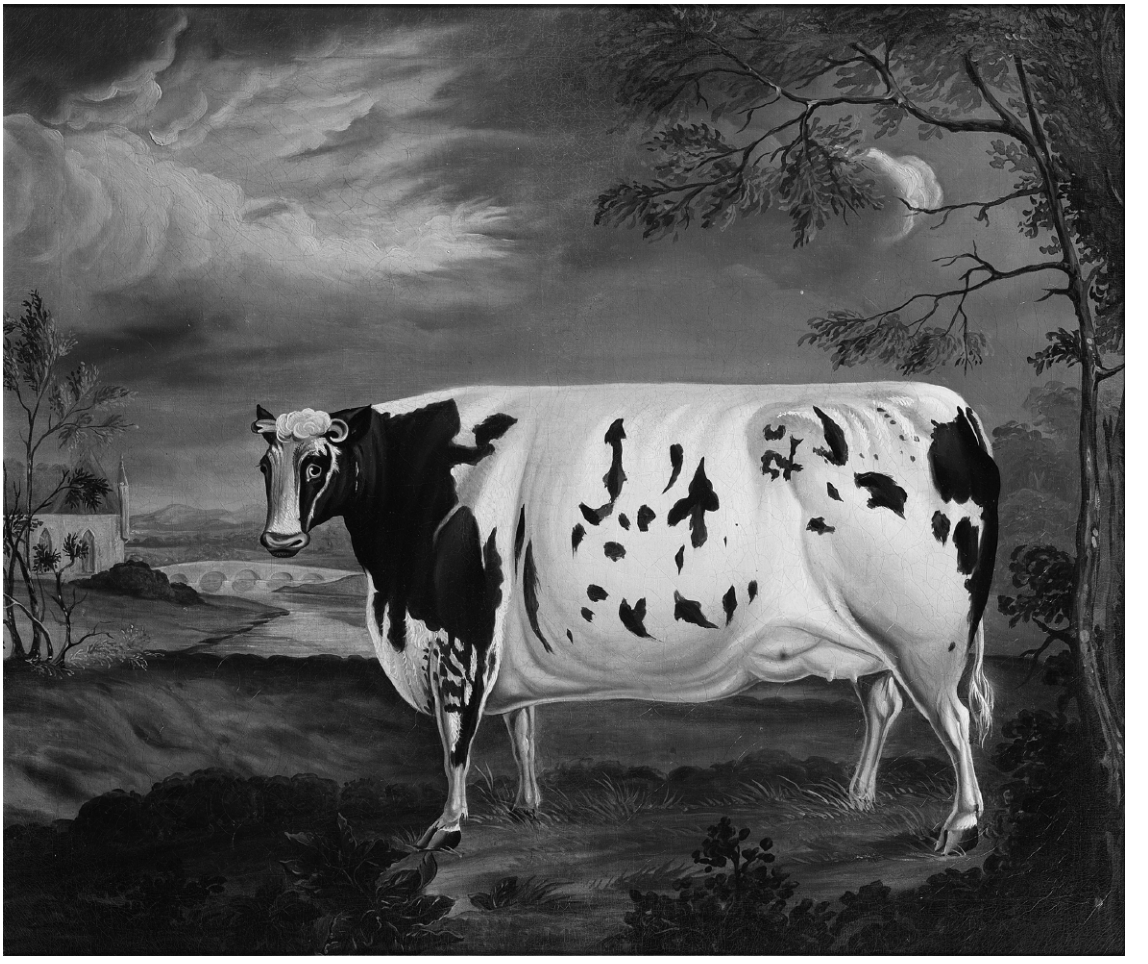


FIGURE 1. The Craven Heifer, oil-on-canvas portrait by W. B. Fryer, 1811.

Source: https://www.bonhams.com/auctions/20448/lot/250/?category=list

III

On 13 October 2020 a collection of some 30 letters as well as assorted receipts and handbills relating to the tour of the Craven Heifer was auctioned online by Hansons Auctioneers. With an estimated price of £300–500, the virtual hammer finally fell at £5500. Alas, whilst the fevered bidding for the archive demonstrates strong public interest in the heifer, the sale also means that the archive remains in private hands.[56] Whilst it is not possible to ascertain the precise details of every aspect of the collection, the contents of the archive was first outlined in

[56] A disclaimer and a plea. Notwithstanding the help of auctioneer Jim Spencer, for which I am very grateful, it has not been possible to gain access to this private archive. If any reader of this archive can assist me in gaining access to the collection, please do get in touch. On the auction see: 'Fattest cow in England sparks auction bidding battle', 14 Oct. 2020, Hansons Auctioneers, https://hansonsauctioneers.co.uk/fattest-cow-in-england-sparks-auction-bidding-battle/ (accessed 13 Aug. 2021).

a report in the *Leeds Mercury* in November 1897, while the recent Hansons' sale catalogue and sale report offer useful confirmation and some further detail.[57] From this we know that head of the list of subscribers for the print of Fryer's portrait was the duke of Devonshire, with Rev. Carr second on the list.[58] Whilst Watkinson might be expected to assert the respectability of his bovine charge – the Craven Heifer not just being a prodigiously large beast but bred on the estate of one of the most important noble families in the land – it would appear that in such matters he was little versed. Indeed, the obsequious dedication of the print to the 'most noble William Spencer Duke of Devonshire' by 'his Grace's most obedient humble servant John Watkinson' was not penned by Watkinson – or his associates – but instead by Carr: Henry Pickop writing to ask Carr, 'When your great Cow is engraven, to whom must she be dedicated?' Indeed, from a further letter it is clear that Pickop had been charged to determine the dedication, he both relating to Carr that he had mentioned 'to my partners about the dedication of the Heifer' and also stating that 'we have left it to your own pleasure'.[59]

Carr was also requested to arrange the engraving of the Fryer portrait, Pickop requesting that 'We will thank you to make the best agreement that can (be made) for the plate engraving in a masterly manner, we should wish to know what the expense of it will be, also what the engraving will cost per 100 printing'. Evidently Watkinson and his 'partners' were not only unused to the niceties of elite etiquette but also uncomfortable to be operating in the – alien to them – art world. John Whessell of Oxford, known as the engraver of the portraits of the Durham Ox and the Driffield Cow, was commissioned by Carr after the two met on 30 October. The matter was subsequently agreed, with Carr again acting as the intermediary: the print would be coloured and that, in the first instance, 500 copies would be ordered from Whessell.[60]

The resulting print arguably represented a more commercial image than the portrait. A rather doleful looking Craven Heifer in Fryer's original now rendered in a more purposive way, and the elaborate painterly palate of browns for the foreground and the moody swirling sky of the portrait replaced with a softer, lusher, green valley-scape with a blue sky with large cottony clouds in Whessell's engraving (Figures 1 and 2). The print proved popular, selling 'fairly well' on the tour, notwithstanding being delivered late in February 1812, and thus missing out on significant potential sales in the initial stages of the tour. In London there was 'exceptional demand', while we also know that copies of the print were sent from London to Skipton, albeit in small numbers but suggestive of sustained demand even after the tour: 26 in 1812, 56 in 1816 and 60 in 1819.[61] These numbers are probably a significant underestimate of demand in Craven though, for we also know that the print – notwithstanding the relatively high price of one guinea – was hawked about the area. A report in the Leeds press in March 1812 relating that 'On Monday last James Warriner, of Draughton, a youth about 23 years of age, employed in hawking prints of the Craven Heifer, was unfortunately found drowned in the Canal near Marton'.[62]

[57] *Leeds Mercury*, 27 Nov. 1897; Hansons' Sale Catalogue.

[58] 'Proposals for publishing by subscription an engraving of the celebrated Four year-old, Short-horned Craven Heifer', Hansons' sale catalogue.

[59] Letters from Henry Pickop to William Carr, 14 and 26 Oct. 1811, Bolton Abbey Estate, uncatalogued estate papers.

[60] Letters from Henry Pickop to William Carr, 14 and 26 Oct. and 6 Nov., and Carr to Pickop, 30 Oct. 1811, Bolton Abbey Estate, uncatalogued estate papers.

[61] *Leeds Mercury*, 27 Nov. 1897; 'Description', Hansons' sale catalogue.

[62] *Leeds Mercury*, 28 Mar. 1812.

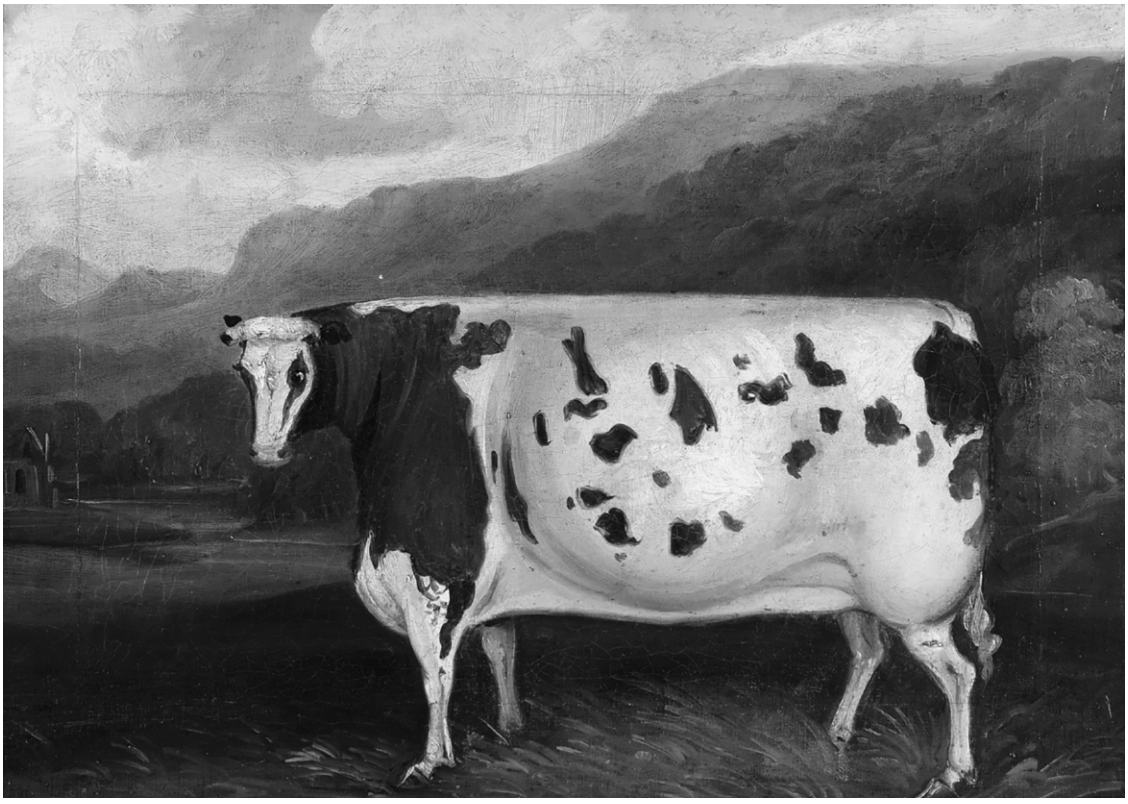


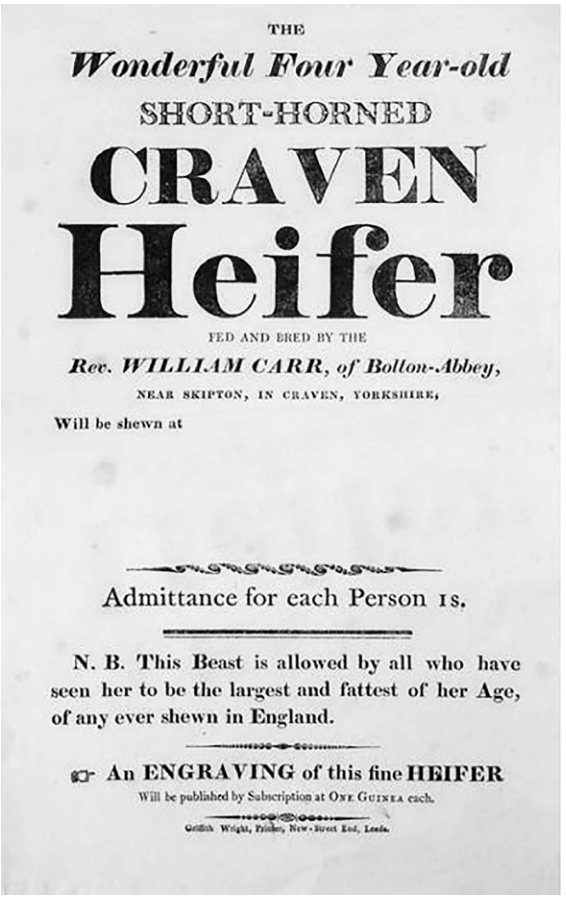
FIGURE 2. The Craven Heifer, print by John Whessell, 1812, after W. B. Fryer.

Source: https://upload.wikimedia.org/wikipedia/commons/c/c4/Craven_Heifer_portrait.jpg

IV

The tour can meaningfully be divided into three parts. The first from Craven to Sheffield; the second from Sheffield to London; and finally from London back to Craven. Before the tour began, the partners charged Thomas Pearson of Skipton to 'see about purchasing the Carriage at Shap', this evidently the carriage used to carry the famed 'Highland Ox' on its tour. Successfully purchased, when the carriage arrived in Craven on 26 October – twelve days after Pearson had travelled to Cumbria – it was found to be 'complete' and 'well made'. However, the Craven Heifer, evidently being a much bigger beast than the Highland Ox, was not able to turn in the carriage. The subsequent adjustments, making an opening at the 'fore end' to allow her to gain egress, delayed the start of the tour, the Craven Heifer was finally loaded into the 'Caravan' on 31 October and taken to Skipton. Here we have the only description of her character: Pickop relating to Carr that she was 'very quiet and likely to do well'.[63]

[63] Letters from Henry Pickop to William Carr, 14 and 26 Oct. and 6 Nov. 1811, Bolton Abbey Estate, uncatalogued estate papers.


THE
Wonderful Four Year-old
SHORT-HORNED
CRAVEN
Heifer
FED AND BRED BY THE
Rev. WILLIAM CARR, of Bolton-Abbey,
NEAR SKIPTON, IN CRAVEN, YORKSHIRE,
Will be shewn at

Admittance for each Person 1s.

N. B. This Beast is allowed by all who have seen her to be the largest and fattest of her Age, of any ever shewn in England.

☞ An ENGRAVING of this fine HEIFER
Will be published by Subscription at One Guinea each.

Griffith Wright, Printer, New-Street End, Leeds.

FIGURE 3. Tour handbill, printed at Leeds.

Source: Reproduced with kind permission of Hansons Auctioneers.

The first leg was under the stewardship of G. Pickop and started with exhibitions in Skipton on 2 and 5 November, the Craven Heifer apparently staying in Skipton before travelling to Otley on 6 November and onwards again to Leeds on 7 November.[64] At Leeds she was shown, so an advert placed in the *Leeds Mercury* of 11 November related, for 'a few days only'.[65] In Leeds, proforma handbills advertising subsequent stops on the tour a space being left blank for the location of the exhibition – were printed, and the price of entry to see the heifer set at one shilling (Figure 3). From Leeds she travelled via Bradford to Wakefield, where she was shown on 18 November, before heading to Pontefract, Doncaster, Rotherham and Sheffield where she was on 2 December. At this point, G. Pickop ended his account, the tour then running at a loss.[66]

At Sheffield, Kitchin assumed responsibility, keeping the accounts 'afresh, not taking into account the entries made by Pickup [sic]'. Having journeyed through Yorkshire, the tour now made its way to London following a direct line through the East Midlands and the Home

[64] Letter from Henry Pickop to William Carr, 6 Nov. 1811, Bolton Abbey Estate, uncatalogued estate papers; *Leeds Intelligencer*, 28 Oct. 1811

[65] *Leeds Intelligencer*, 11 Nov. 1811.

[66] *Leeds Mercury*, 27 Nov. 1897; Particulars, 'Sale catalogue'.

Counties. After Sheffield, she travelled to Chesterfield, on to Alfreton, Ripley, and Derby, then moving into Leicestershire stopping at Loughborough and Leicester, thence to Northampton, Newport Pagnell, Dunstable, and finally St. Albans before arriving in the capital on 31 January 1812, the tour having already taken nearly three months. In London, she was exhibited at the Cock Inn, Haymarket, the entry fee 1*s.* for 'ladies and gentlemen' while servants were admitted for 6*d*. A dedicated handbill was printed, detailing the pedigree of the Craven Heifer as well as her extraordinary dimensions. 'This Beast', the handbill boasted, 'is allowed by all who have seen her, to be the largest and fattest of her Age, of any ever shewn in England.'[67]

The central focus of her being in London was Lord Somerville's prestigious 'Grand Spring Shew of Cattle', held at Sadler's Repository in Smithfield. This was a private show, and tightly controlled by Somerville, although members of the public could pay a shilling for 'inspection'. Here, alongside the usual show of cattle, the Craven Heifer was exhibited alongside the Durham Heifer, aka the White Heifer That Travelled. Together, so advertisements of the show claimed, they were 'allowed to be two of the best ever seen.' This being a more genteel event than the Haymarket exhibition, only 'Ladies and Gentlemen' were to be admitted.[68] Yet the spectacular nature of the heifer head-to-head seemingly went against the spirit of Somerville's spring show. Indeed, Somerville stated that 'his reasons for admitting the famous Craven and Durham Heifers to be separately shewn in the yard, contrary to his custom' were the 'earnest request[s] of the land-owners, the Duke of Devonshire and Mr Robert Collings'. Yet, as Moncrieff *et al.* have suggested, this would seemingly contradict a plea that Somerville had made in with correspondence with Colling. As the Barmpton breeder put it in a letter to the renowned animal artist Thomas Weaver – who had been commissioned by Colling to produce a portrait of the White Heifer, from which an engraving had also been made and prints sold at one guinea – Somerville was 'so very obliging to express his particular wishes that she [the White Heifer] might also be exhibited at his [Smithfield] show'. Further, Somerville would 'take the direction of her himself, provide a suitable place for her, and take care the men had every advantage that might arise from it'. It is fair to assume therefore that the same offer was made to Watkinson. The show, then, was an opportunity to further both heifers' celebrity – and to sell prints.[69]

It is unclear as to how long she remained in London after the Somerville show. What we do know is that the account book (kept by Pickop then Kitchin) ends on 13 April.[70] Other than that she returned to Craven, we know very little about the return leg of the tour – with one exception. Having 'just arrived', 'this beautiful animal … one of the greatest curiosities in the world', was advertised on 2 May to be 'exhibiting for this day only' at the Crown Inn Yard, Corn Market, Oxford. The advert also noted that she had been 'exhibited at Lord Somerville's Cattle Show in London … and was allowed by judges to be best ever shewn', this a clear rebuke to similar claims made for the White Heifer.[71] Thereafter, the trail goes cold.

[67] *Leeds Mercury*, 27 Nov. 1897; Moncrieff *et al.*, *Farm animal portraits*, p. 28; Description, 'Sale catalogue'.

[68] *The Englishman*, 1 Mar.; *The Star*, 4 Mar. 1812.

[69] Moncrieff *et al.*, *Farm animal portraits*, p. 18; L. T. Weaver, *Painter of pedigree. Thomas Weaver of Shrewsbury – animal artist of the agricultural revolution* (2017).

[70] *Leeds Mercury*, 27 Nov. 1897.

[71] *Oxford University and City Herald*, 2 May 1812.

Given the expense of having to cart her home, it would seem unlikely that she was not shown again. Indeed, that she visited Oxford shows that a different, and less direct, route was taken on the return journey compared to the tour to London. Further, the naming of public houses after her in broad swathes of Lancashire (Barnoldswick, close to Skipton, but also Bolton and nearby Astley Bridge and Horwich, Bury, Rochdale, Darwen, Preston, Edge Hill on the edge of Liverpool, Chaigley near Clitheroe, Manchester, Salford, Rawtenstall, and Burnley), and in the far west of the Yorkshire Dales (at Ingleton and Stainforth) is highly suggestive of either a return tour that sojourned through Lancashire and on to the Dales before returning to Halton East, where Watkinson, the then owner, farmed, or of a subsequent north-western tour.[72] As a later writer put it: 'It is exceedingly probable that the familiar "Craven Heifer" attached to the signs of so many hostelries in Yorkshire and the neighbouring counties was suggested by the tour of this beast, which was indeed a beautiful specimen of animal symmetry'.[73] Either way, we know from later accounts that the tour was 'not the success that Watkinson hoped it would be', the cost of transporting and feeding not having been met by ticket sales.[74]

V

After appearing at Oxford in May 1812, the next certain record we have of the Craven Heifer is on 23 March 1813, with the final record of her life on 24 March. After the relative failure of the tour, Watkinson evidently decided that the Craven Heifer was of no use to him. Indeed, given that her celebrity was assured, that the sale of prints had proved successful, and that demand for prints continued, she was now an encumbrance to him, a cost. Watkinson thus decided to dispose of her. Whether he tried to sell her we know not, although given her initial cost and her ongoing celebrity it would be a fair assumption that he attempted but failed to sell her. Instead, on 23 and 24 March the Craven Heifer was competed for in a main of cocks (a cockfighting competition involving multiple competitors and birds) at Carleton, a small village a mile outside of Skipton. This, then, was a final attempt to monetize her, presumably showman Watkinson controlling both the entry fees and the betting book. The main must have been advertised, for the winner, a Mr Boothroyd, was a Huddersfield innkeeper whilst another competitor came from Manchester. Boothroyd having won 'the mass of obesity', as one account put it, proceeded to have her slaughtered and sold her butchered remains at one shilling a pound, this a considerable advance on the then standard price of five to six pence for a pound of beef. Even in death, people were evidently prepared to pay a premium. The event was not without controversy. Rev. Robert Thomlinson 'both in and out of the pulpit, raised his voice against the barbarism', one boy at his school being subsequently expelled for

[72] This list is based on lists of open and closed pubs on the websites 'WhatPub?' (whatpub.com) and 'The Lost Pubs Project' (closedpubs.co.uk) supplemented with a search of the National Archives 'Discovery' catalogue and: *Pierce Egan's Life in London, and Sporting Guide*, 20 Mar. 1825; '50 years ago in Salford: 150-strong mob see police assaulted in Cross Lane beat club riot [14 July 1965]', Salford Online, 14 July 2015, http://salfordonline.com/3970-50-years-ago-in-salford-150-strong-mob-see-police-assaulted-in-cross-lane-beat-club-riot.html (accessed 27 Aug. 2021); 'Fred Foley remembers Lovat Street', oral history interview [nd], Edge Hill Station, http://www.edgehillstation.co.uk/resources/fred-foley-remembers-lovat-street/ (accessed 27 Aug. 2021).

[73] *Leeds Mercury*, 27 Nov. 1897.

[74] *Bradford Observer*, 14 Feb. 1946.

attending the cockfight. Rev. Carr too was reportedly 'disgusted' by the event.[75] Indeed, it is hard to think of a more ignominious end for such an extraordinary animal.

To suppose that the death, the slaughter and consumption of an animal necessarily marks the end of their story is a fair assumption for most farm animals. Yet, for the Craven Heifer her celebrity continued, and persists, after her death. Beyond the fact that prints of the Craven Heifer continued to sell, her afterlife figured initially in three ways. First, her (unproven) title as the fattest cow England had ever seen was subject to subsequent challenges which kept her name and her prodigious size in the public mind. For instance, in March 1818 a five-year-old ox ('the Minskip Ox') was exhibited at Leeds, then Otley, the promoters of the ox gaining publicity for their claim that he was 'thought to be about 50 stone heavier than the Craven Heifer' and yet was also 'so gentle, that even children may handle him with perfect safety'.[76]

Second, as noted above, inspired either directly by her having visited the vicinity or by dint of her celebrity,[77] several (the precise number is beyond the scope of this paper to delineate, but at least 20) public houses in Lancashire and Yorkshire were named or renamed the Craven Heifer in her honour. The earliest reference I have found is to a Craven Heifer pub at Long Mill Gate in the centre of Manchester, this from an advert placed in March 1825 for a boxing tournament.[78] The subsequent extant reference is to a 'fine dinner' having been held at the Craven Heifer Inn in Blackburn in July 1826.[79] A systematic trawl through the licensing archives for both counties might reveal earlier references still, though we know, for instance, that the Craven Heifer on North Road in Preston was first licensed in 1825.[80] Either way, in the period from the tour through to the explosion of the opening of new pubs in the 1830s and early 1840s due to the liberalization of licensing laws under the terms of the 1830 Beerhouse Act,[81] many publicans chose to call their pubs after the celebrated cow. Such pub naming practices showed that her celebrity continued to shine brightly and acted to further keep her in the public mind.

Third, in 1817 the Craven Bank changed the central picture on their banknotes from Castleberg, a 'grand old rock' and local landmark in Settle where the bank was based, to a portrait of the 'well known' Craven Heifer.[82] Clearly such an act of rebranding would come at some cost – the design and printing of the new notes – and as such the decision speaks to the local potency of her image. Further, such a move was no doubt calculated to appeal to farmers, Craven being a largely agrarian district. The notes would have largely circulated

[75] *Leeds Mercury*, 27 Mar. 1813; James Henry Dixon, *Chronicles and stories of the Craven Dales* (1881), p. 144. On the price of beef in 1813 see: William Pitt, *General view of the agriculture of the county of Stafford* (sec. edn, 1813), pp. 221–3.

[76] *Leeds Intelligencer*, 30 Mar. 1818.

[77] The Durham Ox lent its name to an inn constructed in the Loddon Valley of west Victoria, Australia, in the 1850s. The inn no longer stands but the rural community that grew up around the inn persists. Evidently, celebrity travelled: 'History and heritage [Loddon Valley]', https://www.bendigoregion.com.au/visit-loddon-valley/loddon-valley-history-heritage (accessed 10 Sept. 2021).

[78] *Pierce Egan's Life in London, and Sporting Guide*, 20 Mar. 1825

[79] *Dublin Morning Register*, 1 July 1826.

[80] Craven Heifer, North Road, http://pubsinpreston.blogspot.com/2012/02/craven-heifer-north-road.html (accessed 30 Aug. 2021)

[81] N. Mason, '"The sovereign people are in a beastly state": The Beer Act of 1830 and Victorian discourse on working-class drunkenness', *Victorian Literature and Culture* 29 (2001), pp. 109–27.

[82] H. Speight, *The Craven and north-west Yorkshire highlands: being a complete account of the history, scenery, and antiquities of that romantic district* (1892), p. 85.

in the local area, although when a forged note 'with the Craven heifer in the centre' entered circulation in the summer of 1826 the story received national press attention.[83] The Craven Heifer continued to appear on banknotes until 1906 when the Craven Bank merged with the larger Liverpool Bank, although the Craven Heifer continued to appear on cheques issued until at least the 1930s.[84] We know too that the likeness of the Craven Heifer was used as the motif for speculative shares issued in 1846 for a railway that never was but would have joined the area of Skipton with Wensleydale via a line that was to run through Upper Wharfedale.[85]

VI

What might be called 'Craven Heifer mania' in the years immediately after her untimely death, gave way from the middle of the nineteenth century. Her image continued to circulate on bank notes and cheques, prints and copies of the Fryer portrait (several versions of the painting are known, each varying in terms of the background detail)[86] continued to exist – one such appearing in the entrance hall of the Skipton branch of the Craven Bank – whilst people continued to frequent pubs that bore her name and image on their signs. But until the final years of the last century, her legend, her celebrity, arguably retreated to Craven where, as the Duchess of Devonshire put it in 1996, 'she is still part of folklore'.[87] A minor revival of interest in the Craven Heifer during and immediately after the Second World War – and this confined to Yorkshire – was stimulated by high prices for livestock prompting memories of 'famous cattle of the past'. Likewise, rationing provoked reminiscences of 'those huge joints of beef which used to grace the dinner table on Sunday' and prompted readers of the *Bradford Observer* to ask for 'particulars of the famous Craven Heifer'. As the columnist articulated, 'It certainly was a huge beast, and at the present rationing of meat it would have [been] carved up into rations for a small town'.[88]

As Jeanne Schinto, writing on the fate of livestock portraits, put it: 'Many, perhaps most, ended up in rubbish heaps and bonfires when pictures of fattened farm animals went out of fashion after Queen Victoria's reign'. Thankfully though, many paintings and prints of the Craven Heifer did survive, and when interest in such portraits again strengthened from the mid-1980s not only did portraits start to be saved from ends as discreditable as that of the Craven Heifer herself but values started to increase as collectors and others created a market.[89] On 9 December 1982, a dedicated sale of sporting and livestock paintings was held at Bonhams, London, timed to coincide with the Smithfield show, and thus suggestive of attempting to attract landowners and agriculturalists. It proved a landmark success with few lots left unsold, the successful sale even drawing comment in *The Times*. Of note was the sale of Fryer's painting of the Craven Heifer – 'an engaging cow' – sold to the duke of Devonshire for £3,300, the duke planning to hang the

[83] For example, see: *Morning Herald*, 11 Sept. 1826.

[84] Martin's Bank Limited – Branch network: Skipton, http://www.martinsbank.co.uk/11-90-70%20Skipton.htm (accessed 30 Aug. 2021); Barclays Bank Archive – Craven Bank: Settle and Skipton https://www.archive.barclays.com/items/show/5324 (accessed 30 Aug. 2021).

[85] C. S. Hallas, *The Wensleydale Railway* (1984), pp. 4–18; *Bradford Observer*, 8 Dec. 1939.

[86] Moncrieff *et al.*, *Farm animal portraits*, p. 28.

[87] Foreword by the Duchess of Devonshire, in Moncrieff *et al. Farm animal portraits*, p. 10.

[88] *Bradford Observer*, 26 Feb. 1943 and 14 Feb. 1946.

[89] Schinto, 'Good breeding', p. 30.

painting in the Devonshire Arms hotel on the Bolton Abbey Estate.[90] A copy of the painting, which had been owned by Stephen and Iona Joseph since the late 1980s, was likewise auctioned by Bonhams on 29 January 2013, with an expectation that it would fetch £6,000. Publicity of the sale in the national press – including in *The Times* ('Fat cow picture expected to pile on more pounds at auction') and *Daily Mail* which both printed copies of the painting – helped to lift the sale price to £16,250.[91] Generative of less publicity but no less notable in terms of the 'bidding war' that ensued, was the aforementioned sale of an archive of her tour in 1811 and 1812, sold by Hansons Auctioneers in an online auction on 13 October 2020, the lot estimated from £300–500 but selling at £5500. As the subsequent headline in the *Craven Herald* proudly put it, 'Fattest cow in England sparks auction bidding battle'.[92] Whessell's prints of the Fryer original now regularly sell for upwards of £500, and occasionally more than £1000, at auction and are priced higher still by antique dealers, such is the level of interest in the Craven Heifer. Even an oil-on-canvas copy in the 'naïve' style of Fryer's painting sold for £840 at auction in 2008.[93]

Arguably the most curious, and high profile, resurrection of public interest in the Craven Heifer came in the form of an announcement that a life-size statue of Yorkshire's most famous cow had been sculpted to mark the 160th Great Yorkshire Show (Figure 4). First held in 1838 at Fulford near York, the annual exhibition of Yorkshire agriculture had a peripatetic existence until a permanent showground was acquired at Harrogate in 1949, thus making the touring Craven Heifer an apposite choice to mark the anniversary. Whitby artist Emma Stothard's sculpture, fashioned from half a tonne of galvanized steel, was unveiled by the duke and duchess of Devonshire at Bolton Abbey on 10 April 2018 before being taken on tour on the back of a specially designed truck. The first stop-off was Fulford, where the sculpture – named GYSheifer – arrived under a police escort 'accompanied by music played by Gurkha pipe player … and was greeted by 50 soldiers of the 2 Signal Regiment, plus a group of cheering schoolchildren from Fulford School and St Oswald's CE Primary'. Thereafter, mimicking the history of both the show and of the Craven Heifer, the GYSheifer toured the county, even visiting the Wold Top Brewery at Hunmanby who brewed a special beer to mark the tour, before arriving at the Great Yorkshire Showground in time for the opening of the 160th show.[94] Members of the public were encouraged to take 'selfies' with the sculpture, using the Twitter hashtag #GYSheifer, the best picture from each stop of the tour winning a family ticket to the show. Today, the sculpture of the Craven Heifer is a permanent exhibit at the showground,

[90] *The Times*, 11 Dec. 1982.

[91] *Daily Mail*, 9 Jan.; *The Times*, 9 Jan. 2013; Bonham's Gentleman's Library Sale, Catalogue, Lot 250, https://www.bonhams.com/auctions/20448/lot/250/?category=list (accessed 31 August 2021).

[92] For references see note 52 and 'Fattest cow in England sparks auction bidding battle', *Craven Herald and Pioneer*, 15 Oct. 2020, https://www.cravenherald.co.uk/news/18797175.fattest-cow-england-sparks-auction-bidding-battle/ (accessed 31 Aug. 2021).

[93] Bonham's The Sporting and Ornithological Pictures Including a Collection of Primitive and Livestock Art Sale, 9 Sept. 2008, Lot 11, https://www.bonhams.com/auctions/15812/lot/11/?category=list&length=12&page=1 (accessed 8 Sept. 2021).

[94] 'Legend of the Craven Heifer reimagined to launch the 160th Great Yorkshire Show', *Yorkshire Post*, 11 Apr. 2018, https://www.yorkshirepost.co.uk/news/legend-craven-heifer-reimagined-launch-160th-great-yorkshire-show-587245 (accessed 8 Sept. 2021); 'Steel sculpture visits Wold Top Brewery to celebrate 160th Great Yorkshire Show', Yorkshire Agricultural Society, 4 June 2018, https://media.yasdigital.com/2018/06/04/steel-sculpture-visits-wold-top-brewery-to-celebrate-160th-great-yorkshire-show/ (accessed 8 Sept. 2021).

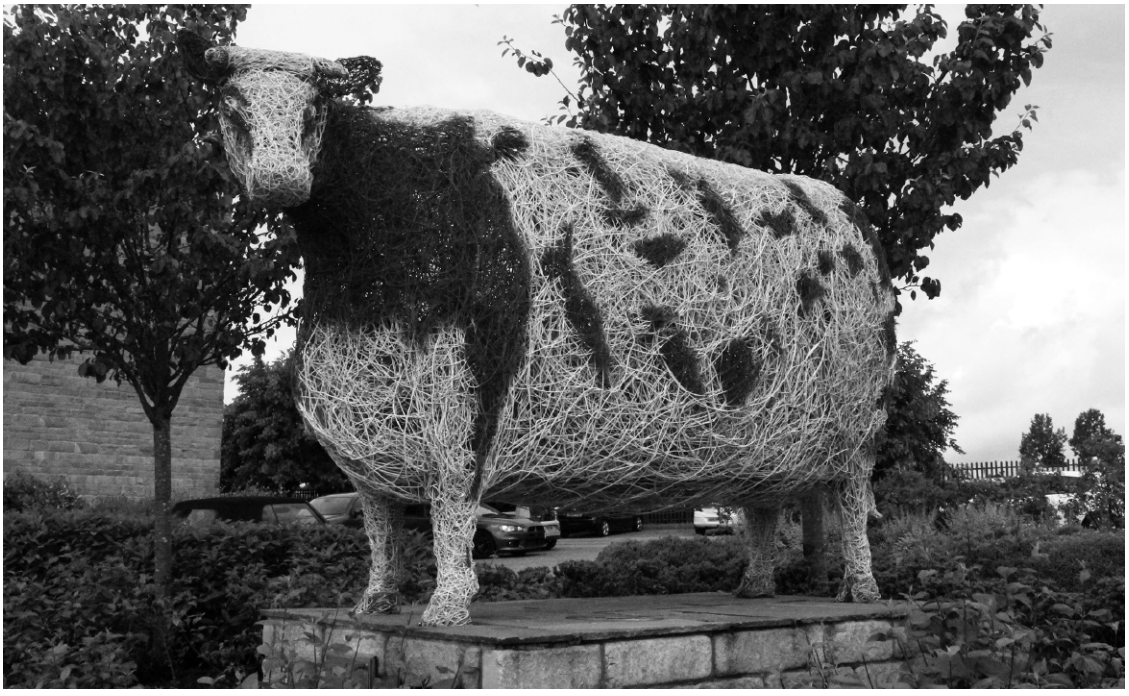


FIGURE 4. Emma Stothard's GYSheifer sculpture, on display at the Great Yorkshire Showground.

Source: https://commons.wikimedia.org/wiki/Category:Craven_Heifer#/media/File:Craven_heifer_sculpture.jpg.

taking pride of place near the entrance. As Margaret Chapman, the Show's Chief Cattle Steward, proudly proclaimed: 'I think the Heifer looks brilliantly placed – exactly where I had hoped she would be – welcoming visitors into the Showground. She looks magnificent!'[95]

VII

'There has been a consistent, and generally accepted, call within the burgeoning "animal geographies" literature', so states Lewis Holloway, 'that nonhuman animals should be accorded a status as subjects, in opposition to tendencies to represent them in objectifying ways which suggest that animals are simply "there"'.[96] In some sense there can be nothing more objectifying for an animal than rendering it as a celebrity, parading it, slaughtering it, and then turning it into prints. Indeed, the Craven Heifer was exoticized and othered by those who paid to see her whilst on tour in precisely the same way that animals in touring menageries and those with monstrous mutations were consumed. Here, one might argue, we start from an unpromising

[95] 'Steel sculpture launched to celebrate 160th Great Yorkshire Show', Yorkshire Agricultural Society, 10 Apr. 2018, https://media.yasdigital.com/2018/04/10/steel-sculpture-launched-to-celebrate-160th-great-yorkshire-show/ (accessed 8 Sept. 2021); 'Craven Heifer sculpture comes home', Yorkshire Agricultural Society, 8 Oct. 2018, https://media.yasdigital.com/2018/10/08/craven-heifer-comes-home/ (accessed 8 Sept. 2021).

[96] L. Holloway, 'Subjecting cows to robots: farming technologies and the making of animal subjects', *Environment and Planning D: Society and Space 25* (2007), p. 1041.

base. But, whatever the representational and archival ethics, here we have an animal, not of some exotic and unusual (in the context of early nineteenth-century England) species, not a domestic companion, but a cow, something of the farm and ultimately of the fork, that leaves a reasonably rich archival trail. We might not know how the Craven Heifer felt, indeed we know very little of her dispositions and character traits, but we can deduce a great deal about how she was in the world and how the world responded – and continues – to respond to her. That we can tell her life is important because, as an animal, she mattered and matters still.

Of course, very few beasts are immortalized in paintings, prints, banknotes, share certificates, pub signs, or sculpture. Arguably, still fewer humans have been represented in *all* the ways the Craven Heifer has been. Over 200 years after her short life, her fame, notwithstanding the recent revival of interest, might no longer be at 1812 levels but still exceeds that of any bovine of recent times – including Chilli. The Craven Heifer, we must conclude, stands apart. Perhaps the level of public interest in extraordinarily sized livestock at the turn of the nineteenth century has helped fuel curiosity in such animals today, their very size a source of fascination but their one-time celebrity of even greater enthralment, the survival of so many farm animal portraits further helping bridge a connection to past living things. She allows us to imagine past bovines in ways which would otherwise be impossible, by piecing together her life we can begin to understand not only her experience but also, by inference and stark difference, the lives of other cows. Her otherness was underpinned by her sameness, her essential bovine-ness, her breeding, feeding and fate decidedly ordinary.

There is also a sense that the Craven Heifer's celebrity acted, in the context of the early decades of the nineteenth century, to help proselytize the utility of the Shorthorn as a meat machine and as such a played a critical role in normalizing the breed. Indeed, as Emily Pawley has noted of other famed biotic things – both animals and plants – in her study of 'improvement' in Antebellum New York State, the celebrity of individuals powerfully impacted upon the perception of the wider breed (or even species in the case of certain plants) in the agrarian mind.[97] The lives of extraordinary animals, and other biotic things, evidently matter. And the Craven Heifer was not just an extraordinary animal but also lived an extraordinary life, her celebrity shifting but enduring. By telling her story we are not only able to tell the life of a remarkable being of the early nineteenth century agrarian world, but it also serves to show the importance of asking questions about livestock lives in all settings. What, for instance, of the way in which certain farm animals lodged themselves in the affections of their human charges? What of other ways in which some individuals rose above the herd or flock – or in a Foucauldian biopolitical sense the population – and assumed a degree of individual prominence, even celebrity? Perhaps beyond all else what the case of the Craven Heifer tells us is that even in a culture increasingly obsessed with the hard facts of yields and margins, of costs and usefulness, where beings were reduced to statistics, that in some ways the singularity of the individual might be recognized, valued, and even cherished. To understand that a heifer from Bolton Abbey might see more of England than most humans then alive, that she might become an enduring source of fascination and pride, speaks to a seemingly paradoxical culture at the heart of agriculture in the age of improvement that demands further investigation.

[97] E. Pawley, *The nature of the future* (2020).

Accounting for agricultural development? The case of the Netherlands, 1840–1940*

by Daan Hendrikx and Oscar Gelderblom

Abstract

In the second half of the nineteenth century Dutch agronomists and government officials promoted bookkeeping as a means to raise agricultural productivity. However, most farmers were only interested in cash flow management for which they relied on their memory, unstructured private notebooks, accounts kept by their suppliers and, from the 1880s onwards, the accounts kept on their behalf by rural co-operatives. Farmers in the Netherlands only took to formal accounting when in 1914 the government extended the national income tax to all farmers earning 600 guilders or more. As farmers – and tax inspectors – struggled to estimate individual incomes, farmers' associations created accounting agencies to support the drafting of their tax returns. The success of these agencies shows that the fiscal imperative for bookkeeping was much stronger than the desire of farmers to raise farm productivity through more extensive accounting.

The growth of agricultural productivity is key to reducing poverty among farmers. But what can policy makers do to help subsistence-oriented smallholders make the transition to commercial farming for regional, national, or even international markets? In addition to technical advice on farming methods and the provision of different types of micro-finance, development economists have begun to explore the effects of business training to smallholders. Teaching them how to calculate the value of their inputs and outputs and then use this knowledge to make informed decisions about investments could raise the productivity of their land, labour, and capital.[1] The empirical support for this contention is weak, however. Smallholders seldom keep written records on their own initiative and when business training is offered to them as part of more extensive micro-finance programs it seems to make little difference. Randomized trials manipulating the training offered to rural households only find weak effects on economic performance, or none at all.[2]

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[1] Lisa Xu and Bilal Zia, Financial literacy around the world. An overview of the evidence with practical suggestions for the way forward (World Bank Policy Research Working Paper, 6107, 2012).

[2] David McKenzie and Christopher Woodruff, 'What are we learning from business training and

The agricultural history of Europe and North America can help to explain this limited effect of business training on economic performance. In the eighteenth and nineteenth centuries Europe agronomists began to promote the adoption of farm accounting to raise agricultural productivity.[3] They were able to motivate a small number of eager experimenters, for instance in Danish dairy farming, but beyond that detailed accounts were only kept by big commercial farmers with large numbers of buyers and suppliers, and stewards of landed estates who had to report to their absentee owners.[4] That is not to say that other farmers were ignorant about their income and expenditure. They kept track of operations through mental accounting, as often as not supported by simple recordings in private notebooks or the accounts kept by local shopkeepers, artisans, and other suppliers.[5] Thus, when French farmers' unions became aware that their members preferred simple forms of registration, they began to promote the use of almanacs, diaries and private notebooks.[6] Observing the same preference for rudimentary annotations, in the Netherlands commercial suppliers of fertilizer, seeds, and other farm inputs distributed small booklets with practical information about their products and either blank or preprinted pages to record cash transactions.[7]

What these examples show is that farmers big and small carefully weighed the costs and benefits of keeping more or less elaborate accounts. This is also what emerges from changing accounting

Note 2 *continued*
entrepreneurship evaluations around the developing world', *World Bank Research Observer* 29 (2014), pp. 48–82; David John McKenzie and Susana Puerto, Growing markets through business training for female entrepreneurs: A market-level randomized experiment in Kenya (World Bank Policy Research Working Paper 7993, 2017); Tim Kaiser and Lukas Menkhoff, 'Does financial education impact financial literacy and financial behavior, and if so, when?' (Deutsches Institut für Wirtschaftsforschung Berlin, Discussion Paper, 1562, 2017); Erwin Bulte, Robert Lensink and Nhung Vu, 'Do gender and business trainings affect business outcomes? Experimental evidence from Vietnam', *Management Science* 63 (2017), pp. 2885–902.

[3] Nathalie Joly, 'Shaping records on the farm: agricultural record keeping in France from the nineteenth century to the Liberation', *AgHR* 59 (2011), pp. 61–80; *ead*., 'Educating in economic calculus: the invention of the enlightened peasant via manuals of agriculture, 1830–1870', *Accounting Hist. Rev.* 26 (2016), pp. 131–60; S. Felten, 'Unlikely Circuits: General Monetisation in a European Rural Society, c. 1700–1900' (unpublished PhD thesis, King's College, London, 2015); Thomas Depecker and François Vatin, 'Taking stock to yield a return: agricultural accounting, agronomometry and chemical statics in the early-nineteenth century', *Accounting Hist. Rev.* 26 (2016), pp. 107–29.

[4] Markus Lampe and Paul Sharp, 'A quest for useful knowledge: the early development of agricultural accounting in Denmark and Northern Germany', *Accounting Hist. Rev.* 27 (2017), pp. 73–99; M. Lampe and P. Sharp, *A land of milk and butter: How elites created the modern Danish dairy industry* (2018); eid., 'Accounting for the wealth of Denmark: a case study of Smithian growth using the emergence of modern accounting in Danish dairying', *European J. Hist. Economic Thought*, 26 (2019), pp. 659–97; Garry D. Carnegie and Christopher J. Napier, 'Exploring comparative international accounting history', *Accounting, Auditing and Accountability J.* 15 (2002), pp. 689–718.

[5] Thijs Lambrecht, 'Reciprocal exchange, credit and cash: agricultural labour markets and local economies in the southern Low Countries during the eighteenth century', *Continuity and Change* 18 (2003), p. 244; Sheilagh Ogilvie, Markus Küpker and Janine Maegraith, 'Household debt in early modern Germany: evidence from personal inventories', *J. Econ. Hist.* 72 (2012), p. 146; Karin Lurvink, 'Strapped for Cash. Non-cash Payments on Louisiana Cotton Plantations, 1865–1908', *Tijdschrift voor Sociale en Economische Geschiedenis* 11 (2014), pp. 123–51.

[6] Joly, 'Shaping records', pp. 71–3.

[7] See below. In Italy, fascist organizations published similar booklets: Manuel Vaquero Piñeiro, 'Readings for farmers: agrarian almanacs in Italy from the eighteenth to the twentieth century', *AgHR* 63 (2015), pp. 243–64.

[8] Alan L. Olmstead and Paul W. Rhode, *Creating abundance. Biological innovation and American agricultural development, 1700–1960* (2008).

practices in the United States. In the nineteenth century American farmers were able to make informed decisions about which crops to grow and how, but they did so without any recourse to detailed accounting.[8] Only plantation owners in the South developed far more elaborate – and dehumanizing – systems of accounting and control.[9] This changed with the introduction of a new income tax in 1914, which pushed farmers to record income and expenditure in much greater detail, simply because it would help them to minimize their tax bill.[10] A similar pecuniary motive surfaced 20 years later, when the Great Depression threatened the livelihood of scores of small farmers. They were not interested in accounting as a means to raise the productivity of their farms, but to qualify for emergency loans smallholders in distress had to produce a paper trail of their transactions using pre-printed accounts provided by the government.[11]

The case of New Zealand also points to financial rather than technological motives for more extensive farm accounting.[12] In 1915 the government subjected farmers to an income tax to finance the country's war effort. But their very rudimentary administration, often no more than simple diary notes, was completely unsuited to calculate income. So the government introduced a system of standard values and New Zealand's farmers engaged accountants to file their tax returns for them. Their efforts merely went into minimizing the tax bill and it was only in the 1960s that the farm accounts started being used to evaluate and improve farm performance. Before that date causality did not run from accounting to increased productivity but instead the growth of farmers' incomes induced the government to tax these revenues which in turn led to greater accounting efforts.

To further explore why farmers keep more or less elaborate accounts we analyze the diffusion of farm accounting in the Netherlands between 1840 and 1940. As elsewhere, Dutch agronomists, school teachers, and public officials actively promoted bookkeeping as a means to raise farm productivity, at a time when many other science-based improvements in farm exploitation occurred.[13] But while farmers readily adopted new farm methods from the 1890s onwards, they seldom kept accounts detailed enough to guide these investment decisions.[14]

[9] Caitlin C. Rosenthal, 'From memory to mastery: Accounting for control in America, 1750–1880', *Enterprise and Society* 14 (2013), pp. 732–48.

[10] Deborah Kay Fitzgerald, *Every farm a factory: The industrial ideal in American agriculture* (2003), pp. 47, 73. In Britain tax assessments continued to be based on the rental value of the land, as a result of which very few farmers felt the need to keep detailed accounts: John Martin, *The development of modern agriculture: British farming since 1931* (2000), p. 20.

[11] O. F. Larson and J. N. Zimmerman, *Sociology in government. The Galpin-Taylor years in the U.S. Department of Agriculture 1919–1953* (2003), p. 203; S. P. Walker, 'Accounting and rural rehabilitation in New Deal America', *Accounting, Organizations and Society* 39 (2014), pp. 208–35.

[12] Jill Hooks and Ross E. Stewart, 'Farmers, politics, and accounting: the history of standard values – an accounting convenience or political arithmetic?', *Accounting Historians J.* 38 (2011), pp. 47–75.

[13] J. P. Smits, 'Technological change, institutional development and economic growth in Dutch agriculture, 1870–1939', in P. Lains and V. Pinilla (eds), *Agriculture and Economic Development in Europe since 1870* (2009), pp. 97–116; Merijn Knibbe and Marijn Molema, 'Institutionalisation of Knowledge-based Growth: the Case of the Dutch-Frisian Dairy Sector (1895–1950)', *Rural History: Economy, Society, Culture* 29 (2018), pp. 217–35; H. Zwarts, 'Knowledge, networks, and niches: Dutch agricultural innovation in an international perspective, c. 1880–1970' (Doctoral dissertation, Wageningen University, 2021).

[14] J. A. Kuperus, 'Boekhoudingen op Nederlandse landbouwbedrijven voor 1900, in Ceres en Clio. Zeven variaties op het thema landbouwgeschiedenis (Wageningen, 1964); J. L. van Zanden, *De economische ontwikkeling van de Nederlandse landbouw in de negentiende eeuw, 1800–1914* (Wageningen, 1985).

That is, until in 1917 farmers' associations began to operate accounting agencies that helped thousands of members with their business.[15] So what made them change their mind to engage these agencies after 1917?

We use government reports, newspaper articles, parliamentary proceedings, private farm accounts, and the extensive secondary literature on the organization of the Dutch rural economy to reconstruct the accounting practices of its farmers between 1840 and 1940. Section I analyses the individual efforts of agronomists and school teachers in the mid-nineteenth century to instruct farmers how to create a paper trail of their operations. In section II we consider the education and extension programs created by the central government during the severe agricultural crisis that began in 1878 and lasted until 1895. Section III highlights the role rural co-operatives began to play as record keepers for their members in the two decades following the crisis, when tens of thousands of small- and medium-sized family farms took to new technologies to produce dairy, vegetables, and fruit for rapidly growing export markets. In section IV we analyse the assistance accounting agencies offered to farmers subjected, from 1914 onwards, to the national income tax. In section V we study the relief program created by the Dutch government to help small family farms through the Great Depression. Section VI concludes.

I

In the second quarter of the nineteenth century several economic writers in the Netherlands drew attention to the value of farm accounting for increasing productivity.[16] At the time, Dutch agriculture was not doing very well with productivity and employment stagnating and, for export-oriented farmers, growing competition from abroad.[17] Taking their cue from scholars in neighboring countries, early agronomists like Winand Staring believed that keeping track of income and expenditure and carefully calculating returns on investment would stimulate the sector.[18] Their first publications were mere theoretical treatises, but soon enough practical manuals appeared and in several parts of the countries self-taught school teachers started offering agricultural courses.[19] To be sure, farm accounting as such was not

[15] P. Coenemans, *Vijf en twintig jaar Boekhoudbureau v.d. L.L.T.B., 1928–1953* (Roermond 1953); *id., Geschiedenis van het Accountants – en Boekhoudadviesbureau van de NCB, 1924–1974* (Tilburg, 1974).

[16] Kuperus, 'Boekhoudingen'.

[17] J. Bieleman, *Five centuries of farming. A short history of Dutch agriculture 1500–2000* (Wageningen, 2010), pp. 83, 155.

[18] I. G. H. van den Bosch, *Handleiding tot het doelmatig boekhouden op een landelijk bedrijf, zijnde het bekroonde antwoord op eene, door de Zeeuwsche Commissie van Landbouw uitgeschrevene prijsvraag* (Middelburg 1843); W. C. H. Staring, *Het boekhouden voor den kleinen landbouwer* (Arnhem 1951); Jan Gerhardus Veldink, *W. C. H. Staring 1808–1877: geoloog en landbouwkundige* (Wageningen, 1970), pp. 10, 45, 95; Joly, 'Educating in economic calculus'; Martin Giraudeau, 'The farm as an accounting laboratory: an essay on the history of accounting and agriculture', *Accounting Hist. Rev.* 27.2 (2017), pp. 201–15; N. B. Goudswaard, *Agrarisch onderwijs in Nederland. Hoe het wor(s)telde en groeide* (Culemborg 1986).

[19] M. van der Burg, *'Geen Tweede Boer'. Gender, landbouwmodernisering en onderwijs aan plattelandsvrouwen in Nederland, 1863–1968* (Wageningen, 2002), pp. 71–2, 101, 113–14, 120, 147–8, 165; P. Kooij, 'Het landbouwonderwijs in de twintigste eeuw', in M. Duijvendak, E. H. Kaerl and P. Kooij (eds), *Groen Onderwijs. Terugblik en uitzicht naar aanleiding van het 100-jarig bestaan van de Vereniging voor Hoger Landbouw Onderwijs (1906–2006)* (Wageningen, Historia Agriculturae, 41, 2008), pp. 9–13.

new. Stewards managing the estates of absent land owners always had to report their results to their principals while the owners of large farms whose exploitation depended on wage labour were accustomed to running payrolls. But the agronomists' efforts were directed towards a new group of enterprising farmers keen to experiment with more scientific methods to increase productivity.[20]

The farm accounts that survive from the nineteenth century in the Netherlands offer a first indication that few farmers responded to the call of the agronomists. Figure 1 reports for the years from 1851 through 1970 the number of farms for which financial records survive in Dutch archives.[21] These farm accounts, especially the ones from the province of Groningen, figure prominently in Dutch agricultural history.[22] But given that the Netherlands towards the end of the nineteenth century counted up to 200,000 farms the number of surviving accounts is very small indeed.[23] What is more, only a handful were full accounts which farmers may have used to evaluate performance. Especially before 1900 the majority of documents consisted of notebooks with more or less elaborate remarks about specific farm operations; receipts for goods and services received, and cashbooks detailing income and expenditure.[24]

Surely, many documents will have been lost over time, while others may still remain in private hands. The crowd-sourcing project, *Kasboekje van Nederland*, broadcast on national television in 2018, provides more insight into the latter category. We asked Dutch citizens to share with us their own account books or those of their ancestors. Figure 2 shows that most accounts that have survived in private collections date from after 1910 and while this may be a simple survival bias it is noteworthy that most of these documents are cashbooks and full accounts – the more extensive records that also dominate archival collections from the first half of the twentieth century.

We already knew from the work of agricultural historians that the farm accounts that do survive from the second half of the nineteenth century were never kept in the comprehensive double-entry fashion advocated by agronomists.[25] Rather, the owners and stewards of large

[20] J. M. G. van der Poel, *Van Brakell van den Eng*: *Een Betuws hereboer uit het begin van de 19e eeuw* (Wageningen, 1959); Zanden, *De economische ontwikkeling*, pp. 189–93.

[21] Figure 1 relates to private farm accounts only. Not included are (a) accounts of farms that belonged to churches, foundations, water boards, and other institutions; (b) accounts kept by landowners with no direct involvement in farm operations; and (c) accounts kept by stewards on behalf of absent landowners.

[22] Peter R. Priester, *De economische ontwikkeling van de landbouw in Groningen, 1800–1910: een kwalitatieve en kwantitatieve analyse* (Wageningen, 1991); Richard Paping, *"Voor een handvol stuivers": Werken, verdienen en besteden: de levensstandaard van boeren, arbeiders en middenstanders op de Groninger klei, 1770–1860* (Wageningen, Historia Agriculturae, 28, 1995).

[23] In 1900 the Netherlands counted 118,926 farms with at least one horse. In addition, there were tens of thousands of smallholders working tiny plots of land without horses: Bieleman, *Five centuries of farming*, pp. 177, 229; Commissie van Advies Dienst Kleine Boerenbedrijven, *Rapport over den sociaal-economischen toestand der kleine boerenbedrijven in Nederland gevolgd door voorstellen ter verbetering van den bestaanden toestand* ('s-Gravenhage, 1937), p. 356.

[24] The distinction between these four types of documents was first applied by Kuperus in his overview of farm accounts surviving in Dutch archives: Kuperus, 'Boekhoudingen'. We have used the same coding for additional farm accounts retrieved from the secondary literature, and from published inventories of Dutch archives. The 'unspecified' documents relate to accounts described in general terms only, e.g. 'kasboek'.

[25] Zanden, *De economische ontwikkeling*, pp. 260–1; Priester, *De economische ontwikkeling*, pp. 255–6.

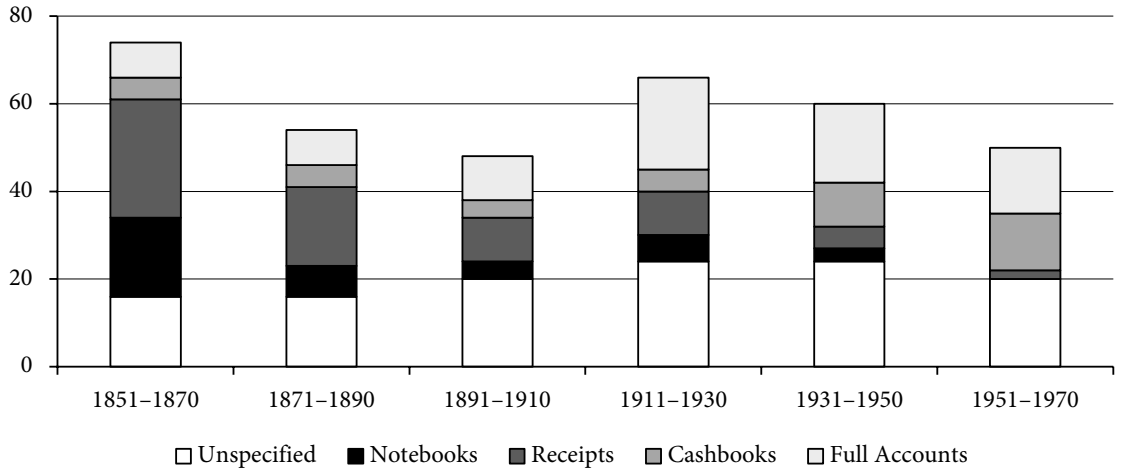


FIGURE 1. Private Farm Accounts Surviving in Dutch Archives, 1851–1970

Sources: Van der Poel, *Van Brakell van den Eng*; J. M. G. van der Poel, *De Wilhelminapolder 1809–1859* (Wageningen, 1959); J. A. Kuperus, 'Honderd jaar bedrijfsresultaten van de Wilhelminapolder (1814–1913)', *Historia Agriculturae* 6 (1962), pp. 117–273; Kuperus, 'Boekhoudingen'; J. C. G. M. Jansen, 'Landbouw rond Maastricht (1610–1865). Een analyse van de exploitatie-uitkomsten van enige lössbedrijven in halfwinning', *Studies over de sociaal-economische geschiedenis van Limburg* 13 (1968), pp. 1–98; C. Baars, 'Boekhoudingen van landbouwbedrijven in de Hoeksewaard uit de zeventiende en achttiende eeuw', *A.A.G. Bijdragen* 19 (1975); Zanden, *De economische ontwikkeling*; W. S. Verstegen and J. L. van Zanden, 'Landbouwers als ondernemers. Vier landbouwbedrijven op de Veluwe in de negentiende eeuw (1808–1867)', *Jaarboek voor de geschiedenis van bedrijf en techniek*, 4 (1987), pp. 85–105; Priester, *De economische ontwikkeling*; P. R. Priester, 'De economische ontwikkeling van de landbouw in het Oldambt in de negentiende eeuw', in J. N. H. Elerie and P. C. M. Hoppenbrouwers (eds), *Het Oldambt, deel 2; Nieuwe visies op geschiedenis en actuele problemen* (Groningen, 1991); Paping, '"Voor een handvol stuivers"'; Piet J. van Cruyningen, *Behoudend maar buigzaam: boeren in West-Zeeuws-Vlaanderen, 1650–1850* (2000); Amsterdams Archief, Inv. Nrs. 225: 384–5; 494: 311–12; 30702: 1–3, 15; Archief Achterhoek-Liemers Inv. Nr. 175: 205, 341: 15, 1469: 126, 1544: 69; Archief Barneveld Inv. Nr. 231: 109, 117; Archief Rivierenland Inv. Nr. 185: 2–10, 376: 1–6, 18, 49, 51, 53; Brabants Historisch informatie Centrum Inv. Nr. 319: 467; Drents Archief Inv. Nr. 184: 35, 294: 515, 794: 175–252, 764; Erfgoedcentrum Achterhoek en Liemers Inv. Nr.499: 409, 341: 2–16, 1008: 694, 1544: 45; Gelders Archief Inv. Nr. 584: 91–92, 3027: 1803–1805; Gemeente Archief Goes Inv. Nr. 22: 69–182, 330: 31; Gemeentearchief Roermond Inv. Nr. 50520: 246–247; Groninger Archieven Inv. Nr. 110: 266–267, 550: 17, 20, 586: 18–29, 610: 2, 638: 18, 48, 52–56; 640: 1–5, 21, 649: 2, 1896: 45–78, 1910: 1–6, 2987: 248–249; Haags Gemeentearchief Inv. Nr. 0751-01: 1–19, 084-01: 111; Het Utrechts Archief Inv. Nr. 584-1: 212–222, 256–259; Historisch Archief Westland Aanwinsten (tuindersbedrijf A. van der Arend); Historisch Centrum Overijssel Inv. Nr. 563: 12, 1498: 30; Noord-Hollands Archief Inv. Nr. 197: 90–91, 7120: 12; Regionaal Archief Dordrecht Inv. Nr. 392: 323j; Regionaal Historisch Centrum Eindhoven Inv. Nr. 11137: 36–49, 12087: 662, 736b; Regionaal Historisch Centrum Zuidoost Utrecht Inv. Nr. 315: 1-5; Stadsarchief Kampen Inv. Nr. 134: 1–7; Streekarchief Langstraat Heusden Altena Inv. Nr. 149: 154; Tresoar Inv. Nr. 93-60: 531, 110: 6533, 318–19: 118, 318–32: 9, 325: 272, 334-06: 25, 334-11: 259, 344: 807–810, 347: 387, 348: 6290; Westfries Archief Inv. Nr. 117: 31, 167: 20, 204: 1, 549: 14, 778: 56, 359, 1012: 1, 1081: 1, 3; 1285: 2, 1733: 1–6; Zeeuws Archief Inv. Nr. 216: 3–6.

landed estates produced rent books or payrolls, while middle-sized market-oriented farmers simply wrote down income and expenditure – an appropriate means to monitor cash flows but not nearly enough to prepare or evaluate decision making, to calculate return on investment,

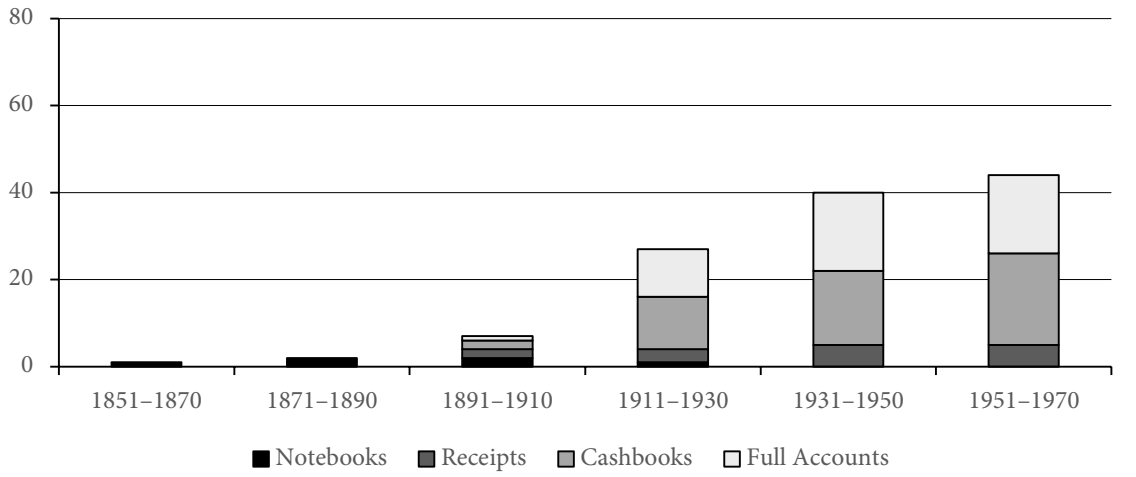


FIGURE 2. Private farm accounts retrieved through the Kasboekje van Nederland Crowd-Sourcing Project, 1851–1970

Sources: Universiteit Utrecht, Kasboekje van Nederland, Inv. nrs. 8; 22; 77; 104; 112; 130; 193; 202; 231; 236; 251; 253; 295; 298; 307; 321; 330; 334; 338; 341; 347; 372; 378; 380; 381; 386; 396; 420; 437; 448; 451; 474; 477; 1027; 1054; 1063; 1070; 1102; 1115; 1172; 1192.

or even calculate net farm income.[26] Smallholders did not do that. As one commentator observed, 'the peasant feels no need to keep accounts, and as long as he does not, any effort to teach bookkeeping will be fruitless'.[27] Dutch politicians drew the same conclusion in 1871 when they considered the introduction of a general income tax. They recognized that farmers faced a brighter future since the liberalization of international trade in the late 1850s but taxing their income would be virtually impossible: 'Even if we assume farmers are willing to file a tax return, there are so few in the Netherlands who know their income, because keeping proper farm accounts remains very rare.'[28]

And yet it seems hard to believe that farmers did not know how much money they spent or received. Subsistence farmers on the sandy soils of the inland provinces will have been aware of the price their limited surpluses could fetch on the local market, and the bigger, more commercially oriented farmers in the coastal and riverine clay areas clearly responded

[26] E. Buringh, *Afdeling Blijham Groninger Mij. Van Landbouw, 1854–1954. Jubileumuitgave ter gelegenheid van het 100 jarig bestaan* (1954), pp. 129–37; J. A. Kuperus, *Resultaten van een Groninger landbouwbedrijf (1832–1876)* (Wageningen, Historia Agriculturae, 3, 1956), pp. 171–255; Jansen, 'Landbouw rond Maastricht', pp. 1–98; Zanden, *De economische ontwikkeling*, pp. 260–1; Priester, *De economische ontwikkeling*, pp. 255–6, 556–7; Verstegen, 'Landbouwers als ondernemers', pp. 85–105; Paping, '"Voor een handvol stuivers"', pp. 182, 226–7; Cruyningen, *Behoudend maar buigzaam*, pp. 423–4.

[27] A de Heer, 'Onderwijs in het landhuishoudkundig boekhouden.', *De boerengoudmijn* 5 (1859), p. 26.

[28] 'Bij den besten wil echter van de zijde der landbouwers, om aangifte hunner inkomsten te doen, zijn er slechts zeer enkelen in Nederland, die weten hoeveel hunne inkomsten bedragen, daar het voeren eener goede landbouw-boekhouding eene uitzondering is.': 'De Toepassing van het Beginsel', *De Tijd: godsdienstig-staatkundig dagblad*, 10 Nov. 1871.

to changing prices in international markets.[29] These were certainly farmers who could read and write – as rural literacy rates were traditionally very high, especially in the Protestant provinces – and while they may not have kept extensive double entry books, they did have to pay rent or interest on their mortgage, while their livelihood depended on a positive margin between the money spent on farm inputs and revenue from sales.[30] How these farmers kept track of incoming and outgoing cash flows is very difficult to establish but we do know that farmers purchased tools, fodder, seeds, and other farm inputs from local suppliers who allowed them to buy on credit, and settled these accounts once a year with the farmers.[31] Besides this delegation of accounting to shopkeepers and artisans, Dutch farmers practised something well known in other European countries as well: the use of almanacs as memory books.[32]

In 1858, Antonie Geluk, an eager experimenter and self-appointed teacher on his farm on the island of Tholen, submitted a short article to the farmers' journal *Boerengoudmijn*, in which he deplored both the recent closure of Zeeland's first agricultural school in Goes (est. 1848) and the habit of many farmers of using their 'so-called green pocket almanacs' instead of more systematic accounts.[33] The almanacs he referred to were those written by the agronomist and farm education pioneer W. C. H. Staring from 1846 onwards.[34] Building on the century-old practice of publishing practical information on diverse topics in pocket-sized booklets, Staring's *Almanac voor de Landbouwer*, first published in September 1846 contained information on a host of agricultural matters: the annual cycle of husbandry and arable farming, weights and measures, seeds and fertilizers, and the latest developments in mechanization.[35] Already in the second edition the publisher added blank monthly pages for farmers to record income and expenditure, occasionally accompanied by an edifying comment: 'Order is the source of all prosperity … let us take this opportunity and write what we spend and receive'.[36]

[29] Hendrik Algra, *Kroniek van een Friese boer: de aantekeningen (1821–1856) van Doeke Wijgers Hellema te Wirdum* (Franeker, 1979), pp. 219–20, 239, 369; Zanden, *De economische ontwikkeling*; Bieleman, *Five centuries of farming*, p. 184.

[30] H. Knippenberg and B. de Pater. *De eenwording van Nederland: schaalvergroting en integratie sinds 1800* (Nijmegen, 1988), pp. 175–7; Paping, '"Voor een handvol stuivers"', p. 182.

[31] Zanden, *De economische ontwikkeling*, pp. 239–40, 411n; Paping, '"Voor een handvol stuivers"', pp. 25–6; E. Kloos, *Rappe Handen. Zeeuwse vrouwenarbeid 1900–1940* (Goes, 1989), p. 30; E. J. van den Broecke-de Man and A. Francke, *Dialect op Walcheren* (Kruiningen 1987); R. F. J. Paping, 'Nederland in de negentiende eeuw. Enige perspectieven voor regionaal economisch-historisch onderzoek', *NEHA-Bulletin. Tijdschrift voor de economische geschiedenis in Nederland* 10 (1996), p. 9. Big farmers did the same with their farmhands and maids, offering them board and lodging, and paying a money wage every three, six, or twelve months: Paping, '"Voor een handvol stuivers"', pp. 240–1.

[32] Joly, 'Shaping records', pp. 61–80.

[33] A. J. Geluk, 'Over het boekhouden in den landbouw', *De Boerengoudmijn* 4 (1858), p. 17; A. J. Geluk, 'Het boekhouden in den landbouw', *De Boerengoudmijn* 5 (1859), pp. 16–18.

[34] Veldink, *W. C. H. Staring.*

[35] The Deventer printer J. P. Brinkgreve published an *Almanak, voor landman en burger* for the years 1845 and 1846 but his almanac contained only general information on holidays and some brief notes on agriculture. W. C. H. Staring's, *Almanak voor den Gelderschen, Overijsselschen en Drentschen landman* (1848–1850), continued as *Almanak voor den landman in Groningen, Friesland, Drenthe, Overijssel, Gelderland, Utrecht en Noord-Braband* from 1851 onwards, contained far more information that was directly relevant to farmers.

[36] 'Het beginsel van allen voorspoed is orde op zijn zaken. Het beginsel van orde op zijn zaken is alles

Geluk's aversion to Staring's almanac-cum-notebook was not devoid of self-interest. In 1847 he had published his own *Geluks landbouwerszakboekje, geschikt voor dagelijksche aanteekeningen*.[37] It was available through mail order from a book seller in Dordrecht but few farmers were interested. In 1854 Geluk published a second, revised edition but sales remained disappointing while a new edition of Staring's almanac including the empty notes pages in the monthly calendar, was published every year and readily available throughout the country.[38] The need to keep track of daily cash flows without the creation of elaborate and exhaustive records is very clear from a unique series of 35 almanacs from a dairy farmer in Lisse, which surfaced in the *Kasboekje van Nederland* project. Between 1866 and 1870 this farmer already used a blank notebook to jot down all deliveries of cheese, butter, and calves, and then in 1873 he bought his first green, leather-bound *Leidsche Brieventasch-almanak*, with a copper clasp and a pencil stuck in the book binding. He carved his initials on the cover and carried the booklet with him every day, buying a new copy every time the previous one was full.[39]

With annual sales of butter and cheese of more than 3,000 guilders this was not a petty farmer, and the sheer length and consistency of the series of cash books suggests he was a very organized man. Indeed, in 1889 he began a separate notebook to register the wages owed to his personnel, subtracting all payments for food, clothes, and other expenses he made for them. He also kept, in very neat handwriting, a separate, hardcover notebook detailing the interest and rent paid and received.[40] The latter register ran from 1875 to his death in 1932. By then he was long retired, drawing an annual income of more than 3,500 guilders from loans extended and land leased to other farmers. This then was a financially very literate farmer who chose to combine simple memory books for daily transactions with a carefully kept capital account. This form of management was more than enough to monitor his financial situation even though he never used it to calculate annual profits or the return on specific farm investments, as learned agronomists would have liked.

Note 36 *continued*
opschrijven. (…) laten wij dan van de gelegenheid gebruik maken en hieronder opschrijven wat en waarvoor wij ontvangen en uitgeven': Tjeenk Willink, *Almanak voor den Gelderschen, Overijsselschen en Drenthschen Landman voor het jaar 1857*. Notes pages appeared for the first time in Volume 2 (1849). For an example of the use of Staring's Almanac as late as 1925, see Historich Centrum Overijssel, inv. 1498, nr. 30.

[37] Lijst van nieuw uitgekomen boeken 1847 (Amsterdam, 1847), p. 334; Cf. also the advertisement for the almanac in: De tijd: merkwaardigheden der letterkunde en geschiedenis van den dag voor de beschaafde wereld: met platen en portretten, 7 (1947), pp. 100, 166; To date, one copy of Geluk's almanac survives in the library of Wageningen University.

[38] IJ. Botke, *Boer en Heer: 'De Groninger Boer', 1760–1960* (Assen, 2002), p. 492; *Verbeterd landbouwers-zakboekje voor dagelijkse aanteekeningen* (1854). Cf. also: 'Daartoe zeer gemakkelijk ingerigte zakboekjes worden tegenwoordig overal verkocht' in 'Lessen voor beginnende landbouwers', *Maandblad voor den Nederlandschen landbouwer* (1862: 12), pp. 180–2. Staring himself, in a private library, did have a copy of Geluk's revised edition, cf. 'Starings bibliotheek', in *Catalogus van de bibliotheek der Rijkslandbouwschool te Wageningen* (1877), pp. 5–9, at 8 (nr. 50).

[39] Universiteit Utrecht, Kasboekje van Nederland [herafter KvN], inv. nr. 130.1; It is possible that the first, general notebook (f. 130.5), belonged to the farmer's father.

[40] KvN, inv. nr. 130.38.

II

The urgency of business training for smaller farmers resurfaced when Dutch agriculture entered a deep crisis in 1878.[41] The flooding of Europe with large quantities of grain from the US and Russia rapidly turned arable farming into a losing proposition while at the same time Dutch dairy farmers were losing out to technologically more advanced foreign competitors. For the bigger farmers who were already experimenting with artificial fertilizer, new fodder crops, and mechanical equipment the crisis simply offered an extra incentive to modernize farm operations but for small farmers it spelled trouble.[42] They managed to absorb the first shock through dissaving and borrowing from local suppliers but as prices remained low their financial situation quickly deteriorated.[43] Farmers' organizations called on the government to intervene and in 1886 a National Agriculture Committee was set up to explore what could be done to improve the economic outlook of Dutch farmers.

Over the next few years the Agricultural Committee churned out a large number of proposals to reinforce two developments that had already begun before the crisis. One was the establishment of local co-operatives: for the purchase of seeds, fodder, and fertilizer; for the industrial processing and sales of agricultural products; and for the provision of savings, loans, and insurance.[44] The other was the formation of human capital through a national program of research, extension, and education.[45] The main emphasis of this so-called OVO triangle (*onderzoek, voorlichting, onderwijs* [research, information, education]) was on new technologies for fertilization, plant breeding, and the processing of farm output but the newly established winter schools also set out to teach basic arithmetic and accounting to help farmers assess the economic effects of farm improvement.[46] Several school teachers published manuals on bookkeeping which they used in the classes they taught but also in separate evening courses hosted by local sections of farmers' unions.[47]

[41] D. Pilat, *Dutch agricultural export performance (1846–1926)* (Groningen, 1989), pp. 14–18.

[42] Zanden, *De economische ontwikkeling*; J. Bieleman, *Boeren in Nederland. Geschiedenis van de landbouw 1500–2000* (Amsterdam, 2008), pp. 216–18.

[43] G. Minderhoud, *Landbouw-coöperatie in Nederland* (Groningen, 1940), pp. 102, 108; W. J. Sangers, *De ontwikkeling van de Nederlandse tuinbouw (tot het jaar 1930)* (Zwolle, 1952), pp. 237–8; . Bieleman, *Geschiedenis van de landbouw in Nederland* (Meppel, 1992), 266. R. N. J. Rommes, 'Voor en door boeren? De opkomst van het coöperatiewezen in de Nederlandse landbouw vóór de Tweede Wereldoorlog', *Historische studies naar platteland, landschap en milieu*, 2 (Hilversum, 2013), p. 118.

[44] *Uitkomsten van het onderzoek naar den toestand van den landbouw in Nederland ingesteld door de Landbouwcommissie, benoemd bij Koninklijk Besluit van 18 September 1886* (4 vols, 's-Gravenhage, 1890); Minderhoud, *Landbouw*-coöperatie, p. 37.

[45] Bieleman, *Boeren in Nederland*; Smits, 'Technological Change'.

[46] J. G. M. van der Poel, *Het landbouwonderwijs in Nederland tot 1918* (Wageningen, 1976), pp. 135–9; Goudswaard, *Agrarisch onderwijs*, p. 171; Burg, '*Geen Tweede* Boer', pp. 127–30.

[47] Instruction manuals written by school teachers included: Heidema, *Landbouwboekhouding ontworpen ten behoeve van Onderwijs en Praktijk* (Groningen, 1904); A. Rauwerda, *Handleiding bij de landbouwboekhouding* (Leeuwarden, 1906); F. de Muinck, *Allereerste beginselen van het landbouw-boekhouden* (Assen, 1907); J. Z. ten Rodengate Marissen, *Enkelvoudig landbouwboekhouden* (Groningen, 1910). For advertisements of separate accounting courses, see *Leeuwarder Courant*, 21 September 1906, p. 6; *Nieuwsblad van het Noorden*, 6 March 1907, p. 10; *Oprechte Steenwijker Courant*, 10 September 1910, p. 5; *Nieuwsblad van Friesland: Hepkema' Courant*, 2 September 1911, p. 10; *Provinciale Drentsche en Asser courant*, 11 May 1911, p. 4; *Nieuwe Veendammer Courant,* 16 September 1913, p. 4.

The courses taught were not enough to enable farmers to keep their own accounts, however. The winter schools crammed accounting, funding strategies, the functioning of co-operatives, and other economic subjects into one hour per week, without any practical exercises.[48] In the lower agricultural schools, first established in 1921 onwards, children spent only 18 hours in four years on bookkeeping.[49] And yet, many Dutch farmers adopted new technologies in these years. When a second Agricultural Committee reported on the state of Dutch agriculture in 1912 it noted with satisfaction the widespread use among farmers big and small of improved seeds and fodder crops, artificial fertilizer, and mechanical equipment.[50] The precise impact of these improvements was still hard to measure, 'because farm accounts were seldom kept, and the few farmers who did, refused to open their books'.[51] At agricultural congresses agronomists still talked about accounting as an important tool to raise productivity but the Committee accepted that the vast majority of farmers cared about land rents and agricultural prices but not the precise recording of inputs and yields.[52] They did not push for more business training but simply praised the willingness of farmers to adopt new technologies and the support offered by rural co-operatives that allowed even small farmers to take these steps.[53]

The measures taken to strengthen the agricultural sector did indeed benefit smallholders. Between 1881 and 1921 the total number of farms with less than 5 hectares of land almost doubled from 59,600 to 112,600, while the number of farms with 5 to 10 hectares rose from 28,800 to 48,900. It is unlikely that these small and medium-sized farmers changed their business model without a keen eye on costs and benefits.[54] Based on what they observed with the introduction of new farming methods, the Agricultural Committee speculated that small farmers simply copied the behavior of bigger farms in their immediate surroundings.[55] But there was more to it. In 1898 a local observer of farming practices on the sandy soils of Noord-Brabant described a far more intricate system of knowledge transfer. Commenting

[48] Nationaal Archief, Den Haag, [hereafter: NA], 2.11.35, Directie van de Landbouw: Afdeling Landbouw Onderwijs, 1898–1957 [hereafter: LVV/Landbouwonderwijs], inv. nr. 374.

[49] NA, 2.11.35, LVV/Landbouwonderwijs, inv. nr 460; Goudswaard, *Agrarisch onderwijs*, pp. 244–5; T. Duffhues, *Voor een betere toekomst. Het werk van de Noordbrabantse Christelijke Boerenbond voor bedrijf en gezin, 1896–1996* (Nijmegen, 1996), p. 404; D. Hendrikx, 'The Financial Farmer. Financial education and extension to Dutch farmers, 1890–1940' (unpublished MA thesis, Universiteit Utrecht, 2018), pp. 32–4.

[50] Staatscommissie voor den Landbouw, *Overzicht van het landbouwbedrijf in Nederland* ('s-Gravenhage, 1912).

[51] Staatscommissie, *Overzicht*, p. 141. One local correspondent observed that tenants lacked scientific knowledge and that only a few individuals had sufficient accounting skills to calculate annual profits or losses: Staatscommissie voor den Landbouw. *Bijlagen behoorende bij de rapporten en voorstellen betreffende den oeconomischen toestand der landbouwers in Nederland* ('s-Gravenhage, 1912), p. 186.

[52] Technical matters dominated the discussions at the agricultural congresses: J. M. G. van der Poel and R. J. C. Wessels, *De verslagen van het Nederlandsch Landhuishoudkundig Congres, 1846–1953* (Meppel, 1953), pp. 10–24. However, the sustained interest of agronomists in the benefits of bookkeeping is evident from a number of contributions to the *verslagen* by agronomists: Vorsterman van Oyen (1902), pp. 226–7; Montenberg (1905), pp. 35, 152; Boeke (1905), pp. 154–7; Timmers (1910), pp. 81–3; De Vries (1910), p. 237; Bulder (1911), pp. 2, 5–6). At the 1910 congress the Director General of Agriculture, Van Hoek, also emphasized the importance of accounting as he referred to bookkeeping courses taught in various parts of the country: Van Hoek (1910), pp. 239–40.

[53] Instead of relying on actual farm accounts, the committee used the reports of local correspondents to produce model calculations for several types of farms: Staatscommissie, *Overzicht*, pp. 317–20, 456–7, 502–8.

[54] Zanden, *De economische ontwikkeling*, pp. 293–314.

[55] Staatscommissie, *Overzicht*, p. 22.

on the use of advanced accounting techniques by big farmers in Groningen, he pointed out that petty farmers in his province did not care about bookkeeping because they committed everything to memory:

> We know of examples of respectable, old-fashioned farmers, who retain for many years what happened on their farms; what crops were grown; yields produced; the number of cows and sheep they sold at what price; how expensive the butter and wool were; et cetera, et cetera [and because] the farm is all they ever talk about between themselves, sharing their experiences solidifies everyone's personal memory.[56]

This is what behavioural economists today describe as *mental accounting* – in this particular case the establishment of reference outcomes.[57] Agricultural historians working on the preindustrial period will also recognize this kind of sharing of knowledge as an important means for smallholders to make informed decisions about their farms.[58] It is impossible to tell how widespread this mental accounting was but at the time reference outcomes were very easy to come by whether through newspapers, visits to markets, or reports from the agents selling farmers' produce.[59] The sometimes very basic recordings in surviving notebooks also point to their primary function as aids to memory.[60]

Another means by which even the smallest farmers could track their performance was the registration of their transactions by the rural co-operatives founded from the 1870s onwards.[61] Rural banks, purchasing associations for fodder and fertilizer, co-operative auctions, and mutual insurance funds freed farmers from the, sometimes oppressive, financial ties with suppliers and buyers while offering similar administrative support. Obviously, the co-operatives kept track of their members' payments and deliveries to keep their own organization financially healthy, and indeed there was a legal obligation to keep records of all the business that transpired.[62] But the by-product of this administrative effort was the emergence of an

[56] 'maar toch zijn ons voorbeelden bekend van degelijke ouderwetsche boeren, die gedurende een reeks van jaren alles kunnen onthouden wat op hunne boerderij gebeurd is, wat op de verschillende perceelen verbouwd is, hoe groot de opbrengst was, hoeveel koeien en schapen zij verkocht hebben en voor welken prijs, hoe duur de boter en de wol was enz. enz. [omdat ze] onder elkander alleen over de boerderij spreken en telkens en telkens weer, nu aan den een, dan aan den ander, van hunne bevindingen mededeeling doen, waardoor het des te vaster in het geheugen komt,': 'het landbouw-boekhouden', *Provinciale Noordbrabantsche en 's Hertogenbossche courant*, 24 April 1898.

[57] Richard Thaler, 'Mental accounting and consumer choice', *Marketing Science* 4 (1985), p. 204.

[58] H. K. Roessingh, 'Inlandse Tabak: Expansie en contractie van een handelsgewas in de 17e en 18e eeuw in Nederland', *A. A. G. Bijdragen*, 20 (1976), p. 207; Paul Brusse, *Overleven door ondernemen. De agrarische geschiedenis van de Over-Betuwe 1650–1850* (Wageningen, 1999), pp. 88–9; Thijs Lambrecht, *Een grote hoeve in een klein dorp: relaties van arbeid en pacht op het Vlaamse platteland tijdens de 18de eeuw* (Gent, 2002), p. 9.

[59] Algra, *Kroniek*, pp. 219–20, 239, 246–8, 369.

[60] Cf. for instance the rudimentary notes kept by a carpenter-turned-blacksmith who kept chickens and pigs on the side: KvN, inv. nr. 307.1, 1899–1919 and KvN, inv. nr. 307.2, 1902–1919. Among the farmers with more extensive accounts were also those who had become passive investors renting out their land to others, for instance KvN, inv. nr. 202.1, 1889–1911.

[61] Rommes, 'Voor en door boeren', pp. 49, 57–9.

[62] According to Article 2 of the 1925 law on co-operative societies 'every co-operative association was a merchant as understood in the commercial code.' This obligated them to keep accounts and these accounts could be used as legal proof in a court of law: O. Gezelle Meerburg, *Practische handleiding bij de wet op cooperartieve vereenigingen* (1925).

extensive system of delegated accounting that went much further than the accounts previously kept by local merchants, shopkeepers and artisans.[63]

One obvious example were the savings booklets of the rural credit co-operatives. Within a decade after the foundation of the first *boerenleenbank* in 1898 more than 60,000 rural dwellers brought their savings to a rural co-op.[64] But the recording of transactions went much further than the deposits and withdrawals registered in these saving booklets. Horticulturists, for instance, subscribed to their local co-operative to purchase seeds, fertilizer, and other inputs: 'on the day of delivery the members appeared at the docks or the railway station with their carts, received their share and paid cash, either on the spot or after sampling the merchandise.'.[65] The co-operative auctions for the sales of fruits and vegetables were created with the express purpose of settling accounts quickly – a feature so crucial that some auctions built reserve funds to offer cash payments to producers in case a buyer failed to do so.[66] Since hardly any accounts survive from this period, it is very difficult to tell exactly how much work this took out of the hands of farmers. However, one producer of tomatoes, cabbage and other vegetables did keep cluttered notes of all the money coming and going out from 1914 onwards, with the single most organized entry the weekly (in January and February bi-weekly) payment of auction revenues.[67]

Similar methods were employed in livestock farming with, for instance, co-operatives collectively purchasing fodder and then receiving farmers' cash payments on delivery.[68] In dairy-producing regions co-operative milk, cheese, and butter factories made weekly payments of 'milk money' to farmers – members and non-members – creating a regular income stream that stabilized farmers' cash flow.[69] Indeed, dairy factories obviated the need for what agronomists claimed was the greatest benefit of accounts carefully kept: individual farmers making investment decisions. With the establishment of co-operative cheese and

[63] To be sure, the client accounts kept by rural co-operatives did not fully replace the accounts kept by local suppliers of goods and services. The death duty forms (*Memories van Successie*) of a representative sample of 2,321 people who died in 1921 with an estimated wealth of at least 1,000 guilders, reveal that among them were 66 farmers aged under 65. There were 35 with one or more debts outstanding with local suppliers: O. Gelderblom, J. Jonker, R. Peeters and O. Gelderblom, 'Memories van Successie 1921' (unpublished dataset).

[64] H. van Haastert and G. W. M. Huysmans. *Veertig jaren landbouwcrediet onder leiding der Coöperatieve Centrale Boerenleenbank te Eindhoven 1898–1938* (Roermond, 1939), p. 117; Cornelis Weststrate *et al.*, *Gedenkboek: uitgegeven ter gelegenheid van het vijftigjarig bestaan der Coöperatieve Centrale Raiffeisen-Bank te Utrecht, 1898–1948* (Utrecht, 1948), p. 34.

[65] Minderhoud, *Landbouw-coöperatie*, p. 38.

[66] Ibid., p. 63.

[67] KvN, inv. nr. 104.1, 1914–1928. Cf. also the weekly reckoning with of the brothers Krul, horticulturalists near The Hague, with the co-operative auction house: Haags Gemeentearchief, 0843-01, BNR., inv. nr. 111.

[68] Rommes, 'Voor en door boeren', p. 148.

[69] T. van der Zee, *De Friesche boeren-coöperaties in haar maatschappelijk verband : een studie van gemeenschapsleven* (Sneek, 1933), pp. 98, 241–2; Minderhoud, *Landbouw-coöperatie*, p. 86; Rommes, 'Voor en door boeren', pp. 237, 241. Early examples of milk money paid to farmers in KvN, inv. nr. 372.7, 1919–1920 and KvN, inv. nr. 1027.14C, 1920–1946. For milk factories extending services to non-members: Rommes, 'Voor en door boeren', p. 228; The *Nederlandsche Staatscourant,* 4 April 1897, p. 7, published on the legal obligation of a dairy factory in Friesland to pay weekly milk money. In addition to the ledgers of its milk drivers (*melkrijders*), Friesland's co-operative dairy factory kept a separate account book (*kasboek* 1940–1973) for farmers who delivered their milk directly to the factory: Tresoar, 94-01, Friese coöperatieve zuivelfabrieken, inv. nr. 498.

milk factories these investment decisions and the accounting efforts to inform them, including the daily recording of the amounts of milk delivered to the factory, were delegated to the board of the co-operation.[70] Eventually even petty farmers on the sandy soils of the inland provinces benefited as the co-operatives, in the words of the Agricultural Committee in 1912, facilitated the transition from an exchange-based *Naturwirtschaft* to a cash-based *Geldwirtschaft* by shortening the time it took for farmers to receive cash in hand.[71] But cash payments obviated the need for a paper trail, and thus it comes as no surprise that this second Agricultural Committee made no recommendations at all about the improvement of farmers' accountings skills.

III

And then, just as policy makers became resigned to the farmers' unwillingness to keep books, the latter started taking an interest. As Figure 1 shows, the number of surviving farm accounts between 1911 and 1920 was double that of the previous decade. At the same time a new type of accounting instructions began to appear: not textbooks, but practical manuals with blank, pre-printed registers of income and expenditure.[72] One straightforward explanation would be that farmers experimenting with new seeds, fodder, and machinery felt the need to keep better track of their inputs and outputs. But this kind of monitoring was mostly left to farm consultants and co-operative factories.[73] There was another, more urgent reason for farmers to keep more detailed accounts: the inclusion of farmers in the national income tax from 1915 onwards.

The taxation of farmers' income had been long in coming. In 1893, after half a century of political struggle, a general income tax was introduced in the Netherlands. It was a carefully designed but nevertheless quite complex fiscal instrument, that required elaborate estimations of income and capital stock for an adequate assessment of taxable incomes. Farmers were exempt from taxation because they already paid a land tax and because it would be impossible to determine their income.[74] Nicolaas Pierson, responsible for the introduction of the income

[70] Smits, 'Technological change'; Knibbe and Molema, Institutionalisation', pp. 222–5, 229. Cf. Lampe and Sharp, *Land of milk and butter* and S. Henriques, E. McLaughlin, P. Sharp, X. Tsoukli, and C. Vedel, 'Opening the black box of the Danish dairy cooperatives: A productivity analysis', *EHES Working Paper* 203 (2020), for the delegation of both investment decisions and related accounting efforts to creameries in Danish dairy farming.

[71] Staatscommissie, *Overzicht*, pp. 303, 313.

[72] Practicus, *Eenvoudig Landbouw-Boekhouden voor greid- en bouwboeren* (Leeuwarden, 1909); F. Tuinstra, *Landbouwboekhouding* (Heerenveen, 1909); C. Nobel, *Landbouwboekhouding* (Schagen, 1912); P. H. Dijksterhuis, *Kasboek Landbouw-boekhouding met toelichting* (Groningen, 1915); J. F. H. Deckers, *Handleiding bij de enkelvoudige landbouwboekhouding* (1916); E. P. W. van Schaik, *Leerboek van het landbouwboekhouden* (1917); R. Reindersma, *Eenvoudige Landbouwboekhouding* (Appingedam, 1917). In 1917 W. Vermeulen published *Uitgewerkt voorbeeld voor een eenvoudige landbouwboekhouding* (Deventer, 1917), with no explicit reference to the income tax but a direct pointer to the 1st of May (that is, the start of the fiscal year) as the right time to begin one's accounts.

[73] Knibbe and Molema, 'Institutionalisation', *passim*.

[74] In 1881 the Minister of Finance, Simon Vissering, told Parliament that a farmer could not tell how much he earned because he and his family consumed most produce themselves. This did not mean they were unaware of their financial situation: '(…) a peasant knows very well, when he has put out money on a mortgage, who his debtor is, and how much he is owed when the day comes he must receive his interest': *Handelingen der Staten-Generaal, 1880–1881*, p. 1051 (22 Mar. 1881).

tax in 1893, knew from his own experience as a member of the Agricultural Committee of 1886 that farmers would be unable to produce accurate estimates of their income: 'a farmer … as a rule does not know how much he earns. Much of his income is consumed in kind, the exact amount of which can hardly be calculated. However extensive his farm may be, he seldom keeps accounts, let alone properly kept ones'.[75]

With the recent agricultural crisis in mind, the government had decided in 1893 to exempt farmers from paying the income tax.[76] But then the sector began to thrive again, with international markets opening up and farmers benefiting from state-sponsored research, education, and extension. It was not for long that members of parliament revisited the tax exemption for farmers, arguing as early as 1907 that farmers who had previously benefited from public expenditure should now contribute more to the state's revenues.[77] Six years later, in 1914, parliament voted for the inclusion of farmers in the income tax, with the first levy set for 1915.

The response of farmers varied with the size of their operations. For very small farmers the new tax did not change anything, as their annual income easily fell below the 650 guilders threshold.[78] This was also true for the agricultural labourers who combined working on somebody else's farm with subsistence farming on a tiny plot of land of one hectare or less. A government committee reviewing their living conditions in 1906, pointed to the low and very irregular income of rural workers arguing that it was so difficult to sustain their livelihood that at some point the state might need to step in.[79] Well aware of the negligible share of low-income earners in fiscal revenue, the government raised the threshold for assessment to 800 guilders in 1919.[80] At the other end of the spectrum, big farmers were obviously not happy about the new levy but filing their taxes did not pose a problem. They were used to paying land taxes and the scale and scope of their business was such that the everyday management of their farm required them to keep track of income and expenditure. Indeed, the savviest farmers were able to take advantage of the administrative small print, reporting their income and expenditure in such a way as to minimize their assessment.[81]

[75] 'Verslag van parlementair debat over inkomstenbelasting', *Provinciale Drentsche en Asser Courant*, 22 May 1907.

[76] On Pierson's desire to protect farmers with low incomes, see also W. H. Vermeulen, *Den Haag en de landbouw* (Assen, 1966), pp. 76–7.

[77] C. Smit, *Omwille der Billijkheid. De strijd over de invoering van de inkomstenbelasting in Nederland* (Amsterdam, 2002), p. 268; Cf. the 1907 newspaper report citing Pierson's considerations, and an opinion piece from 1910 describing the strong growth of the income of a 22 hectares farm between 1890 and 1910 to argue for the lifting of the tax exemption for farmers: 'Het betrekken der Landbouwbedrijven in de Bedrijfsbelasting c. q. Inkomstenbelasting', *Algemeen Handelsblad*, 15 Sept. 1910.

[78] In 1915 the threshold was determined at 650 guilders. This was raised to 800 guilders in 1919: W. A. Bonger, 'Vermogen en inkomen gedurende den oorlogstijd. Een statistische studie, Deel II. Inkomen', *De Socialistische Gids. Maandschrift der Sociaal-Democratische Arbeiderspartij*, 8.3 (1923), p. 342n.

[79] Staatscommissie voor den landbouw, *Verslagen betreffende den oeconomischen toestand der landarbeiders in Nederland* (2 vols, 's-Gravenhage, 1908), pp. 10, 15, 24–33, 49.

[80] W. A. Bonger, 'Vermogen en inkomen', p. 342n. While the Dutch government taxed excess profits made during World War I with a targeted War Profit Tax (*oorlogswinstbelasting),* raising the threshold for the income tax was unrelated to this effort. Indeed, Bonger, the leading expert on income and wealth taxation at the time, explicitly stated that people with incomes below 800 were unlikely to save any money at all: Bonger, 'Vermogen en inkomen', p. 191.

[81] See for instance several newspaper reports on farmers' tax evasion: 'Belastingontduiking', *Leeuwarder Courant*, 6 June 1917, p. 2; ''t Scheelt nogal wat',

The bigger challenge was the taxation of more than 50,000 medium-sized, family-owned farms.[82] Tax inspectors had no way of knowing how much income individual farmers actually earned, and the same was true for the farmers themselves: some of them may have kept detailed books but the vast majority did not have the accounts necessary to make such calculations. To solve this problem the fiscal authorities applied an income source system (*bronnenstelsel*), with standard values for the average profit per cow, chicken, hectare of potatoes, hectare of cereals, and so forth.[83] Starting in 1915, tax inspectors used these numbers to estimate every farm's annual income and taxed them accordingly. In theory, their calculations should produce equitable tax assessments for all farms, big and small, and thus save farmers the effort of keeping detailed accounts. But soon enough it became clear that many individual assessments were inaccurate. On the one hand, the standard norms did not account for the location of the farm, the quality of the soil, the sort of livestock, etc. On the other, farmers often incurred idiosyncratic costs unobservable by the tax inspector.[84]

Like any other taxpayer, farmers were free to lodge an appeal against their assessment but to be successful required the kind of paper proof that could only be obtained through careful accounting. Take, for instance, a mixed farm near Eindhoven in Noord-Brabant. With an annual turnover of 7,000 guilders. This was already quite a big farm, and the owner a respectable member of the local community who served as an alderman. In February 1921 he filed an official complaint with the tax inspector in Eindhoven about his assessment for the previous year: 'Last year we moved to a different farm, which necessarily entails considerable costs, notably more fertilizer, and because of the foot-and-mouth disease among our cattle we needed much more fodder and our livestock was in poor condition.'[85] This particular farmer was well prepared for his confrontation with the fiscal authorities. Since 1918 he had registered all amounts received and spent, plus the farm products consumed by the household. These overviews allowed him to substantiate his appeal to the tax inspector: 'if you wish, please come and review my accounts'.[86] But his energetic reaction to the new fiscal challenge was exceptional. Through the *Kasboekje van Nederland* project we retrieved the accounts of only five other middle-sized farmers who immediately stepped up their administrative efforts in the first years after the introduction of the income tax.[87] The actual number of farmers doing

Note 81 *continued*
Dagblad van Noord-Brabant, 24 Nov. 1919, p. 5; 'Nieuw systeem van belastingontduiking', *Algemeen Handelsblad*, 17 Dec. 1919, p. 8. Cf. also the published minutes of a village council meeting in Smilde: *Provinciale Drentsche en Asser courant*, 13 Mar. 1924, p. 6.

[82] The estimated number is taken from Bonger, 'Vermogen en inkomen', p. 348.

[83] The so-called *bronnenstelsel* distinguished between 'old assets' and 'new assets' acquired over the course of the fiscal year. Income from the old assets was estimated – and taxed – on the basis of the revenues they had generated in previous years while standard tables were applied to estimate income from the new assets: *Geschiedenis van het Accountants- en Boekhoudadviesbureau*, pp. 27–8.

[84] One specific problem emerged when the War Profit Tax was levied for the first time over the *calendar year* 1916. The income farmers had earned in the *fiscal year* running from 1 May 1915 to 30 Apr. 1916, was also taxed as war profit for 1916: V. S. Ohmstede, *Practijk der oorlogswinstbelasting 1916. Supplement II (Augustus 1917)* (Gouda, 1917), p. 17.

[85] KvN, inv. nr. 1172.1: 'Wij zijn verleden jaar naar een andere boerderij getrokken, en dat brengt noodzakelijk vele kosten mede, 't is meer kunstmest, en dan hebben wij veel meer veevoeder noodig gehad vanwege 't mond en klauwzeer, dat wij in 19 onder 't vee gehad hebben en 't vee wegens die ziek te in een slechte conditie was.'

[86] KvN, inv. nr. 1172.1 (letter) and KvN, inv. nr. 1172.2.

[87] KvN, inv. nrs. 236.1, 253.2, 372.7, 1027.1-3, 1172.1.

so must have been higher, of course, but there is no doubt that the vast majority of farmers could not make the transition all by themselves. Hence there followed a spate of private and public initiatives to help farmers with their tax returns.

Starting in 1915 several tax inspectors published instruction manuals for farmers, as often as not accompanied by public lectures and newspaper articles on the administrative requirements of the income tax.[88] School teachers published new editions of their existing manuals to address fiscal requirements, they taught special evening courses about the drafting of tax returns, and some even offered their accounting services to individual farmers.[89] At the same time, private accounting firms across the country advertised their administrative services to local farmers.[90] But soon enough it became clear that the interpretation of the *bronnenstelsel* differed between individual tax inspectors and more and more farmers took issue with their tax assessment.[91] It was at that point that farmers' unions in Friesland and Groningen, provinces with large numbers of medium-sized farms, decided to take action.

IV

In 1917 dairy farmers in Friesland established a co-operative accounting agency (*boekhoudbureau*) to help their members draft their tax returns.[92] The next year the *Groninger Landbouwmaatschappij* (Groningen Agricultural Society) advertised the creation of a similar agency taking over the business of a local accounting firm.[93] It was not too long until accounting agencies were established in other parts of the country as well.[94] In 1926, the first year for which national statistics are available, a total of eight accounting agencies serviced some 1,450 farmers. Half of this membership was from Friesland and another 400 came from

[88] Several manuals explicitly referred to this fiscal imperative. In 1915 P. van der Meulen, a tax inspector in Leeuwarden, published *Eenvoudig kasboek voor landbouwers en veehouders*. It reappeared in 1918 under the title *Eenvoudige handleiding voor het voeren van een landbouwboekhouding, in aansluiting met de Wet op de Rijksinkomstenbelasting*. In 1918, J. C. Laterveer, director of the Central Bureau of Accounting in The Hague published *Landbouwboekhouden*. Three years later he advertised the lectures he could give on 'Farm accounting and fiscal matters', *Dagblad van Noord-Brabant*, 27 Aug. 1921. On 20 Jan. 1917 the *Leeuwarder courant* (pp. 9–10) published an extensive instruction as to how farmers should calculate their income. Cf. for advertisements of public lectures on farm accounting and the income tax: *De Graafschap-bode*, 18 februari 1916, *Opregte Steenwijker Courant*, 3 Feb. 1917.

[89] In 1917 one farmer from Delft used the pre-printed inventory and cash-books of J. Kok, *Bedrijfscontrole*, a private operator, and probably the same J. Kok who established the agricultural winter school of Veendam in 1908: KvN, inv. nrs. 1027.1, 1027.2. Cf. on this farm Jacques Moerman, 'Klapwijk, boer op 't Woudt van 1937 tot 1939', *Historisch Jaarboek Schipluiden* (2016), pp. 28–43.

[90] See for instance: *Dagblad van Noord-Brabant*, 1 Jan. 1920, *De Grondwet*, 27 Aug. 1921, *Onze courant*, 22 Nov. 1922, and *Nieuwsblad van Friesland: Hepkema's courant*, 16 June 1922.

[91] One problem was the effect the attribution of farm income to one year or another could have on the total amount of taxes due: W. J. de Langen, 'Progressieve inkomstenbelasting en wisselende inkomens', *De Economist* 70 (1921), pp. 393–406. Fifteen years after the introduction of the new income tax, farmers still complained about the arbitrary decision-making of local tax inspectors – concerns that even reached parliament: *Handelingen Tweede Kamer, 1929–1930*, 29 Nov. 1929, pp. 759–61; Cf. also: J. C. Mollerus 1932, *Officieele vertegenwoordiging van landbouw, nijverheid en handel* (Amsterdam, 1932): 249; *Geschiedenis van het Accountants- en Boekhoudadviesbureau*, p. 27.

[92] Zee, *De Friesche boeren-coöperaties*, p. 123.

[93] Botke, *Boer en Heer*, p. 494; *Nieuwsblad van het Noorden*, 31 May 1918.

[94] Coenemans, *Vijf en twintig jaar*, p. 25.

Groningen. However, five years later, in 1931, the total number of agencies had grown to 14, and in Overijssel, Gelderland, Noord-Brabant, and Holland each of them had more than 500 members.[95]

The basic arrangement offered by the agencies was a simple one. They provided farmers with blank, standardized accounting forms to record their income and expenditure, both in money and in kind.[96] Some agencies offered separate books for business and household expenses, others combined the two, sometimes with a separate cash register. The standard accounts always included a farm inventory, with on the one hand the farms assets: buildings, land, animals, vehicles, large agricultural equipment, tools, goods in stock, crops on the field and debtors, and on the other hand the farm's liabilities: outstanding debt, unpaid supplies and unpaid wages. The farmers were supposed to record transactions themselves but they could always ask the agency for advice to prevent 'inconvenient difficulties' with the tax authorities.[97] Upon the completion of the fiscal year the agency produced full accounts plus a statement to submit to the tax authorities. Still, the outcome depended on the farmers' diligence: 'without accurate information, many appeals [will be] consigned to the waste-paper basket'.[98]

The strength of the fiscal imperative for bookkeeping is evident from the growth of the agencies' membership, reaching 10,000 in 1940.[99] The number of farmers keeping accounts was higher still as some chose to work with commercial accountants, while others educated themselves, went to their local stationer's for standard cash-books, and set up their own forms of administration.[100] But still, these farmers with far more elaborate accounts remained a minority. The total number of farms in the Netherlands was close to 200,000 in 1930, which meant that the accounting bureaus attracted only one out of 20 farmers.[101] Even if some farmers turned to a private accountant instead, it is clear that many farms remained without a any detailed administration of their accounts. As Figure 3 shows, the annual turnover in the first year for which accounts survive was seldom below 5,000 guilders – a size at which farmers could expect to be assessed in the income tax. Hence, it comes as no surprise that almost without exception, their accounts were aligned with the fiscal year running from 1 May to 30 April.

[95] NA, 2.19.042.49, Vereniging Landbouwboekhouden; Landelijke Vereniging van Accountants- en Belastingadviesbureaus (VLB), (1922) 1926–1983 [hereafter, VLB], inv. nrs. 8–11; For Friesland: 'Uitkomsten van landbouwbedrijven in Friesland', *Nieuwe Rotterdamsche Courant*, 28 Sept. 1926.

[96] *Geschiedenis van het Accountants- en Boekhoudadviesbureau*, pp. 17–18.

[97] Brabants Historisch Informatie Centrum [hereafter BHIC], 761, F. J. M. Smits van Oijen, privé, 1895–1984, inv. nr. 621.

[98] P. J. van Haaren, *Landbouwboekhouden en Inkomstenbelasting* (Tilburg, 1934), p. iii.

[99] NA, 2.19.042.49, VLB, inv. nr. 12; The Vereniging Landbouwboekhouden counted 9,500 members in 1940, not including Friesland's accounting agency. The latter was reported to have 1,452 members by the *Leeuwarder Courant*, 'De uitkomsten in het Friesche landbouwbedrijf over 1939/1940', 20 Sept. 1940.

[100] From 1917 onwards private accounting firms advertised their services setting up accounts for farmers or helping them with their filing of taxes. See, for instance: *Dagblad van Noord-Brabant*, 27 Aug. 1921; *Nieuwe Vlaardingsche courant*, 1 Aug. 1924, *Leeuwarder courant*, 8 Oct. 1927: Farm accounts without visible traces of the involvement of an accounting agency: KvN, inv. nrs. 236, 251, 295, 298, 334, 338, 341, 372, 380, 396, 437, 448, 451, 477, 1027, 1063, 1102. One farmer used the *Zakboekje ter bijhouding van het kasboek van den Nederlandschen landbouwer*, first published in 1928 by the *Inlichtingenbureau voor Chilisalpeter*, the public relations office of the N.V. Chilisalpeter Handelmaatschappij: KvN, inv. nr. 104.1.

[101] *Commissie van Advies, Rapport*, p. 356.

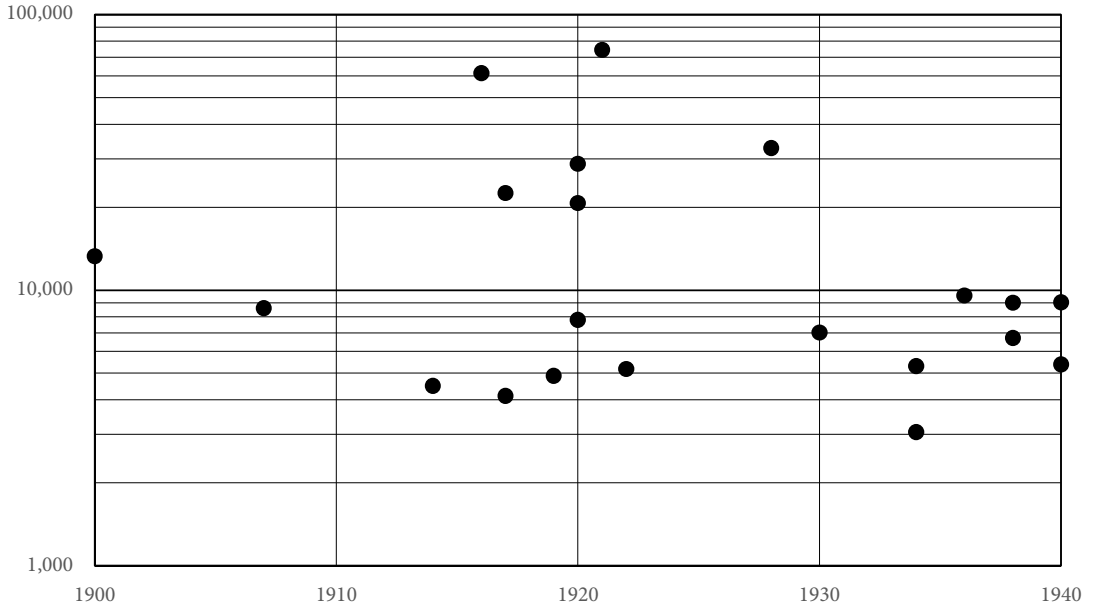


FIGURE 3. Annual turnover of 29 Dutch farms in the first year for which their accounts survive (1900–40, logarithmic scale)

Source: KvN, inv. nrs. 104, 193, 202, 231, 236, 251, 253, 295, 298, 334, 338, 372, 378, 380, 381, 386, 396, 437, 448, 451, 1027 (2 farms), 1054, 1070, 1102, 1115, 1172, 1192

Further evidence for this direct link between farm size and active accounting comes from the province of Noord-Brabant where two accounting agencies worked in very different circumstances. The Christian Farmer's Union of Noord-Brabant (*Noordbrabantsche Christelijke Boerenbond, NCB)*, headquartered in Tilburg, united 32,500 predominantly small farmers working the sandy soils in the eastern part of the province.[102] By 1935 the NCB accounting agency had 1,000 members, i.e. one out of 30.[103] The North-Brabant Agricultural Society (*Noord-Brabantsche Maatschappij van Landbouw, NBML)* was a much smaller union of medium-sized and large farmers on the clay soils of western Brabant.[104] Their membership did not exceed 1,100 in the 1930s but one out of seven members relied on the accounting agency for their financial administration.[105]

We find the same pattern in other parts of the country. Accounting agencies came early in Friesland and Groningen, provinces with a relatively large number of medium-sized and big farmers, and late in places like Limburg and Drenthe with many small farmers.[106] The

[102] Duffhues, *Voor een betere toekomst*.

[103] *Geschiedenis van het Accountants- en Boekhoudadviesbureau*, pp. 3–7, 13.

[104] P. J. van Loon, *Honderd jaren Maatschappij van Landbouw in Noord-Brabant 1851–1951* (Amsterdam, 1951).

[105] BHIC, 213, Noordbrabantse Maatschappij van Landbouw [hereafter, NBML], inv. nr. 6; BHIC, 213, NBML, inv. nr. 119.

[106] Cf. also a contemporary study of dairy farmers in the vicinity of Amsterdam. The 17 farmers who were members of the accounting agency in 1934 worked on 12.8 hectares on average: B. G. L. M. Tosseram, *Het melkwinningsgebied van amsterdam: een sociografische studie over consumptiemelkers* (Purmerend, 1936).

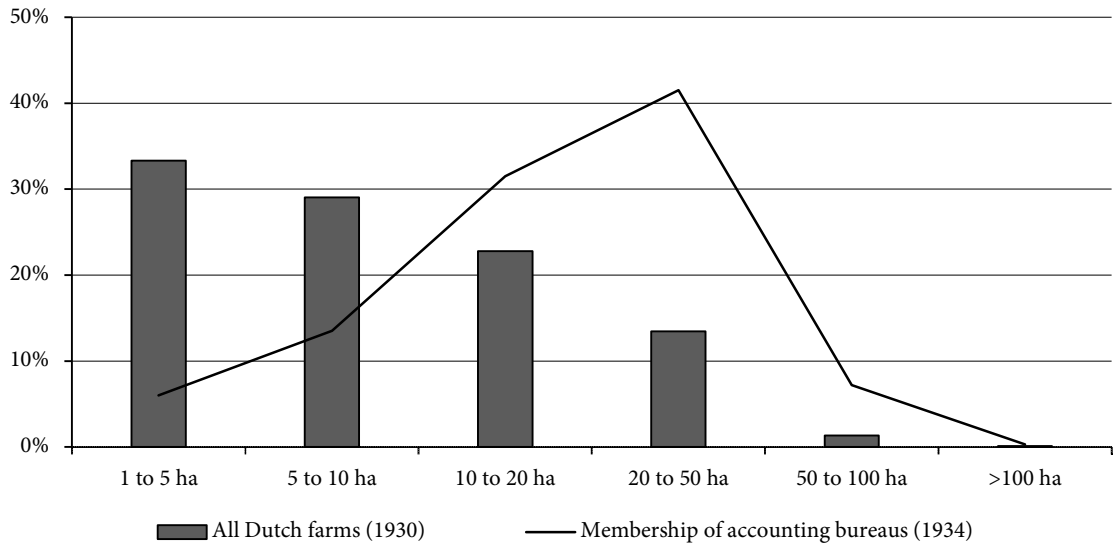


FIGURE 4. The distribution of farm size (1930) and the membership of accounting bureaus (1934) in the Netherlands

Sources: Verslag der Staatscommissie, ingesteld bij Koninklijk Besluit van 15 december 1927, No. 34, tot het onderzoeken van de vraag of en, zoo ja, in hoeverre en door welke oorzaken in den land- en tuinbouw eene wanverhouding bestaat tusschen de bodemprijzen en productiekosten eenerzijds en de opbrengst der producten anderzijds ('s-Gravenhage, 1933), p. 290; C. G. P. Stevens, *De Dienst der Bedrijfsconsulenten voor den Landbouw* (Amsterdam, 1935), pp. 8–9.

relationship between farm size and accounting effort is also borne out by contemporary reports comparing the size distribution in the agricultural sector as a whole with the composition of the agencies' membership. Figure 4 shows that farms between one and ten hectares made up 60 per cent of all farms in 1930 but only 20 per cent of the membership of all 14 accounting agencies. Conversely, farms between 10 and 50 hectares, a third of all farms in 1930, made up three quarters of the agencies' membership. Truly big farms of 50 hectares or more made up a tiny part of both the agencies' membership and the agricultural sector as whole.

The choice of small farmers not to use the accounting agencies was based on a sound cost-benefit calculus, which can be reconstructed from the records of the accounting agency of the NBML. Like any other agency, this *boekhoudbureau* provided its members with their own model notebook, accompanied by 30 envelopes to send in their records every two weeks.[107] Regardless of the size of their farm, each member paid a basic fee of 10 guilders per year, 65 cents for their pre-printed accounts, and 65 cent per hectare with a minimum of 6 guilders and 50 cents (the equivalent of 10 hectares). This put the minimum contribution of any member slightly over 17 guilders.[108] In return they received every year in May an overview of their financial results, followed by a possible refund if the taxable income fell below the estimate of

[107] *Noordbabantsch landbouwblad*, 23 April 1924; *Landbouwblad voor Zeeland en Noord-Brabant*, 22 Mar. 1930; *Landbouwblad voor Zeeland en Noord-Brabant*, 29 Mar. 1930.

[108] *Noordbrabantsch landbouwblad*, 27 Feb. 1924.

the fiscal authorities. In the fiscal year 1936/37, for instance, the NBML reported to its members that it had reclaimed an amount of 3,150.56 guilders from the tax administration, i.e. an average 19.20 guilders per member.[109] This reimbursement confirmed that farmers were right to challenge the assessments made by the tax inspector, and that accounting bureaus played a valuable role in making these claims. But comparing the fees paid with the average amount reclaimed also shows that the fiscal imperative kicked in at a certain farm size only: for small farmers it was unlikely that the refund they might be able to claim exceeded the contribution they had to pay to the accounting agency.[110]

V

The establishment of the accounting agencies made it clear that Dutch farmers did not take to the careful recording of income and expenditure to raise the productivity of their land or labour but simply to pay as little tax as possible. Even the ones who had already acquired some accounting knowledge in school only began to keep more detailed accounts when the government subjected them to the national income tax in 1914.[111] This would have put an end to the nineteenth-century idea of farm accounting as a development tool if it had not been for the Great Depression. In 1930 Dutch agriculture entered a deep crisis that lasted almost a decade. After some hesitation the government intervened with production quotas and price controls to support arable and livestock farmers in the coastal provinces but for several years showed very little concern for small farmers.[112] While family-owned mixed farms in the coastal provinces benefited from lower fodder prices, tens of thousands of smallholders on the sandy soils of the interior provinces suffered. The same was true for the agricultural consultants, whose technological and business advice was directed to larger, more productive farms only.[113]

The predominantly Catholic spokesmen of the small farmers kept pressuring the government to do more and eventually, in 1935, a Small Farmers Service (*Dienst Kleine Boerenbedrijven*) was created to offer assistance through a combination of business training, emergency loans, social benefits, and financial advice to the farmers' wives.[114] The purpose of the Dutch aid program closely resembled that of the rural rehabilitation pursued by the Farm Security Administration in the US: a wish to alleviate the immediate hardship of small farmers, combined with the desire to improve their situation in the long run.[115] But there was one crucial difference.

[109] BHIC, 213, NBML, inv. nr. 6, Jaarverslagen van de NBML 1938–1939.

[110] The income tax tariff list of 1915 stipulated a levy of 17 guilders for incomes between 1,450 and 1,550 guilders. 'Wet op de Inkomstenbelasting 1914, zooals die is gewijzigd bij de wet van 16 April 1915', *Staatsblad*, nr. 197.

[111] A farmer appointed treasurer of his local section of the *Groninger Maatschappij van Landbouw* in 1921 recalled: 'farm accounting only became common in 1914 because of the introduction of the income tax and the further development and diffusion of agricultural education': Buringh, *Afdeling Blijham*, p. 129.

[112] Bieleman, *Five centuries of farming*, p. 167.

[113] M. Knibbe, *Agriculture in the Netherlands 1851–1950. Production and institutional change* (Amsterdam, 1993); Smits, 'Technological change', pp. 111–12.

[114] P. M. M. Klep, 'De Nederlandse katholieke boerenbonden en de agrarische gezinsproblematiek', in Th. H. J. Clemens, P. M. M. Klep and L. Winkeler (eds), *Moeizame moderniteit. Katholieke cultuur in transitie. Opstellen voor Jan Roes (1939–2003)* (Nijmegen, 2005), pp. 316–41.

[115] Fitzgerald, *Every farm a factory*; Walker, 'Accounting and rural rehabilitation'.

American farmers were eligible for emergency loans only if they agreed to record all their payments and receipts in standardized, preprinted accounts. The government needed this information to monitor the loans, as the shopkeepers and merchants who previously provided credit had gone – and with them the financial track record of the farmers who borrowed.[116] In the Netherlands no such administrative problem existed. Here local co-operatives recorded the sales and purchases of their members, while at the same time Dutch farmers had a strong preference for savings over loans. Those who did borrow from non-relatives typically opted for a short-term loan or current accounts with their local credit co-operative. The bank recorded the loan in small booklets (*voorschotboekjes*) similar to the more than 500,000 savings booklets in circulation in the 1930s.[117]

This particular organization of the rural economy deeply affected the views of Dutch agronomists on the benefits of bookkeeping as a development tool. The first person to publicly consider farm accounting as a means to support small farmers in the Great Depression was Willem Droesen, a farmer's son from Limburg who graduated from the Wageningen agricultural college. Droesen started his professional career in 1926 as an advisor to young farmers in northern Limburg and then moved on to become agricultural consultant for the entire province in 1932.[118] On the eve of this appointment he argued before the National Agricultural Congress that emergency loans should be extended to small farmers in distress.[119] He was very explicit about the way this should be implemented. Building on his own PhD research on the exploitation of wasteland in Brabant and Limburg since the beginning of the nineteenth century, he argued that a combination of technical advice and loans provided by local credit co-operatives would allow farmers to survive the crisis.[120] The vetting of potential borrowers should be in the hands of the directors of the co-operative banks and other local community leaders, while accounting agencies might play a role in the subsequent monitoring of debtors.[121]

Droesen's suggestion to extend emergency loans to small farmers was discussed in parliament in December 1931 but dismissed out of hand by a Cabinet that was not even ready to support the economically much more important medium-sized and large farms.[122] The only step it was willing to take was to pay accounting agencies to keep the books of a limited number of small farms – not to help them manage their finances but to find out how they were holding up. This was nothing new. Already in 1924 the accounting agencies had been co-opted by the Directorate of Agriculture to supply data for its annual agricultural report, and starting in

[116] Walker, 'Accounting and rural rehabilitation'.

[117] In 1935 the central office of the Catholic credit co-operatives in Eindhoven recorded a total of 39,988 advances (*voorschotboekjes)*, 9,594 current accounts (*loopende rekeningen*) and 162,609 savings accounts (*spaarboekjes*): Haastert and Huysmans, *Veertig jaren landbouwcrediet*, p. 117. The Protestant credit co-operatives, headquartered in Utrecht, counted 366,712 savings booklets.

[118] On Willem Droesen: https://www.parlement.com/id/vg09llo2pzu1/w_j_droesen.

[119] Van der Poel and Wessels, *De verslagen van het Nederlandsch Landhuishoudkundig Congres*, W. Droesen (1931).

[120] Willem Jozef Droesen, *De gemeentegronden in Noord-Brabant en Limburg en hunne ontginning: eene geschied- en landhuishoudkundige studie* (Roermond, 1927), pp. 90, 93, 156–65, 170–81.

[121] Van der Poel and Wessels, *De verslagen van het Nederlandsch Landhuishoudkundig Congres*, W. Droesen (1931), p. 11

[122] *Handelingen Tweede Kamer, 1930–1931*, pp. 1137, 1141–2.

1928 this information became a key input in the government's deliberations on the best way to respond to the crisis.[123] For 1932 the government reserved 3,000 guilders for the accounting agencies, raising its subsidy to 10,000 guilders in 1933 in order to obtain information about some 1,000 small farms. But soon enough it became clear that many smallholders produced for subsistence only, making quantitative data simply unavailable.[124]

In the meantime the central government chose to come to the rescue of bigger, more commercial farms only, with price guarantees, subsidies, and production limits.[125] It was at that point that Willem Droesen placed his candidature for Parliament for the Catholic Party. He did so on a rural ticket, promising support to the full range of farms, including smallholders and their families.[126] Upon his election in July 1933 very little changed at first, as the Protestant parties in the new government were primarily concerned with the bigger, more commercial farmers. Therefore the Catholic Farmers Union decided to put some more pressure on the government by announcing its own inquiry into the living conditions of small farmers. In September 1934 the Union's study committee reported that 300,000 to 400,000 people lived in very dire circumstances on farms cultivating 5 hectares or less. The committee recognized that these farms could not be transformed into commercially viable enterprises overnight but there was no alternative employment for these families either. Hence the best course of action would be for the government to support them on their farms, not with loans but with subsidies.[127]

Then finally, in the summer of 1935, things started to move. Growing discontent about the government's response to the crisis led to a reshuffling of the Cabinet, with the Catholic Minister of Defence, Laurentius Deckers, now appointed to a separate Ministry of Agriculture. Deckers had graduated from Leuven University, with a PhD thesis on the agricultural situation in Brabant, and he had been very active in the promotion of Brabant's *boerenleenbanken*.[128] In July 1936 the new Minister of Agriculture appointed a committee to investigate what kind of extension and financial aid would benefit smallholders.[129] The committee members included Willem Droesen and Petrus van Haaren, one of the founders of the NCB accounting agency and author of their instruction manual on bookkeeping and income taxation.[130] This then was a group of experts deeply familiar with, and favorably disposed towards farm accounting, but they had no illusions about the value of accounting for small farmers in the face of poverty.

[123] *Handelingen Tweede Kamer, 1928–1929*, p. 330; J. de Hoogh, *Pachtprijsbeheersing en landbouwprijsbeleid in Nederland* (Wageningen, 1959), pp. 64–5. From 1928 provincial summaries were also discussed in parliament: *Handelingen Tweede Kamer, 1928–1929*, 13 Nov. 1928, p. 330.

[124] *Verslag der Staatscommissie,* p. 294; Commissie van Advies, *Rapport*, p. 314.

[125] Bieleman, *Geschiedenis*, pp. 224–5.

[126] 'R. K. Staatspartij vóór den boer', *Limburger koerier: provinciaal dagblad*, 18 Apr. 1933, p. 2.

[127] M. G. M. Smits, *Boeren met beleid. Honderd jaar Katholieke Nederlandse Boerenen Tuindersbond, 1896–1996* (Nijmegen, 1996), p. 110; Commissie van Advies, *Rapport*, p. 356.

[128] Laurent Deckers, *De landbouwers van den Noordbrabantschen zandgrond: eene bijdrage tot de kennis der maatschappelijke en oeconomische ontwikkeling van den Nederlandschen boerenstand in de negentiende en twintigste eeuw* (Leuven, 1912).

[129] J. W. A. Korsten, *Standhouden door veranderingen. De Limburgse Landen Tuinbouwbond als behartiger van agrarische belangen, 1896–1996* (Nijmegen, 1996), pp. 49–50.

[130] Haaren, *Landbouwboekhouden*; *Geschiedenis van het Accountants- en Boekhoudadviesbureau*, pp. 6, 17–19; Smits, *Boeren met beleid*, p. 112.

To substantiate their view, the committee members initiated a new survey among 650 small farms around the country. Since none of these smallholders had any accounts to speak of the committee received 643 written reports from local correspondents.[131] Combining this information with government statistics, the commission estimated that at up to half a million people were living in dire circumstances.[132] They did not own or lease enough land to benefit from the government's grain subsidies, and not all farms were suited for horticulture or keeping pigs and poultry.[133] Farm accounting, the committee believed, would have no effect whatsoever on the productivity of these farms and neither would emergency loans. Instead they opted for a two-pronged approach: social benefits to sustain the livelihood of very poorly performing peasants – simply to keep them on their farms as long as the crisis lasted – and small, targeted subsidies to purchase seeds, fertilizer, and equipment for smallholders who would be able to turn a profit under normal circumstances.[134]

Parliament approved the new approach in December 1936 and the Small Farmers Service spent the next year preparing its implementation.[135] After careful vetting it admitted 33,400 small farmers to the programme, two thirds of whom worked on the sandy soils of the eastern and southern provinces.[136] Agricultural consultants across the country were tasked with the extension to the small farmers: help them design crop plans, choose seeds and fertilizers, and strategic advice on the best way to proceed with their farm.[137] The program built on traditional forms of knowledge sharing: every consultant designated a well-functioning small farm in his district as a model farm. Accounting played no role in the training offered.[138] Money obviously mattered a great deal for small farmers and their families, but policy makers realized that better record keeping would not make their farms more productive, or their living conditions les precarious. And that was when they turned their attention to the smallholders' wives.

It was well known at the time that farmers' wives played an important role in the farm's finances. In the agricultural schools for girls that were established from 1907 onwards, accounting was already part of the core curriculum, and policy makers believed financial advice might also help the small farmers and their families.[139] In 1937 the Small Farmers Service appointed its first female budget consultant. At first she accompanied the agricultural

[131] Commissie van Advies, *Rapport*, pp. 33, 41, 314; A. Maris, *Enkele aspecten van het kleine-boerenvraagstuk op de zandgronden* (Assen, 1951), pp. 12–13.

[132] Commissie van Advies, *Rapport*, pp. 51–4, 71.

[133] Ibid., pp. 440–1.

[134] Ibid.; C. Stevens and Th. J. Platenburg, *Hulpverleening aan kleine grondgebruikers* (Alphen aan den Rijn, 1938), pp. 14, 101.

[135] 'Begrooting van Landbouw goedgekeurd. De kleine boeren worden geholpen', *De Tijd: godsdienstig-staatkundig dagblad*, 17 Dec. 1936, p. 10.

[136] Zeeuws Archief, 18.1, Rijkslandbouwconsulent voor Zeeland, 1893–1958, inv. nr. 223, Notulen der vergadering der Bedrijfsconsulenten, 10 augustus 1936; Stevens and Platenburg, *Hulpverleening*, pp. 41–3.

[137] Stevens and Platenburg, *Hulpverleening*, pp. 41–4.

[138] Farmers eligible for a subsidy to improve their farm would obtain the financial aid from the municipal authorities – a procedure identical to the granting of subsidies for wasteland exploitation analyzed by Willem Droesen in his PhD dissertation 15 years earlier.

[139] Van der Poel and Wessels, *De verslagen van het Nederlandsch Landhuishoudkundig Congres* (1905), pp. 152, 154–5; (1911), pp. 2, 5; (1921), pp. 23–4, 61; Burg, '*Geen Tweede Boer*', pp. 166–7, 364–7; Cf. also: M. van der Burg and T. Duffhues, *Laat ze maar leren. 100 jaar onderwijs van de Noordbrabantsche Christelijke Boerenbond* (Tilburg, 1996), p. 22.

consultants on their visits to farmers, but she realized soon enough that, in order to gain the necessary trust to talk about money and other personal matters she had to go by herself.[140] As the small farmers program was continued in 1938 and 1939, so was the budget coaching, now with a dozen female advisors working in close co-operation with the agricultural consultants but with a separate responsibility.[141] By now, small farms were recognized for what they really were: households as much as businesses, with home production making up an important part of total output.[142] The government's attempts to improve the financial skills of families living on small farms continued but the idea that better accounting would raise the productivity of their land or labour was done away with.

VI

The history of Dutch agriculture shows that keeping detailed accounts was not necessary for small and medium-sized, family-owned farms to modernize and commercialize their operations. In the first phase of export-led agricultural growth in the 1860s and 1870s there were some farmers with detailed accounts of inputs and yields but the common way to keep track of performance was through memory, simple notebooks, and the accounts kept by local suppliers. During the agricultural crisis that followed policy makers pointed to more systematic bookkeeping as a possible means to make farms more productive but their encouragement fell on deaf ears. Farmers did adopt new technologies including new seeds, fertilizer, tools, and machinery, but they relied on rural co-operatives for the registration of sales and purchases, and for coordinated investments in productive facilities. When Dutch agriculture began to thrive again after 1895 hardly any farmer kept the kind of detailed accounts still championed by some agronomists.

Their interest in bookkeeping increased when parliament voted to subject farmers earning 600 guilders or more to the national income tax in 1914. It was a logical step after the strong growth of the sector in the previous two decades but the government soon discovered that it was very difficult to properly assess the income of individual farms. And so did the farmers. Dissatisfied with the assessments made by local tax inspectors, farmers' associations across the country established accounting agencies to help their members filing their tax returns. Such was the success of these agencies that by 1930 they had become an important source of information on economic conditions in the countryside.

For a brief moment during the Great Depression the agencies were even considered as supervisory bodies for the extension of emergency loans to small farmers in distress, but after careful consideration the government decided against it. Instead, the Small Farmers Service created a relief program that combined technological advice with small, direct investment subsidies for farmers whom they thought might survive the crisis, practical household advice to their wives, and relief payments to allow a larger group of poorly performing small farmers to simply stay put as long as the crisis lasted.

[140] Burg, '*Geen Tweede Boer*', p. 273; *25 jaar Stichting voor Huishoudelijke voorlichting ten plattelande* ('s Gravenhage, 1960), pp. 73–6.

[141] Burg, '*Geen Tweede Boer*', pp. 273–4.

[142] Commissie van Advies, *Rapport*, pp. 41, 314; Korsten, *Standhouden door veranderingen*, p. 99.

The Dutch pattern fits very well what we know from other countries. Farmers were well aware of market conditions, they made conscious decisions about their production, and they kept track of money spent and received. But they left more detailed accounting to others, whether accounting agencies, co-operative factories, or individual financial advisors. This then is a sobering story about the role of accounting in agricultural development. Surely, our historical case study is no match for the sophisticated methods social scientists can apply to evaluate business training programs in the world today. However, it does reveal three structural elements that must be considered before offering business training to small farmers. The first is the ability of farmers to evaluate their performance through mental accounting: committing sales and purchases to memory and comparing their own operations to that of others may suffice to run a farm. Second, the choice of farmers to spend more or less time and effort on the recording of their income and expenditure is determined by the organization of the rural economy as a whole. In the Netherlands from the 1880s onwards the owners of small and medium-sized farms benefited from the collective organization of purchases, sales, and processing of their products. The widespread provision of these services came with an accurate administration by the co-ops at no additional cost. Hence the lukewarm response of Dutch farmers to repeated efforts to strengthen their financial capabilities: they could simply do without, at least until they were subjected to income taxation in 1914.

That is the final lesson we can draw from the Dutch case. Even if the adoption of more advanced accounting methods coincided with a much broader movement to apply science and technology to the exploitation of farms, the underlying rationale was a different one. Farmers, especially the bigger ones, simply wanted to minimize their tax bill and for that they needed accurate information on their total income. Their efforts to obtain this information show that better farm accounting followed from the growth of agricultural productivity, not the other way round.

The living standards of the labouring classes in Sweden, 1750–1900: evidence from rural probate inventories*

by Erik Bengtsson and Patrick Svensson

Abstract

We present new estimates of the living standards among the rural labouring classes in Sweden from 1750 to 1900. Starting with a database of more than 1,000 probate inventories of rural, landless and semi-landless people from the years 1750, 1800, 1850 and 1900, we study the development for crofters in particular. In a sub-sample of 120 probate inventories we map in great detail the material items of the crofter households, focusing especially on two categories: the means of production (animals and agricultural tools) and consumption goods. The crofters held over time fewer means of production but more consumption goods: glass, porcelain, mirrors, and clocks become more common. However, the decrease in means of production indicates a greater dependence on wage labour, rising land prices made it more difficult to become a farmer, and housing standards stayed poor. The study shows the usefulness of probate inventories to study labouring people's living standards.

The development of the living standards of the labouring classes is among the most important debates in economic history, and the debate continues to be very lively today.[1] The purpose of this paper is to study working-class living standards in Sweden from 1750 to 1900. We want to know who obtained the fruits of economic development; whether the living standards of the lower classes improved with the so-called agrarian revolution of rising agricultural output after 1750 and how the labouring classes' living standards evolved in an era of industrialization, urbanization and emigration to America, all of which all took off after 1870.

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[1] For example John Hatcher and Judy Stephenson, 'Introduction', in Hatcher and Stephenson (eds), *Seven centuries of unreal wages: The unreliable data, sources and methods that have been used for measuring standards of living in the past* (2018), pp. 1–14.

We focus on the rural lower classes and especially the group of crofters, i.e. people who were tenants of small areas of land, not enough to subsist on; instead they worked in various ways for the landowner (corvée labour) and for other employers. Studying crofters in detail is relevant since the Swedish population was 90 per cent rural in 1800, and 80 per cent in 1900.[2] By 1800 the crofters as a class formed a larger share of the population than the total of urban dwellers. The methodology chosen has been to study probate inventories, i.e. lists (with valuations) of the goods owned and bequeathed by the deceased. This has more typically been used to study middle-class people, but as Muldrew has observed in England, while it is true that the poorer classes were less likely to be probated than the wealthier, in absolute numbers their probate inventories are a rich source for the working classes too.[3] We also show, comparing church death books with the probates, that the proportion of lower-class people who were probated was surprisingly high in Sweden. We have gathered about 1,000 inventories for the rural landless and semi-landless that date from our four benchmark years: 1750, 1800, 1850 and 1900.

Our approach to the probate inventories starts with estimates of the evolution of living standards, building on the way that the crofters' 'real wealth' – i.e. net wealth deflated by a consumer price index – develops over time. However, we believe that this approach has flaws, due to the difficulties of constructing historical CPIs, as well as the assumption that people bought, rather than produced, food. Therefore, the main purpose of the paper is to take a more 'item-oriented' approach to the inventories.

The contribution of the paper, then, is twofold. The first – empirical – contribution of the paper is to give a partly new picture of Swedish working-class living standards from 1750–1900. The second contribution is methodological: to show what a household economy approach based on probate inventories can add to the real wages-dominated literature on historical living standards. The aim is to combine the comparability of the 'real wage' or, in our case, 'real wealth' approach, with the realism of a more granular, item-oriented approach. While our empirical study is concerned with Sweden, a relatively peripheral case in the literature on historical living standards, it has methodological and analytical implications for the general debate.

I

The leading methodology in research on historical living standards is the study of real wages, namely, the money wage of a group of workers (typically building workers in long-run studies) deflated by the price of grain, or by a more complex basket of goods. This parsimonious approach has great advantages because it facilitates comparisons of living standards between countries and over time, as in Allen's influential approach.[4]

[2] This according to the official statistics: SCB (Statistiska Centralbyrån), *Historisk statistik för Sverige. Del 1. Befolkning 1720–1967* (1969), p. 46. By this definition, only established cities and towns count as 'urban', which underestimates the level of urbanization in 1900, since new industrial towns emerged over the nineteenth century. The degree of urbanization in 1900 was nevertheless low.

[3] On the middle class see for example Lorna Weatherill, *Consumer behaviour and material culture in Britain, 1660–1760* (1988). Craig Muldrew, *Food, energy and the creation of industriousness: Work and material culture in agrarian England, 1550–1780* (2011), p. 13.

[4] Robert C. Allen, 'The Great Divergence in European wages and prices from the Middle Ages to the First World War', *Explorations in Econ. Hist.* 38 (2001), pp. 411–47.

The real wage approach has great strengths and has since the 1980s dominated research, but it also has some recognized problems.[5] One is that we very rarely have information both on wage rates and on *available hours for working*.[6] Of course, a good hourly rate is not of much help if it rewards only a few hours. The availability of work varies over time and it is difficult to control for this when studying wages as indicators of living standards. Another problem is that the wage sources used most often apply to adult male workers, and it is difficult to draw conclusions on actual living standards if one does not have the relevant information about the work and pay of women and children.[7] The wage data also cannot comprehend the importance (or not) of opportunities for by-employment. In the Swedish context, the investigation by Gary, for example, suggests that construction work between 1500 and 1800 was markedly seasonal and for a family to survive such work must have been combined with other income/subsistence sources. Several employments and other income sources were standard for the Swedish pre-industrial working classes.[8]

In this regard probate inventories, assessing all the items held by a household, have an advantage in that they present a 'composite' estimate of living standards: the final outcome of men's, women's and children's work, for wages, for in-kind payment or production for domestic consumption.[9] The probate inventory presents the outcome of all these endeavours, in terms of a household's collected items, a quite direct measure of material living standards, and capturing the composite result of formal wage labour and other types of work is an attractive feature of the probate inventory as a source.[10]

What is positive about using probate inventories to study labourers' living standards is that their weaknesses as sources are converse to those of wage studies. One main drawback of using probates is they cannot be used to study short-term fluctuations in welfare: for this purpose, wages are to be preferred. Furthermore, probates are biased towards the old; we partly remedy this by paying especial attention to those who died while still of working age. But that the respective strengths and weaknesses of the real wage and the probate-based approaches are so different, means that it should be fruitful to use both approaches. We thus build on previous wage-based studies, component-based studies and demographic studies of living standards in Sweden and contribute with a probate-based approach.[11]

[5] Emma Griffin, 'Diets, hunger and living standards during the British Industrial Revolution', *Past and Present* 239 (2018), pp. 71–111; pp. 71–2 discusses the recent dominance of the approach. See John Hatcher, 'Seven centuries of unreal wages', in Hatcher and Stephenson (eds), *Seven centuries*, pp. 15–70, for a critical discussion.

[6] Judy Stephenson, 'Working days in a London construction team in the eighteenth century: evidence from St Paul's Cathedral', *EcHR* 73 (2020), pp. 409–30; Sara Horrell, Jane Humphries and Jacob Weisdorf, 'Family standards of living over the long run, England, 1280–1850', *Past and Present* 250 (2021), pp. 88–9.

[7] Cf. Kathryn Gary, *Work, wages and income: remuneration and labor patterns in Sweden, 1500–1850* (Lund University, 2018), pp. 28–32; Horrell, Humphries, and Weisdorf, 'Family standards'.

[8] Gary, *Work*, pp. 69–75; Carl-Johan Gadd, *Den agrara revolutionen, 1700–1870* (2000), pp. 86–91; Jonas Lindström, 'Labouring poor in early modern Sweden? Crofters and lodgers in Västmanland in the 17th century', *Scandinavian J. Hist.* 44 (2019), pp. 403–29; Jonas Lindström, Rosemarie Fiebranz, and Göran Rydén, 'The Diversity of Work', in Maria Ågren (ed.), *Making a living, making a difference: Gender and work in early modern European society* (2017), pp. 25–52.

[9] Cf. Mark Overton, Jane Whittle, Darron Dean and Andrew Hann, *Production and consumption in English households, 1600–1750* (2004).

[10] Cf. Jan De Vries, *The Industrious Revolution: Consumer behavior and the household economy, 1650 to the present* (2008), pp. 29–30.

[11] Wages: Johan Söderberg, 'Long-term Trends in Real Wages of Labourers', in Rodney Edvinsson, Tor Jacobson and Daniel Waldenström (eds), *Exchange*

Relative prices and living standards

Another problem in the historical living standards debate that we want to address is the issue of prices and deflators. Hoffman, Jacks, Levin and Lindert point to the fact that different classes consume different things and so their consumption basket deflators should vary: while poor consumers are hurt badly if the prices for staple foods go up, it is less of a problem for nobles or the wealthy who anyway consume higher quality and more diverse food. For this reason, they argue, inequality grew even more in Europe from 1500 to 1815 than we suppose if we look only at nominal inequality, because during this period the prices of grain grew faster than the prices of luxury goods. From 1815 to 1914 the opposite was true.[12] It is not only nominal incomes, but also prices, which affect living standards – and relative prices change over time. Such a point has been made in probate-based studies of England and New England, both finding that falling relative prices of consumption goods meant that actual higher material living standards, or at least ownership of more goods, could appear in deflated monetary terms ('real') as falling wealth.[13]

An important aspect of this problem is the difference between people who produced their own food and people who had to buy it in the market. For grain-producing peasants, rising grain prices would not have been a problem – rather the opposite. However, the lower-class households in the analysis by Hoffman *et al.* are all buyers, not producers, of grain. According to their collected household budgets, a rural worker in France in 1832 spent 49 per cent of his income on bread, and labourers in the Netherlands in the eighteenth century 30 per cent.[14] For Swedish conditions, where urbanization was late and the separation of lower-class people from access to land was gradual, these assumptions seem less valid. The Swedish economy was also only weakly monetized; Lindström and Mispelaere in their study of seventeenth-century mining and agrarian workers find that only 10–60 per cent of wages were paid in cash.[15] They also find that labourers often grew grain and kept cattle. Studies of the nineteenth century also show that important shares of Swedish workers' wages were paid in kind, and that workers often had access to some land. Mats Larsson in his study of Bredsjö iron works found that the cash share of wages for labourers was 38 per cent in 1830, 22 per cent in 1850, 15 per cent in 1870 and only in 1890 became a majority share, 66 per cent.[16] Iron production did not go on

Note 11 *continued*
Rates, Prices, and Wages, 1277–2008 (2010), pp. 453–78; Gary, *Work*. Component-based: Bo Gustafsson, *Den norrländska sågverksindustrins arbetare, 1890–1913* (1965). Demographic: Martin Dribe, Mats Olsson and Patrick Svensson, 'The agricultural revolution and the conditions of the rural poor, southern Sweden 1750–1860', *EcHR* 70 (2017), pp. 483–508.

[12] Philip T. Hoffman, David S. Jacks, Patricia A. Levin and Peter H. Lindert, 'Real Inequality in Europe since 1500', *J. Econ. Hist.* 62 (2002), pp. 322–55.

[13] Carole Shammas, *The pre-industrial consumer in England and America* (1990), pp. 96–8, found for England from the late sixteenth to the late seventeenth century, that prices of consumer goods such as textiles fell heavily. Gloria L. Main and Jackson T. Main, 'Economic growth and the standard of living in southern New England, 1640–1774', *J. Econ. Hist.* 48 (1988), pp. 27–46, found the same for Connecticut and Massachusetts from 1640 to 1774.

[14] Hoffman *et al.*, 'Real Inequality', pp. 326–7.

[15] Jonas Lindström and Jan Mispelaere, 'Vad fick 1600-talets arbetare i lön?', *Historisk Tidskrift* 135 (2015), pp. 432–63. On grain and cattle cf. Muldrew, *Food, energy*, on England.

[16] Mats Larsson, *Arbete och lön vid Bredsjö bruk: En studie av löneprinciper och lönenivåer för olika yrkeskategorier vid Bredsjö bruk 1828–1905* (1986), pp. 103–5. For the more skilled *hyttarbetare* cash was more than half of the wage all years but 1870 but in-kind payment

all year around before the 1890s, so it was important for the workers to have access to some subsistence production. Workers typically grew potatoes, and before the 1890s often had a more rounded subsistence production, including owning animals.[17]

Given the remarks above, there are good reasons to believe that the labouring classes in Sweden during the eighteenth and nineteenth centuries survived by combining several different versions of labour (in the household and in the labour market; subsistence and for sale), and that the monetary value of these people's wages misses many dimensions of their living standards. For this reason, we provide the first study of Swedish working-class living standards based on probate inventories. Studies of historical living standards based on probate inventories focus on the ownership of material goods.[18] We discuss the evolution of consumption goods ownership, as well as production goods, to understand the material living conditions of rural labourers.

II

The period from 1750 to 1900 was one of thorough transformation in the Swedish economy. The period from *c.*1750 to 1870 is typically labelled the 'agricultural revolution', with growing productivity in agriculture, the breakaway from the Malthusian trap, and the combination of a growing population and rising living standards per capita.[19] As in Britain, it was not only a process of growing productivity, new crops, techniques and tools, but also a social transformation. In 1750, four fifths of households in the Swedish countryside were landholding peasant-farmer households, owners or tenants; by 1850, however, this share had fallen to a half.[20] The living standards of farmers rose impressively, especially during the nineteenth century, but it appears that class differences in wealth and social standing between the land-holding and

Note 16 *continued*
was still 23% in 1840 and 9% in 1890, so not unimportant (Larsson, p. 106). What is perhaps even more telling in our context is that even in this archetypical location of industrialization – iron production – since production was so energy intensive and demanded so much firewood (as well as food), actually a large share of the employees – loosely defined – of the works were the crofters, who were 24 of 42 employees in 1830, 33 of 85 in 1861, and 35 of 97 in 1893 (Larsson, pp. 51, 62–4, 69; Eva Svensson, Sara Bodin, Hans Hulling and Susanne Pettersson, 'The crofter and the iron works: The material culture of structural crisis, identity and making a living on the edge', *International J. Historical Arch.* 13 (2009) pp. 183–205, study crofters at another iron works). For smiths employed at the three iron works studied by Göran Rydén, *Hammarlag och hushåll: om relationen mellan smidesarbetet och smedshushållen vid Tore Petrés brukskomplex 1830–1850* (1991), cash was between 42% and 66% of the wage in the 1840s. 'Cash' in this context, Rydén points out, was a flexible concept which also covered rights to fetch goods at the company store. Rydén, pp. 231–5.

[17] Larsson, *Arbete och lön*, pp. 67–9, 113–15. The memoirs of the later socialist leader Karl Kilbom, *Ur mitt livs äventyr* (1953), pp. 27–31, who grew up at an iron works with a father who was a smith, provides an individual narrative of the same kind of mixed household economy.

[18] Cf. Weatherill, *Consumer behaviour*; Shammas, *Pre-industrial consumer*; de Vries, *Industrious Revolution*; Muldrew, *Food, energy*, Ch. 4; Sheilagh Ogilvie, Jeremy Edwards and Markus Küpker, 'Economically relevant human capital or multi-purpose consumption good? Book ownership in pre-modern Württemberg' (Cambridge Working Paper in Economics, 1655, 2016).

[19] Gadd, *Den agrara revolutionen*; Mats Olsson and Patrick Svensson, 'Agricultural growth and institutions: Sweden 1700–1860', *European Rev. Econ. Hist.* 14 (2010), pp. 275–304. On Britain see Mark Overton, *Agricultural Revolution in England: The transformation of the agrarian economy, 1500–1850* (1996).

[20] Christer Winberg, *Folkökning och proletarisering: kring den sociala strukturomvandlingen på Sveriges landsbygd under den agrara revolutionen* (University of Gothenburg, 1975).

TABLE 1. Agrarian class structure: numbers of households, 1750–1900

	Peasant farmers	*Crofters*	*Cottagers and lodgers*	*Contract workers*
1750	186,569	27,891	20,033	
1800	199,654	64,644	44,367	
1850	206,929	96,810	89,215	17,025
1900	264,242	72,252	54,238	41,900

Source: Builds on data in Janken Myrdal and Mats Morell (eds), *The agrarian history of Sweden: 4000 BC to AD 2000* (2011), Statistical appendix.

the proletarian or semi-proletarian classes grew.[21] Table 1 shows key facts about the number of agrarian households between 1750 and 1900 in the following categories: farmers, crofters, cottagers, and contract workers.

In this paper, we study crofters especially. There are at least two reasons for studying crofters. One is simply that it was a big group: in 1800, there were more crofter households than the total of urban households.[22] The second is that even though they have been described in social terms as the upper portion of the landless, in terms of wealth, their living standards were average, compared to those of the labouring classes – cottagers, contract workers and day labourers – overall.

First, we should give some concrete details about the crofters. Crofts were single-family residences on someone else's land – a farmer's, a village's or a nobleman's – where a crofter family could combine several types of work. They had a degree of subsistence production, large or small, but also provided labour (or, in the later period, money rent only) to the landowner, and possibly also did other outwork or wage labour.[23] In this sense, they are representative of the complex combination of work and survival strategies of the Swedish and European pre-industrial working classes. In the early eighteenth century, a typical croft had about 0.4 to 1.2 hectares of land and one or a few cows. 'The croft resembled a very small farm', says Gadd, and the crofters were a 'half proletarian' group, socially between the farmers and the pure rural proletariat.[24] They had no say, as landowners did, in village governance, and official society treated them to some extent as outsiders, but they were not the poorest of the poor.

A local study from southern Sweden 1766–1894 found that crofters stayed on their croft on average for 11 years while a study of two estates in eastern Sweden found that typically the

[21] Farmers: Erik Bengtsson and Patrick Svensson, 'The wealth of the Swedish peasant farmer class (1750–1900): composition and distribution', *Rural Hist.* 30 (2019), pp. 129–45. Inequality: Erik Bengtsson, Anna Missiaia, Mats Olsson, and Patrick Svensson, 'Wealth Inequality in Sweden, 1750–1900', *EcHR* 71 (2018), pp. 772–94.

[22] Assuming a household size of 4–5, applying this to the number of households in Table 1, and compared to the number of urban residents according to the SCB, *Historisk statistik*.

[23] On crofters as workers, see Gustaf Utterström, *Jordbrukets arbetare: Levnadsvillkor och arbetsliv på landsbygden från frihetstiden till mitten av 1800-talet* (1957), pp. 786–825.

[24] Gadd, *Den agrara revolutionen*, p. 88. The subjective side of the inbetween-ness of the crofters is captured by the author Moa Martinson, *Kyrkbröllop* (1950), p. 222, when she in her autobiography describes her childhood around 1900, and says that crofters for example would invite rural artisans to coffee but never contract labourers. See also Christina Rosén, 'Torpare och materiell kultur', in Stig Welinder (ed.), *Torpens arkeologi* (2007), pp. 61–78, on the status of crofters.

contract termination time was 1.5 years, and for the crofters, therefore, tenant rights were very weak.[25] Furthermore, the contracts contained vague formulations to the effect that crofters could be evicted for insubordination and the like. After 1870 fixed contracts became more common and they were typically for 7–10 years. Typically, crofters owned their croft, i.e. the little house, but not the land it stood on. So when it was time to move they had to dismantle the house and rebuild it elsewhere. As this indicates, housing standards were poor.

Conclusions on crofter living standards from previous intense local studies differ, and it seems reasonable that conditions varied over the country, over time, and between smaller and larger crofts and better and worse contracts, but it seems clear that crofters were poorer than farmers, if not always desperately poor.[26] In our study with inventories from all over the country and over 150 years, we can give a more comprehensive view.

III

In Sweden, it became mandatory in 1734 to make a probate inventory at death, for several reasons: to facilitate the inheritance process, to see that outstanding debts were repaid, and to calculate a small tax. Swedish probate inventories are very detailed in that they include all types of assets and goods – real estate, clothing, animals, household utensils, and so on. For this reason they have been used by many researchers, on topics such as credit markets and debts, the mechanization of Swedish agriculture, and the clothing practices of farmers and other social groups.[27] The probate inventory was made for the household of the deceased person – it lists not only his or her belongings but all the household assets, even though personal items such as clothing may be listed specifically under headings such as 'spouse's clothing'. Because of their comprehensive nature, they are very well suited to studying complex household economies such as those of crofters, building on various combinations of wage labour, corvée labour and subsistence production.

We may speculate that an important reason why writers on historical living standards use probate inventories comparatively rarely is that in England and Wales, a paradigmatic case for economic historians everywhere, probate frequency after the 1720s tailed off, thus precluding

[25] South: Christer Lundh, 'Husmän och torpare vid Duveke gods 1766–1894', in Christer Lundh and Kerstin Sundberg (eds), *Gatehus och gatehusfolk i skånska godsmiljöer* (2002), pp. 118–19. East: Ulf Jonsson, *Jordmagnater, landbönder och torpare i sydöstra Södermanland 1800–1880* (1980), p. 53.

[26] Jonsson, *Jordmagnater*, p. 55, in a study of east-central Sweden is the most optimistic while Johan Söderberg, *Agrar fattigdom i Sydsverige under 1800-talet* (1978), in a study from the south has more pessimistic conclusions. Carl-Johan Gadd, *Järn och potatis: jordbruk, teknik och social omvandling i Skaraborgs län 1750–1860* (1983), pp. 117, 120, in a study from western Sweden finds that crofters lost out compared to farmers between the 1750s and 1850s and that polarization within the crofter group increased. Per Hallén, *Överflöd eller livets nödtorft* (2009), pp. 67–74, described a crofter inventory from 1800 as not 'poor, rather it had all the basics', but lacking silver and other finer items which farmers had.

[27] Credit markets: Håkan Lindgren, 'The modernization of Swedish credit markets, 1840–1905: Evidence from probate records', *J. Econ. Hist.* 62 (2002), pp. 810–32. Mechanization: Jan Kuuse, *Från redskap till maskiner: mekaniseringsspridning och kommersialisering inom svenskt jordbruk 1860–1910* (1970). Clothing: Marie Tengroth Ulväng, 'Bondehushåll i förändring: Kläder som uttryck för socioekonomisk ställning i 1800–talets Härjedalen', in Christer Ahlberger and Pia Lundqvist (eds), *Varans vägar och världar: Handel och konsumtion i Skandinavien ca 1600–1900* (2007), pp. 57–74.

studies of industrialization and living standards with this source.[28] For Sweden this problem does not exist; on the contrary, probate coverage goes from rather poor in the 1730s and better in the second half of the eighteenth century to very good in the nineteenth century.[29] We will return later on to the discussion of probate frequency and whether it may affect our results. Here, we would just add that the received wisdom probate frequency in Sweden is that they very much skewed to the wealthy, but that we can show that its coverage is surprisingly good for labouring people too.[30]

The probate inventories come from the Bengtsson *et al.* dataset of about 5,000 probate inventories for 1750, 1800, 1850 and 1900.[31] This builds on a random sample of 32 rural districts and 8 towns from all over the country; here we focus on the rural sector. Occupational titles are taken from the probate inventories and crofters are classified according to their Swedish title, *torpare*, whereas other rural labourers have titles such as for example worker (*arbetare, arbetskarl*), day labourer (*dagkarl*), contract labourer (*statare, statkarl*), small-size cottager (*backstugusittare*), lodger (*inhyses*), and servants (*dräng, piga*). To compare living standards over time, we have translated older currencies into the equivalent of the *riksdaler riksmynt/kronor* used after 1862.[32] We then transform all values into 1800 prices by adjusting for price changes according to a historical consumer price index. Below, we discuss the issues with this type of adjustment.

IV

We begin with a typical 'monetary', 'real wage' or 'real wealth' approach to living standards, i.e. we study the development of real wealth, as conventionally defined, over time. According to Table 2, living standards for rural semi-proletarian and proletarian households fell from 1750 to 1800, stayed relatively flat to 1850, then drastically improved from 1850 to 1900. It is striking that mean wealth for the rural proletariat in 1850 is half of what it was in 1750 – this in an age of agrarian revolution. Although the output growth may have mostly translated into higher incomes for the landholding class it also meant improved labour opportunities for the landless strata.[33] But the finding that living standards fell between 1750 and 1800 is supported by Gadd, who invokes real wages (which of course face the CPI problems discussed here) and the heights of soldiers as evidence.[34]

[28] Cf. Shammas, *Pre-industrial consumer*, pp. 18–19.

[29] Gadd, *Järn och potatis*, pp. 56–9.

[30] The view of skewed representation is presented by for example Maths Isacson, *Ekonomisk tillväxt och social differentiering 1680–1860: Bondeklassen i By socken, Kopparbergs län* (1979); Lindgren, 'Modernization'.

[31] Bengtsson *et al.*, 'Wealth inequality'. The probate inventories database is available from the authors upon request. For overall discussion of the original sampling see the original paper. Probate inventories were sampled from 32 local judicial districts (härader, tingslag, domsagor) archived in various archives all over the country. The probate inventories have been digitalized and are available from Arkiv Digital, https://app.arkivdigital.se .

[32] In the 1750 sample, estates are valued in *daler kopparmynt* (dkm) or *daler silvermynt* (dsm); dkm is translated into kr by division by 18, and dsm by division by 6. Riksdaler banco is often used in 1800 and 1850; this is translated into kr by multiplication by 1.5. See the discussion of currencies in Rodney Edvinsson, 'The multiple currencies of Sweden-Finland, 1534–1803', in Rodney Edvinsson, Tor Jacobson and Daniel Waldenström (eds), *Historical monetary and financial statistics for Sweden: Exchange rates, prices and wages, 1277–2008* (2010), pp. 133–237.

[33] On output growth cf. Olsson and Svensson, 'Agricultural growth'. On the landless see Dribe, Olsson and Svensson, 'Agricultural revolution'.

[34] Gadd, *Den agrara revolutionen*, p. 345.

TABLE 2. Wealth of probated rural labourers, 1750–1900 (*kronor*)

		1750	*1800*	*1850*	*1900*
Rural labourers, including crofters	Mean	126.6	67.2	59.8	139.3
	Median	66.3	41.6	28.1	52.9
	Sample size	137	265	340	331
Crofters only	Mean	99.8	66.4	56.3	137.7
	Median	56.6	53.8	34.6	83.9
	Sample size	37	96	123	87

Note: All wealth in 1800 prices, as average for 1795–1805. The consumer price index used comes from Rodney Edvinsson and Johan Söderberg, 'The Evolution of Swedish Consumer Prices, 1290–2008', in Rodney Edvinsson, Tor Jacobson and Daniel Waldenström (eds), *Historical monetary and financial statistics for Sweden: exchange rates, prices and wages, 1277–2008* (2010), pp. 412–52. We have also made alternative deflated calculations using the silver prices (also from Edvinsson and Söderberg) instead of the CPI. The relative price of silver is quite high in 1750 and falls over time, so with this deflator, real wealth improves throughout our period, 1750–1800. This is not very informative and to a large degree reflects the silver price. For discussion of the relative price of silver, see Rodney Edvinsson and Johan Söderberg, 'Prices and the growth of the knowledge economy in Sweden and Western Europe before the industrial revolution', *Scandinavian Economic Hist. Rev.* 59 (2011), pp. 262–4.

The improvement over time is more marked in the mean than in the median, which indicates lower living standards in 1900 than in 1750 for the rural working class overall. Part of the issue here is probably that the Swedish historical CPI is quite grain-heavy and does not fully account for the shift by the lower classes from grains to potatoes from the early 1800s onward.[35] It can also be the case that many items consumed by the working classes fell in price over the period, thus giving lower 'real' (CPI-adjusted) wealth even if material standards might have improved.[36] Alternatively, material standards for the working-class strikingly deteriorated during the period. Below, we compare 'real' wealth with actual items owned, but first let us go into slightly more detail on the distribution within the crofter group.

Table 3 shows the distribution of net wealth in 1800 prices for crofters: not only the mean and the median, but also the wealth at the tenth, 25th, 75th and 90th percentiles. Crofters in the tenth percentile in a year belong to the poorest ten per cent of the crofters: 90 per cent of crofters are wealthier. And conversely, crofters in the 75th percentile are in the 'upper middle class' of crofters: richer than 75 per cent of their peers, but poorer than 25 per cent. The values in Table 3, then, indicate the spread within the crofter group for each of our four years. As we might have expected from the literature review, the differences are rather large.[37] Even though

[35] On potatoes cf. Gadd, *Den agrara revolutionen*, p. 256; Thor Berger, 'Adopting a new technology: potatoes and population growth in the periphery', *EcHR* 72 (2019), 869–96. The relative price of grain increased markedly during the eighteenth century and until the mid-nineteenth century, when it started to decrease. See Rodney Edvinsson and Johan Söderberg, 'Prices and the growth of the knowledge economy in Sweden and Western Europe before the industrial revolution', *Scandinavian Econ. Hist. Rev.* 59 (2011), p. 257.

[36] As in Main and Main, 'Economic growth'.

[37] Jonsson, *Jordmagnater*; Söderberg, *Agrar fattigdom*; Gadd, *Järn och potatis*.

TABLE 3. Median, poor and wealthy crofters, 1750–1900 (*kronor*).

	Mean	*Median*	*P10*	*P25*	*P75*	*P90*	*Sample size*
1750	99.8	56.6	27.6	45.2	99.1	210.3	37
1800	66.4	53.8	15.0	23.1	86.8	131.9	96
1850	56.3	34.6	–11.8	10.8	88.5	156.3	123
1900	137.7	83.9	–2.8	19.4	220.6	357.2	87

Note. All wealth in 1800 prices, as average for 1795–1805. Consumer price index as for Table 2.

one cannot be a crofter and be wealthy, there is a variation within the group from being dirt poor to being a kind of 'prosperous' labourer.[38]

The numbers in Tables 2 and 3 are very abstract. What did it mean to have a net wealth of around the mean in 1800? Let us take as an example Sissa Hansdotter, who passed away as a 48-year-old in 1800 in south-eastern Sweden. Her assets were worth 98 riksdaler (rdr), and she had debts of 27 rdr; her net wealth of 71 rdr was slightly better than the crofter average of this year. Her inventory included a gold ring (1.32 rdr), several silver items, liquor-making instruments (3 rdr), six plates of porcelain and some other things of the same material (very low values), and a decent set of bed-linen (13 rdr). She furthermore had several tablecloths, curtains, and quite a few items of clothing (very low values). The list of items made of iron is fairly long, as is the list of wooden goods. She had five cows (10.16 rdr), two horses and a few sheep. As we will see, this number of animals was not completely unusual for this time, but would become more unusual for a crofter over the nineteenth century.

Guided by the stratification in Table 3, we made an in-depth analysis of probate inventories from thirty 'typical' crofter households for each year, crofters who were at the poor end of the group, those who were at the median, and those who were relatively well-off. The reason why we wanted to choose crofters representative of the wider group in terms of wealth is that even though we studied only 120 crofter households in the in-depth study, we know that in wealth terms they stand for a much larger sample – the 1,000 proletarian and semi-proletarian households discussed above (see Table 2). We have also strived to choose working-age households, since the aged households often have got rid of items related to the running of the croft. We will pursue this analysis in two steps. First, in Table 4 we summarize the ownership trends in terms of 40 categories of items, from gold and silver to pewter, glass, wooden vessels, wagons, ploughs, and various kinds of animals.[39] This table contains a massive amount of information but is included for reference; we will elaborate more precise discussions below.

[38] To borrow an evocative phrase from Whittle's review of Muldrew, *Food, energy*: Jane Whittle, 'Prosperous labourers?', *Hist. Workshop J.* 76 (2013), 311–18. One source of variation is life stage. This has been much discussed in the probate inventories literature – cf. Lindgren, 'Modernization', pp. 819–20. However, our calculations, not reported here, show that, for the crofters, the life course pattern is actually not very stark. They do not accumulate very much over the life cycle, and do not go into debt to buy land in the way that farmers did (cf. Bengtsson and Svensson, 'Wealth'). We do, however, take care mainly to study crofters of working age.

[39] The classification is inspired by Rosén, 'Torpare och materiell kultur'.

TABLE 4. Number of items held by crofters (N=120) by category, 1750–1900

	Mean				*Median*			
	1750	*1800*	*1850*	*1900*	*1750*	*1800*	*1850*	*1900*
Gold	0.1	0.2	0.3	0.2	0	0	0	0
Silver	0.8	1.5	0.6	0.6	0	0	0	0
Pewter	0.9	3.1	1.7	0.2	0	3	1	0
Stone and brass	0.9	0.8	0.9	0.5	0	0	0	0
Copper	1.3	3.0	3.3	3.9	1	2	3	4
Tin-plate	0.8	0.3	0.7	2.1	0	0	0	1
Personal clothes	11.4	20.4	11.7	12.0	7	19	11.5	12
Linen	3.2	3.1	1.4	3.4	2.5	0	1	3
Bedding	7.4	8.7	5.6	5.0	7	7.5	5	4
Iron kitchenware	3.4	4.4	5.9	5.6	4	3.5	5.5	4.5
Glass	1.1	1.7	2.1	2.8	0	1	2	2
Porcelain	1.6	2.2	1.6	5.4	0	1	1	4
Casks and barrels	24.2	21.3	9.4	8.5	21	17.5	9	6
Furniture	4.2	5.8	7.4	9.5	3.5	5	7	8.5
Clocks	0.1	0.6	1.0	1.3	0	1	1	1
Mirrors	0.1	0.1	0.3	0.8	0	0	0	1
Books	1.0	1.6	1.5	0.8	0	1	1	0
Iron tools	14.8	19.5	10.4	8.8	12.5	18	11	8
Wooden tools	0.8	1.8	4.3	3.3	0	0	3	3
Looms	0.6	0.8	0.9	0.7	1	1	1	1
Spinning wheels	0.6	0.7	0.7	0.9	0	0	0	1
Textiles			1.7	0.7			1	0
Wagons and carts	1.1	1.1	1.4	1.6	1	1	1	1
Sleighs and sledges	1.9	1.3	0.9	1.4	1.5	1	0	1
Other wagon parts	1.4	0.6	0.9	1.0	1	0	0	0
Ploughs	0.2	0.2	0.5	0.7	0	0	0	1
Arder	1.0	0.8	0.5	0.5	1	0	0	0
Harrows	0.5	0.6	0.6	1.3	0	0.5	1	1
Other agr. tools	1.3	3.9	1.0	3.6	1	2	0	3
Cattle	4.0	3.1	1.9	2.8	3	3	2	2
Horses	0.8	0.8	0.3	0.3	1	1	0	0
Sheep	4.9	3.4	2.2	1.4	5	4	1.75**	0
Pigs	2.7	0.5	0.7	0.5	3	0	0	0
Poultry	0.3	0.1	0.3	4.1	0	0	0	0
Geese	0.5	0.6	0.0	0.0	0	0	0	0
Goats	0.8	0.1	0.0	0.1	0	0	0	0

TABLE 4. *continued*

	Mean				*Median*			
	1750	*1800*	*1850*	*1900*	*1750*	*1800*	*1850*	*1900*
Crops*	0.7	0.5	1.0	1.4	0	0	0	1
Miscellaneous	0.8	3.0	6.6	7.1	0	1	6	5
Cash*	0.1	0.1	0.0	0.2	0	0	0	0
Claims*	0.6	0.6	0.9	0.9	0	0	1	0

* For cash the number indicates the number of crofters that have cash; for claims and crops the number indicates the number of claims or crops regardless of size of claim or crop.
** It might seem strange that one household owned one and three quarters of a sheep. But it did happen that crofter households shared ownership of animals, and of agricultural tools – cf. the 0.5 median harrow in 1800.

The next step is to analyse the development of two main categories of items. The first is household goods, consumption items that we study as indicators of wealth or a comfortable living standard. The second is production goods, items used in various types of production. It is important to separate the two kinds of goods as the household consumption goods are indicators of the material standard of living and comfort, while the sets of production goods rather tell us how the crofters combined various forms of labour to make a living.

Table 5 shows the share of crofters, of the 30 for each year studied in detail, who held certain types of consumption goods. As we can see, cash was unusual: a few had cash in 1750 and 1800, not a single crofter had cash in 1850, and only 17 per cent of them in 1900. Few had gold items, with a small increase from 1750 to 1800 and remaining constant thereafter. Silver was more common across the whole period. Some categories existed in all households. This is the case with for example kitchenware, personal clothes, some types of bedding, and furniture. No trend is discernible for these items; most crofters had at least some of these things both in 1750 and in 1900. The only exception is linen but linen and bedding are sometimes listed together and hard to separate; for 1750 and 1800 the figures would be 87 and 97 per cent respectively if taken together.

Other consumption items became more common over time. Glass, porcelain, mirrors, clocks and books are examples of this. These are items that were expensive in the eighteenth century, particularly clocks, but where prices fell relatively and a mass market emerged for these consumption goods. One estimation has found that the consumption per capita of industrial-made consumption goods in Sweden grew elevenfold in the nineteenth century, and Ahlberger found for three rural areas in southern Sweden that porcelain plates were almost non-existent in 1750 but quite common in 1850.[40] Utensils related to coffee drinking also became significantly more common, while tea still was uncommon in 1850.

Whereas consumption goods tell a story of living conditions, and to some extent income or at least consumption power, the productive assets provide information on the crofter

[40] On aggregate consumption, see Olle Krantz and Lennart Schön, *Om den svenska konsumtionen under 1800- och 1900-talen: Två uppsatser* (1984), pp. 8–9. On porcelain, and coffee and tea, see Christer Ahlberger, *Konsumtionsrevolutionen, I: Om det moderna konsumtionssamhällets framväxt 1750–1900* (Humanistiska fakulteteten, Göteborgs universitet, 1996), pp. 84–8 and pp. 90–104, respectively.

TABLE 5. Share of crofter households with consumption goods, by category, 1750–1900 (per cent)

	1750	*1800*	*1850*	*1900*
Cash	7	7	0	17
Gold	7	13	17	13
Silver	33	43	33	30
Pewter	40	77	53	7
Stone and brass	40	37	47	33
Personal clothes	87	97	93	100
Linen	57	37	63	97
Bedding	77	90	97	93
Iron kitchenware	97	100	97	93
Glass	47	57	83	87
Porcelain	47	63	67	87
Clocks	7	57	87	90
Mirrors	7	10	30	60
Furniture	100	90	97	100
Books	30	63	70	50

Note: This is based on 120 crofter households reflecting poor, average and rich crofters at each year (see text) and the share expresses households that have at least one item in said category.

households' self-provision and earning. Table 6 shows the evolution of crofters' access to production goods. The first category, agriculture, is an estimation of whether the crofter household provided themselves through farming, indicated by the ownership of three key farm assets, (a) a draught animal (oxen or horse), (b) a plough or ard plough (*årder*), and (c) crops. Holding all three equals one in the indicator; if they held two of these three, it counts as 0.5. Looking at this category, we see stability over time: the average is about 0.4 and the median is 0.5. A similar measure is owning the means of production, which is Gadd's way of classifying a croft or a farm as proletarian or not.[41] This is coded as a 1 if the household held two of the three categories, (a) draught animals (b) cow, and (c) plough or ard plough. Here the median is a 1 in every year, which indicates that in every year, the typical crofter household had at least a cow and a plough. In terms of the average for this category, however, it decreases slightly, from 0.85 and 0.84 in 1750 and 1800 to 0.62 and 0.68 in 1850 and 1900. This is an indicator of some proletarianization among the crofters. A deeper indicator of this development is visible in Table 4: that the number of animals in the typical crofter household decreased over time. While the typical (median) crofter household in 1900 had at least one cow, Table 4 shows that the average number of cows and oxen decreases from 4.0 in 1750 to 2.8 in 1900, while the average number of horses goes down from 0.8 to 0.3, sheep from 4.9 to 1.4 and pigs from 2.7 to 0.5. Another way of illustrating this is by looking at animal products, measured as having

[41] Gadd, *Järn och potatis*.

TABLE 6. Production goods among crofters, 1750–1900

	1750		1800		1850		1900	
	Mean	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*
Agriculture	0.37	0.5	0.39	0.5	0.40	0.5	0.42	0.5
Animal products	0.83	1	0.55	0.5	0.55	0.5	0.52	0.5
Hunting	0.00	0	0.05	0	0.10	0	0.03	0
Fishing	0.10	0	0.05	0	0.20	0	0.03	0
Spinning	0.30	0	0.29	0	0.28	0	0.33	0.5
Weaving	0.43	0.5	0.66	0.5	0.45	0.5	0.38	0.5
Forging	0.03	0	0.05	0	0.10	0	0.03	0
Carpentry	0.03	0	0.47	0	0.50	0.5	0.27	0
Means of production	0.85	1	0.84	1	0.62	0.5	0.68	1

Note: Each household is assigned 0, 0.5 or 1 depending on possession or not of certain items. To score 1 you need for agriculture a draught animal, a plough or arder, and crops; for animal products a cow, a pig, and a churn; for spinning a spinning wheel and textile material, for weaving a loom and textile material. If one item is missing, the household is assigned 0.5. For some categories it is either 0 or 1: for hunting a rifle or not, for fishing fishing gear or not, for forging or carpentry specialized tools or not. Finally, for means of production we follow Gadd, *Järn och potatis*, assigning 1 if the household had at least two out of three of a draught animal, a cow, a plough or an arder, and 0 otherwise.

at least a cow, a pig, and tools for processing milk. Here there is a downward trend over time among the crofters. The only type of animal which becomes more widely held is poultry, from an average of 0.3 in 1750 to 4.1 in 1900 – and this may have resulted from the under-reporting of hens in the early period.[42] However, the category of wagons and agricultural tools shows no real trend over time: if we take the interchangeable plough and ard plough together, the average number of items in this category is stable at 1.2 in 1750 as well as 1900. Owning a harrow becomes more common over time.

What about other types of production? A minority of the crofters had hunting rifles and/or fishing equipment. Spinning was common. We have classified spinning as a '1' when a household had both a spinning wheel and materials, and a '0.5' when only a spinning wheel. The average is around 0.3 every year while the median 1750–1850 is 0, but 0.5 in 1900, indicating that a substantial share of the households had spinning wheels. Weaving tools were even more common (40 per cent in 1750 and 1900). Both these categories were quite stable over time, while the share who had carpentry tools grew.

Thus, many croft households supported themselves by a multitude of activities. Farming was one, supplemented by weaving and spinning. The probates also reveal that some of the crofters were specialized in carpentry and a few in working as blacksmiths. This could be a supplement to small-scale agricultural production but also an alternative way of supporting the household; for example, in 1800 half of those with specialized carpentry tools had no indication of farming as a means of provision.

[42] As discussed by Gadd, *Järn och potatis*, pp. 69–70.

As a summary of the overall development, we suggest 'proletarianization without pauperization'. By 1900 the crofters have fewer animals than their 1750 or 1800 counterparts, but more consumer goods. Their animal holdings declined over this period, and so they must have become more dependent on corvée labour and on wage labour. Research on some estates have found increasing demesne production in the second half of the nineteenth century, and as wage labour became more expensive when competition with industry for labour set in, corvée labour from crofters could be a very attractive option for estate owners.[43] With smaller crofts, crofters could keep less animals, and worked more with means of production owned by others, not appearing in crofter probate inventories.[44]

We have above emphasized the importance of relative price changes in historical studies of living standards. Given the prevalence of relative price shifts, it is crucial to examine not only changes in actual ownership of items, but also the values/prices of the items, to give a rounded view of living standards. For example, when we combine the two types of indicators, item count and values, we get an idea of how large a sacrifice of other consumption was entailed in, for example, buying a plough or more consumption goods. We know from previous research that land prices grew more rapidly than the CPI over the nineteenth century, and that the relative price of industrial goods fell from 1825 to the late 1890s, with increasing speed after 1870.[45] We have divided the values of the probate inventories into six categories. The first two are obvious: consumption goods and production goods, as discussed in detail above. To these we add cash, savings and debts owed to the deceased, real estate (including value of crofter contracts), and an 'other' category. The results are shown in Table 7. The shares both for consumption goods and means of production decrease over time. It makes sense that the share for means of production decreases, given that, as we have seen, the crofters' ownership especially of animals decreased over time.[46] However, the fact that the share for consumption goods also decreased, while actual ownership of porcelain, glass, books, mirrors, clocks and other consumption goods grew, indicates that the relative prices for such consumption goods fell over time.[47] It became cheaper to achieve some sorts of material comfort, like porcelain and glass, textiles and furniture, in the croft.

[43] Mats Olsson, 'Storföretaget Vittskövle 1500–1950', in Mats Olsson, Sten Skansjö and Kerstin Sundberg (eds) *Gods och bönder från högmedeltid till nutid: Kontinuitet genom omvandling på Vittskövle och andra skånska gods* (2006), pp. 158–9; cf. also Lars Nyström, *Potatisriket: Stora Bjurum 1857–1917: Jorden, makten, samhället* (2003), pp. 79–84

[44] Walter Elgeskog, *Svensk torpbebyggelse från 1500-talet till laga skiftet: En agrarhistorisk studie* (1945), pp. 403–5, 426, finds that the total number of crofts in the Sunnerbo area (a forested area in southwest Sweden) was rather constant from 1815 to 1910, but that there is a lot of flux in the composition of crofts: 1800 crofts disappeared while 1700 new crofts were created. This happened in relation to enclosures as well as other land sales and reorganizations. Such flux could facilitate the disappearance of larger crofts and the appearance of smaller ones; Elgeskog does remark that some larger crofts during the enclosures became independent farms (*hemman*) while others became consolidated into existing or newly established farms.

[45] Land: Bengtsson and Svensson, 'Wealth', pp. 138–41. Consumption goods: Krantz and Schön, *Om den svenska konsumtionen*, p. 11.

[46] Mats Morell and Martin Söderhäll, 'Smallholders' and large estates' reaction to changed market conditions 1860–1910', *Scandinavian Econ. Hist. Rev.* 67 (2019), p. 322, show that the relative price of cows to rye grew by 130% from 1858 to 1910.

[47] As discussed by Krantz and Schön, *Om den svenska konsumtionen*; and Ahlberger, *Konsumtionsrevolutionen*.

TABLE 7. Values of the crofter probate inventories divided into categories (average share)

	1750	*1800*	*1850*	*1900*
Means of production	44.4	35.4	35.3	32.0
Consumption goods	28.2	32.1	24.7	19.6
Real estate	9.9	10.1	10.5	27.4
Claims	3.4	6.3	14.0	11.4
Cash	0.2	1.0	0.4	1.2
Various	14.0	15.2	15.2	8.1

Note: The figures presented are the average shares of total gross wealth of the 120 crofters we studied in detail, taken up by the category at hand, e.g. consumption goods or real estate. The category 'consumption goods' is defined as gold, silver, pewter, glass, porcelain, clothing, linen, bed linen, iron items from the kitchen, clocks, mirrors, furniture, and books. The category 'means of production' is defined as wagons, harvest items, animals, and crops.

Beyond production and consumption goods, Table 7 shows two important developments. One is that the share of savings and debts owed to the deceased grows in total value, on average, from 3.4 per cent in 1750 to 14 per cent in 1850 and 11.4 per cent in 1900. This is driven by two changes. One is the use of bank accounts for savings (in 1900, 11 of the 30 crofters had bank accounts), the other is claims on indebted individuals. The median for debts owed to the deceased and bank accounts is still zero in 1900, so at least half of the crofters still had no debts owed to them or bank accounts, but for those who had, they were an important share of assets. The other important development in crofter assets is that the average share of asset values captured by 'real estate' grows from around 10 per cent in 1750–1850 to 27 per cent in 1900. As we have stressed, the crofters themselves did not own land. But they owned their buildings, and by 1900 they could also hold lease contracts that themselves were allocated a value. To take one example, Karin Nilsdotter in Delsbo in 1900 had the contract for a parish croft, and the contract was valued at 400 kr, a not insignificant sum for a crofter at this time, while the real estate category for Kristina Bengtsdotter in Kullings in the same year was a cottage valued at 350 kr, a barn valued at 75 kr, a wood shed valued at 10 kr, and a cellar house (*källarhus*) valued at 10 kr. At a time when a typical price for a horse was around 200 kr,[48] this was not a lot of money, but as a share of the total value in crofter probate inventories, it was non-negligible.

The pattern of proletarianization without pauperization among our crofters around 1900 may be illustrated with Anna Brita Nilsdotter, who was 49 years when she died in October 1899 in the village of Värhuvud in the west of Sweden, leaving behind her widower Anders and their three underage children. This crofter family did have two cows, so they were not completely

[48] This is based on 60 farmer probate inventories from Bara and Kullings *härader*, studied in Bengtsson and Svensson, 'Wealth'. See especially Table 5, but there the values are deflated in 1800 prices. See also Kuuse, *Från redskap*, pp. 122–3, who, also based on probate inventories, reports a price level of 100 to 290 kr (depending on farm size and region, and of course also on the condition of the horse) in 1890 and 165 to 415 kr in 1910.

proletarianized; they also had eight hens. The value of the hens was very low, but the value of the cows was substantial, larger than the croft house and barn taken together. This indicates the transience of the crofters' housing, and the associated low quality of the housing, but also that animals were expensive. The household items included a copper cauldron (4 kr), two coffee pots (1 kr), some iron kitchen items (4.15 kr), and some kitchen items of wood including some for baking and butter making (1.75 kr). The furniture consisted of a table, a cupboard, seven chairs, a clock, a mirror, and a bookshelf. The pieces of furniture had very low values, indicating that they were probably home-made. Her clothing included a winter coat (*vinterpaletå*), a summer cardigan (*sommarkofta*), a black dress, and four cotton skirts. Here we see not only clothing of the traditional wool and linen, but also cotton, imported and bought. She had not only a woollen skirt and a wool scarf, but also a lace scarf (valued six times higher than the woollen one). She had three headscarves (*huvudduk*), and some linen. Only one pair of boots is mentioned, valued at 0.25 kr. The buildings were listed as one old house (*manbyggnad gammal*) worth 15 kr and one old barn (*ladugård*), with very low values – the barn was worth as much as the bedding in the house. Anna Brita Nilsdotter would not have been atypical of crofters at the end of the nineteenth century: access to some food production of their own (the two cows and eight hens), but not on any substantial scale – no draught animal, for example – and so reliant on combining work on their own croft with labouring for others, corvée labour and wage labour.

V

One worry is that the results are driven by the changing representation of crofters in the probate inventories. If probate frequency increased over time so that in 1750 and 1800 only the most well-off crofters were probated, while in 1900 all were, then we will get a bias in our results whereby the 1750 and 1800 crofters look artificially richer than they actually were. Adjusting for such intra-group heterogeneity is difficult.[49]

One way to deal with the heterogeneity is to see whether the likelihood of a deceased crofter being probated increases significantly over time. If so, then we would expect that poorer crofters in the early years were not probated, and that we get a bias if we compare probated crofters in 1750 with those probated in 1900 without taking account of the change in the probate process. To check for such possible problems, we have taken an in-depth look at six districts (*härader*), encompassing 40 parishes, that are included in our full dataset. These six areas cover some very different social and economic structures: Simtuna is located in the central Swedish mining area, Skärkind is a relatively well-off and well-connected area on the main road from Stockholm to southern Sweden, Enånger is a northern area, Östra is a poor coastal area in the southeast, Bara is a wealthy plains area in the south, and Inlands Torpe is a poor coastal area in the west. The Simtuna judicial district encompasses six parishes, Skärkind five parishes, Enånger three parishes, Östra ten parishes, Bara 14 parishes and Inlands Torpe two parishes, and we have gone through the death books for each parish to

[49] The canonical discussion of this issue is Peter H. Lindert, 'An Algorithm for Probate Sampling', *J. Interdisciplinary Hist.* 11 (1981), pp. 662–4.

TABLE 8. Probate representation in six hundreds, 1750–1900

		Crofters			*Overall*		
		Dead	*Probated*	*Probate frequency (%)*	*Dead*	*Probated*	*Probate frequency (%)*
Simtuna Hundred	1750			n.a.	209	67	32.1
	1800	12	8	66.7	163	112	68.7
	1850	15	11	73.3	134	83	61.9
	1900	29	20	69.0	212	161	75.9
Skärkind Hundred	1750	12	5	41.7	119	28	23.5
	1800	27	15	55.6	120	55	45.8
	1850	14	5	35.7	51	30	58.8
	1900	24	18	75.0	136	81	59.6
Östra Hundred	1750			n.a.	156	32	20.6
	1800	13	10	77.0	268	102	38.0
	1850	44	25	56.8	378	141	37.3
	1900	90	52	57.7	626	317	50.6
Enångers Tingslag	1750	33	16	48.5	130	65	50.0
	1800	24	12	50.0	103	56	54.4
	1850	20	18	90.0	75	70	93.3
	1900	40	28	70.0	162	125	77.2
Inlands Torpe	1750			n/a	206	60	29.1
	1800			n/a	125	58	46.4
	1850	20	11	55.0	148	67	45.3
	1900	4	3	75.0	74	59	79.7
Bara Hundred	1750	20	6	30.0	226	51	22.6
	1800	29	21	72.4	105	44	41.9
	1850	37	20	54.1	156	71	45.5
	1900	14	6	42.9	199	131	65.8

Note: Only residents of the hundreds in question of 20 years of age or older are counted. Probate inventories were to be made within three months after death, but in reality they could be drawn up until one year later. They are not archived in completely chronological order, neither after the date of death nor after the date of the inventory. Instead they are archived after the judicial assembly (*ting*) in which they were registered. The *ting* was held two to three times a year. That they are partly jumbled means that for each benchmark year, our probates are typically drawn from two adjacent years: 1749–50, 1799–1800, 1849–1850, and 1899–1900. For this reason, the probate frequency test in every case involves two years: we look for probates for all those deceased in the two-year pair as above. We go through the probate inventories for both years and also at least one more (1751, 1801, 1851, 1901) to ascertain that we have found all the relevant probates, since probates could be registered with a lag. While probates usually contained titles or occupations of the deceased, the early death books sometimes did not. For Simtuna, Östra, and Inlands Torpe we have therefore only occupations for those probated in 1750 but not for the rest of the deceased which make a frequency for crofters impossible to calculate.

Sources: For ***Skärkind***, sources are church death books from the parishes Skärkind, Gistad, Gårdeby, Östra Ryd and Yxnerum, and probate inventories from Skärkind häradsrätt (district court). For ***Östra***, the church death books

TABLE 8. *continued*

from the parishes Augerum, Jämjö. Kristianopel, Lyckeby, Lösen, Ramdala, Rödeby, Sturkö, Tjurkö and Torhamn, and probate inventories from Östra häradsrätt. In Östra, the missing probates in 1750 results in this year's being represented by the years 1768–69. For ***Simtuna***, the church books from the parishes Altuna, Enåker, Frösthult, Norrby, Simtuna, and Tärna. We exclude the parishes Västerlövsta and Nora since part of them lie outside the hundred, which complicates the comparison. The probate inventories are from Simtuna häradsrätt for 1750–1850 and from Västmanlands Östra domsagas häradsrätt for 1900. We have not found death books for Frösthult after 1894, so the 1900 study builds on the death books from the five other parishes. For ***Bara*** there are missing death books for some of the parishes in three of the studied years. In 1750 and 1800 the parishes of Lyngby, Lomma and Kyrkheddinge are wholly or partly missing, leaving us with 15 parishes studied. In 1900, death books from Knästorp and Kyrkheddinge are missing so these parishes are not included in the 1900 calculations. The parishes included are: Genarp, Lyngby, Lomma, Brågarp, Görslöv, Mölleberga, Nevishög, Tottarp, Uppåkra, Bara, Bjärshög, Hyby, Burlöf, and Skabersjö. Furthermore, for '1750', death books for the years 1751–53 are used. However, the hundred grows large over time in terms of population so for '1800' only the year 1798 is used and in '1900' only the dead in the year 1899 are counted. Finally, for ***Enånger***: This hundred is rather small in the beginning of the period and probates are missing for 1750. Hence, we study the death books for 1760–69 for the '1750' point and the years 1799–1804 for the '1800' point. For '1850' the years 1849 and 1850 are used. Source is Enångers tingslags häradsrätt and the death books from Enånger and Njutånger parishes.

match the deceased with those probated. In total, this calculation builds on 4201 deceased adults, of which 521 were crofters. It should be noted that much of the picture in the previous literature of a steadily increasing frequency of probate over time has been disproportionally influenced by Isacson's findings for one single parish in north-central Sweden.[50] In the present paper the test is reproduced for 40 parishes. Table 8 reports our results: the number of dead (adults) from the church death books, and the number of probates, for crofters and overall, for our four benchmark years.

The results are reassuring. Between 1800 and 1900, when we find the rather large shift – proletarianization without pauperization – the probate frequency for crofters follows no linear trend; rather, the development is quite diverse across the six areas. In Inlands Torpe, where we cannot identify people by profession before 1850, there is as expected an increase in crofter probate frequency from 1850 to 1900, but in Enånger and Simtuna the frequency decreases from 1850 to 1900, In Skärkind it decreases from 1800 to 1850 and increases from 1850 to 1900, while in Östra and Bara the frequency actually peaks in 1800. The main conclusion we draw from Table 8 is that there are major regional variations in probate frequency, and in the trends of probates, but no linear increase in the likelihood of probate among the lower classes. We find no reason to believe that the results of the paper are driven by a changing representation of the crofter group in the probate records.[51] However, the results in Table 8 point to important regional/local differences which should be considered in future research.

[50] Isacson, *Ekonomisk tillväxt*. Cf. discussion in Gadd, *Järn och potatis*, pp. 56–7.

[51] See also Willner's study of five parishes in south eastern Sweden (Kronoberg county). His study indicates that probate frequency was high also for lower classes. For rural workers 20–59 years old with heirs, the probate frequency was just above 60 percent in the 1770s, rose to around 80 percent around 1810, and was relatively constant for a hundred years, until a final further increase 1880–1910, with a level of over 90 percent at the end. Sam Willner, *Rural living standards and inequality: A case study from southern Sweden 1780–1919* (Lund Papers in Economic History, 219, 2021), Fig. 1 and discussion on pp. 16–19.

VI

This paper throws new light on the evolution of the living standards of the labouring classes. The divergence between actual material holdings in 1750 to 1800, and the marked drop in real (CPI-deflated) wealth, gives us cause to think again about the problems of historical consumer price indices, and how to think about working-class living standards in contexts where much labour is not rewarded by a money wage, and labourers partly produce their own food.[52] We have shown that crofters owned fewer means of production in 1900 compared to 1750 or 1800, but that the relative prices of animals increased while the relative prices of consumption goods fell, which made it 'cheaper' to get more consumption goods such as porcelain, furniture, mirrors and clocks. We would argue that the information one can get from probate inventories, about the ownership of animals, grain, tools and other productive goods, as well as household goods, can contribute an important dimension to a debate on living standards which has to a large degree become dominated by the real wage approach.

Our results should not be interpreted to suggest that everything was rosy for the crofters. Inequality still increased in the rural sector. According to the Bengtsson *et al.* dataset, the farmer/crofter wealth ratio was 2.5 in 1750, 4.6 in 1800, 5.1 in 1850 and 10.9 in 1900. Much of this was driven by land prices, which rose rapidly especially after 1850.[53] This inflated the estimated wealth of farmers. It also meant, in a dynamic perspective, that it became more and more difficult for a crofter or rural proletarian to advance into the freeholder class. Decades of hard work were by 1900 not rewarding enough to allow a farm to be bought. Exit from agriculture *tout court*, to the cities and to industry, was the more rational route for the rural underclasses.[54] We must also admit that this paper has looked at the crofters only. According to the probate inventory database they were not markedly richer than the group of rural workers and servants (in fact, for 1850 and 1900 the probated values of the latter group were superior), but the growth of the contract labourers as a group after 1850 probably still pushed the living standards of the average underclass rural household downwards. This highlights the need for historical studies of living standards to focus, like the literature on the real wage, on the incomes of one particular group, but also to discuss the relative weight of this group and how it changes over time. Interestingly, the partial 'proletarianization' we have mapped for the crofters probably made them more dependent upon wages around 1900, which makes the real wage approach more appropriate at that point in time. In Magnuson's telling phrase, the late nineteenth century and early twentieth century was an era of 'uneven monetarization'.[55] The crofters became more involved in the monetary economy from the late 1800s onwards; we have seen that holding cash became more common, as did savings bank accounts.

We must also remember that in an unequal society, crofters' living standards in the early 1900s were still comparatively low. The crofter cottages were better furnished and would smell

[52] Here we follow the contribution of Muldrew, *Food, energy*.

[53] Bengtsson *et al.*, 'Wealth Inequality'; Bengtsson and Svensson, 'Wealth'.

[54] Cf. Henrik Svensson, 'Torpens försvinnande och samhällsomvandlingens geografi', in Christer Lundh and Kerstin Sundberg (eds), *Gatehus och gatehusfolk i skånska godsmiljöer* (2002), p. 185.

[55] Mark Magnuson, *A Swedish dilemma: Aging during the search for a national insurance, 1884–1913* (2018).

of coffee more often than they had 50 years before, but there were still serious structural problems for the crofters' living standards. When the investigative journalist Lubbe Nordström travelled around the whole country in 1938 to judge the development of living and especially housing standards in what was then an aspiring welfare society, he was frequently appalled by the housing of crofters. To an old friend he bumped into in the city of Norrköping, surrounded by historically agricultural land, the otherwise mainstream author exclaimed: 'I'm becoming a Bolshevik!'[56] This was in response to the 'stench of [his] experience' from the backward housing standards of the lower classes, especially agrarian workers: the houses were built directly on the soil, without foundations, damp, draughty, disease-ridden. The continuously poor housing standards for crofters are also an important reason for not getting too carried away by the improvement in 'real wealth' from 1850 to 1900. Crofters' stocks of consumer goods improved, but the fundamentals of the housing situation probably did not improve much. With no ownership of the land that the croft stood on, and no certain long-run tenants' rights, the crofters' buildings probably did not improve much over time.[57]

Another factor in living standards which has not been considered here is that of health and life expectancy. Browsing through the church death books of this period, one is struck by the very high death rates for new-born babies in Sweden, not least those in crofter families. On this point, living standards did improve in the second half of the nineteenth century. Public health knowledge and interventions improved in Sweden from the 1870s on, and the increased employment of qualified midwives lowered infant as well as mothers' mortality.[58] This would have been a major improvement of crofters' living standards too.

There are several ways forward from this paper. As Hanson Jones commented, real wage estimates are never 'as real as we would like them to be'.[59] To corroborate wider and more comparable quantitative estimates, more granular, detailed approaches such as the one taken here would help to advance our understanding of historical living standards. Another further research project would be to investigate the living standards of other working-class groups using probate inventories. To understand the development of working-class living standards overall, we need to consider more sub-groups than the crofters. The Swedish literature on probate inventories has often said that these disproportionately represent the wealthier segments of the population; admittedly they do, but it is also true, as Muldrew says à propos of England, that the absolute number of inventories is so great that they are useful for studying the labouring classes too.[60] This would be a promising way forward.

[56] Lubbe Nordström, *Lort-Sverige* (Kooperativa förbundets bokförlag, 1938), p. 70.

[57] Cf. Jonsson, *Jordmagnater*; Lundh, 'Husmän och torpare'.

[58] Volha Lazuka, *Defeating disease: Lasting effects of public health and medical breakthroughs between 1880 and 1945 on health and income in Sweden* (2017), pp. 14–17.

[59] Alice Hanson Jones, 'Wealth and growth of the Thirteen Colonies: Some implications", *J. Econ. Hist.* 44 (1984), p. 253.

[60] Muldrew, *Food, energy*, p. 13.

Sweden's agricultural revolution reassessed: A reconstruction of arable land and food production in 1810 and 1870*

by Erik Hallberg, Lars Nyström, Lotta Leijonhufvud and Lennart Palm

Abstract

This article presents the main results from the project Arable Land in Sweden. By examining some 9,400 cadastral maps, the acreages of arable land for the years 1810 and 1870 have been reconstructed. The calculations have thereafter been combined with other data in order to estimate agricultural production these years. As a result of the project, researchers have for the first time accurate data to quantify developments during the agricultural revolution. Surprisingly, Sweden had less arable land in the beginning of the nineteenth century than researchers have come to believe. Also, the acreage of arable land in 1870 must be adjusted downwards, but not as much. Land reclamation was thus faster than expected and firmly exceeded population growth. In addition, the data show that the expansion of the arable went hand-in-hand with increased productivity, surmounting the pitfalls of diminishing returns. In a concluding part, a partially new interpretation of Sweden's agricultural revolution is put forward.

Agriculture transformed nineteenth-century Sweden. After 1800, ecological, institutional and technological constraints of the old agrarian regime were overthrown. A new situation in which the increase in agricultural production permanently outpaced population growth can be discerned. These developments are commonly referred to as the agricultural revolution.[1] Various trends have been adduced to support such an interpretation:

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[1] For an overview, see Carl-Johan Gadd, *Svenska jordbrukets histora Bd 3. Den agrara revolutionen [History of Swedish agriculture*, III, *The agrarian revolution]* (Stockholm, 2000); Carl-Johan Gadd, *The agricultural revolution in Sweden: 1700–1870*, in Janken Myrdal and Mats Morell (eds), *The agrarian history of Sweden: from 4000 BC to AD 2000* (Lund, 2011), pp. 118–65. Overviews of other cases are, e.g.: Mark Overton, *Agricultural Revolution in England* (1996); Jan Luiten van Zanden, *The transformation of European agriculture in the nineteenth century: The case*

- Before the nineteenth century, severe mortality crises frequently hit Sweden, usually in connection to food shortage. In the nineteenth century, however, the crises became milder and less frequent, even as the population doubled. This new pattern suggests that there must have been enough food to keep starvation at the door. In short, Sweden had escaped the Malthusian trap.[2]
- Swedish imports of grain decreased from the late eighteenth century. In the 1830s Sweden became instead a net exporter of grain, mainly oats. At its peak in the 1870s, the value of exported oats surpassed the value of exported iron, traditionally Sweden's major export.[3]
- Price trends indicate that living standards improved. Grain prices fell while real wages rose. The combination of strong population growth, falling food prices, grain exports and rising real wages could only be achieved in a situation of improved agricultural productivity.[4]
- A continually enhanced prosperity was manifested in rural areas. Farmhouses became larger. The peasantry could afford novelties such as coffee, iron stoves and tableware. Overall, the peasantry's economic, political and cultural influence grew.[5]

Several technological and institutional changes that might explain these developments have been identified. Freeholders' property rights were strengthened. Taxes were fixed, incentivizing farmers to increase production without having to share the fruits of the investment with the Crown. Enclosure reforms did away with the commons and the open fields. Convertible husbandry and new fodder plants such as clover were introduced. Tools became heavier and more efficient.[6]

Researchers, however, have had difficulty giving a quantitative and substantive account of the development. Agricultural statistics were introduced early in Sweden, but are hampered by severe underestimations. Researchers have had therefore to reconstruct acreage and production from other sources. As within the international research community, this has been done in two ways.[7]

One path has been what Mark Overton labelled as 'top-down studies'. Within this tradition, macro-level production has been deduced from national series of wages, prices, population, per capita consumption, imports and exports. Following this approach in 1974, Bengt Holgersson

Note 1 *continued*
of the Netherlands (1993); Erik Thoen and Leen Van Molle (eds), *Rural history in the North Sea area. An overview of recent research (Middle Ages – beginning twentieth century)* (2006). For a discussion on the definition of the agricultural revolution, see p. 14.

[2] Erland Hofsten, Svensk befolkningshistoria. *Några grunddrag i utvecklingen från 1750 [Swedish population history. Some basic features of the development from 1750]* (Stockholm, 1996), pp. 104–8, 163–71.

[3] Gunnar Fridlizius, *Swedish corn export in the free trade era* (Lund, 1957), p. 84.

[4] Rodney Edvinsson and Johan Söderberg, 'Prices and the growth of the knowledge economy in Sweden and Western Europe before the industrial revolution', *Scandinavian Econ. Hist. Rev.* 59 (2011), pp. 250–72; Rodney Edvinsson, 'Swedish GDP 1620–1800: stagnation or growth?', *Cliometrica* 7 (2013), pp. 37–60; Lennart Jörberg, *A history of prices in Sweden, 1732–1914* (Lund, 1972), esp. p. 337.

[5] Christer Ahlberger & Johannes Daun (eds), *Bondeherrgårdar. Den nyrika bondeklassens gårdar 1750–1850 [Farmer's mansions. The farms of the nouveau riche peasantry 1750–1850]* (Lund, 2018).

[6] Gadd, *Svenska jordbrukets*, esp. pp. 195–7 (taxation), 198–205 (tenants and freeholders), 231–41 (land reclamation), 242–54 (new tools), 273–304 (land reforms), 305–14 (new cultivation systems).

[7] Overton, *Agricultural revolution*, p. 74.

estimated Sweden's arable land and grain production in 1840–1939 on the basis of the population's need for subsistence. Holgersson's calculations were later used by Lennart Schön in his reconstruction of Sweden's nineteenth-century national accounts.[8]

The other path has been what Overton calls 'bottom-up' studies. Within this tradition micro-level data on, for example, acreage and production are used in order to reconstruct figures at the level of the region or national. In 1971, the geographer David Hannerberg estimated arable land and grain production in Sweden 1800–1900 by the use of area data from a sample of cadastral maps in Närke, one of Sweden's 25 counties. The figures were later used by, among others, Carl-Johan Gadd and Rodney Edvinsson.[9]

Both the top-down and the bottom-up approaches are characterized by rough estimates. One limitation with top-down studies such as Holgersson's is that agriculture is reduced to being a dependent factor. No deeper understanding of the causes and content of the agricultural development can be reached from such investigations. Hannerberg's bottom-up study, on the other hand, faces the problem of estimating aggregate numbers on the basis of a limited set of micro-level data. Furthermore, none of the mentioned studies can capture the regional mosaic of different paths of developments, so important in the study of agricultural history.

The project Arable Land in Sweden has reconstructed acreages of arable land and meadows in 1810 and 1870 following the bottom-up tradition and using microdata, but on a much larger scale than in previous studies. Close to ten thousand cadastral maps were examined in order to calculate the acreage of arable land on the *härad* (the local jurisdiction district) level for all of Sweden. The calculations have thereafter been combined with trustworthy data in order to reconstruct agricultural production and consumption for these benchmark years. This article presents the methodology and the main empirical results of the project.

I

Agricultural statistics were established early in Sweden. From the beginning of the nineteenth century comprehensive data for each of the 2,300 parishes in the kingdom was collected as a part of a larger demographic questionnaire by *Tabellverket*, the statistical bureau of the time. Every fifth year from 1805–20, the clergy estimated the size of arable land, how much of it was sown and also the number of livestock. Annually from 1802–20, they approximated the seeding rates and yields of the most important crops. The material is uniform, complete and well preserved.[10]

After 1820, the clergy were freed from this duty. A few years earlier bailiffs had been made responsible for the collection of a new series agricultural statistics, which was published in the

[8] Bengt Holgersson, 'Cultivated land in Sweden and its growth 1840–1939', *Econ. and Hist.* 17 (1974), pp. 20–51. Lennart Schön, *Historiska nationalräkenskaper för Sverige.* 1. *Jordbruk med binäringar 1800–1980 [Historical national accounts for Sweden.* 1. *Agriculture with ancillary industries 1800–1980]* (Lund, 1995).

[9] David Hannerberg, *Svenskt agrarsamhälle under 1200 år. Gård och åker, skörd och boskap [Swedish rural society for 1200 years. Farm and field, harvest and livestock]* (Stockholm, 1971). Gadd, *Svenska jordbrukets*, pp. 231–4, 379; Rodney Edvinsson, 'Harvests and grain prices in Sweden, 1665–1870', *AgHR* 60 (2012), p. 3.

[10] The Swedish National Archives, Tabellverket 1749–1859, reference code SE/RA/420439, published online at http://rystad.ddb.umu.se:8080/Tabellverket/Tabverk.

County governor's reports to the government every fifth year. However, the original documentation is only sporadically preserved.[11]

In 1858, a so-called Finance Committee was appointed to study the economic and financial development of the previous 25 years. As a basis for the investigation, the vestries of all parishes were asked to fill out a questionnaire, which was distributed by the regional Husbandry Societies (*Hushållningssällskap*), semi-official organizations for the promotion of agriculture. The material is extensive but has never been published on a micro level.[12] Furthermore, there are differences in form and content of the data between the provinces.

In 1865 the SCB (Statistiska centralbyrån), the Central Bureau of Statistics, initiated a more ambitious attempt to create a set of national agricultural statistics. Annual information on acreages of arable land, seeding rates, harvests, and the number of farm animals was published in annual volumes, BiSOS, Bidrag till Sveriges officiella statistic (Contributions to the Official Statistics of Sweden), including data at the national, county, district and in most cases also parish level. The Husbandry Societies were (again) responsible for the collection of the data. They did not however develop a uniform approach. In most counties, the parish councils or some other local committee submitted information. In other counties the Husbandry Societies organized local enquiries with varying degrees of ambition.

It was only in 1913 that the methodology for collecting information was made uniform, with detailed local surveys, organized by the SCB. In connection with the emergency measures taken during the First World War, the surveys included meticulous records of acreage and livestock inventories at the farm level.

II

Unfortunately, the nineteenth century agricultural statistics leave much to be desired. Microstudies strongly indicate that the actual amount of arable land was considerably higher than that recorded in the official figures. Contemporary officials were well aware of these problems. In 1809, Henric Nicander, head of *Tabellkommissionen*, the authority responsible for the statistics, assumed the published figures on acreages and harvests to be roughly one third too low.[13]

The problem of underestimation was to be an enduring cause of worry. The Finance Committee of 1858 considered the result of its local agricultural survey inadequate and refrained from publishing more than just a small part thereof. Some years later Fredrik Theodor Berg, head of SCB, estimated the official figures of grain production in 1865 to be about one fifth too

[11] Femårsberättelser [Five-year reports] (Stockholm, 1817–1855). Published online at https://www.scb.se/hitta-statistik/aldre-statistik/innehall/officiell-statistik-1811-1860/femarsberattelser-18171855/

[12] The Swedish National Archives, Finanskommittén 1858 [Committee of Finance], reference code SE/RA/310496.

[13] Henrik Nicander, 'Om Svenska Tabell-Werket, åren 1801–1805, Utsäde, Skörd, Öppen jord, Kreatur', *Kungl. Svenska vetenskapsakademiens handlingar, T. 30, För år 1809* ['On the Swedish Tabellverket, the years 1801–1805, Seed, Harvest, Open land, Cattle', *Documents from the Royal Swedish Academy of Sciences, T. 30, För år 1809*] (Stockholm, 1809), pp. 116–21, esp. p. 119. See also Carl af Forsell, *Statistik öfver Sverige, grundad på offentliga handlingar [Statistics of Sweden, based on public documents]* (sec. edn, Stockholm, 1833), pp. 94–5.

low, given the nutritional need of the population, the use of grain as fodder, and imports and exports of grain.[14]

Why were the agricultural statistics not reliable? The main reason was that no closer examination of acreages and yields were carried out. Instead the persons in charge of the investigation were directly or indirectly dependent on information from the farmers. The farmers in turn were worried that the information submitted to the authorities would form the basis for future taxation. Consequently, they tended to submit understated production figures. In fact, the clergy seems to have disliked the task precisely because of its delicate social implications. The collection soured their relationship with the peasantry, who suspected public officials of having hidden motives behind their interest in local level production figures.[15]

During the BiSOS-period, 1865–1912, the level of underestimation in the statistics seems to have been gradually reduced. As shown by Jörn Svensson, the material however also became increasingly heterogeneous, as the Husbandry Societies developed different methods for the collection of data. Another problem was that figures collected at the local level were not updated annually. Once a parish or a district had been examined more closely, the data on acreages and seeding rates were often left unchanged until the next investigation, which could happen one or two decades later. Even if the quality of the local inquiries improved over time the aggregated level figures thus still tended to lag behind the actual development. Svensson believed BiSOS to be accurate only around 1900 at the earliest. Still in 1905 the SCB itself noted that the overall data in BiSOS appeared inaccurate.[16]

III

One way to try to recover the official statistics has been systematic upward adjustments. The fundamental idea for such attempts is that real production has been downgraded to a more or less consistent extent in the statistics. An increase by a certain percentage would therefore result in accurate figures.

In 1913 the distinguished statistician Gustaf Sundbärg raised the figures of the official statistics by 12 per cent for 1805, by 10 per cent for the period 1810–70, by 5 per cent for 1880 and, finally, by 0 per cent for 1900. At the turn of twentieth century, the official statistics were thus supposed to finally show accurate numbers.[17]

Subsequent research has determined Sundbärg's adjustments to be too small. On the basis of land survey acts, Hannerberg found acreage in the county of Närke in 1800 to be roughly

[14] [Fredrik Theodor Berg], BiSOS N, *Jordbruk och boskapsskötsel [Agriculture and stock raising]* (1865), pp. 24–5.

[15] Hannerberg, *Svenskt agrarsamhälle*, pp. 29–31; Gadd, C-J 1999. 'Präster och landshövdingar berättar', *Svensk jordbruksstatistik 200 år* ['Clergymen and governors recount', *Swedish agricultural statistics 200 years*] (SCB, 1999), p. 30. John Hellstenius, 'Skördarna i Sverige och dess verkningar' ['The harvests in Sweden and their effects'], *Statistisk tidskrift* 29 (1871), p. 104.

[16] Jörn Svensson, *Jordbruk och depression 1870–1900. En kritik av statistikens utvecklingsbild [Agriculture and depression 1870–1900. A critique of the statistic's depiction of the development]* (Lund, 1965). Karl Medin, 'Statistiska centralbyrån tar över' ['The national bureau of statistics takes over'], *Svensk jordbruksstatistik 200 år* (SCB, 1999), pp. 63, 78–9.

[17] Gustav Sundbärg, *Emigrationsutredningen, bilaga 22. Betänkande i utvandringsfrågan. [The Emigration investigation, Suppl. 22. Report on the emigration issue]* (Stockholm, 1913), p. 91.

100 per cent higher than according to the official statistics. He assumed that the national figures were underestimated to the same degree. For 1865, Hannerberg considered official acreages in his sample area to be trustworthy. Nevertheless, he assumed the national acreage to be underestimated by *c.*20 per cent. This was still a modest estimation compared to Holgersson, who raised the official acreage in 1870 by 30 per cent.[18]

Hannerberg's estimations from 1971 were never intended to be more than a preliminary sketch. Hannerberg himself stressed the importance of further studies, advocating a wider investigation on acreages on the basis of land survey material. Subsequent local studies have demonstrated a large variation in extent of deviations from the true situation in the statistics around 1800.[19] Nevertheless the original assessment of Hannerberg has had an enduring normative effect on the state of research.[20]

The growing interest in databases and the collection of 'big data' in the last decades has however given rise to new attempts to estimate Sweden's nineteenth-century agricultural production. At the regional level, Mats Olsson and Patrick Svensson have compiled the extremely rich source material that exists for the province Scania (and nowhere else) into a database, namely eighteenth- and nineteenth-century farm-level tithe records.[21] In another project, led by Mats Morell, land survey acts are used to study and chart the development in the Mälardalen region.[22] At the national level Lennart Palm and Rodney Edvinsson have presented new production estimates.

Lennart Palm's project Swedish Database of Agricultural History aimed at offering agricultural statistics at the parish level with 60-year intervals 1570–1810. For 1810 the main source was some 9,000 probate inventories from all over the country. The material proved to be highly useful in the reconstruction of animal husbandry. Regarding cereal production, the plan was to use farm level seed-data from the inventories, following a methodology developed by Lars Herlitz and Carl-Johan Gadd. However, information on seeds was only included in the inventories in a few counties in western Sweden. For the rest of the country other sources and methods had to be utilized: local reports, previous micro-level studies, the official statistics, guesstimates and analogies combining a wide range of different information. The material is thus very heterogeneous. Compared to Hannerberg, Palm's reconstruction

[18] Hannerberg, *Svenskt agrarsamhälle,* pp. 69–71. Holgersson, 'Cultivated land', tab. 12, p. 47.

[19] Calculated acreage of arable land in relation to the official statistics: +250%, Maths Isacsson, *Ekonomisk tillväxt och social differentiering 1680–1860: bondeklassen i By socken, Kopparbergs län [Economic growth and social differentiation 1680–1860. The peasant class in By parish, Dalarna County]* (Uppsala, 1979), p. 83; table E in the Appx); +116% and +233%, resp. (two different areas), Folke Karlsson, *Mark och människor: befolkning och försörjningsresurser i västra Småland 1800–1850 [Land and people. Population and livelihood resources in western Småland 1800–1850]* (Göteborg, 1976), p. 224); +105% (Herlitz, Urban, *Restadtegen i världsekonomin. Lokala studier av befolkningstillväxt, jordbruksproduktion och fördelning i Västsverige 1800–1860 [Restadtegen in the world economy. Local studies of population growth, agricultural production and distribution in Western Sweden 1800–1860]* (Göteborg, 1988), p. 209.

[20] Gadd, *Svenska jordbrukets*, pp. 231–2, 379. See also Edvinsson, 'Harvests', p. 3

[21] Mats Olsson and Patrick Svensson, *Historical Database of Scanian Agriculture, version 3.0* (Dept. of Economic Hist., Lund University, 2017).

[22] Mats Morell and Marja Eriksson, Institutionell förändring och agrar-ekonomisk tillväxt i Sverige 1810–1880 [Institutional change and agrarian-economic growth in Sweden 1810–1880], ongoing project.

TABLE 1. Different estimates of acreage in Sweden 1810, 1870 and 1920, hectares (thousands)

Author	*Method*	*Acreage c. 1810*	*Acreage c. 1870*	*Acreage 1920*	*Utilization within research*
A. Official statistics (*Tabellverket*)	Local estimations provided by the clergy as part of the *Tabellverket*-collection of data	827			Adjustments by Sundbärg, *Emigrationsutredningen* (D) and Hannerberg, *Svenskt agrarsamhälle* (E)
B. Official statistics (BiSOS)	Local estimations provided by the regional Husbandry Societies, based on heterogeneous methods of data collection.		2,546		Adjustments by Sundbärg, *Emigrationsutredningen* (D) and Hannerberg, *Svenskt agrarsamhälle* (E)
C. Official statistics (SCB)	Uniform and meticulous local enquiries.			3,795	Widely accepted
D. Sundbärg, *Emigrationsutredningen*	Adjustments of the official statistics based on guesstimates.	925	2,831		
E. Hannerberg, *Svenskt agrarsamhälle*	Adjustments of the official statistics based on acreages according to land survey acts in Närke historical province.	1,500 (year 1800)			Schön, *Historiska nationalräkenskaper* (H); Gadd, *Svenska jordbruket* (I), conference papers (J, K, L); Edvinsson, 'Annual estimates' (M) and 'Gross domestic product' (N), via Gadd conference papers (J, K)
E. Hannerberg, *Svenskt agrarsamhälle*	Guesstimate		3,000 (year 1865)		Gadd, *Svenska jordbruket* (I), conferemce papers (J, K, L); Edvinsson, 'Gross domestic product' (N), via Gadd conference papers (J, K)
F. Holgersson, 'Cultivated land'	Estimations based on nutritional needs of the population		3,300		Schön, *Historiska nationalräkenskaper* (H)
G. Linde & Palm, *Sverige 1810*	Heterogenous sources and methods	1,211			

Sources:
A. As compiled in *Minnesskrift med anledning av den svenska befolkningsstatistikens 200-åriga bestånd [Anniversary publication on the occasion of two hundred years of population statistics in Sweden]* (Stockholm, 1949), p. 193, table 2.
B. *Bidrag till Sveriges officiella statistik N Jordbruk och boskapsskötsel* [*Contributions to the Official Statistics of Sweden N Agriculture and stock raising]* (1870), pp. 22–3, table 1.
C. *Jordbruk och boskapsskötsel / Statistiska centralbyrån [Agriculture / Central Bureau of Statistics]* (1920), p. 4.
D. Gustav Sundbärg, *Emigrationsutredningen, bilaga 22. Betänkande i utvandringsfrågan [The emigration investigation, Suppl. 22. Report on the emigration issue]* (Stockholm, 1913), p. 91.
E. David Hannerberg, *Svenskt agrarsamhälle under 1200 år. Gård och åker, skörd och boskap [Swedish rural society for 1200 years. Farm and field, harvest and livestock]* (Stockholm, 1971), p. 31.
F. Bengt Holgersson, 'Cultivated land in Sweden and its growth 1840–1939', *Econ. and Hist.* 17 (1974), pp. 20– 51.

TABLE 8. *continued*

G. Martin Linde and Lennart Andersson Palm, *Sverige 1810. Befolkning, jordbruk, skog, jordägande [Sweden 1810. Population, agriculture, forest, land ownership]* (Göteborg, 2014), p. 1.
H. Lennart Schön, *Historiska nationalräkenskaper för Sverige.* 1. *Jordbruk med binäringar 1800–1980 [Historical national accounts for Sweden.* 1. *Agriculture with ancillary industries 1800–1980]* (Lund, 1995).
I. Carl-Johan Gadd, *Svenska jordbrukets histora Bd 3. Den agrara revolutionen [History of Swedish agriculture*, III, *The agrarian revolution]* (Stockholm, 2000), pp. 331–3.
J. Carl-Johan Gadd, '*Underskattningsproblemet i svensk jordbruksstatistik omkring år 1800*' *[The issue of underestimation in Swedish agricultural statistics c.1800],* paper presented at Dept. of Human Geography, Stockholm University (2007)
K. Carl-Johan Gadd, '*Swedish agricultural production: preliminary version*', paper presented at Svenska ekonomisk-historiska mötet, Stockholm (2007).
L. Carl-Johan Gadd, '*Swedish agricultural production, 1800–1910. A study of three periods*', paper presented at Svenska ekonomisk-historiska mötet, Uppsala (2019).
M. Rodney Edvinsson, 'New annual estimates of Swedish GDP, 1800–2010', *EcHR* 66 (2013).
N. Rodney Edvinsson, 'The Gross Domestic Product of Sweden within present borders, 1620–2012', in Rodney Edvinsson, Tor Jacobson, Daniel Waldenström (eds), *House prices, stock returns, national accounts and the Riksbank balance sheet 1620–2012* (Stockholm, 2014).

suggests a lower acreage of arable land in 1810, roughly 50 per cent more than the official figures of *Tabellverket*.[23]

Rodney Edvinsson's studies of agricultural production were part of his revisions of *The Historical National Accounts of Sweden*. His most important empirical contribution is his compilation of yield ratios from county level annual harvest reports. This series enabled Edvinsson to reconstruct inter-annual variations in agriculture's contribution to the GDP.[24] The volume of production cannot be deduced from the material, however. In order to estimate seeds, Edvinsson made use of conference papers by Carl-Johan Gadd. Gadd's calculations in turn were based on a revised version of Hannerberg's previous estimates.[25] Table 1 summarizes the different estimations on how much arable land there was in Sweden c. 1800–1915.

[23] Martin Linde and Lennart Andersson Palm, *Sverige 1810. Befolkning, jordbruk, skog, jordägande [Sweden 1810. Population, agriculture, forest, land ownership]* (Göteborg, 2014). Lars Herlitz, *Jordegendom och ränta. Omfördelningen av jordbrukets merprodukt i Skaraborgs län under frihetstiden [Land ownership and rent. The redistribution of the surplus of agriculture in the county of Skaraborg during the age of liberty]* (Göteborg, 1974). Carl-Johan Gadd, *Järn och potatis. Jordbruk, teknik och social omvandling i Skaraborgs län 1750–1860. [Iron and potatoes. Agriculture, technique and social change in the county of Skaraborg 1750–1860]* (Göteborg, 1983).

[24] Rodney Edvinsson, 'The Gross Domestic Product of Sweden within present borders, 1620–2012', in Rodney Edvinsson, Tor Jacobson, Daniel Waldenström (eds), *House prices, stock returns, national accounts and the Riksbank balance sheet 1620–2012* (Stockholm, 2014), p. 101–82; Rodney Edvinsson, 'New annual estimates of Swedish GDP, 1800–2010', *EcHR* 66 (2013), pp. 1101–26.

[25] Edvinsson, 'New annual estimates', p. 1105, quotes Carl-Johan Gadd, 'Underskattningsproblemet i svensk jordbruksstatistik omkring år 1800' [The issue of underestimation in Swedish agricultural statistics *c.*1800], paper presented at Dept. of Human Geography, Stockholm University, 2007, but Edvinsson must also have used another conference paper, Carl-Johan Gadd, 'Swedish agricultural production: preliminary version', presented at Svenska ekonomisk-historiska mötet, Stockholm 2007. Gadd's idea was that Hannerberg's acreages were correct, but included areas, etc. that were never sown, resulting in a lower 'effective acreage'.

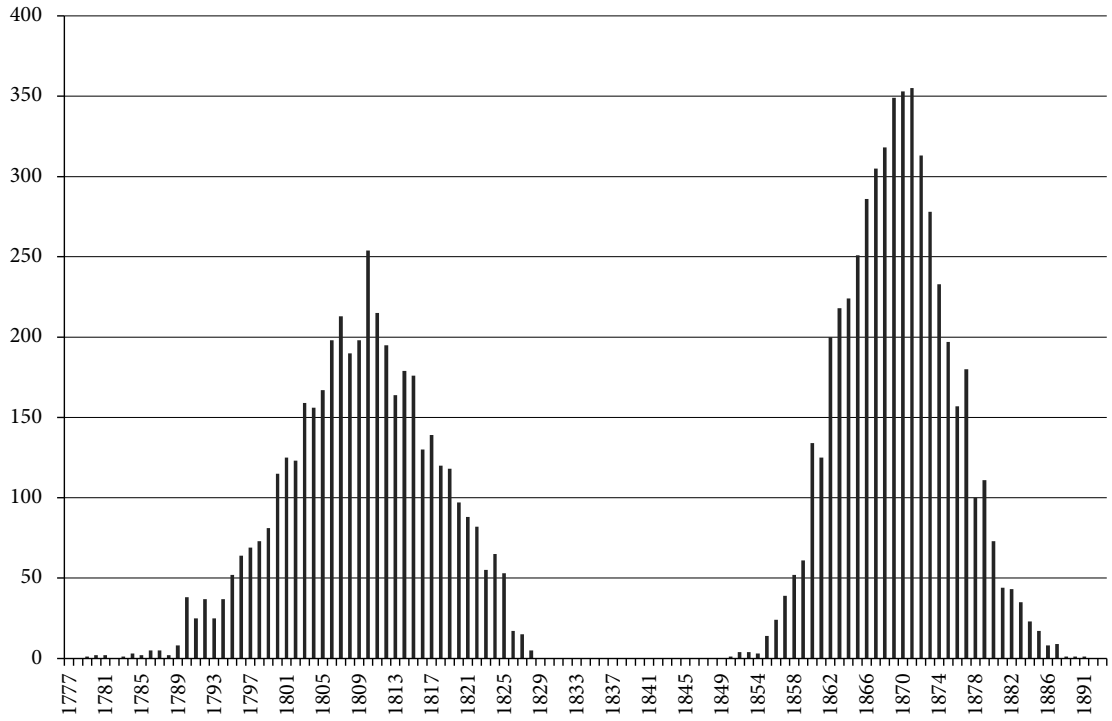


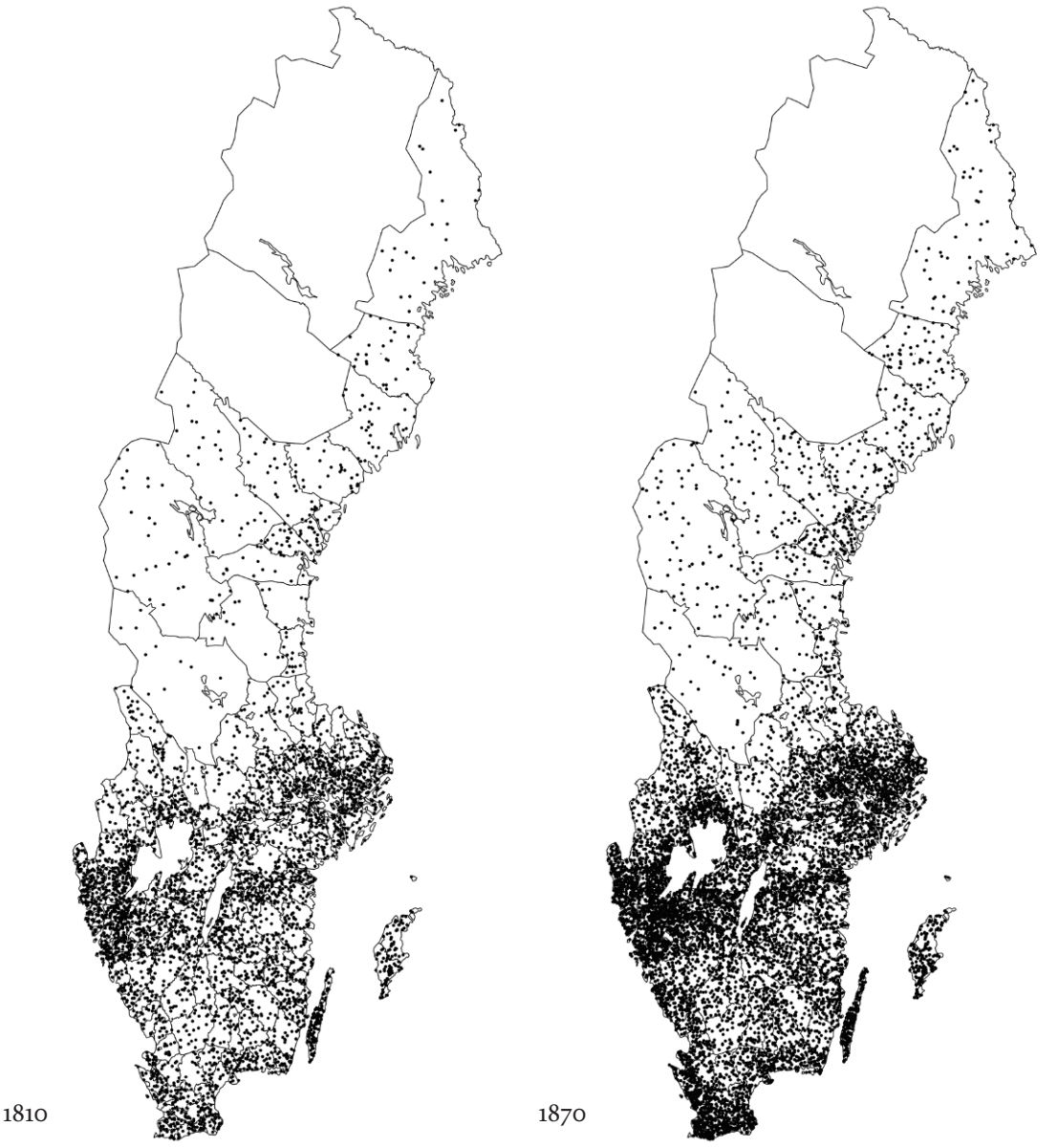
FIGURE 1. The chronological spread of observations (number of maps per year)

IV

While tithe records, probate inventories and yield reports have been drawn on in recent years, Sweden's treasury of nineteenth-century cadastral maps has not. Hannerberg insisted the map material would enable significantly safer estimations of acreage than any other source. Prior to digitalization, the compilation of the maps was rather time-consuming, which explains why it has only been employed in local-level studies. However, after the Land Survey scanned the maps and made the material available on the Internet, the task became significantly more straightforward and made large-scale nationwide studies possible.

The national land survey of Sweden dates back to 1628. During the following centuries tens of thousands of maps were produced covering almost every corner of the land. For the study period in question, the Land Survey archive contains maps from the three important Swedish land reforms: *Storskifte* (1747–1827), *enskifte* (1803–1827) and *laga skifte* (1827–1926). Numerous maps were also produced as a result of partitions of farmsteads, *hemmansklyvning*. In addition, both the Crown and private landowners used the land survey in order to assess their property.

This present study is based on 9,401 maps. The selected maps were mainly from within a decade before and after the two survey years, respectively (Figure 1). The collected material covers all parts of the country with the exception of the towns and the arctic Lappland region (Maps 1 and 2). The basic unit of investigation of the project was the *härad*, the local jurisdictional district. The ambition was to collect information from a minimum of 15 maps



MAP 1–2. The geographical spread of observations (one dot = one map)

covering at least 30 land register units (*hemman*) for each district. If possible, every parish should be represented in the sample. These requirements were not always met. For large parts of northern Sweden, jurisdictional districts were frequently merged into wider survey areas in order to get a sufficient number of observations. In total, 230 areas were investigated.

The land survey maps covered a village, a hamlet, or a just a farmstead. The methodological key that allowed data from a variety of maps to be combined into series for larger areas was the *mantal*, the official assessment unit of land. The *mantal* dates back to the earliest Swedish

land registers in the sixteenth century. It was primarily used in taxation but also, for example, as a basis for the new distribution of land in the enclosures of commons. During the eighteenth century the *mantal* of each farm register unit was fixed and remained in principle unchanged throughout the period studied.

Cadastral maps report the acreage of arable land as well as the *mantal* of the unit mapped. These data were compiled for all investigated maps. The sum of acreage of all observations in a district was than divided by the sum of *mantal* of the same observations. This specific ratio of acreage per *mantal* was thereafter multiplied by the total sum of *mantal* in that district. For instance, in Kind's district in Älvsborg County, 31 maps were studied for the year 1810. The sum of arable acreage from these maps was 199.7 hectares and the corresponding sum of *mantal* 28.0; the ratio arable per *mantal* was thus 7.2. The total sum *mantal* in Kind's district was 525.5, which, multiplied by the ratio, makes 3,758 hectares of arable land.

The investigation revealed a variety of problems that have to do with the fact that agriculture, terminology, assessment traditions, and enclosure processes differed at the regional level. One recurrent problem in, above all, southern Sweden was the reuse of older cadastral maps at the time of enclosures. Close attention thus had to be paid to when the survey was actually done. In Dalarna and Gävleborg Counties the investigation was aggravated by the fact that most maps lacked information on the *mantal*. Other source materials then had to be consulted, such as tax registers. The project's user manual contains county level information on sources and farming practices of importance for the study.

V

Table 2 presents an overview of the empirical base of the investigation and its main results. According to the official statistics, arable land in 1810 comprised 827,000 hectares. Our project finds arable land to be 61 per cent greater: 1,334,000 hectares.

Compared with Hannerberg's estimation, of about 100 per cent greater acreage, this is a low figure. Actually, we find the same high level of underestimation as Hannerberg in his own case study area, Örebro County. The level of underestimation is however lower in most other counties, which demonstrates the difficulty in using geographically limited micro-level investigations as the basis for macro-level estimates.[26]

During the 60 years, 1810–70, much land reclamation was done. According to BiSOS, arable land measured 2,546,000 hectares in 1870. This figure is not far from the result of this project. We find acreage in general to have been a merely 14 per cent greater, 2,906,000 hectares. Arable land in Sweden thus more than doubled (+118 per cent) between 1810 and 1870.

Taken together, these results alter the established narrative of nineteenth-century agricultural development in Sweden. The pace of expansion was faster, and the scope was longer. Sweden had less arable land in the beginning of the nineteenth century than researchers have come

[26] Lars Nyström and Erik Hallberg, 'Att komma till "möjligaste sannolikhet; om icke alldeles träffa sanningen". Kring präststatistiken 1802–1820 – världens äldsta jordbruksstatistik' [To arrive at the "best probable probability; if not quite meet the truth". About the priest statistics 1802–1820 – the world's oldest agricultural statistics]. *Scandia* 89 (2023), forthcoming.

TABLE 2. Acreage of arable land in Sweden 1810 and 1870, present project

	1810	*1870*
N (maps used)	4,266	5,135
Mantal studied	6,208	4,186
National coverage	9.5%	6.2%
Estimated acreage, thousands of hectares	1,334	2,906

to believe. In 1870, arable land must also be adjusted downwards compared with both Hannerberg's and Holgersson's estimates, but not as much. Land reclamation was thus faster than expected and firmly exceeded population growth. Another consequence of these results is that land reclamation after 1870 was stronger than previously assumed.

The regional differences in the rate of cultivation were considerable. Compared with the national average, land reclamation was smaller in the major grain producing areas around the lake Mälaren and on the fertile plains of southern Scania. Regions of stronger cultivation were western and northern Sweden. These two latter regions were less cultivated around the turn of the nineteenth century and agriculture more oriented towards animal husbandry.

VI

Compared to previous studies this investigation makes use of massive amount of empirical evidence. The sample of maps at the district level however seldom cover more than a small part of the district's total *mantal*. The basic assumption is that acreage per *mantal* as estimated from the investigated maps is an unbiased average of the entire district. How confident can we be?

The *mantal* did not specifically correspond to a geometric area. Rather was it an assessment of the general capacity of a land register unit to pay taxes; to some extent even the result of a process of negotiations.[27]

Agrarian Sweden was anything but uniform and, as the project demonstrates, the ratio of arable land per *mantal* varied greatly between districts: from 5 to 75 hectares per *mantal* in 1810; and from 15 to 150 hectares per *mantal* in 1870. Two main factors explain why *mantal* and nineteenth-century acreages were not more closely correlated nationwide. Firstly, the *mantal* was an assessment not only of arable land, but also of other resources such as meadows, pastures, forests and fisheries. Secondly, the *mantal* was set in the early eighteenth century. The

[27] Bruno Johnsson, *Åkerns omfattning vid 1600-talets mitt enligt de geometriska jordeböckerna: kulturgeografiska metodstudier tillämpade på Västmanlands län [The extent of the field at the middle of the seventeenth century according to the geometric land registers. Cultural-geographical method studies applied to Västmanland County]* (Stockholm, 1956) pp. 51–5; Gerhard Hafström, *Ledung och marklandsindelning. [Ledung (=medieval tax) and markland (=medieval assessment unit of land) division]* (Stockholm, 1949) pp. 196, 227; Folke Dovring, *Agrarhistorien. En översikt av dess uppgifter, forskningsmetoder och resultat [Agricultural history. An overview of its tasks, research methods and results]* (Stockholm, 1953) pp. 63, 66; Gadd, *Svenska jordbrukets*, pp. 42–3, 195–7.

TABLE 3. Bootstrap 95% confidence interval of the estimates of arable land, 1810 and 1870

	Lower (%)	*Upper (%)*	*Mean*	*Lower*	*Upper*
1810	–2.48	+2.46	1,334	1,301	1,367
1870	–1.98	+2.02	2,906	2,848	2,966

ensuing development did not subsequently reflect how farms and regions developed differently in terms of the reclamation of land.

As the acreage of each district is estimated separately in the project, the great variation in the ratio *between* districts is not a problem. More important is to explore to which extent variation *within* districts might influence the results.

A calculation of the statistical variation was made according to the bootstrap model. Bootstrap is based on the calculation of random samples and is used to explore the statistical uncertainty when the sample (in this case per district) is small and a normal distribution cannot be assumed. The method was used as follows: a macro program randomly retrieved a sample of maps from each of the 230 survey areas (districts), calculated the ratio (acreage per *mantal*) per district (based on the random sample), multiplied the ratio with the total sum of *mantal* of the district and finally summarized the different 230 acreage sums. This procedure was repeated 10,000 times. The 95 per cent confidence interval was then calculated for the 10,000 estimates. The result of the bootstrapping is reported in Table 3.

Three main factors are considered to contribute to the statistical variation: firstly, the variation in the ratio of acreage per *mantal* between land register units also *within* districts; secondly, the use of observations of different statistical weight, given their different size in *mantal*; and thirdly, the relatively small samples at the district level: on average 18 (1810) and 21 (1870) maps. Once district level data is aggregated into larger investigation areas, the statistical variation decreases. At the national level, figures show a very low degree of uncertainty.

Bootstrapping only explores the risks of random statistical variation within a sample. It cannot check for the risk of a *biased sample*, that is the representativeness of the sample. The samples used in this study were not random. Instead, we were dependent on the availability of suitable cadastral maps. There is a risk that farms that were objects of land surveys at average had more (or less) arable per *mantal* land than farms that were not, as these farms might have been forerunners (or laggers) in regards to land reclamation. Importantly, however, we don't rely on just one category of maps. For 1870 we use many maps from late *laga skifte* enclosures. Possibly land reclamation in these villages had been slower than in villages that were enclosed early. We also use many maps from the partitions of farmsteads, that is when a farm was spilt into two or more units. Here we might suspect the opposite tendency, that land reclamation had been faster than on farms that were not divided.

One way to check for the risks of a biased sample is to compare local level results with other reliable series which do not have the same selection problems. In 1860, the National Geographical Survey started mapping the country at the regional level in 1:20,000 scale. In the

TABLE 4. Acreages of arable per *mantal* according to the Geographical Survey mappings 1860–77 and according to the present study

Area	Mantal *covered*	*Number of study areas compared*	*1. Geographical Survey*		*2. This present investigation*		*Acreage index 2/1*
			Hectares/ mantal	*Average year of survey*	*Hectares/* mantal	*Average year of survey*	
Uppsala County	3,560	13	30.21	33 (1861)	30.96	72 (1868)	102.5
Örebro County	2,878	12	42.74	25 (1866)	45.9	75 (1867)	107.4
Östergötland County	5,484	22	39.62	29 (1872)	37.21	83 (1867)	93.9
Norrbotten Province	822	1	25.50	96 (1873)	25.30	18 (1870)	99.2
All areas	12,745	48	36.79	97 (1867)	36.66	21 (1868)	99.7

TABLE 5. Acreages of arable per *mantal* according to local surveys conducted by the Husbandry Societies 1869–1876 and according to the present study

Area	Mantal *covered*	*Number of study areas compared*	*1. Geographical Survey*		*2. This present investigation*		*Acreage index 2/1*
			Hectares/ mantal	*Average year of survey*	*Hectares/* mantal	*Average year of survey*	
Blekinge County	1,076	4	46.68	95 (1871)	43.21	36 (1868)	92.6
Kalmar County	2,148	9	38.53	85 (1872)	46.07	94 (1869)	119.6
Jönköping County	3,860	9	22.23	76 (1873)	23.14	01 (1869)	104.1
Älvsborg County	2,269	12	38.89	04 (1873)	35.66	57 (1868	91.7
Västmanland County	2,851	7	43.53	75 (1873)	42.14	27 (1868)	96.8
Värmland County	429	4	83.56	82 (1875)	86.91	48 (1868)	104.0
All areas	12,634	45	36.92	39 (1873)	37.45	85 (1868)	101.4

mid 1870s, most of Uppsala, Östergötland, Örebro and Norrbotten Counties had been charted. The published map protocols include information on acreage sums at the land register unit level as well as at the county level. These figures can be compared to ours.

Another series that enables cross-checks with the project's acreages are district level data of the official BiSOS statistics. As discussed previously this material suffers from a number of shortcomings, not least the vast heterogenicity regarding the methods of collection of data. In some districts, the regional Husbandry Societies however carried out detailed local inquires of acreages and agricultural production. By the use of Svensson's thesis, 45 such districts (surveyed 1869–1876) can be identified, spread over six different counties.

Tables 4 and 5 show acreages at county and aggregated levels according to, on the one hand, the geographical survey and the regional Husbandry Societies' high-quality local enquiries, respectively, and, on the other hand, the present project. Taken together, the compared areas cover more than one third of the total *mantal* of the country. In Figure 2 the correlation between the sources at district level is displayed.

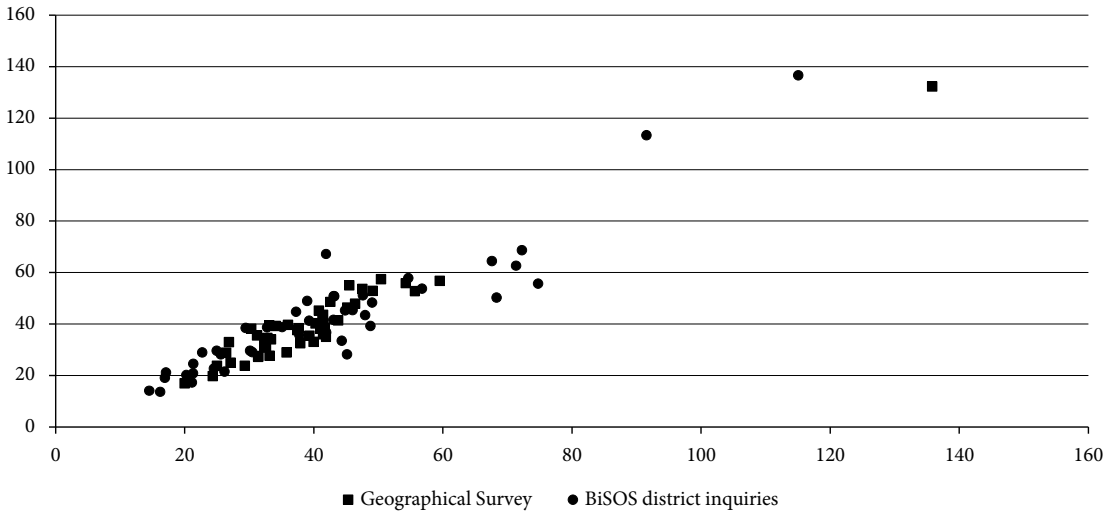


FIGURE 2. Acreages of arable per *mantal* at the district level according to the Geographical Survey and BiSOS district surveys (X-axis) and according to this present study (Y-axis)

The comparisons give no reason to suspect the samples of the study of being biased. District-level figures sometimes differ more than optimally, but deviations occur in both directions. At an aggregated level, deviations thus tend to neutralize one another. The differences in the ratio acreage per *mantal* between the project and the other two series are down to 1–2 per cent.

Which of the three series is the most accurate? The Land Survey maps are outstanding in quality and richness of details as they are large scale, but cover only part of a district. In contrast, the Geographical Survey is comprehensive but based on much more rudimentary field work. The BiSOS surveys are more difficult to evaluate since the methods employed by the different Husbandry Societies varied. Nevertheless, given the huge problems involved in the process of estimating acreages, the degree to which the three sources coincide is striking. The correlation in acreages of arable per *mantal* at the district level between our investigation and the Geographical survey is an impressive 0.97 and between ours and BiSOS a handsome 0.93. Unfortunately, there is no corresponding reference material for 1810.

These comparisons along with the bootstrapping sensitivity analysis result in the conclusion that although our figures are associated with a certain margin of error at the district level, at the aggregated level, numbers are solid and reliable.

VII

The next step is to use the revised series of acreages in a reconstruction of Swedish food production *c.*1810 and 1870. The main purpose of the reconstruction is to facilitate a deeper analysis of farming and nutrition in Sweden during the agricultural revolution; but it will also work as a third check of the project data, indicating to what degree our estimated acreages of arable land are plausible or not. In the following sections seeds, harvests and animal

husbandry will be estimated sequentially. Then the calorific content of the production will be assessed.

Let us start with the most important foodstuff, grain. The most straightforward method to calculate harvests from acreage would have been to adjust the grain production figures from the official statistics with the same magnitude as acreages differed from the official statistics: 25 per cent more arable land than according to the official statistics, would then, consequently, have resulted in the increase of seed sown and harvests by 25 per cent as well. Such a method would however only be reliable if the relative measures used in the statistics, such as sowing density and harvest ratios, were trustworthy. Unfortunately, they are not.

In several conference papers, Carl-Johan Gadd has analysed the inner coherence of the Swedish agricultural statistics. One observation is that the yield ratios reported by the bailiffs to the County governors (running from 1817) are 20–25 per cent higher than according to those that the clergy reported to the *Tabellverket* (running to 1820). Gadd's interpretation is that the clergy's yield ratios are too low.[28] We agree with this conclusion. If the official acreages were biased by the farmer's fear of increased taxes, why would yield ratios be any different?

Our investigation has furthermore cast doubt on the ratio of seed per acre in the early agricultural statistics. Tests that combine the information on acreages, the percentage of land lying fallow per annum and seeds of different crops show that the clergy frequently turned to very rough templates regarding the ratio of seed per acre. Most often, the clergy assumed that one barrel (*tunna*) of grain (regardless of the crop) sowed one *tunnland* (literally 'barrel land', equivalent to about half a hectare). Such rough-and-ready guestimates provide an uncertain basis for further calculations on agricultural production.

During the BiSOS period from 1865, the problems regarding sowing density had been sorted out. According to the persons in charge of the compilation of the material, there was however still a risk that yield ratios were slightly underestimated.[29] The problems have been addressed as follows:

1) The yield ratios of the official statistics have been replaced by what we, Carl-Johan Gadd, and Rodney Edvinsson think is a more trustworthy series, namely the yield ratios submitted by the bailiffs to the County governors in annual growth reports from 1818 and onwards. This material has been compiled by Edvinsson who generously made it available to us. We use figures for the period 1818–22 in order to assess the normal county level yield ratios around 1810. For 1870 figures for the period 1866–74 have been used.

2) Regarding sowing density, only scattered evidence exists prior to the establishing of BiSOS agricultural statistics in 1865. In this reconstruction we assume that the county level ratios seed per acreage were the same in 1810 as in 1870.[30]

In the end, only two datasets from the official statistics of the early nineteenth century were used in the reconstruction of production in 1810: the proportion of land annually lying

[28] See Carl-Johan Gadd, 'Swedish agricultural production'.

[29] BiSOS N, *Jordbruk* (1870), pp. 13–18.

[30] BiSOS N, *Jordbruk* (1870), our compilation and processing. By using constant data on seed density and grain weights, i.e. to use the 1870 figures also for the year 1810, we avoid the problematic question of the different sizes of barrels (*tunna*) in 1810.

TABLE 6. Estimated production of grain and potato in Sweden 1810 and 1870, hectares and tons (thousands)

Indicator	*1810*	*1870*	*Index 1810=100*
Hectares of arable land	1,334	2,906	218
Hectares sown with grain, peas or potatoes	866	1,418	164
Seeds of grain	172	283	165
Gross harvest of grain	909	1,880	207
Gross yield ratio grain	5.3	6.6	125
Seeds of potatoes	14	188	1360
Gross harvest of potatoes	103	1,361	1326
Gross yield ratio potatoes	7.4	7.2	98
Population, thousands	2,396	4,169	175

fallow and the relative distribution between the crops sown.[31] These data were combined with acreages according to this present investigation, seeding ratios from BiSOS 1870 and yield ratios from the annual growth reports. For 1870 the official data on seeds was increased with the same magnitude as we had increased acreages. To calculate harvests, we multiplied the adjusted seed data with yield ratios according to the growth reports. For both 1810 and 1870, weights of crops have to be estimated according to the BiSOS 1866–70 averages: (in kilograms per hectolitre): wheat 75; rye 70; barley 58; dredge corn (a mixture of barley and oats) 51; oats 47; peas 79; potatoes 70.[32] Table 6 provides an overview of the results at national level.

The overall result shows a strong increase in production, in absolute numbers as well as relative to population growth. The increase was driven both by the massive land reclamation and by rising yields. In addition, the cultivation of potatoes was greatly expanded.

VIII

A reconstruction of food production must also include animal husbandry. Land Survey acts have no such information. The best available source is the probate inventories. From the 1760s and onwards this material includes most deceased farmers in the country. As the livestock was among the most valuable assets, it was in general comprehensively listed. As previously mentioned, probate inventories were used to reconstruct the number of livestock at the local,

[31] Retrieved from the official *Tabellverket* statistics of 1805 by Linde and Palm, *Sweden 1810*. We have assumed that peas and potatoes were sown on the fallow (except from in areas with continuous cropping). For 1870, we have compiled information from the official statistic, BiSOS N., *Jordbruk* (1870, or nearby year).

[32] As compiled by Hannerberg, Svenskt agrarsamhälle. See also Gadd, 'Swedish agricultural production', Table S3 ab; and Mats Morell, *Studier i den svenska livsmedelskonsumtionens historia: hospitalhjonens livsmedelskonsumtion 1621–1872 [Studies in the history of Swedish food consumption. Food consumption among institutionally supported paupers 1621–1872]* (Uppsala, 1989), pp. 333–4. Morell's eighteenth-century estimates come close to the BiSOS weights, while Gadd advocates lower figures.

TABLE 7. Estimated number of farm animals in Sweden 1810 and 1870, thousands

	1810	*1870*	*1810=100*
Horses	521	477	92
Cows	1,132	1,379	122
Oxen	240	296	123
Bulls	52	54	104
Steers	147	161	109
Heifers	300	328	109
Hogs	373	400	107
Sheep	1,965	1,751	89
Goats	358	145	40
Livestock units	2,749	2,976	108

regional and national level in the compilation of the database *Sweden 1810*. Its data have also been used in this project.

A reconstruction of livestock based on probate inventories is however yet to be conducted for the year 1870. Consequently, it has been necessary to use the official figures (the BiSOS statistics). The varying and uncertain quality of this material has been discussed repeatedly throughout this paper. As demonstrated, acreage statistics were better than previously assumed, and there is no reason to believe livestock statistics were worse. It must have been easier for the various regional Husbandry Societies to count the numbers of livestock in the barns than to estimate the area of fields. In the early nineteenth-century statistics, we discovered data on animals to be more trustworthy than data on acreages.[33] Consequently, we have for 1870 increased the official figures on cattle by 10 per cent, slightly less than acreage. Table 7 presents estimated number of farm animals in Sweden 1810 and 1870.

The number of livestock units increased slightly between 1810 and 1870, but did not keep pace with population growth or land reclamation. Consequently, there were fewer cows per capita and fewer draft animals per hectare of arable land in 1870 than in 1810.

IX

So far acreages, seeds, harvests and livestock have been reconstructed. In order to find out how much food was actually produced and available for human consumption, some further steps are required. Each step raises a number of research questions. In general, our calculations follow mainstream interpretations. In a few cases it has been necessary to reach a reasonable guesstimate as sources and literature provide limited help.

Milk and meat yields must be estimated. In 1810, most estimates suggest an annual return of about 600 kilograms of milk per cow; and per sheep and goat 60 kg, respectively. In 1870,

[33] Nyström and Hallberg, 'Att komma till "möjligaste sannolikhet"'.

most assessments put forward a milk yield of 1,000 kg per cow, and 90 kg per sheep and goat. For both years we estimate that 20 per cent of the milk-fed calves, lambs and kids.[34]

To calculate early nineteenth-century meat yields, we use a template developed by Hannerberg and Gadd with some minor adjustments.[35] Annual livestock replacement rates, that is the share of the adult breed that was slaughtered and replaced by younger animals, are set at 0.14 for cows, oxen and bulls; 0.5 for pigs; and 0.3 for sheep and goats. We further assume that 0.67 calves per cow and 0.6 lambs/kids per sheep/goat were born annually, and that young animals not used for the replacement of old animals were slaughtered. Meat yields are estimated at 80 kg per cow; 100 kg per ox and bull; 30 kg per pig; 15 kg per sheep and goat; 20 kg per calf and 8 kg per lamb and kid. In addition, we assume a yield from piglets averaging at 4 kg meat per litter.

For 1870, we use the 1924 Customs Committee's estimations of animal production for the years 1871–75.[36] Annual livestock replacements rates are set at 0.12 for cows; 0.2 for oxen; 0.35 for bulls; 0.5 for sheep and goats and 1.0 for pigs. We further assume that 0.8 calves per cow were born annually and 0.9 lambs/kid per sheep/goat. Meat yields are estimated at 150 kg per cow; 200 kg per ox and bull; 80 kg per pig; 17 kg per sheep and goats; 50 kg per calf/heifer/steer and 10 kg per lamb and kid. We further assume a yield from piglets averaging at 6 kg meat per litter. We suppose that no horse meat was consumed in either 1810 or 1870.

Thereafter, the share of the grain used to feed animals must be assessed, as must imports and exports as well as the spill, that is the share of the foodstuff lost in transport, storing and processing.

For 1810, Henrik Nicander, claimed that 6.5 per cent of the gross harvest (by volume) was used as fodder.[37] We accept this figure and assume that all of it was oats. Regarding forage use in 1870, we agree with Gadd's processing of the Finance Committee 1858 material and assume that 20 per cent of the net harvest (by volume) was used as fodder, 68 per cent thereof oats; the rest mainly barley.[38] We suppose potatoes were used as fodder to the same degree as grain.

For imports and exports, we use previous compilations of official statistics.[39] Grain, flour and sugar are included in the reconstruction. In the case of animal products, imports and exports were so marginal that the level of consumption was hardly affected.

British consumption estimates generally include processing losses from grinding at 20 per cent or more.[40] These calculations are based on the underlying assumption that the flour

[34] 1810: Linde and Palm, *Sverige 1810*, p. 3; Gadd, *Järn*, pp. 135–6. 1870: Mats Morell, *Det svenska jordbrukets historia Bd 4 Jordbruket i industrisamhället, 1870–1945* [*The history of Swedish agriculture, IV, Agriculture in industrial society, 1870–1945*] (Stockholm, 2001) pp. 258–61; Gadd, *Svenska jordbrukets*, pp. 315–16.

[35] Hannerberg, *Svenskt agrarsamhälle*, pp. 107–8; Gadd, *Järn*, p 136. We use Gadd's figures. Some estimations of animal weights have been slightly adjusted upwards. Meat from piglets has been added.

[36] Statens offentliga utredningar 1924:38. Betänkande angående tullsystemets verkningar i Sverige före världskriget. Del 2. [State Public Investigations 1924: 38. Report on the effects of the customs system in Sweden before the World War. Part 2] (Stockholm 1924), pp. 75–9. Some weights have been slightly adjusted (mostly downward). Meat from piglets has been added.

[37] Nicander, *Om svenska tabellverket*, p. 118 (adjusted for weights of different crops).

[38] Gadd, 'Swedish Agricultural Production', p. 21.

[39] Grain and flour 1810: Linde and Palm, *Sverige 1810*, p. 1 (1801–1820); grain and flour 1870 (1865–1874); sugar 1810 and 1870 (1815–1820, 1865–1874): *Historical statistics of Sweden. Part 3. Foreign trade 1730–1970* (Stockholm, 1972).

[40] For an overview, see Bernard Harris, Roderick

was sifted to ensure a product that contained only endosperm. In nineteenth-century Sweden, however, practically all flour consumed was wholegrain, which meant that the bran and the germ was also included. As a consequence, the milling losses were down to a maximum of 2 or 3 per cent.[41] Distillation, brewing and cheese making likewise meant losses. In addition, there were losses from transport and storage (often estimated at *c.*10 per cent). Overall, we have assumed that processing, transport and storage losses amounted to 15 per cent of the gross production of all food in both 1810 and 1870.

After these steps, the quantity of different types of food consumed can be calculated. These figures must then be converted into nutritional content. Calories per kilogram of grain were set slightly under today's whole grain content: wheat and rye 3,200 kcal/kg; barley 3,300 kcal/kg. For oats and dredge corn, we assume that 30 per cent and 20 per cent of the cereal weight, respectively, was hull (which is not digestible), resulting in a calorie content of 2,520 kcal/kg for oats and 2,800 kcal/kg for dredge corn. In addition, we assume a calorie content in kcal/kg of 2,900 for peas, 800 for potatoes and 3,800 for sugar. For animal products we use the following figures: cow's milk 700; sheep's milk 1,000; goat's milk 650; beef 2,500, veal 1,700; pork 2,400; mutton 2,900; and goat meat 1,400 (kcal/kg).

X

So, how much food was consumed in Sweden in 1810 and 1870? In Tables 8 and 9 the estimations of crops and animal husbandry are presented. In Table 10 the calorie consumption of different foodstuffs per capita and per day is summarized.

The results indicate that the consumption of calories per capita per day was about 2,750 in 1810 and 2,900 in 1870. This is slightly higher than according to most estimates of calorific intake in nineteenth-century England, but this difference is mainly due to the latter assuming higher losses during the journey from the field to the table.[42] In present-day Sweden, per capita consumption is 3,110 kcal a day according to official UN figures.[43] Unlike in the nineteenth century, Swedes now tend to consume more food than they need. At the same time, the need for food is smaller since most jobs require less physical activity than in the past.

Note 40 *continued*
Floud and Sok Chul Hong, 'How many calories? Food availability in England and Wales in the eighteenth and nineteenth centuries', in *Res. in Econ. Hist.* 3 (2015), pp. 133–7.

[41] An official source from 1755 states a grinding loss in weight of less than 1% for rye: 1755-06-14 Kongl. majt:s: Beskrifning om det wid Kongl. Amiralitetet brukelige Bakningssättet … hwaraf finnes hela Processen med Sädens utgifwande til malning, hwad afgång i wigten : wid Qwarnen : skier, och huru mycket mjukt eller torrt bröd hwar tunna säd med säkerhet gifwer., [1755-06-14 His Royal Majesty's Description of the Baking Method customary at the Royal Admiralty … which describes the whole process when the grain is ground, how much loss in weight at the mill, and how much soft or dry bread each thin grain will by certain yield.] (Stockholm, 1755). See also Craig Muldrew, *Food, energy and the creation of industriousness. Work and material culture in agrarian England, 1550–1780* (2011), pp. 146–7.

[42] Harris *et al.*, 'How many calories', p. 140, appendix (graph).

[43] Food Consumption Nutrients. *Food and Agriculture Organization of the United Nations*, http://www.fao.org/fileadmin/templates/ess/documents/food_security_statistics/FoodConsumptionNutrients_en.xls. Accessed 5 June 2021.

TABLE 8. Estimated production and consumption of grain and potatoes in 1810 and 1870, thousand tons

	Grain		*Potatoes*	
	1810	*1870*	*1810*	*1870*
Gross harvest	909	1,880	103	1,361
Seeds	–172	–283	–14	–188
Net harvest	737	1,597	89	1,173
Forage use	–37	–285	–6	–199
Net of import/exports	32	–134	–	–
Transportation, storage and processing losses	–141	–294	–15	–204
Net for human consumption	591	883	68	769
Consumption/capita/year (kg)	249	212	28	185
Consumption/capita/day calories (kcal)	2,116	1,792	62	404

TABLE 9. Estimated production and consumption of meat and milk in 1810 and 1870, thousand tons

	Cows' milk		*Sheep and goats' milk*		*Meat*	
	1810	*1870*	*1810*	*1870*	*1810*	*1870*
Total production	679	1,379	139	171	52	144
Used for calves	–136	–276	–28	–34	–	–
Transportation, storage and processing loses	–102	–207	–21	–26	–8	–22
Available for human consumption	441	896	91	111	44	122
Consumption/capita/year (kg)	184	215	38	27	22	29
Consumption/capita/day calories (kcal)	353	412	98	71	120	184

Our figures indicate a consumption of 3,450 kcal per unit of consumption (adult male equivalent) and day in 1810 and of 3,650 in 1870. Some calories from fish, egg, vegetables, fruit and game meat should be added, but probably not more than 100 per day and capita.[44] Given that a large share of the population did heavy physical work the estimated consumption figures are probable and at a level with nutritional needs. At the same time, it must be remembered that several factors in the calculation are rough estimates.

[44] English estimates range between 0 and 200 kcal/day, see Harris *et al.*, 'How many calories', appendix. Cf. Morell, *Studier*, pp. 194–5.

TABLE 10. Estimated per capita/day calorie consumption of different foodstuffs in 1810 and 1870

	Kcal/capita/day		*Percent of total consumption accounted for*	
	1810	*1870*	*1810*	*1870*
Grain	2,116	1,792	77	62
Potatoes	62	404	2	14
Imported sugar	10	45	0	2
Total vegetables	2,189	2,241	79	77
Cow milk	353	412	13	14
Sheep and goat milk	98	71	4	2
Meat	120	184	4	6
Total animal products	571	667	21	23
Total consumption accounted for	2,759	2,908		

XI

What do these new figures say about Sweden's agricultural revolution? From a nutritional point of view, it may seem the improvements were not that impressive. Swedes had access to slightly more food in 1870 than in 1810 and the share of calories from animal products had increased by two percentage points. The most important change in the food basket was that some of the grain had been substituted for potatoes – an even cheaper vegetable calorie source. More sugar did indeed add a bit of sweetness to people's everyday lives. However, this development was the result of trade and globalization – not of a domestic agricultural revolution.

Once we go beyond consumption, it becomes clear that the agricultural economy changed profoundly. In 1810, virtually all grain was needed to sustain the population. If the harvest failed, only imports could save the population from dearth and hunger. In 1870 the situation was different. A fifth of the net harvest was used to feed the animals. A further tenth was exported. Yet there was enough food to meet the needs of the people. Despite strong population growth, food security had improved drastically.

Within previous research, the agricultural revolution has been defined either from its content or its results. While Encyclopaedia Britannica, for example, describes it as the sum of a number of interrelated transformations (enclosures, new crop rotations and so on), a scholar like Robert Allen understands the agricultural revolution as an increase in both production and productivity.[45] Given the empirical content of this present study, we find Allen's approach most useful, but we believe his definition needs a delimitation against the era of industrial agriculture, in which progress was even more impressive. We define the agricultural revolution

[45] https://www.britannica.com/topic/agricultural-revolution. Accessed 5 Jan. 2022; Robert C. Allen, 'Tracking the agricultural revolution in England', *EcHR* 52 (1999), p. 217. Cf. Overton, *Agricultural Revolution*, p. 193; Gadd, *Svenska jordbrukets*, pp. 11–12.

as *an increase in both production and productivity prior to the point in history when imported fertilizers and fossil fuels freed agriculture from its local ecological constraints*.[46] So, what does the present study say in respect to this discussion?

The most striking feature of the agricultural development in Sweden in the nineteenth century is without doubt the strong quantitative expansion of arable land. In France and the Netherlands, the extent of arable land hardly increased at all after 1800.[47] In England 1800–70, it merely expanded by one-sixth. In Sweden, by contrast, arable land more than doubled in the same period. Compared to many other western European countries, an extraordinary potential for cultivation thus still existed in Sweden around 1800. More land under cultivation meant that much more food could be produced. However, this development did not in itself imply a situation where also productivity grew. The expansion of the acreage of arable land could just as well have led straight into the trap of diminishing returns.

Diminishing returns has been a common topic within the study of agricultural growth since the days of Ricardo. Ricardo's original example was how land reclamation led to falling yields, as more poor land was cultivated. In fact, land reclamation also worried early nineteenth-century Swedish agricultural expertise. Their fear was that the fragile balance between arable farming and animal husbandry would be disrupted.[48] If meadows and pastures were turned into arable, there would be less hay and grass to feed the animals. If the number of animals decreased accordingly, there would be less traction to work the land and less manure to maintain soil fertility. Consequently, yields would drop. Scholars have identified this 'food-feed dilemma' as one of the shackles of Early Modern agricultural growth.[49]

The Swedish development of 1810–70, however, defies these risks. Here, fields and returns increased simultaneously: arable land more than doubled; yield ratios increased by a fifth. Similar tendencies can be discerned regarding animal husbandry. The number of cows increased during the period studied, albeit at a slower rate than land reclamation. Still, the increase in productivity per animal is striking. As referred to earlier, cows in 1810 produced on average about 600 kg of milk per year, but in 1870 about 1,000 kg.[50] The simultaneous

[46] Cf. F. M. L. Thompson, 'The second Agricultural Revolution, 1815–1880', *EcHR* 21 (1968), pp. 62–77.

[47] For a European overview, see Giovanni Federico, *Feeding the World. An economic history of agriculture, 1800–2000* (2005), pp. 33–5; for England, see Harris *et al*., 'How many calories', p. 121.

[48] Gadd, *Svenska jordbrukets,* pp. 235–6. Eli F. Heckscher. *Sveriges Ekonomiska historia. Det moderna Sveriges grundläggning [The economic history of Sweden: The founding of modern Sweden]* (Stockholm, 1949), pp. 222–3.

[49] See for example, Mark Overton and Bruce M. S. Campbell, 'Productivity change in European agricultural development', in Bruce M. S. Campbell and Mark Overton (eds), *Land, labour and livestock: historical studies European agricultural productivity* (1991), p. 2; David Grigg, *Population growth and agrarian change. An historical perspective* (1980), p. 27; Jerome Blum, *The end of the old order in rural Europe* (1978), p. 118; Gadd, *Svenska jordbrukets*, pp. 235–8.

[50] Admittedly, the reconstruction of animal husbandry is based on a less solid empirical basis than the grain production. However, the rapid increase in productivity per animal could hardly be questioned. A solid and complementary evidence is studies on animal prices, which show an even stronger increase *c*.1810–70. See Pablo Wiking-Faria, F*reden, friköpen och järnplogarna: Drivkrafter och förändringsprocesser under den agrara revolutionen i Halland 1700–1900 [Peace, freeholding and iron ploughs: Motivating forces and processes of change during the agricultural revolution in Halland 1700–1900]* Göteborg (2009), pp. 286–9, 298–9; Lars Nyström and Erik Hallberg, 'Two parallel systems: The political economy of enclosures and open fields on the plains of Västergötland, Western Sweden, 1805–65', in *Historia agraria* 76 (2018), pp. 105–6.

increase in population, in agrarian production, in yield ratios, in milk and meat yields per animal, and in food consumption per capita clearly indicate that the agrarian economy had entered a phase in which both land, labour and total factor productivity grew. What had actually happened?

According to contemporary agronomic expertise and agricultural historians alike the two main ingredients in the breaking up of the old agricultural regime were enclosures and convertible husbandry.[51] Through the introduction of new crop rotations that included fodder plants such as clover, farmers could leave the 'food-feed' dilemma behind and enter a positive loop where arable farming and animal husbandry could expand in parallel. Legumes grown on the fields meant more fodder, more fodder meant more animals, more animals meant more manure, more manure meant higher yields and so on. An important factor in the new ecological equation was the fact that legumes such as clover fixated nitrogen, enabling higher yields even as the proportion of land laying fallow was reduced. In order to implement the new crop-rotations, it has been argued that a breaking up of the old territorial organization of the open fields was necessary. In the textbook trajectory of the agricultural revolution, convertible husbandry and enclosures thus walked hand-in-hand.[52]

A closer look at Sweden's agricultural revolution reveals that these developments were just part of the story, however. Both enclosures and convertible husbandry were indeed important; the crux is that the breakthrough of these two processes were rather late. With the notable exception of the fertile plains in the southernmost province of Scania, enclosures in most provinces did not gain momentum until the 1840s, 1850s or even the 1860s. The spread of convertible husbandry was even later. By 1870 many provinces were still in the process of adopting it.[53] Other and earlier developments must, as Carl-Johan Gadd has emphasized, have contributed to the momentum of agriculture.

Gadd highlights the importance of iron ploughs and potatoes.[54] With the iron plough, the number of draft animals needed to plough one hectare of land decreased by up to 50 per cent. Farmers could now double the size of the fields without having to increase the number of horses or oxen.[55] The main advantage of the potato was that it enabled a more productive use of the land: compared to grain, it provided about twice as many calories per acreage.[56]

[51] See for example Blum, *The end of the old order in rural Europe (1978)*, pp. 257–62. Overton, *Agricultural Revolution*, pp. 109–11; Grigg, *Population growth*, pp. 175–6.

[52] Gadd, *Svenska jordbrukets*, p. 285; Overton, *Agricultural Revolution*, pp. 164–7.

[53] On the chronology of enclosures: Staffan Helmfrid, 'The Storskifte, Enskifte and Laga Skifte in Sweden: General features', *Geografiska Annaler* 43 (1961), pp. 114–29; Gadd, *Svenska jordbrukets*, p. 300 (map); on convertible husbandry: Folke Lägnert, *Syd- och mellansvenska växtföljder. De äldre brukningssystemens upplösning under 1800-talet* [*Southern and central Swedish crop rotation. Dissolution of the older cultivation systems during the nineteenth century*] (Lund, 1955); Carl-Johan Gadd, 'Jordbruksteknisk förändring i Sverige under 1700- och 1800-talen. Regionala aspekter', in *Ett föränderligt agrarsamhälle* ['Agricultural technical change in Sweden during the eighteenth and nineteenth centuries. Regional aspects', in *A changing rural society*] (Göteborg, 1998) pp. 198–200. See also Lars Nyström and Erik Hallberg, 'Two parallel systems: The political economy of enclosures and open fields on the plains of Västergötland, Western Sweden, 1805–65', in *Historia agraria* 76 (2018), pp. 85–122.

[54] Gadd, *Järn*.

[55] Ibid., pp. 234–7, 248, 335.

[56] Gadd, *Svenska jordbrukets,* pp. 256–7.

As a consequence of these developments, large amounts of grain previously needed for the population (or used within distilling) were released for other purposes. According to Gadd, the potato was a necessary condition behind Sweden's transition from a grain importing to a grain exporting country after *c.*1830. However, the domestic use of the emerging grain surplus seems to have been even more strategic. Cast in the shadow of the much-highlighted export of grain (mainly oats) to (above all) England, which around 1870 accounted for 134,000 net tons annually, is the estimated 285,000 tons of oats and barley used as feed, more than twice as much as net exports.

The increased use of oats as fodder, that has been largely neglected within research, could be identified as one of the key factors in Sweden's agricultural revolution. This practice opened up a way out of the old 'food-feed dilemma' even before the breakthrough of clover and convertible husbandry. Compared to clover, oats may seem to be the more expensive choice of fodder crop. It is also true that it lacked the capacity of the clover to fixate nitrogen from the air. Oats had however other benefits. In contrast to clover, oats could be cultivated in large quantities without the breaking up of the old cultivation systems on the open fields. In addition, oats could yield decent harvest even with little or no manure.[57]

In animal husbandry, oats was feed of the highest quality. The fact that oats was increasingly used as feed is probably an important reason why the animals were bigger, more expansive and yielded more milk and meat in 1870 than in 1810. Better-fed animals also offered more muscle power. The increased energy output per draft animal was most likely an equally important factor as iron tools for the impressive increase in acreage per draft animal in 1810–70. In addition, bigger animals produced more manure. This should be kept in mind when discussing the increased yield ratios during the same time period.

Arable farming and animal husbandry were never separate entities in Western agriculture. In Sweden during the agricultural revolution, the productivity of livestock farming increased more than the productivity of arable farming. Milk yields increased by two thirds, while grain yields were raised by one fifth. The benefits of land reclamation were thus also taken advantage of within stock raising. While human calorie consumption only improved slightly, there was a massive increase in the feed budget for farm animals. In the end, the fear of the contemporary expertise – that land reclamation would result in shortage of feed and manure and disrupt the ecological equilibrium of agriculture – was turned upside down.

In summary, the massive land reclamation combined with the spread of potatoes and new uses of oats provided Swedish agriculture with sufficient calories in order to reach a new level. Importantly, much of this development took place within the traditional cultivation systems on the open fields. Only gradually, and at a different pace in different parts of the country, were enclosure and convertible husbandry finally adopted.

Then, shortly after 1870, Swedish agriculture entered a new phase, defined by a rapidly increasing imports of fertilizers.[58] This was the first step taken towards a new agricultural

[57] Richard J. Moore-Colyer, 'Oats and oat production in history and pre-history', in Robert Welch (ed.), *The oat crop* (1995), pp. 1–33. Herman Juhlin-Dannfelt and Abraham Sjöström, *Handbok i jordbruksekonomi [Handbook of agricultural economics]* (Stockholm, 1911), pp. 800–5.

[58] For imports of fertilizers, see *Historical statistics of Sweden …*, p. 200. Also imports of oil cakes started to take off in the 1870s and 1880s (p. 199).

economy where food security was made dependent on a constant inflow of nutrients and traction power from outside of the local ecological system.

XII

By virtue of the project, Arable Land in Sweden, accurate calculations of acreages and food production can be carried out for the first time. While researchers previously had to make do with top-down estimates based on price trends, population development, etc., or bottom-up surveys of smaller areas assumed to represent the national level, the project offers a large-scale empirical approach to estimate agricultural production in nineteenth century Sweden.

The project has revised earlier suppositions. Sweden had significantly smaller fields in 1810 and slightly smaller fields in 1870 than expected. The agrarian revolution was thus a relatively faster process than previously thought. The project also shows that the expansion of the arable went hand in hand with an increased productivity – bigger and more productive animals in the barns and higher yields in the fields. In spite of the rapid population growth, the margins of the agrarian economy widened.

This article has highlighted national trends. The database, which is freely available on the Internet, makes it possible to study regional and district level trajectories as well. In this way, even closer studies of developments are made possible, allowing for an ever better assessment of Sweden's agricultural revolution.

'The greatest clothier in the kingdome': estimating the wealth and trading output of John Ashe, clothier-politician, of Freshford in Somerset (1597–1659)*

by John Gaisford

Abstract

'Frome water', a tributary of the River Avon, flows through a valley of woodland, arable and pasture on the Somerset-Wiltshire border, between the towns of Frome and Bradford-on-Avon. In the early modern era, this rural district was nationally important as a broadcloth-manufacturing centre. At least eleven fulling mills operated along the river, and thousands of men, women and children earned at least part of their income from the cloth trade with London and the continent. Using data drawn from contemporary account books and other surviving documents, this article describes the valuable business built up in the 1620s and 1630s by the clothier John Ashe in and around the small village of Freshford in Somerset, traces his growing wealth through the decades of Civil War and Interregnum, and considers his enduring impact on this rural society.

The value and profitability of agricultural landholding in the seventeenth century has interested many historians. Among them, two previous editors of this journal, Joan Thirsk and Richard Hoyle, have made important contributions on the subject. Early in her career, Thirsk described the trade in confiscated royalist lands during the Interregnum and Restoration, and Hoyle has taken a particular interest in wealth-generation by improvement, by tenants as well as landlords, while critiquing the financial exploitation of land assets.[1] Yet the profitability of early modern cloth-making, perhaps the most widespread of the agrarian processing industries,

* My thanks are due to Somerset Record Society (SRS) for encouraging my research into the Ashe family, and transcriptions of their account books, to be published as *Clothiers and merchants of the Spanish cloth trade, 1627–1665*, SRS vol. 101. Also to the History of Parliament Trust for access to draft articles by Andrew Barclay on John, Edward and James Ashe, MPs, for the forthcoming volumes on the 1640–1660 parliaments; and to the editor and referees of this journal for their comments and suggestions.

[1] Joan Thirsk, 'The sales of royalist land during the Interregnum', *EcHR* 5 (1952), pp. 188–207, and 'The Restoration land settlement,' *J. Modern Hist.* 26 (1954), pp. 315–28; Richard Hoyle (ed.), *The estates of the English crown, 1558–1640* (1992) and *id*., 'Some reservations on Dr Ward on "Rental policy of the English peerage, 1649–60"', *AgHR* 40 (1992), pp. 156–9.

frequently conducted in the countryside by landowners who also had farming interests, has not previously been considered in these pages. Indeed cloth-making in the countryside has rarely been discussed here except as an example of by-employment for agricultural workers, although two such analyses have revealed cloth-making and weaving as by far the most common occupations after farming in the rural areas studied by their authors.[2]

The international and domestic trade in cloth has, of course, been closely studied by economic and social historians. These have typically focused on the major themes of product innovation, regulation, technological development, regional distribution, economic cycles, and the social consequences of boom and bust; or on studies of the most prolific cloth-producing areas of the era: Yorkshire, East Anglia, Kent, Berkshire, and – most important of all – the West Country, whose undyed 'white' broadcloths were exported to the continent in vast quantities during the sixteenth century.[3] But the significance of individual cloth entrepreneurs in linking some rural districts far more closely than others to this international economy, and the impact of such men on their local communities, has not often been highlighted.

There have been a few studies of individuals, including brief descriptions of the early Tudor clothiers William Stumpe of Malmesbury in Wiltshire, d. 1552, and John Winchcombe of Newbury in Berkshire, d. 1558; and of the Jacobean merchant-clothier Benedict Webb of Kingswood, now in Gloucestershire but formerly an outpost of Wiltshire, d. *c.*1632.[4] But not even these have made a serious attempt to assess the wealth generated by their subjects, almost certainly because the evidence is insufficient. The purpose of this article is to address that unanswered question by focusing on the career of a single West Country clothier, who left sufficient traces in the documentary record to be studied in some depth. John Ashe is of unusual interest because he developed his business in the 1620s, a decade usually associated with economic crisis and decline, made his fortune supplying fine cloth for the French market in the 1630s, and sustained it through the extraordinarily adverse conditions of the 1640s and 1650s. Analysis of his career illuminates a relatively under-studied sector of the western broadcloth manufactory, as it expanded through innovation, struggled through the disruptions

[2] John Patten, 'Village and town: an occupational study', *AgHR* 20 (1972), pp. 1–16; Sebastian Keibek and Leigh Shaw-Taylor, 'Early modern rural by-employments: a re-examination of the probate inventory evidence', *AgHR* 61 (2013), pp. 244–82.

[3] For economic and social studies, see Negley Harte and Keith Ponting (eds), *Textile history and economic history* (1973); Eric Kerridge, *Textile manufactures in early modern England* (1985); Joan Thirsk, 'Industry in the countryside', in F. J. Fisher (ed.), *Essays in the economic and social history of Tudor and Stuart England* (1961), pp. 70–88; Barry Supple, *Commercial crisis and change in England, 1600–1642* (1964); Paul Slack, *Poverty and policy in Tudor and Stuart England* (1988); Craig Muldrew, '"Th'ancient distaff" and "whirling spindle": measuring the contribution of spinning to household earnings and the national economy in England, 1550–1770', *EcHR* 65 (2012), pp. 498–526. For studies of regional production see H. Heaton, *The Yorkshire woollen and worsted industries* (1920); Michael Zell, *Industry in the countryside: Wealden society in the sixteenth century* (1994); Christine Jackson, 'The Berkshire woollen industry, 1500–1650' (unpublished PhD thesis, University of Reading, 1993); Julia de Lacy Mann, *The cloth industry in the west of England, 1640–1880* (1971); Ken Rogers, *Wiltshire and Somerset fulling mills* (1976); John Gaisford, 'Capital in the countryside: social change in west Wiltshire, 1530–1680' (unpublished PhD thesis, Birkbeck University of London, 2015).

[4] G. D. Ramsay, *The Wiltshire woollen industry in the sixteenth and seventeenth centuries* (1943), pp. 31–7; Christine Jackson, 'Boom-time freaks or heroic industrial pioneers? Clothing entrepreneurs in sixteenth and early-seventeenth century Berkshire', *Textile Hist.* 39 (2008), 145–71; E. E. Moir, 'Benedict Webb, clothier', in *EcHR* 10 (1957), pp. 256–64.

of civil war and privateering in the Channel, and faced strong competition from the clothiers of Leiden in Holland.

I

On 16 March 1643, in the sixth month of the war, the royalist newsbook *Mercurius Aulicus* reported that an important blow had been struck against one of the king's enemies in the West Country:

> Certain news came this day, that Sir Arthur Aston had seized on seven cartloads, one wainload, and 24 horse loads of broad fine cloth, amounting in the whole unto 380 clothes, and that in many of the packs were found some belts and bandaleers, and great store of match, and a considerable sum of money. All which were sent towards London from one Mr Ashe, the greatest Clothier in the Kingdom, as it is conceived.[5]

The victim of this raid, John Ashe of Freshford, had recently emerged as one of the most vigorous parliamentary leaders in the west. Elected MP for Westbury in Wiltshire to both the Short and Long Parliaments, he had attracted attention in August 1642 as one of the deputy-lieutenants for Somerset who raised 'the power of the county' against troops led by the Marquess of Hertford and Sir Ralph Hopton at Wells and forced them to retreat into Dorset.[6] Ashe would become chairman from August 1643 to March 1650 of the Goldsmith's Hall committee for compounding with royalists and delinquents, and MP for Somerset in Cromwell's Protectorate parliaments.

Political historians have noted the funds Ashe raised for parliament in the 1640s and his support for Cromwell in the late 1650s, well documented in the parliamentary journals and state papers.[7] His career as a clothier, however, which spanned some four decades from around 1620, has not been so closely examined. While he is well known as an early producer of the expensive fabric known as 'Spanish medley cloth', a lightweight broadcloth made from pre-dyed wool – of mixed colours – the scale of his output has only ever been summarized, most notably by Julia de Lacy Mann in her authoritative account of the West Country cloth industry from the seventeenth to the nineteenth century:

> John Ashe of Freshford, who was said in 1656 to have £3,000 per annum and to be worth £60,000, sent up to his brother [Edward, a London merchant] between April 1640 and April 1641, 682 cloths valued at £12,400, and in the following year 761 valued at £13,407; and this may not have been the whole of his production.[8]

[5] P. Heylin, *Mercuricus Aulicus* (1643–5), p. 137. The munitions and money were presumably intended for the defence of London.

[6] Ashe wrote two accounts of this exploit, which were both printed by order of parliament: *A perfect relation of all the passages and proceedings of the Marquess Hartford, the Lord Paulet, and the rest of the cavalleers that were with them in Wels*, written on 7 August 1642 in Freshford; and *A second letter sent from John Ashe*, written there the following day.

[7] David Underdown, *Pride's Purge: Politics in the Puritan Revolution* (1971) and *id.*, *Somerset in the Civil War and Interregnum* (Newton Abbot, 1973); John Wroughton, 'John Ashe (1597–1659)', *ODNB*.

[8] Mann, *Cloth industry*, p. 91.

Such figures are easily skimmed over in a reference work, but these are huge sums for the period and worthy of deeper consideration. The business historian Richard Grassby found that very few of London's wealthiest seventeenth-century aldermen could command a fortune as high as £50,000, and only six exceeded £100,000.[9] It seems unlikely, then, that many clothiers could have reached a worth of £60,000. So how did Ashe achieve it? Mann's authority, the MP and diarist Thomas Burton, tells us 'per clothing'.[10] But could one really amass such a huge fortune on trading revenues of £12–13,000 per year? And is the annual output of about 700 cloths or more suggested by Mann's summary credible in the mid-seventeenth century? (Elsewhere she tells us that 200 cloths per year was a sizeable output 50 years later.)[11] Can we square the estimate of 700 cloths per year with the capture by Aston of 380 cloths in a single convoy? Or should we conclude with the Bath historian John Wroughton that – contrary to the newsbook report that all were sent from Mr Ashe – the seized convoy included cloths dispatched by other producers?[12]

None of John Ashe's own trading accounts survive, but account books produced by his clothier father, James Ashe of Westcombe in Somerset, and by his brothers, Edward and Jonathan Ashe, cloth merchants in London, were deposited in Chancery in 1681 during an inheritance dispute.[13] Edward Ashe's ledger for 1640–43 is the source of Mann's figures quoted above, and other account books in the same deposit have been used anecdotally by a few cloth trade historians.[14] But, analysed systematically, the accounts can give a much fuller picture of John Ashe's trade. In the following pages are set out first a summary of his career, in the context of the West Country cloth manufactory and politics; then an analysis of the financial data relating to him that can be drawn or inferred from the Ashe family accounts; and finally a brief assessment of the trading output and wealth of this notable clothier-politician, and his impact on society in rural east Somerset.

II

In 1685, John Aubrey made notes of 'A Digression from Samuel Ashe of Langley Burrell Esq', a younger brother of John Ashe. According to these notes, Samuel had told Aubrey that 'Benedict Webb of [Taunton in] Somersetshire was the first that made medley cloths ... Mr John Ashe of

[9] Richard Grassby, 'The personal wealth of the business community in seventeenth-century England', *EcHR* 23 (1970), p. 227. Grassby's subjects are predominantly London merchants.

[10] J. T. Rutt (ed.), *The diary of Thomas Burton Esq* (4 vols, 1828), I, p. 127.

[11] Mann, *Cloth industry*, p. 33n.

[12] John Wroughton, *An unhappy Civil War: the experiences of ordinary people in Gloucestershire, Somerset and Wiltshire, 1642–1646* (Bath, 1999), p. 153. Wroughton cites reports in parliament that cloths seized at Reading had been returned to other clothiers, but not to Ashe: *House of Lords Journal*, 5, 24 March 1642/3 and 6, 15 April 1643.

[13] Goodall v Dutell: TNA, C 107/19. The litigants were the widow of Jonathan Ashe, remarried as Rebecca Dutell, and her younger sister Mary Goodall. The dispute concerned the estate of their brother Thomas Leaver, an East India merchant for whom Jonathan had served as custodian and executor. Most of the 13 account books exhibited by Rebecca are unrelated to the dispute, which is described fully in A. L. Brock and M. Ewen, 'Women's public lives: Navigating the East India Company, parliament and courts in early modern England', *Gender and Hist.* 33 (2021), pp. 3–23.

[14] Mann cites TNA, C107/20/3, fos 22, 45, 72, 92, 100. See also Supple, *Commercial crisis*, p. 151 fn.; Ken Rogers, 'Paul Methuen (1613–1667)', *ODNB*; Gaisford, 'Capitalism in the countryside' pp. 160–2, 192–4.

Freshford was the second that made medleys, who improved the art and got a great estate by it *tempore Caroli primi*.'[15]

As Esther Moir first revealed, Benedict Webb (1563–1632?), later of Kingswood in Gloucestershire, was a remarkable entrepreneur. Apprenticed to a London linen draper, he served as a factor in Rouen and Paris during the 1580s. Back in England by 1589 he began producing a smooth, lightweight, medley broadcloth in 'divers and sundry colours', which were created not by a combination of dyes but by blending dyed wool of different colours before spinning.[16] By the turn of the seventeenth century Webb's medley broadcloths were being sold at a high price in London's Cheapside by the Mercer William Stone, who named them 'Spanish' cloths.[17] Moir noted that Webb had a brother named Robert, but did not identify him as the clothier Robert Webb of Beckington, Somerset, just a few miles south of Freshford; nor did she note that Robert's grandson sold his estate to John Ashe, or that John's brother Edward married Benedict's granddaughter, Elizabeth Joliffe.[18]

These connections, however, highlight that (and perhaps how) Webb's innovation spread south and east from Gloucestershire into Somerset, and especially to 'Frome water' – the valley of the River Frome, which flows into the Avon at Freshford. The springs flowing into the Frome from the Mendip Hills, like those of the Cotswolds around Kingswood, produced water soft enough to be suitable for dyeing.[19] It is likely that the Freshford landowner Henry Davison, who bought the local fulling mill in 1612, became aware of this, and took advantage by bringing John Ashe to Freshford as his son-in-law and eventual successor.[20] Freshford itself was a small village of perhaps 50–60 households, and a population of 250–300 in mid-century, located in a deep, wooded valley between towns of Frome and Bradford-on-Avon, with a stone bridge spanning the Frome just below the mill.[21] Steep, narrow lanes gave Freshford mill access to Bath and Bristol in the west, and to Trowbridge, Reading and London in the east. A mile or so west of the village, an important north-south route led via Frome and Warminster to Salisbury and the Channel ports.

Ashe's origins were in a different area from Webb's: near Shepton Mallet in Somerset, where there was a long tradition of making coloured cloth. He had been brought up at Westcombe, about 20 miles southwest of Freshford, where his father James was a clothier, and perhaps

[15] Moir, 'Benedict Webb', p. 256, citing Bodleian Library, MS Aubrey 2, fo. 144, (author's italics).

[16] Moir, 'Benedict Webb', p. 257; Mann, *Cloth industry,* p. xv.

[17] Mann, *Cloth industry*, p. xvii. Stone died in 1607: TNA, PROB 11/110/269. The term 'Spanish cloths' has caused confusion because of the widespread but incorrect assumption that they were always made with Spanish wool: Mann, *Cloth industry*, pp. xiv–xvii. While Spanish wool was certainly imported in increasing quantities by the mid-seventeenth century, the name 'Spanish cloth' seems at first to have described not the wool used, but the colour, quality and lightness of the cloth.

[18] TNA, C 3/294/81; *The visitation of the county of Worcester … 1682–3*, ed. W. C. Metcalfe (Exeter, 1883), pp. 65–6.

[19] J. Gaisford, 'Elizabethan entrepreneurs: three clothiers of the Frome valley, 1555–1600', in James Bowen and Alex Brown (eds), *Custom and commercialisation in English rural society* (2016), pp. 203–24; Mann, *Cloth industry*, p. 10, citing R. P. Beckinsale, 'A geographical survey of the textile industries of western England', (unpublished PhD thesis, University of Oxford, 1949).

[20] Rogers, *Woollen mills* (1976), p. 195.

[21] Alan Dodge, *Freshford: the history of a Somerset village* (2000), p. 76. At the end of the eighteenth century, Collinson described the landscape as 'well cultivated, and rendered picturesque and romantick by a pleasing intermixture of hills, woods, glens, and deep vallies': J. Collinson, *The history and antiquities of the county of Somerset* (3 vols, Bath, 1791), I, p. 124.

tenant of a fulling mill on the River Alham; another branch of the Davison family lived in the same village.[22] The Ashe family had manufactured dyed blue cloth for some generations. As early as 1539, a Thomas Ashe of Batcombe (of which Westcombe was a tithing) had bought Toulouse woad from the Bristol merchant John Smythe, and supplied him with 'penny hews' at £3 10*s*. per cloth.[23] James Ashe made coloured cloth at Westcombe: in 1610 he had ordered 12 cwt of woad from Henry Sherfield of Salisbury.[24] James would have been well aware of opportunities along the Frome.

John Ashe's marriage to Elizabeth Davison by 1621 joined the dyeing techniques of Westcombe to the spinning, weaving and fulling assets of Frome water. Ashe also brought other advantages to the match. His brother Edward was already in London, an apprentice Draper who became free in 1624 and soon bound apprentices of his own at premises in Canning (now Cannon) Street.[25] This gave John Ashe access to both domestic and overseas markets. He was evidently successful from the start. Within four years of his marriage, in 1625, he bought the Freshford mills, a 'mansion house' and 44 acres of arable land, meadow and pasture from his father-in-law.[26] The house, of which fragments remain, stood beside the watermills about half a mile from the village. It was a typical West Country manor house, built of limestone with mullioned windows, with two storeys plus attics and two projecting bays with gables; in 1665 it was rated as having 11 hearths.[27] With outbuildings for cloth-making and agricultural uses, it would have served as a farmhouse as well as home to Ashe's family and servants.[28] The mill buildings housed a corn mill for grain as well as fulling stocks for cloth.[29]

In 1630 Ashe enlarged his Freshford estate with two messuages, seven cottages and 66 acres bought from his father-in-law.[30] These were hard times for the white broadcloth trade, with a deep recession in 1620–24 and a complete breakdown of trade with Flanders in 1630–31 impoverishing many in west Wiltshire and east Somerset. In November 1630 a large crowd seized seven sacks of grain from a packhorse train on Midford Hill, a mile or so west of Freshford itself.[31] But John Ashe was clearly flourishing. He must in most years, if not in 1630, have provided a significant level of local employment well beyond the small village of Freshford, as well as purchasing large quantities of wool from local farmers.

As demand for Spanish cloth grew rapidly, John and his father James at Westcombe refined their range of colours and commissioned the dyers, wool-sorters, spinners and weavers of

[22] M. Bodman, 'Mills along the Alham', *Somerset Industrial Arch. Soc. Bull.* 86 (2001), pp. 16–25. Wiltshire and Swindon History Centre [hereafter WSHC], 221A/27/7 (1622) and Somerset Heritage Centre [hereafter SHC], DD\BR\lw/4 (1624) both name a Thomas Davison of Westcombe, gent.

[23] J. Vanes (ed.), *The ledger of John Smythe, 1538–1550* (Bristol Rec. Soc., 28, 1974), pp. 70–1.

[24] J. H. Bettey, *Wiltshire farming in the seventeenth century* (Wiltshire Rec. Ser., 57, 2005), pp. 283–4.

[25] 'Records of London's Livery Companies Online Apprentices and Freemen, 1400–1900', www.londonroll.org.

[26] WSHC, 1742/1608. A 1628 document clarifies that Ashe held the property 'in fee': TNA, C3/394/44.

[27] The house can clearly be seen in a nineteenth-century painting reproduced in Dodge, *Freshford*, p. 187; TNA, E 179/256/16.

[28] There was a farm associated with the mill site until the end of the eighteenth century: Dodge, *Freshford,* p. 63.

[29] The mills were specified when Davison bought them in 1612: WHSC, 1742/2865.

[30] WSHC, 1742/1608, 1609.

[31] Supple, *Commercial crisis*, pp. 53–8, 116; Buchanan Sharp, *In contempt of all authority: rural artisans and riot in the west of England, 1586–1660* (Berkeley, 1980), pp. 28–9.

Frome water to produce medley cloth to a high standard. The Cloth Sales book of James Ashe records that by 1632 he was sending cloths to several merchants in London in colours described as mussel, wheat, peach, columbine (dove grey), blackberry and beaver, produced by about seventy different suppliers.[32] The cloths were produced in grades, or 'marks' of fineness, ranging from coarser red marks, with around 1,800 warp threads, through blue, mixed, white and green marks, all the way up to 'superfine' yellow mark cloths, with as many as 2,400 threads, and were priced accordingly, from around 14*s*. per yard up to 22*s*. and higher. The length of Spanish cloth was standardized for customs assessment at 25 yards, the width at 6 'quarters' (4 feet 10½ inches), and the weight at 43lbs.[33]

By 1633 John Ashe had outstripped his forerunner, Benedict Webb, who had fallen into severe financial difficulties at Kingswood and was perhaps already dead.[34] That year, Robert Webb's grandson and heir, also Robert, came into his estate at Beckington and sold it to John and Edward Ashe, together with the corn and fulling mills, for the substantial sum of £7,550.[35] This large investment suggests that John Ashe was generating a substantial surplus. In the same year, James Ashe took a mortgage on the manor of Wingfield, with a fulling mill at Stowford, on the Frome between Beckington and Freshford.[36] These investments constituted a major advance for the Ashe family, extending their influence almost to the town of Frome.

As their output grew, John Ashe and his father became major employers in the villages along Frome water. In 1634 they assured the Privy Council during a trade investigation that 'by making [of Spanish cloth] ... the materials are improved to a higher value, and more labour afforded poor people than by any other drapery ever invented.'[37] In January 1637, when John Ashe was summoned to London during a Privy Council investigation into the circulation of puritan tracts, he was permitted to return to Somerset because 'thousands of poor people, his workfolks' were dependent upon him.[38] Later the same year, with five other West Country clothiers, Ashe petitioned against a ban on the import of foreign soap, declaring it essential for the production of Spanish cloth.[39] Also in 1637 he acquired a mansion house and lands at Shaw, in Wiltshire.[40]

Increasingly John and his brother Edward were drawn into politics. In 1640 they bought the manor of Westbury Mauduits, some five miles east of the River Frome, in Wiltshire, and (for £3,000) the nearby manor of Heytesbury, on the road from Westbury to Salisbury.[41] That same year John Ashe was elected MP for Westbury to both the Short and Long Parliaments, and Edward was returned for Heytesbury to the latter.[42] It is reasonable to assume that their growing prosperity – and their need to protect it – lay behind their strong identification with

[32] TNA, C 107/20/1.

[33] *The rates of marchandizes as they are set downe in the book of rates, for the custome and subsidie of poundage, and for the custome and subsidie of clothes* (1635).

[34] Gloucestershire Archives [hereafter GA], D12960/1. Webb is last heard of alive in January 1632.

[35] GA, D2700/NR/12/2. The lordship of Beckington included the 'suit of the tenants and farmers of the messuages, cottages and lands within the manors of Beckington unto the said mills.'

[36] TNA, CP 25/2/527/9CHAS1Easter.

[37] J. Bruce (ed.), *Calendar of State Papers Domestic [hereafter CSPD], Charles I, 1634–5* (1864), p. 24.

[38] Bruce, *CSPD, Charles I, 1636–7*, pp. 393–4.

[39] TNA, SP 16/366, fo. 138.

[40] *Victoria County History* [hereafter *VCH*], *Wiltshire,* VII, 'Melksham: Manors'.

[41] *VCH Wiltshire*, VIII, 'Westbury: Manors'; TNA, CP 25/2/511/15CHASMICH.

[42] A. P. Barclay, 'John Ashe (1597–1659)' and 'Edward Ashe (1599–1656)', in *History of Parliament: House of Commons* [hereafter *HoP*], *1640–1660,* draft.

the parliamentary cause. In Clarendon's view they exemplified the 'people of inferior degree, who by good husbandry, clothing and other thriving arts, had gotten very great fortunes,' who led the rebellion in the West Country.[43]

In July 1643, Bristol fell to Prince Rupert's army and control of the Frome valley passed to the Royalist garrison at Farleigh Hungerford, just three miles south of Freshford. John Ashe and his father James moved their households to London and settled in Fenchurch Street, where Edward acquired a large house and storerooms, formerly the Fullers' Hall, the following year.[44] For two years their trade was interrupted; but Bristol was recaptured by parliament in September 1645 and by the spring of 1646, with the roads to London safe again for trade, both households had returned to Somerset.[45] James Ashe, in his sixties now, never resumed production; but cloth-making slowly revived at Freshford. The business must for long periods have been managed by John's wife Elizabeth or a trusted agent, since John Ashe remained in London for much of each year, until at least 1650.[46] The parliamentary cause was unquestionably a major drain on both his time and his financial resources – in 1646 he petitioned for the repayment of £9,400 that he and others had laid out to support the armies in the west.[47] Yet he remained a powerful and influential figure.

During the 1640s and early 1650s, Ashe invested avidly in property. In 1647 he acquired the manor of Freshford, and two years later a 23 acre meadow with a sheep-house on the west bank of the Frome.[48] To provide long-term security for his children (as many as seven sons and five daughters survived to maturity and beyond), he also acquired several estates in Wiltshire, including lands at Fyfield which became the seat of his eldest son James, a lawyer and MP for Bath; the manor of Longstreet bought from the same owner, Henry Cuss; and the rectory manor of Melksham, formerly held by the dean and chapter of Salisbury, in 1650, when cathedral lands were being sold off by Parliament at just ten years' purchase, or annual income.[49] Two further properties had been owned previously by the sequestered royalist James Ley, third Earl of Marlborough, who was obliged to part with the small manor of Heywood near Westbury in 1648 and his ancestral home of Teffont Evias near Salisbury in 1652.[50] In

[43] E. Hyde, Earl of Clarendon, *History of the rebellion and civil wars in England*, ed., W. D. Macray (6 vols, 1958), II, Book 6, s.5.6.

[44] Clothworkers' Company Archive, CL/b/1/8, fo. 97v.

[45] TNA, C 107/20/4, fo.10 left. John Ashe himself, however, returned only for three weeks, 'for the ordering my affairs, and setling my Estate there': John Ashe, *An answer to divers scandals* (London, 1654), p. 69.

[46] Edward Martyn is named as John Ashe's 'servant' on several occasions during these years and witnessed John Ashe's will in 1657. Another 'faithful servant', John Brownjohn of Holt, was an overseer to the will: TNA, PROB 11/293/280.

[47] With interest, the total claim amounted to £10,920: J. Stowell, *The vindication of Sir John Stawell's remonstrance* (London, 1655), p. 11; Cambridge Univ. Lib., MS Add. 89, fols 110–11.

[48] WSHC, 1742/2891; Colin Brett, *The Manors of Norton St Philip and Hinton Charterhouse, 1535–1691* (Somerset Record Society, 93, 2007), p. 460.

[49] *VCH Wiltshire*, XVI, 'Milton Lilbourne: manors'; A. P. Barclay, 'James Ashe, c.1625–1671', *HoP 1640–1660*, draft; TNA, PROB 11/205/356; *VCH Wiltshire*, XI, 'Enford: Manors'; *VCH Wiltshire*, VII, 'Melksham: Manors'; C. H. Firth and R. H. Raitt (eds), *Acts and ordinances of the Interregnum,* II, 30 Apr. 1649.

[50] Edward Ashe's cash book records a payment to the Earl of Marlborough of £171 'in full' for the 'Manr of Harwood' on 20 Mar. 1648: TNA, C 107/17/5, fo. 16 right, but this was perhaps just a final instalment. Teffont Evias was acquired in 1652: TNA, CP 25/2/608/1651/52HIL; *VCH Wiltshire*, XIII, 'Teffont: manor'. In Apr. 1652 Ashe committed to pay the earl an annuity for life of £250: TNA, C 5/521/49.

1642 Ashe, his father and Edward had also invested a total of £1,200 in parliament's Adventure for Lands in Ireland, which in 1654 yielded John and Edward a large estate in the barony of Clanwilliam, in Co. Tipperary.[51] At his mother's death in July that year John inherited his father's leasehold lands in Westcombe.[52]

Ashe's defeated Royalist opponents saw injustice in his conduct as chairman of the Committee for Compounding, and in the awards made to him by parliament. As one wrote bitterly: 'John Ash had given to him out of Master Coventries composition 4000l out of Sir Edward Mosleis 1000l out of Mr Edward Phillips 1200l out of Sir John Stowels Estate 8000l and (which is worth all this) was the great Chairman at Goldsmiths Hall (is not this better than Clothing?)'[53] The awards cited had been granted by parliament to repay Ashe's loans and disbursements, but the accusation that he had been enriched by his chairmanship of the Committee was stinging.[54] In 1646 John Ashe became embroiled in a public feud with Sir John Stowell, the leading royalist in Somerset, who was charged with treason that year after spending several years in Newgate for refusing to compound. Among many other complaints, Stowell accused Ashe of attempting to buy a property in Wiltshire from him for less than half the price Stowell had paid, and of inflating the loans and disbursements claimed from Parliament.[55] Ashe denied both allegations, but a similar accusation was made after the Restoration by Samuel Cuss, heir to the former owner of the Fyfield estate, who claimed his father had been prevented from recovering the property, first conveyed only by mortgage in 1648:

> so it is that said John Ashe being powerful in the late times & the said William Cuss being low in estate & having been always in the service of the late king against the Parliament either the said John Ashe did refuse to perform his promise or the said William Cuss durst not not press him thereunto.[56]

Despite the demands of their commercial interests, both John and Edward Ashe continued to serve in the Rump parliament until 1653. Edward's career as an MP ended then; he was elected alderman for Vintry ward later the same year, but died in 1656.[57] John was elected for

[51] R. P. Mahaffy (ed.), *Calendar of State Papers, Ireland, Charles I, 1642–59* (1903), p. 157; *id.* (ed.), *Calendar of State Papers, Ireland, Charles I, 1647–60* (1903), pp. 517, 523.

[52] TNA, PROB 11/196/50. That was the full extent of John's inheritance from his father. His mother Grace Ashe's residuary estate was left to John's younger brother, Samuel: WSHC, 118/108.

[53] *A List of the names of the members of the House of Commons ... together with such summes of money, offices and lands, as they have given to themselves, for service done, and to be done, against the King and kingdome* (London, 1648), no. 37.

[54] 'Order of the House of Commons of 17 July that the fines of Sir Edward Mosely, John Coventry, and Sir John Stowell, be paid John Ashe and others for engagements and disbursements of the State, amounting to 10,920 *li*; any overplus remaining after expenses to be paid Ashe for losses and damages': M. A. E. Green, (ed.), *Calendar of the proceedings of the Committee for Compounding with Delinquents* (5 vols, 1889–93), I, 30 July 1645. In 1654, however, Ashe claimed that he was still owed £5,000 because Stowell had refused to compound: J. Ashe *An answer to divers scandals* (London, 1654), p. 10.

[55] The property was the manor or farm of Avebury in Wiltshire, which Stowell had bought for £8,000 in 1640. Ashe denied the accusation both at Stowell's trial and by pamphlet: J. Stowell, *The humble remonstrance of Sir John Stawell* (London, 1653), p. 28, and *Vindication*, pp. 14, 30; Ashe, *An answer* (1654), pp. 9, 17.

[56] TNA, C 9/40/24 (1668). Samuel Cuss was a younger son of Henry Cuss, d. 1648; William his elder brother.

[57] A. B. Beaven, *The Aldermen of the City of London* (2 vols, 1908–1913), II, p. 82.

Somerset to the Protectorate parliaments of 1654 and 1656.[58] Throughout the decade a younger brother, Jonathan Ashe, handled the day-to-day business in London, while much of John's work as a clothier must again have been delegated, since even when he was in Somerset he now had many responsibilities as a JP.[59] In December 1658 John Ashe was elected to Richard Cromwell's parliament, this time for Edward's old seat of Heytesbury, but soon afterwards fell ill and did not recover.[60] He was buried at Beckington on 26 February 1659.[61] His widow Elizabeth and a younger son, Edward, kept cloth production going at Freshford until 1660; in London, Jonathan Ashe continued as a merchant until May 1665.[62]

III

No accounts survive for the first part of John Ashe's long career – the two decades from his arrival in Freshford until 1640, when he was establishing his position as the leading clothier of east Somerset. For this period the only relevant documents that survive are the Cloth Sales account of his father, James Ashe, and two summary accounts provided to James by Edward Ashe.[63] The absence of accounts specific to John Ashe means that it is impossible to track his early progress; but it is evident from Edward Ashe's ledger of 1640–43 that by 1640 John had overtaken his father. Since James's accounts are the only benchmark we have for estimating John's early output, the Cloth Sales account from 1627–43 is summarized in Table 1.

Perhaps the most notable features of Table 1 are the volatility of the early years, from 1627 to 1632, including the complete lack of sales in 1630 when Flanders was closed to English merchants; the lean years of the mid-1630s; and the strong revival from 1638 until the first months of 1643, before James' business ceased at the start of the Civil War. At first, James's London customers were evidently supplying Antwerp rather than Paris, but this changed during the 1630s as James supplied an ever-greater share of his output to Edward. The table makes clear the scale of James's business, with annual output frequently under 200 cloths, and exceeding 400 cloths in only two years, 1632 and 1639. The average value per cloth over the whole period comes to £17 5*s.* 4*d*.

From 1640 onwards, there are detailed sources for calculating John Ashe's own output. The most important are the Great Ledger of Edward Ashe, covering the three years from April 1640 to February 1643; his Cash Book for 1646–55, when Edward and Jonathan Ashe operated as a partnership held two thirds by Edward and one third by Jonathan; and two journals compiled by Jonathan for 1645–51, as junior partner to Edward, and for 1656–60, as a sole trader after Edward's death, referred to below as Journals A and B.[64] The ledger and journals record *inter alia* the cloths sent from Freshford to Edward and Jonathan in London, and the goods they bought and sent to Somerset; the cash book records income received from customers, and payments to suppliers, including payments to John Ashe or made on his behalf.

[58] Barclay, 'John Ashe'.

[59] E. H. Bates-Harbin (ed.), *Quarter sessions records for the county of Somerset: Commonwealth* (Somerset Record Society, 28, 1912), p. 10.

[60] Barclay, 'John Ashe'.

[61] The register entry reads 'John Ashe Esq, Landlord of Beckington, being the age of sixtie one years'.

[62] TNA, C107/18/1; C 107/20/5.

[63] TNA, C 107/20/1; C 107/17/1 & 2.

[64] TNA, C107/20/3, inscribed 'Groot Boeck', Flemish for 'great book' or 'great ledger'; TNA, C 107/17/5; TNA, C107/20/4 and C107/18/1.

TABLE 1. James Ashe's cloth sales by year, volume and value

	Units	£	*s.*	*d.*	
1627 (7 months)	111	2007	6	11	
1628	317	5985	17	7	
1629	188	3453	12	4	
1630	0	0	0	0	
1631	173	2514	15	7	
1632	420	6871	1	10	
1633	219	3728	16	1	
1634	129	2954	19	6	
1635	138	3068	2	6	
1636	121	2229	14	9	
1637	82	2028	17	6	
1638	365	3270	8	6	
1639	413	7799	1	3	
1640	329	5949	5	3	
1641	304	5731	18	6	
1642	347	5838	16	0	
1643 (3 months)	154	2356	14	0	
Total	3810	65,789	8	1	average value £17 5*s.*

Source: TNA, C 107/20/1.

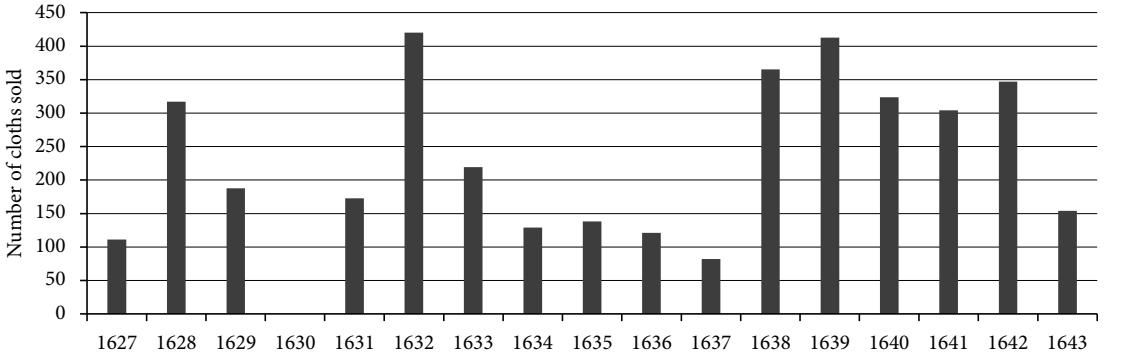


FIGURE 1. James Ashe's cloth sales by volume, 1627–1643

Through these accounts, we can track the commercial progress of a highly labour-intensive operation that began with the clothier's purchase of large quantities of wool and dyestuffs. For Spanish cloth the wool was dyed first, then the fibres were mingled to create the required colours – both were specialist jobs, perhaps carried out at Freshford. Hundreds of local women and girls working at their own homes would have been needed for spinning. They received or collected the wool from Freshford and returned it as yarn, which in turn was supplied to

dozens of weavers – men working in pairs, with a boy to help them. After two or three weeks the woven cloths were brought back to the fulling mills at Freshford, Stowford and Beckington to be washed and felted, rinsed clean, measured and hung out to dry; then sheared to a smooth nap, pressed, folded, numbered, and packed for dispatch to London, a journey of about four days, by wagon, cart and packhorse.

On arrival at King's Arms Yard at Holborn Bridge, where the Freshford carrier stabled his horses, the packs were unloaded from the larger vehicles and taken to Edward's warehouse in Fenchurch Street. There the cloths were checked, measured again and stored on shelves beside those from other suppliers. Faulty or damaged cloths were sent out for repair by members of the Clothworkers' Company, whose hall was close by, just south of Fenchurch Street. When orders were received, the cloths were packed in bales painted with Edward's merchant mark and carted across London Bridge for dispatch to the Channel ports of Dover, Rye or Lewes. There an agent arranged for them to be loaded aboard hoys bound for France, and paid the customs duty and harbour and town dues. Unloaded at Dieppe or Rouen, the cloths were then carted, or shipped up the Seine, to Paris, where Edward's most important customers by far were Marie Moulard and her husband Nicholas Héron of the rue St-Honoré beside the Louvre, and Jacques and Nicholas Le Couteulx of the rue de la Grande Truanderie in Les Halles.[65] The whole journey from London to Paris might take a week or more, during which risk in the goods passed from seller to buyer when the bales were laded in the English port.[66]

Payment from these customers was made in a steady flow of bills of exchange sent from Paris and drawn on other London merchants. These were entered on the debit, left-hand, side of Edward's ledger and cash book, and the proceeds were kept securely at Fenchurch Street or placed on deposit. With the dangers of inland transport during this period, Edward rarely sent cash to his main suppliers in the west; instead he kept their revenues on account and made numerous part-payments of sums up to £200 or so to John Ashe and his servants when they were in London. He also paid merchants in the City on John's behalf, and bought supplies of wool, oil and soap for dispatch to Freshford, along with household items such as newsbooks, sugar, tobacco, wine and – occasionally – sturgeon and neats' (ox) tongues.[67] Many smaller entries in the cash book relate to payments made to or on behalf of John Ashe's children when they came to live in London. All these payments were entered on the credit, right-hand, pages; and a balance was calculated at the end of every month. The account was always kept in credit. As Craig Muldrew has noted, it was crucial for merchants to ensure that there was sufficient cash on hand to meet anticipated demands and thus maintain a reputation for financial stability.[68]

The records in the Great Ledger reveal for the first time the scale of John Ashe's trade with Edward, and allow us to compare his output with his father's: the respective figures are set out in Table 2.

[65] R. H. de Villefosse, *Les Halles: de Lutèce à Rungis* (Paris, 1973), pp. 176–7; M. Zylberberg, *Capitalisme et catholicisme dans la France moderne: La dynastie Le Couteulx* (Paris, 2001), pp. 241–2. In 1650 the Le Couteulx company moved to new premises in the rue Neuve-St-Honoré, now the rue Faubourg-St Honoré, north of the Champs Elysées: *ibid*.

[66] The only cloths on which sea freight was charged were a very few sent at the Ashes' own risk.

[67] The oil was used in preparing the wool, spinning and weaving; the soap for cleansing the woven cloths.

[68] C. Muldrew, *The economy of obligation* (1998), pp. 61–2.

TABLE 2. Cloths bought by Edward Ashe, 1640–43

	Units	£	*s.*	*d.*	*Average value*	
					£	*s.*
James Ashe						
1640 (9 months)	207	3677	7	0	17	15
1641	291	5401	1	0	18	11
1642	333	5634	4	0	16	18
1643 (2 months)	54	807	8	0	14	19
Total	885	15,520	0	0	17	10
John Ashe						
1640 (9 months)	469	8553	0	0	18	4
1641	683	12,292	10	0	18	0
1642	604	10,140	0	0	16	16
1643 (2 months)	116	1791	10	0	15	8
Total	1872	32,777	0	0	17	10

Source: TNA, C 107/20/3.

There are three key points to take from these figures. First, that in this period John's trade with Edward was approximately double the size of his father's, both by volume and by value. Second, that his annual trade when calculated by calendar year was somewhat lower than suggested by Mann's 'annual' figures of 682 and 761 given above; part of the reason being that hers were not true annual figures.[69] John Ashe's average output for the only two full calendar years in the ledger was 643.5 cloths, at average annual value of £11,216. The third point is that the accounts make it inconceivable that the 380 cloths seized by Sir Arthur Aston in mid-March 1643 had all been sent by John Ashe. The 116 cloths received by Edward in January and February that year were entered in his ledger in three fortnightly consignments of 48, 30, and 38 cloths, the last of them recorded on 16 February. So John had not been building up a large stockpile, to ship in one well-protected convoy. It is far more likely that the intercepted consignment, due in London by the first week in March, was again of 30–40 cloths – just a tenth of the stocks seized by Aston. The mid-February delivery was the last consignment from John Ashe to reach Edward and be recorded in the ledger.[70]

From 1646 onwards, John Ashe's consignments to his brothers are recorded in Journals A and B, with a gap between them of nearly five years from October 1651 to July 1656 for which we have only the Cash Book records of payments on account until December 1655. The volumes and values in the journals are set out in Table 3, and the values from the Cash Book in Table 4. It can readily be seen in Table 3 that production at Freshford recovered slowly after

[69] As Mann's footnote acknowledges, the first 'year' covered a thirteen-month period, from April 1640 to April 1641: Mann, *Cloth industry*, p. 91 fn. The exact period of the second is not clear.

[70] TNA, C107/20/3, fo. 92. The entries on fo. 100 of the ledger predate this account.

TABLE 3. John Ashe's cloths purchased by Edward and Jonathan Ashe, 1646–60

	Units	£	*s.*	*d.*	*Average price*	
					£	*s.*
1646	21	380	7	6	18	2
1647	242	5355	6	6	22	2
1648	516	11968	15	8	23	4
1649	342	7609	18	4	22	5
1650	411	9256	13	0	22	10
1651 (10 months)	344	8166	8	6	23	15
Sub-Total: 1646–51	1876	42,737	9	6	22	16
No records October 1651–July 1656						
1656 (6 months)	81	2452	12	7	30	6
1657	160	4445	16	8	27	16
1658	96	2746	14	0	28	12
1659 (2 months)	44	1388	5	9	31	11
1660	2	41	8	6	20	7
Sub-Total: 1656–60	383	11,074	17	6	28	18
Total: 1646–60	2259	53,812	7	0	23	16

Sources: TNA, C 107/20/4, C 107/18/1.

the household returned to Somerset, which is hardly surprising since the property had been under royalist control – any stock remaining in 1643 would have been seized and sold.[71] Output rose to a high point of just 516 cloths in 1648, then fell back to 342 in 1649, for the first half of which England and France were effectively in a state of war following the trial of Charles I. Journal A shows that Edward's cross-Channel trade ceased until the summer. After a modest recovery to 411 in 1650, John's output as recorded in the journals never again approached the scale he had achieved in the early 1640s, and dwindled to levels that would not distinguish him from numerous other clothiers. In the last two full years of his career, 1657 and 1658, when he reached 60 years of age, John Ashe produced well under 200 cloths per year, though their average value increased substantially. A range of factors contributed to this decline, from John's own priorities and those of his customers in Paris, to competition from domestic and overseas suppliers.[72]

However, as Table 4 shows, Edward's Cash Book follows a rather different course, with little sign of a decline in the early 1650s. While the full value of John Ashe's account is never stated, it

[71] In his petition to Parliament, John Ashe claimed to have 'lost the greatest part of his personall Estate, and three whole years Revenew of his Lands, by the Plunder and cruelty of the said Enemy', Stawell, *Vindication*, p. 11.

[72] Among other West Country producers, Ashe's son-in-law Paul Methuen made substantial quantities of Spanish cloth in Bradford-on-Avon from the late 1640s to the mid-1660s, and was an increasingly important supplier to Edward and Jonathan.

TABLE 4. John Ashe's receipts from Edward Ashe, 1646–55

	£	s.	d.		£	s.	d.
1646	406	7	0	1652	8489	4	10
1647	3519	10	8	1653	6852	19	2
1648	9149	11	11	1654	10,385	6	11
1649	6222	1	1	1655	6408	15	4
1650	9061	16	5	Total	69,507	1	9
1651	9011	8	5				

Source: TNA, C 107/17/5.

is clear he maintained a substantial balance in London, from which Edward deducted the cost of goods sent to Freshford, payments to third parties on John's behalf, and his own share of the rents of Heytesbury manor, which John must have received in Somerset on Edward's behalf.[73] By choosing when to make withdrawals from the account, John could flex his income to ride out market fluctuations. Even so, like Journal A, the Cash Book shows a slow rise in income in 1646 and 1647, a boom year in 1648 followed by a lean 1649, and a recovery in 1650, suggesting that the John's income was at that stage aligned fairly closely with his trading revenues. But for the four-year period not covered by either of the trading journals, it shows a high level of payments in 1652, a dip in 1653 and then a record drawdown in 1654 of £10,385 gross income in a single year. Only in 1655 do we see the significantly diminished drawdown to be expected in view of his trading decline. This may have reflected not just concern, but certainty, that a serious slide in income from the cloth trade could be expected in 1656 – the year Edward died, on 31 October, apparently after a period of illness.[74]

By 13 December 1656, when his speech in the Commons was noted by Thomas Burton, John Ashe had suffered a slump in sales from which his business would not recover. As Table 3 shows, during the six months recorded in Journal B after Edward's death in June, Jonathan notes a mere 81 cloths from John Ashe. The bill before the House on 13 December was not about Spanish cloth, but 'for the better ordering and governing the makers and workers of broad, mixed woollen cloths, within the West Riding of the County of York, and for making them a body politic and corporate.' Burton's note reads in full:

> *Mr Ashe, the elder.* I do very much approve of this Bill, and desire it may have a second reading. I gave you the reason before why our manufactures are almost lost, and snatched into Holland only for want of regulation.
> He has got £3,000 per annum, and is worth about £60,000 per clothing.[75]

The second sentence is Burton's comment, not part of Ashe's statement, so while Mann did not question his assessment of Ashe's income and worth, her qualification that 'he was said' to have been worth £3,000 a year proves fully justified. In the context of Edward's cash book,

[73] Edward's share of Heytesbury rents came to £1223 13s. 4d. over the ten-year period.

[74] Parish register, All Hallows, Staining; TNA, C107/18/1, fo. 4

[75] Rutt, *Burton's Diary*, I, p. 127.

Jonathan's journals and John Ashe's warning to the House, Burton's assessment, perhaps gleaned from a fellow member in the House that day, might say more about Ashe's reputation at the time than the reality.[76]

Competition from Holland, in particular from Leiden, had increased sharply since 1640, with a vigorous renewal of trade between Protestant Holland and Catholic France and Spain.[77] Dutch production of fine *laken* cloths grew by over 40 per cent between 1650 and 1661.[78] This was evidently damaging the Ashe family's trade, especially in Paris. As can be seen in Table 3, the average value of John's sales had risen from around £22 per cloth in late 1640s to as much as £30 per cloth a decade later. But this was not wholly good news. The cause of the increase was not a rise in price, but the evaporation of demand for his mid-range cloths, at £20 and below: the products at most risk from Dutch *laken*. John Ashe's cloth revenues would now depend on Jonathan maintaining the residual high price sales for as long as possible; but in 1658, the last full year of John's life, only 96 of his cloths were delivered to Jonathan's warehouse.

When John Ashe died at his sister-in-law's house in Fenchurch Street in February 1659, the executors nominated in his will were 'my dear brothers Joseph and Samuel Ashe, my dutiful son James Ashe, my careful son-in-law Paul Methwin'.[79] But none of these close and trusted relatives was willing to serve for long. In their place, John's merchant son John junior, who returned from Antwerp at the news of his father's death, was granted letters of administration of his estate on 30 June.[80] By the end of the year John junior realized he had taken on a thankless task. John Ashe's personal estate proved far smaller than anticipated. This was still causing problems in 1664, when the executor resorted to legal action against Jonathan in the hope that more value could somehow be found by a closer examination of the trading accounts. John junior's bill of complaint set out the financial reality: his father's gross personal estate had amounted only to about £5,000, most of which was in the form of about 200 fine cloths and an outstanding credit balance of some £1,500, all in the hands of Jonathan Ashe. Against this he had left debts of about £5,000 and monetary bequests of £4,000.[81] It would take several years for this troublesome situation to be resolved.

John Ashe's will and his son's bill of complaint clarify the clothier's cash position at the time of his death, but also help answer another key question about his trade, raised by Julia Mann – whether his sales to Edward and Jonathan constituted all, or at least the bulk, of his production. In his will John Ashe stated that:

[76] Burton was then in his first term in Parliament.

[77] J. I. Israel, *Dutch primacy in world trade, 1585–1740* (1989), pp. 194–6, and *id.*, *Conflicts of empires* (1997), pp. 307–17; K. Davids, *The rise and decline of Dutch technological leadership* (2 vols, Leiden, 2008), I, p. 125.

[78] E. Hiemstra-Kuperus, L. H. van Voss and E. van Nederveen Meerkerk (eds), *Ashgate companion to the history of textile workers, 1650–2000* (2010), p. 367, tab. 14.1.

[79] TNA, PROB 11/293/280. No associated inventory has been traced. The date of death was given by John Ashe junior as 'about the ninth of Februarye': TNA, C5/44/4.

[80] W. D Macray (ed.), *Calendar of the Clarendon State Papers preserved in the Bodleian Library*, III (1872), p. 251, where a letter from John Shaw is incorrectly calendared to the previous year.

[81] TNA, C5/44/4. Defending a separate case the same year, however, John junior deposed that John Ashe's personal estate had amounted only to about £2,500, 'nothinge neare sufficyent to pay his...debts': TNA, C5/56/43.

> my personal estate consisting of cloth, wool and yarn is now in the possession of my said son John Ashe and his brother-in-law John Shawe at Antwerp, and in the possession of my brother Jonathan Ashe of London, merchant, and in the possession of my dear beloved wife of Freshford.

There is no mention of any other merchant or factor holding stock, the possibility hinted at by Mann. The 1664 bill of complaint provides a value only for the stock held by Jonathan, suggesting that there had been little of significant value either at Freshford or in Antwerp; and the evidence of the Cash Book and journals supports this hypothesis.

The Cash Book reveals that John Ashe junior had moved to Antwerp in 1648 or 1649, when he was about 21, apparently to replace his uncle, Joseph Ashe, a close business associate of John Shaw. Before the Civil War Joseph had not bought cloth from Edward, and took just 201 cloths at an average value of £15 4*s*. in the three years 1647–49.[82] It seems likely that he, like Shaw, focused primarily on trade with Spain in tobacco and hides, and perhaps wool, wine and bullion.[83] In October 1649 Joseph paid customs duty on 48 cloths sent to his nephew in Antwerp, suggesting that John junior was at that time acting as his factor, though he may subsequently have traded on his own behalf.[84] There are no other references in the accounts to cloths being sent to Antwerp until 1657, when Journal B records: 'memo. Shipped and delivered and sent by John Ashe [of Freshford] his order to Antwerp [on the account of] John Ashe there via Flushing, these clothes below mentioned at several times and by several ships', a total of 109 cloths.[85]

The same memorandum, scribbled inside the back cover of the journal, makes clear that at least 49 of these were cheaper red and mixed mark cloths, usually valued at 14*s*. to 17*s*. per yard, which had originally been supplied by John Ashe to Edward and Jonathan but remained unsold at the time of Edward's death. The implication may be that they were being sent to John junior because Jonathan no longer had a market for them in Paris. If so, it seems likely that John junior's stock-holding at the time of his father's death was whatever remained from this transfer of old, unsold cloths sent to him in 1657.[86]

The value of the stock held by Elizabeth Ashe at Freshford is also likely to have been small. It would have consisted of undyed wool stored there or held by dyers; of dyed wool and yarn held by spinners and weavers; and of a few woven cloths at the fulling mill. As Table 3 shows, over the whole of 1659, the year of Ashe's death, only 44 cloths valued at £1,388 5*s*. 9*d*. were sent to London on his account, and just 2 cloths in 1660, at £41 8*s*. 6*d*. Thus there is no evidence in any of the data relating to Antwerp or Freshford, or in John Ashe's will, to suggest that he

[82] TNA, C 107/20/3, fos 47, 93; C 107/20/4.

[83] Shaw's activity in 1652 is described in passing in G. F. Steckley (ed.), *The letters of John Paige, London merchant* (London Rec. Soc., 21, 1984), nos 57, 58a. The same year Shaw testified at the High Court of Admiralty about the price of Spanish wool in Antwerp: TNA, HCA 13/66 (unfolioed).

[84] TNA, C107/17/5, fo. 28 right.

[85] TNA, C107/18/1, fo. 361, 'memoria Shiped & dell & sente p[er] Jno Ashe [of Freshford] his order to Antwerpe Ac Jno Ashe there via Flushinge these Clothes belowe mentioned at seaverall times @ p[er] seaverall Shipes'.

[86] A letter to John Ashe in London from 'John Johnson' in Antwerp, probably an alias for John junior, was intercepted by Thurloe's agents. Dated 22 Feb. 1657 (new style), it discusses the difficulty of selling the stock received, and asks for a shipment of red marks. T. Birch (ed.), *A collection of the state papers of John Thurloe* (7 vols, 1742), VI, p. 56.

had any significant production beyond than that which was sent to his brothers in London. He may have course have made some small sales to local merchants in Bristol, Exeter or Salisbury, as his father certainly did in the 1630s, but not enough to materially affect our perception of his trading output.[87]

IV

John Aubrey, in the remarks that opened the previous section, said that John Ashe had 'got a great estate by [clothing] *tempore Caroli primi*.' The evidence set out above suggests that this statement was both correct and precise as regards to timing: the greater part of Ashe's cloth revenue was almost certainly generated in the 1630s and early 1640s; under the adverse conditions of the civil wars and Interregnum his output declined significantly, while his investment in property increased. John Ashe's worth, however, is more difficult to assess than his trading revenues. Worth was the product of retained profits, which are impossible to be sure of because we do not know his costs of production. The Ashe accounts show the costs of materials purchased in London – wool, oil, soap and some dyestuffs – together with the costs of carriage; but no figures survive for labour costs in Somerset, or for materials purchased in the West Country. While out-work costs could be estimated from other sources, it is much harder to assess John Ashe's establishment costs: we have no way of knowing how many workers he kept permanently employed in his dye-houses, fulling mills and shear-shops, nor indeed how many of these premises he held, and what they cost to maintain.[88] It is much more straightforward to consider his potential profit at a range of different percentages of revenue.

From Edward's ledger, we know that between 1640 and 1643 John sent twice as much cloth to London as his father James. If we apply the same ratio to James's total output, recorded in his Cloth Sales book, including his sales to other merchants in London and the west, we can estimate John's total sales for the period 1627 to 1643 (15 trading years) as 7,620 cloths at a value of £131,579, to which we could add perhaps £30,000 for 1621 to 1626, when he was establishing himself at Freshford.[89] Between 1646 and 1659, his revenues in Journals A and B (eight full trading years) come to £53,812, and if we add a further £35,000 for sales in the missing period of October 1651 to June 1656, his estimated total career sales come to £250,391.[90] At 5 per cent profit, that level of turnover would yield £12,520; at 10 per cent, £25,039; at 15 per cent, £37,559; and at 20 per cent (an extraordinarily high level to sustain over four decades), £50,078. To generate a 'worth' of £60,000 solely 'per clothing', even at 20 per cent profit, would require total revenues of at least £300,000 and must be regarded as implausible.[91]

Estimating worth, however, raises the question of what exactly is meant. While in some early modern contexts worth has been narrowly defined as the value of moveable goods

[87] In his last five full years of trading, 1638–42, James sold just 127 cloths in total to these customers: TNA, C 107/20/1.

[88] Mann, *Cloth industry*, Appendix 4: 'Wages' provides a range of relevant data.

[89] Adjustments made for 1631, a year of zero sales, and for a gradual start-up from 1621.

[90] £131,579+£30,000+£53,812+£35,000=£250,391.

[91] Similarly, John Ashe could only have 'got £3,000 a year per clothing' in 1656 through deferred income – his sales revenue that year was less than £2,500: see Table 3.

(including capital and debts due) less the value of debts owed, it seems unlikely that this was the measure Burton had in mind.[92] Throughout Ashe's career as a clothier, he had channelled much of his trading profit into immoveable property and by 1656 was a substantial landowner in Wiltshire, as well as holding property at Freshford and Westcombe and in Ireland.[93] In the absence of contemporary surveys of his lands, it is impossible to value his yield from rental income, leases, agricultural produce and the sale of resources such as timber and building stone, but the valuation of farmland in the seventeenth century often reached 20 times the annual yield; and indeed, this is the ratio in Burton's estimate of £3,000 per year income and £60,000 'worth'.[94] It seems likely that he viewed Ashe's investment in property as part and parcel of his trading activity; and on this basis his statement becomes more credible.

Returning to the episode with which this analysis started, how confident can one be that John Ashe had been 'the Greatest Clothier in the Kingdome' in 1643, when his cloths were seized near Reading? He may well have been worth over three times his father's fortune, said to be £15,000 in 1637; but may still have fallen far short of his contemporary Thomas Guyon (1592–1664) of Coggeshall in Essex, said to have amassed £100,000 as a clothier.[95] In the first decade of the eighteenth century, when the Spanish cloth trade was booming again in east Somerset and west Wiltshire, Defoe wrote 'they told me at Bradford[-on-Avon], that it was no extraordinary thing to have clothiers in that country worth from ten thousand to forty thousand pounds a man'.[96] Amongst these, no doubt, would have been John Ashe's grandson Anthony Methuen (whose father Paul Methuen, d. 1667, was himself described by Aubrey as 'the greatest clothier of his time').[97] By 1710 Anthony Methuen had not only succeeded to his father's trade in Bradford but acquired John Ashe's former estates at Beckington and Freshford.[98] Such comparisons suggest that, although the royalist newsbook may have exaggerated Ashe's national stature for propaganda value, he was credibly the greatest clothier in the West Country in his day.

To conclude: from the available evidence it is hard to believe that John Ashe's cloth production alone, exceptional as it undoubtedly was during the 1630s, could have generated the fortune estimated by Burton in 1656. If Ashe was 'worth' as much as £60,000, then much had been derived from investing in property, of which perhaps half may have been acquired at fire-sale prices during and soon after Ashe's chairmanship of the Goldsmiths'

[92] A. Shepard, *Accounting for oneself: worth, status, and the social order in early modern England* (2015), pp. 37–8, shows that this was the definition employed in church courts. Nonetheless, 'it is likely that [gentlemen's] statements of wealth ... [were based on both] moveables and real estate', p. 91.

[93] John Ashe's total outlay on lands can only be estimated, but was probably in the range of £10,000–12,000, with a yield at 5–7.5% of up to £1,000 per annum. By 1656, the estates bought jointly with Edward early in their careers were held separately. John had relinquished his share of Heytesbury but gained sole ownership of Westbury Mauduits, Beckington and Clanwilliam. Fyfield and, perhaps, Teffont Evias had already been settled on his eldest sons, James and John respectively: WSHC, 929/1; monument at St Michael and All Angels, Teffont Evias.

[94] R. Grassby, 'The rate of profit in seventeenth-century England', *EcHR* 84 (1969), p. 739.

[95] TNA, SP 16/356, fo.103; E. E. Power, *Medieval people* (1924), p. 196.

[96] Daniel Defoe, *Tour through the whole island of Great Britain,* ed., G. D. H Cole and D. C. Browning (2 vols, 1962), I, p. 281. Defoe's visit to Bradford has been dated to 1705.

[97] John Aubrey, *The natural history of Wiltshire*, ed., J. Britton (London, 1847), p. 113.

[98] Collinson, *Somerset*, I, p. 126; II, p. 200.

Hall committee. And while a fortune of even £50,000 would have put Ashe in line with the City's wealthiest aldermen, it should also be set in the context of the West Country gentry. In 1651–52, parliament's contractors sold off the sequestered properties of Ashe's old adversary, Sir John Stowell, 'a gentleman of one of the largest estates that any man possessed in the west.' They brought in more than £63,000, even at the distressed prices of the day.[99] And around 1664, Ashe's fellow MP and Wiltshire landowner, Sir Edward Hungerford of Corsham, was reckoned to be worth around £4,000 a year, suggesting a fortune of perhaps £80,000.[100] If these figures would also bear close scrutiny, the greatest landowners of the west were wealthier than its greatest clothier.

Nonetheless, it is clear that Ashe had a major and enduring influence on the society of east Somerset. Over four decades he returned substantial sums from London to the countryside to fund his cloth-making, underpinning local wool prices and providing small yet critical incomes to a very large and widespread rural workforce with otherwise limited access to employment. As Buchanan Sharp has shown, this area experienced significant population growth during the seventeenth century, both by natural increase and by the movement of landless labourers; Sharp goes so far as to characterize a 'rural industrial proletariat' liable to riot when severe recession in the cloth trade coincided with poor harvests and the resultant surge in food prices.[101] Thanks to the success of the Spanish cloth trade, such episodes were rare along Frome water, considering the repeated challenges of these decades. But there is no question that the largest nearby towns of Bradford-on-Avon and Frome were indeed growing steadily during Ashe's career at Freshford, with hundreds of cottages built on their wastes.[102] The rural population could not be sustained by farming alone. As governments well understood, only the labour-intensive cloth manufactory, exposed though it was to fluctuating demand, international competition and political turmoil, was capable of stabilizing the variable agrarian economy; and the health of the manufactory depended on its entrepreneurs.

In societal terms, the lasting value of John Ashe's career lay not in his personal wealth, but in spreading the innovation of Spanish cloth and promoting the skills needed for renewed economic growth during the last decades of the century. By the time of Defoe's visit in the early 1700s, this legacy was abundantly clear. Spanish cloth, 'with which all the gentlemen and persons of any fashion in England, are clothed, and vast quantities of which are exported to all parts of Europe … maintains and supports so many poor families, and makes so many rich ones'. The town of Frome was 'now reckoned to have more people in it, than the city of Bath, and some say, than even Salisbury itself'; and Bradford and Trowbridge were also thriving.[103] It is clear that, from farmhouses and fulling mills deep in the countryside, Ashe and his fellow clothiers had brought rapid and enduring change, not only to Frome water, but throughout east Somerset and west Wiltshire, and played a major part in the agrarian history of the region.

[99] A. Davidson, 'John Stawell, (1600–1662)', *HoP, 1660–1690*. For the impact of political risk on prices paid in the 1650s see H. J. Habbakuk, 'Public finance and the sales of confiscated property during the Interregnum', *EcHR* 15 (1962), pp. 81–2.

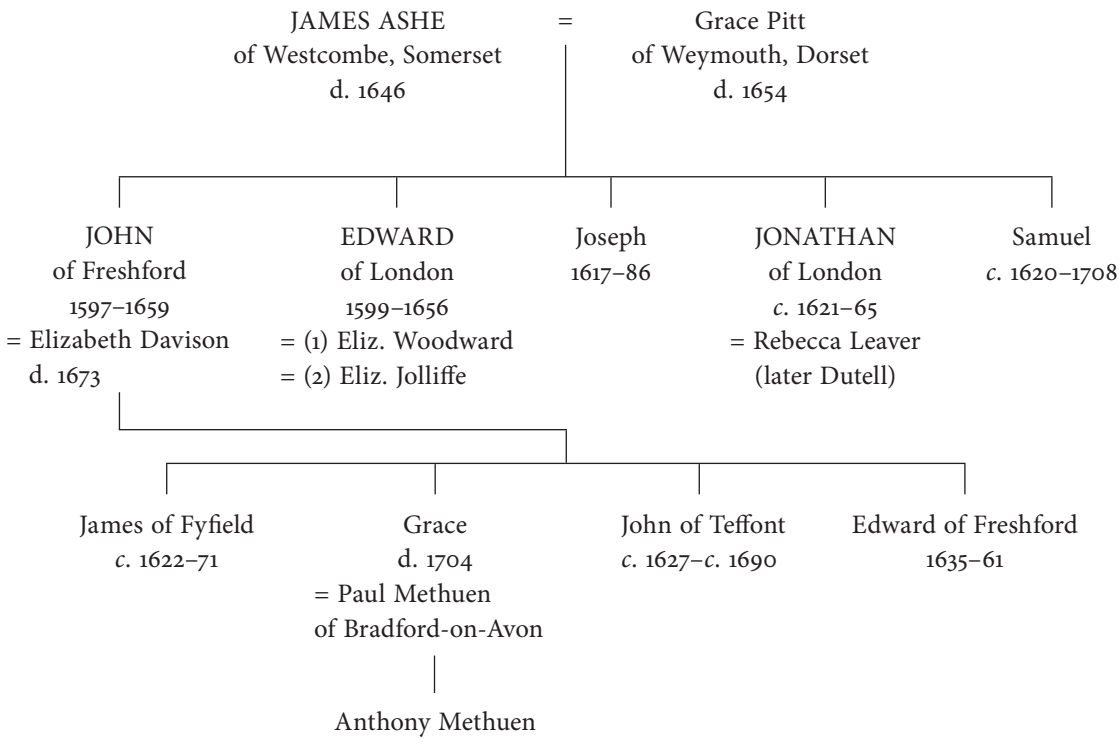
[100] B. D. Henning, 'Edward Hungerford (1632–1711)', *HoP, 1660–1690*.

[101] Sharp, *In contempt of all authority*, p. 3.

[102] Gaisford, 'Capital in the countryside', pp. 245–9: by 1676, the estimated population of Bradford was over 4,500; that of Frome perhaps 7,000 or more.

[103] Defoe, *Tour*, I, pp. 271, 280.

Appendix: Selective pedigree of the Ashe family



Annual list of publications on Agrarian History, 2020*

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JOURNAL AND BOOK ARTICLES

ADAMS, CAROLINE J., 'The influence of the early modern gentleman on the changing landscape of West Sussex', *Local Historian,* 50, pp. 267–75.

AGNEW, JOHN, 'Steam engines on UK roads, 1862–1865: banning orders, agricultural locomotives and the 'red flag' Act', *International J. Hist. of Engineering and Technology,* 90, pp. 53–74.

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ANDREW, REBECCA, '"A spectacle for the cameras": the survival of a Lakeland leisure tradition, 1930–*c.*1955', *J. Tourism Hist.,* 12, pp. 95–115.

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AUSTIN, PETER, 'Oak tan-bark sales from the Cecil estates in Hertfordshire and Rutland, 1550–1914', *Local Historian,* 50, pp. 291–306.

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* Publications are normally of 2020 unless stated.

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COATES, PETER, 'The muskrat's new frontier: the rise and fall of an American animal empire in Britain', *Environmental Hist.,* 25, pp. 207–36.

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Book Reviews

UK and Ireland

JOHN BELCHER, *The foldcourse and East Anglian agriculture and landscape, 1100–1900* (Boydell Press, 2020). xii + 199pp. 4 plates, 8 figures, 20 tables. £75.00.

The first modern description of the foldcourse appears in K. J. Allison's article in the *Review* in 1957 (vol. 5, part I). In his introduction to this book, John Belcher defines what is meant by the foldcourse and in particular by foldcourse husbandry, the farming regime based around the foldcourse. Whilst focusing specifically on the western part of East Anglia, he notes the need to make inter-regional comparisons.

Chapter 1 commences with an examination of the environmental, social and agricultural contexts within which foldcourse husbandry existed. Starting with a review of the soils of East Anglia in terms of recognized soil associations, the correlation between the foldcourse and the differing soil types is considered, noting that the predominant link between foldcourse and light soils is a consequence of the nutritional poverty of those soils. However, Belcher does note some anomalies, where the foldcourse was practised on other types of soil. Different field systems are then examined and it is concluded that the field systems which developed in East Anglia were significantly different to those of the Midlands. In addition, there was also a range of pastures available in the region including fens, heathland and salt marshes.

In the second chapter, consideration is given to the overlapping boundaries of manors, vills and foldcourses. A single manor could have had multiple vills, whilst at the same time one vill may have belonged to more than one manor; over and above that, a single manor may have had multiple foldcourses. Looking at tenurial rights and customs and their complex linkage to the foldcourse, Belcher examines four features: the feeding of animals on the post-harvest stubble (shack); the right to put sheep in the demesne flock (cullet rights); ownership of the tathe (sheep manure) of the flocks; and the practice of the role of exchanges of arable lands between lord and tenants. He considers that it is this latter arrangement which provides a clear and unique distinction between the agrarian practices of the champion region and that of foldcourse husbandry. Further, the tathe was regarded as a commodity with financial value which also contributes to regional differences and emphasizes the market-driven methods employed in the region.

Chapter 3 examines the medieval foldcourse in detail. By examining the use of the term 'fold' and other related terms in Domesday Book, it is concluded that this provides evidence that the foldcourse was already established by the eleventh century: this evidence is focused on East Anglia and relates to feudal relationships at this time, rather than as an agricultural practice. Belcher then considers post-Domesday examples of folds, including requirements to tathe the land and the existence of stints, specifying the number of sheep permitted. The chapter ends with a consideration of folding arrangements in the medieval period in three townships across East Anglia. In his conclusion to the chapter, he notes that the flocks of East Anglia were not operating in the same sense of 'common', as described by Kerridge in respect of the downs of Wiltshire.

In the following chapter, the evolution of foldcourse husbandry is considered in the later medieval period, starting with the effects of famines and plagues in the mid-fourteenth century and the social disturbances of the sixteenth century. Belcher notes that medieval foldcourse husbandry had been a co-operative, and possibly a communal, activity involving lords of the manor and tenants as owners of sheep. However, the impact of changes over this period including the role that flock-masters played, and the acquisition of former monastic grounds and foldcourses, resulted in the foldcourse of the early modern period becoming what Belcher calls 'a mirror image of its medieval predecessor' (p. 112).

Chapter 5 examines the actual farming practices of foldcourse husbandry and the agrarian regime of which it formed a significant part. Infield-outfield agriculture was widespread across East Anglia, primarily in the Good Sands and Brecklands regions, and the foldcourse was an important agricultural practice. Further, the

flexibility of these practices was facilitated by the smaller unit of land (furlong), as opposed to field, and the need to adapt practices which matched the soil. The final chapter considers the contribution which the foldcourse made to the improvement of land, along with the impact of engrossment and enclosure. This is examined for single estates as well as for the landscape of the whole of western East Anglia, thereby bringing the focus of the book to the landscape element of its title.

This is a well-presented book, although with numerous typographical errors, many of which would have been eliminated through use of spell-checking software: further, typesetting has resulted in the running head on odd-numbered pages in chapter 3 reverting to that of chapter 2 for part of the chapter (pp. 86–101) – all would have benefited from thorough proof-reading. As the commercial outcome of Belcher's doctoral thesis (University of East Anglia, 2016), it appears to have been written for those who already have some knowledge of the foldcourse, rather than for the general interested reader: the latter would have benefited from explicit definitions of fold, foldcourse and foldcourse husbandry in an East Anglian context early in the book, rather than the implicit ones provided in the Introduction and throughout the text. The author attempts to excuse this in his conclusions, where he states that the differences between foldcourse husbandry and other regimes 'cannot be framed in monocausal terms', the former being a 'complex system of interactions between the environment, social structures and agrarian practices' (p. 179). However, this is an in-depth study into the subject of the foldcourse, drawing on a wealth of examples taken mainly from primary sources to provide a comprehensive understanding of its practice in East Anglia, thereby emphasizing the distinctiveness of East Anglian agricultural practices in the past. Whilst Belcher notes that the book removes some misconceptions about the foldcourse, he recognizes that there is still work to be done to understand fully this significant complex subject.

ALAN WADSWORTH
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J. MICHAEL JEFFERSON, *The Templar estates in Lincolnshire, 1185–1565: Agriculture and economy* (Boydell Press, 2020). 348 pp. 30 illus. £70.

This book is partly based on Michael Jefferson's 2016 University of Nottingham doctoral thesis and in parts reads like a dissertation, but that is not necessarily a bad thing. The Knights Templar, like King Arthur, suffer from being the subject of far-fetched popular histories, so this well-researched scholarly book is welcome. It tells of political wrangling, spiritual provision and agricultural management.

The Templars were major landholders in Lincolnshire, understanding how their estates worked both under them and subsequent landlords illuminates medieval agrarian land management. Today the tower of a Templar preceptory still stands within a farmyard at Temple Bruer and without Jefferson's research we would not know how this structure fitted into the wider landscape. Historians are limited by their written sources and in this case that is strikingly clear. The book is by necessity framed around five surveys carried out between 1185 and 1535.

The story of the Templars cannot be told without the Hospitallers (the estates of the former were granted to the latter in 1312 and formed the bulk of the Hospitaller holdings in Lincolnshire) and Jefferson, in his introduction, explains how both orders worked and evolved. He rightly points out that the story of the Templars in the Holy Land has been told on many occasions (Helen Nicholson's *The Knights Templar* or Malcolm Barber's *The new knighthood* for example), but his is a rare insight into the estates that supplied and sustained them.

Chapter 1 concentrates on the 1185 survey of Templar properties by Geoffrey Fitz Stephen, the Master of the Templars in England. The real shame is that we do not have records of the initial donations of small parcels of lands that formed the holdings, but the 1185 survey is sufficiently early that when compared to the early fourteenth century records, allows us to see the process whereby the Templars consolidated their scattered donations. As Jefferson says (p. 41): 'The Templars became adept at acquiring and exchanging land so as to consolidate estates, reduce travel time, and lengthen the effective working day'.

The second chapter summarizes the estate accounts after the Crown had seized the estates with the fall of the Templars and date to 1308–13 (these were the focus of Jefferson's original thesis). These form the bulk of Jefferson's evidence and he takes four chapters to analyse them, which he does very successfully. Chapter 3 looks at the evidence for arable production and how soil fertility was maintained through crop rotation and manuring (but oddly with no record of marling) as well as controlling weeds by frequent ploughing. Readers of the *Review* will probably be aware of the discussions surrounding the relative success or failure of late medieval farmers to maintain soil nutrients and the evidence here is useful when investigating that debate. Templars were also building windmills to replace the less efficient watermills. Once the Crown

got control of the estates, they squeezed every penny out of them with little regard to longer-term planning.

The fourth chapter looks at livestock and here Jefferson argues that the use of either mixed horse and oxen plough teams or ones solely made up of horses on estates with lighter soils or hillier ground (which in Lincolnshire generally means the Wolds) confirms that the Templars were managing their estates innovatively. This corroborates Langdon's theory published both in this journal and elsewhere that the use of horses and appropriate harnesses in the twelfth century onwards was a product of good estate management and led to higher yields. There are obvious gaps in the survey evidence, for example almost no pigs are recorded and Jefferson notes (p. 89): 'The manor of Willoughton had a herd of forty-two cattle but recorded no cowherd, which seems highly improbable'. The fifth chapter looks at sheep rearing, a sizeable part of their income (mainly wool but also cheese), and by using the size of fleeces produced concludes that small horned sheep were the norm, perhaps settling the debate as to whether the larger Lincolnshire Longwool had a medieval equivalent. The sixth chapter looks at who worked the estates and lived on them.

Chapter 7 tells of the tortured process whereby the Hospitallers, who had been granted the Templar's property by the Pope, battled to gain control of the estates. With the benefit of hindsight we can see how they were cheated; the 1338 Hospitaller report on the Templars' estates in England (tackled in detail in chapter 8) lists far fewer than there should have been. The last chapter deals with the *Valor Ecclesisticus* compiled in 1535 when the Hospitaller estates were dissolved and a final document of 1557 that relates to Mary Tudor's short-lived attempt to re-establish the order.

The conclusion of his study is that the Templars practised innovative estate management, trying to control disease that affected their flocks of sheep, consolidating their scattered holdings into nucleated estates and built an infrastructure to process their agricultural surplus to finance the Order.

At the end the primary sources are reprinted, useful for future researchers (some tables even list how many carts, pots and bowls were stored in individual buildings). There are numerous maps, these would have benefited from colour and some are taken from other historical atlases. I was a little disappointed when I first thumbed through the book that the author was not able to reconstruct the estates in more detail, perhaps mapping out the boundaries of the preceptories and manors. For descriptions of the physical remains of the estates in Lincolnshire you would also need to look elsewhere (for example Philip Mayes' monograph on the South Witham Preceptory).

Overall, this is a very useful study for anyone wishing to test theories about medieval estate management and agricultural practices, as well as anyone who wants to know more about the Templars.

ERIK GRIGG
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SUSAN KILBY, *Peasant perspectives on the medieval landscape: a study of three communities* (University of Hertfordshire Press, 2020). 238 pp. 8 figs. 8 tables. £18.99.

In an era when there were likely to have been butterflies everywhere, why would medieval people have named a local meadow *boterflyemede* ,'butterfly meadow'? Susan Kilby suggests three practical explanations in a book which is a major contribution to a long-standing field of study and an important source for English landscape history: that of place-names.

'Minor' names, such as those for roads, streams, and farms, for which local inhabitants are the source, have long been collected and recorded by the English Place-Names Society and the work of Margaret Gelling and Ann Cole has revealed the perceptions of landscape features contained in major place-names. Dr Kilby investigates the micro-toponomy, the words that local people used for much smaller features: furlongs and lanes, ponds and ditches, lanes and paths. Her book is far more, however, than an introduction to a new source for place-name scholarship: her aim is to show us 'the medieval world through peasants' eyes' and is an example of an emerging direction in rural studies towards cultural geography, exemplified by recent work by Stephen Mileson, Stuart Brookes and Richard Jones on peasant perceptions of their environment. This theoretical grounding leads her to look for links that might be made with other disciplines and to robust engagements with other fields and approaches. Sometimes this has paid dividends. The archaeological evidence for the village of Elton, for instance, has revealed the external boundaries of 'plots'. Known as messuages, these are often taken to be the base of the typical peasant landholding in the medieval village. In the high-pressure conditions before the Black Death micro-toponomy reveals what is long lost to archaeological record: they were minutely, and often controversially, divided by an informal network of fences, walls and ditches as well as containing more than one dwelling. From the manor court rolls we learn more. The lord of the manor found it necessary to determine which occupant of which crowded plot his labour services were to come from: it was decided that

'each house, having a door open onto the street should provide a man for the loveboon'. The 'on-the ground' reality and the way that the resulting conflicts were settled, are thus laid out before us.

Kilby's approach takes us even further. She finds that locational by-names, such as 'in the lane' were more typical of servile tenants than of free. The village layout at Elton could thus well have reflected a similar situation to that at Cuxham, Oxfordshire, where, as Paul Harvey revealed, the position of servile tenants' holdings along the village street was the result of the landlord, Merton College, organizing the labour for demesne production. How they named their surroundings could preserve local people's ideas about the remote past and could pass on valuable farming practice. It reveals a thriving unofficial micro-economy of fishing, fowling, and small-scale pastoralism which evaded the seigneurial eye and thus the seigneurial records.

The contribution that micro-toponomy makes to what we can learn about the everyday language of medieval country people is fascinating in itself: these East Midlanders saw and named their world with the same closely engaged perception as did a later East Midlander, John Clare. Whether micro-toponomy, or cultural geography more broadly, brings us closer to peasants' 'lived experience' demands closer examination. Two possible problems suggest themselves. The first is that, as displayed here, it has a very narrow perspective. Like those in traditional 'labours of the months', Kilby's peasants seem to do nothing *but* work. Surely, even for the poorest smallholder there was more to life than work? After all, in the books which Zvi Razi, Barbara Hanawalt, Rodney Hilton and others based on very similar source material peasants are found loving, marrying, and dying, bringing up children, joining rural protests… We learn from LeRoy Ladurie's *Montaillou* not simply what medieval French peasants' experience of everyday life was like, but what they believed about the origins of good and evil, life, death and the hereafter! A second problem in this approach is also inherent in its very quality of intense localism. Kilby's sources are the surveys drawn up on behalf of the landowners and the proceedings of the manorial courts of three manors: Elton (Hunts.), Lakenheath (Suff.) and Castor (Northants.). As all are in 'Village England' (and had been in the Danelaw) and all practised open-field farming, the implications of her work might perhaps have profited from moving further away from the geographical constraints this has imposed. Descriptions of her sources, perhaps a legacy from the book's origins in her Ph.D. thesis, make her first chapters somewhat of a trudge (could the series editors have pruned a little?), and, for a book which depends so much on micro-topography, the size at which the OS maps are reproduced makes the topography of the villages, so essential for her argument, very hard to make out. Cavils aside, this is a deeply fascinating book.

ROSAMOND FAITH

CHRISTOPHER GERRARD and ALEJANDRA GUTIÉRREZ (eds), *The Oxford Handbook of later medieval archaeology in Britain* (Oxford University Press, 2018). xlii + 1058 pp. 217 illus. £35.

This major tome represents a huge body of synthesis and research, expertly crafted by the editors and contributors to bring together holistically key themes and topics in later medieval British archaeology. As is the case with most books in the Oxford Handbook series, this is a large volume, at 1058 pages and 60 chapter contributions. The subject matter of later medieval archaeology is multi-faceted, complex and describes an already fairly disparate array of research foci. Nevertheless, the volume does an excellent job of achieving balance in a cohesive and comprehensive overview.

The 60 contributions are split between ten sections in the book, which demonstrates an attempt to arrange the analysis thematically, covering everything from the fundamental and usual suspects, namely the historiography of later medieval archaeology, towns, power, craft, and rural settlement, to religion and belief. The volume does, however, attempt to account for more recent, novel and emerging trends in the field too, with slightly less common thematic sections, analysing the senses, or growing up and growing old, while the final section of the volume also attempts to contextualize British research trends, within wider European analyses. Though there are few major quibbles that one may have with such an ambitious and accomplished shopping list of research themes, how effective this latter international section is at summarizing effectively the key trends in neighbouring regions is perhaps moot.

In terms of the pitch of contributions, there is a decent blend of analyses that fall into the category of critical literature reviews assessing research trends on the one hand, and those that summarize and assess key forms of evidence (old and new) on the other. Added to this, however, are a number of contributions that hone possibilities in relatively novel areas of research, including the analysis of sound and landscape by S. Mileson, or the analysis of play by M. Hall. These contributions give a hint at the more theoretically engaged and pioneering forms of analysis

that are slowly coming to characterize later medieval archaeology, and which are expertly foregrounded by Graves and Gerrard in the introductory section. There are few major gaps in the volume, although some readers might have preferred to see more coverage of other traditional stalwarts of medieval analyses, including the burgeoning and rich field of cemetery archaeology, or castle studies, more overtly. There are of course some excellent contributions covering these fields, including one of the standouts for this reviewer, by O. Creighton, summarizing the major issues and trends facing analysis of elite space and castle landscapes. While contributions are drawn from across a range of sectors, the volume as a whole is weighted towards academic contributions. Given the boom in information produced through developer-led contexts in recent years, one may have liked to see slightly more coverage and input from the commercial sector. Notwithstanding such quibbles, there is a remarkable balance overall, with most sections of the book characterized by both breadth and depth.

In terms of pitch, contributors seem to have received a steer towards a wider British focus, with overt efforts in a range of contributions to avoid too regional a focus. This means that inevitably disparities in regional research trajectories often necessitate a gap in coverage, data being acknowledged as unavailable in some regions for overview, or an inevitable bias towards data and debates that really only characterize scholarship in and concerning particular regions. Hence, Scotland, Wales or the south west, emerge in many respects as poor cousin to the midlands, central and eastern England. While this is as much the result of regionality in academic interest, the absence of similar scales of infrastructure and development projects in recent decades, has simply not engendered the same trajectories of discovery across Britain. It also remains true that different research histories necessitate that some debates have simply not featured as priorities, or been sufficiently prominent in certain regions to attract field analysis or focused research. For example, assembly culture in Gaelic areas, a topic of considerable significance for medieval Scotland, is absent.

Thus, there is something of a tension throughout the volume between the regional nature of many of the principal debates and themes, and the attempt at national coverage that characterizes most of the analyses presented in the volume. While this may be somewhat exacerbated by the selection of contributors and their topics of focus, this is not a failing. Instead, one may read this as a valuable contribution to comparison and contrast, which ensures that the volume as a whole focuses on national trajectories, and truly does attempt to capture as holistically as practicable the state of the art.

To this latter aim, this volume may be said to have been spectacularly successful, and it will constitute a major landmark for the field for some time to come. As a whole it represents an indispensable reference for the widest array of themes and debates in medieval archaeology yet assembled. Sections like Part IV, examining life within towns and ports, includes analysis of urban housing, the relationship with hinterlands, shops, and infrastructure, to paint an extraordinarily holistic assessment of the whole. These themes and associated debates, moreover, characterize scholarship in Britain and elsewhere in Europe, making the volume appropriate to the interested reader, student and specialist working within Britain and without. Alongside these many achievements of synthesis may be placed a considerable number of contributions that problematize the current state of the art, and indeed, pioneer new directions within the historiography of later medieval archaeology. Ronan O'Donnell's overview of field systems and arable agricultural practices, teases apart temporal change in an accessible and important overview for much wider debates. Amanda Richardson contributes an important discursive analysis of gender and space, while Aleks Pluskowski presents an important overview of the fluid relationship between wild animals, humans and landscape, as well as the impacts of changes that characterize the post-medieval period, and practice of things like hunting culture thereafter.

There is therefore much to recommend this volume, with the paperback edition in particular being remarkable value for such a comprehensive piece of synthesis. The editors have done an exemplary job of knitting this volume together into a cohesive, readable and fluent landmark of scholarship for this field.

PATRICK GLEESON
Queen's University Belfast

HUGH WILLMOTT, *The Dissolution of the Monasteries in England and Wales* (Equinox Publishing). 220 pp. 98 illus. £85.

Willmott's book provides a useful overview of the archaeology of the Dissolution, and will be welcomed both by students and by scholars specializing in other aspects of the early modern period seeking an introduction to this topic.

The introduction sets out two aims: to counter a perceived bias in popular and academic writing on the Dissolution towards narratives of destruction, and to recover human agency. The characterization of traditional narratives of the Dissolution seems a little one-sided. Certainly, some writers have over-em-

phasized destruction, but the corrupt and greedy abbot is as much a stereotype of popular English history as the wanton destruction of monastic houses, and this aspect of the historiography is not discussed. Similarly, the fact that the Reformation, and thus Dissolution, are traditionally painted in a positive light in Whiggish narratives of progress is also ignored. The second aim, to examine human agency, is one which nearly all archaeologists set themselves in a work of this type; though to the extent that Willmott has moved away from top-down understandings towards examination of the motives of people in the shires and towns he has achieved it.

Having set out his aims Willmott provides a brief chapter of background information on monasticism in England before moving on to the main subject matter of the book in chapters three to seven. Each of these reviews a different part of the archaeological record.

Chapter 3 examines the initial dispersal of monastic movable goods and building materials, and thus broadly examines portable material culture. This is one of the book's strongest chapters. Much of it is truly fascinating. The suggestion that the church was often chosen as the site for melting lead in order to desecrate it particularly interesting. This section would have benefited from some comparison with archaeologies of iconoclasm in contemporary parish churches. Willmott shows that the deconstruction of the monastic building was often a very well-ordered process, particularly those parts of it conducted by agents of the Crown. It is surprising that this was not examined in the context of the growth of state power in this period which would have helped place the Dissolution within post-medieval archaeological narratives. Likewise, Willmott brings together some interesting evidence for respectful treatment of human remains, and suggests that this was common. This would have benefitted from contextualization in terms of archaeological understandings of attitudes to the corpse and burial in the early modern period.

The next chapter addresses the dispersal of monastic real-estate. This is a vast subject, but Willmott provides a good overview. The discussion of how the gentry used monastic land to consolidate and extend their power locally, and to set up cadet branches is very useful. Likewise, examples of the gentry securing the tombs of their ancestors is interesting and adds to the discussion of the treatment of human remains in the previous chapter.

The next two chapters discuss the use of monastic buildings. Firstly, non-domestic uses are examined. This discussion begins with ecclesiastical reuse, both as cathedrals which continued in use with a Dean and Chapter replacing the monastic community, and as parish churches. Willmott suggests that scholarship has downplayed these uses because they do not fit the traditional narrative. This is unconvincing, as the phenomenon is a familiar one. An alternative, which is not examined, is that, as the Dissolution is a transition-period, medievalists may study the monastic phases of a site and neglect the post-medieval phases, whereas post-medievalists ignore monastic sites altogether as a medieval phenomenon. Nonetheless, the discussion of the archaeological evidence is excellent, and it is very useful to have the material drawn together. The success of parish communities in defending their rights against their social superiors is revealed, which is interesting in light of the contemporary defence of secular rights of manorial tenants. Willmott then explores secular uses, and reveals a great variety of these. The creation of schools and almshouses is familiar, but the examples of use of monastic sites for courts, town halls, prisons and industry and the reuse of monastic water management systems is perhaps more unexpected. Willmott's suggestion that burgesses may have felt some ownership of houses that they had patronized is particularly interesting.

A further chapter is devoted to domestic uses. As Willmott notes such uses are underappreciated. Consequently, this synthesis is very valuable. The discussion of the highest-status houses draws strongly on Maurice Howard, which is then placed in context by discussion of evidence for more modest houses and farms. One of the most interesting features of this chapter is the discussion of the treatment of monastic churches by different owners for personal and political reasons, which really goes to the heart of the human agency issue raised in the introduction. Finally, a chapter examines the landscape gardens which surrounded these houses, where the symbolic uses of monastic ruins is a particularly interesting aspect.

Overall, Willmott's valuable work drawing together and summarizing the archaeology of the Dissolution is let down somewhat by the aims that he set himself, and particularly the perceived traditional narrative which he is criticizing. Despite this some really important observations are made on the treatment of the church building, of human remains, the ability of the state to carry out an orderly process of asset stripping across the country, and the use by the gentry of monastic sites for symbolic/political purposes. One wonders if more could have been achieved if the book had instead been built around such themes. Nonetheless, if Willmott's book stimulates work on any or all of these subjects, he will have made a valuable contribution.

RONAN O'DONNELL
Durham University

WILLIAM D. SHANNON, *Seventeenth-century Lancashire restored: The life and work of Dr Richard Kuerden, antiquary and topographer, 1623–1702* (The Chetham Society, 2020). xviii + 346 pp. £39.95.

This book fits perfectly with The Chetham Society's aims to publish the 'remains historical and literary connected with the Palatine Counties of Lancaster and Chester'. Shannon acknowledges that Kuerden 'played an interesting, if perhaps marginal, role', but historians of Lancashire will find this an illuminating tour through his notes and papers.

The structure of the book carefully organizes Kuerden's jumbled materials into nine thematic chapters – no mean feat – but the sheer volume of his catalogue makes it a dense read. There are 18 small, black and white figures which serve as a whet to the appetite. The book begins with a very thorough introduction discussing the intellectual milieu of the time, setting Kuerden at the edge of, but never quite part of, noted circles of antiquarian studies, local history, and topographical practice.

The first chapter discusses Kuerden's bold, but ultimately fruitless, proposal to create an all-encompassing five-volume history of Lancashire, usefully transcribed in full as Appendix 1. Chapter 2 is a biographical account, rich in detail regarding some areas – such as how Richard Jackson came to be known as Richard Kuerden – but there is little basic personal detail such as date of birth. This is no fault of the author; all that is known of Kuerden derives from an autobiographical account, probably intended to accompany his intended History of Lancashire. Kuerden's statement that he was 'interested in mathematics from childhood' crops up several times throughout the book. Kuerden's correspondence with William Dugdale proves an ongoing connection with the better-known antiquary, but the letters 'throw little new light onto his biography' (p. 47). We see how Kuerden's increasing devotion to his antiquarian work had a detrimental effect on his medical career, a mismatch recognized even by his contemporaries (p. 74). Thus, Chapter 3 provides an illuminating – if alarming – account of medical training and practice at the time. Kuerden's flirtation with Catholicism is the subject of chapter 4, although no definitive conclusions can be drawn from the available evidence; this is perhaps as much a reflection of the limitations of being a professing Catholic at the time Kuerden was working.

The five chapters of the second half of the book feel more substantive, being a thorough analysis of the contents of Kuerden's extant papers. As such, it will be an invaluable source for those interested in the history of Lancashire, signposting the contents and coverage of his notes. This is given further weight by the inclusion of a second Appendix giving a description and discussion of the contents of each surviving manuscript folio. Kuerden had a voracious appetite for the written text, amassing a huge collection of papers and notes copied from – and sometimes onto – original documents. Preston Corporation were still trying to wrest their papers back from Kuerden decades after he had 'borrowed' them (p. 121). Kuerden, Shannon tells us, had 'substantial, albeit unfulfilled, ambitions as an author' (p. 124), and this amassed material was arranged into several unfinished drafts, none of which made it to publication during Kuerden's lifetime.

Shannon's chapters on Kuerden as map-maker and the Towneley maps (Chapters 7 and 8) are perhaps the strongest; whilst his discussion of whether the maps were made by or with Kuerden's involvement is inconclusive, what is not in doubt is the huge value of the Towneley maps. As Shannon states on p. 245, 'the town plans, road strip maps, and the Cartmel boundary survey, individually and collectively, not only throw considerable light on the methodologies and techniques of the seventeenth century surveyor but … add considerably to our knowledge of the landscape and townscapes of Lancashire in the late seventeenth century'. Three further appendices give the reader a partial transcription, calendar and notes relating to the Description of Leyland Hundred, the Towneley Maps, and the War Office Accommodation Returns of 1686, further enriching this volume.

Shannon gives us a window into the process of mapping, the specialist paper (including a gridded paper of Kuerden's own invention), tools and methodology of the surveyor, and an analysis of annotations and calculations on the map paper itself to reconstruct the process in real time. The note on Statute and Customary Measurements forming part of the front matter of the book is a very useful adjunct, explaining some of the challenges of interpreting mapping attempts given the range of lengths in use. As an example, a perch could be anywhere from 5 to 8½ yards in length, varying even between north and south Lancashire, despite attempts of Charles I to introduce a standard yard.

Whilst Kuerden's work was never brought to completion during his lifetime, and 'much of his work on medieval texts has been superseded' (p. 182), his surviving papers are useful to us now in providing insight into Kuerden's Lancashire in the seventeenth century, his working practices, and some of the social and scholarly reverberations of the political and religious upheaval of the time. Shannon's thorough and helpful descriptions of the archive are perhaps most useful in the way they shed light on the life and afterlife

of antiquarian and miscellaneous papers; the initial collection, then dispersal, loss, acquisition, rebinding, and annotations made over subsequent centuries.

Shannon successfully achieves his intention to restore Richard Kuerden to Lancashire's historiography, although Kuerden comes across more akin to a disorganized uncle than 'Father of Lancashire History' (p. 240) – particularly given his collaborator, Christopher Towneley, started twenty years earlier. Kuerden's materials do indeed reveal to us 'some aspects of seventeenth-century Lancashire which are perhaps available to us from no other source' (p. 18). But, whatever the authorship of the Towneley maps, they are the jewel at the centre of this treasure trove of papers, and I found myself agreeing with Shannon's assertion that 'these maps today have more value than the 11 manuscript volumes put together … [throwing] a unique light upon seventeenth-century Lancashire, unavailable from any other sources' (p. 182).

EMILY SLOAN
Nottingham

RICHARD HOYLE (ed.), *Histories of people and landscape: Essays on the Sheffield region in memory of David Hey* (University of Hertfordshire Press, 2021). 218 pp. £18.99.

This lively volume of essays will be close to the hearts of many members of the British Agricultural History Society. Not only are the editor and several of the contributors stalwarts of the society but its dedicatee, David Hey (1928–2016), had served as the society's president and is remembered affectionately as the life and soul of many a conference and excursion. The book is a fitting memorial to the scholarship of one of England's leading regional and local historians, who was firmly rooted in the Sheffield region but whose many contributions to rural history were never myopic. It contains ten essays, many by long-standing colleagues and friends (often an artificial distinction to David), prefaced by the tribute paid to him at his funeral by Charles Phythian-Adams, his friend for half a century.

The ten papers range widely across historical themes, with a greater or lesser focus on the Sheffield region. Two explore woodland in the medieval landscape. The late Melvyn Jones provides a reflective and wide-ranging survey of the purposes and meaning of deer parks, using those in the Sheffield area as examples, and paying welcome attention to their post-medieval history in the transition from park to coppice woodland or farmland. Trajectories in the history of woodlands are also the theme of Ian Rotherham's contribution, a broad, general essay with a focus on what he terms 'shadow woods', the medieval wood pastures which often evolved into largely treeless commons.

As is appropriate for a volume of essays on the Sheffield region, two contributions home in on the history of the steel industry – the 'fiery blades of Hallamshire' of the title of one of David Hey's most important books. In a characteristically thought-provoking and stimulating paper, Richard Hoyle offers a revisionist view of the role played by the earls of Shrewsbury in the statute of 1624 which established the Cutlers' Company in Sheffield. Rather than signifying a withdrawal from active manorial control, he sees the move as an expression of the need for new regulatory mechanisms for urban industry in early modern England. Dorian Gerhold places the south Yorkshire steel industry in a national context, providing a useful and succinct survey of steel-making in England as a whole in the seventeenth and early eighteenth centuries. He traces its development from Coalbrookdale (*c.*1615), south Yorkshire (probably by 1630) and Stourbridge (by 1641), to north-east England by the 1680s and Birmingham by around 1714. Within south Yorkshire, the steel-making heartland shifted from the Rotherham area to Sheffield around 1710.

Several papers examine aspects of rural society and landscape between the seventeenth and twentieth centuries, shedding new light on a disparate array of topics. Peter Edwards' detailed account of the realities of wardship in the early seventeenth century uses estate disbursement books to trace how Lord William Cavendish of Hardwick Hall integrated the estates of his ward, Francis Wortley, with his own, while honouring his obligation to make payments as Wortley's guardian. John Beckett seeks to reach behind the formal records of parliamentary enclosure in Nottinghamshire to assess the full scale of resistance to enclosure, arguing that W. E. Tate's conclusions based on counter-petitions to enclosure bills significantly underestimated the level of opposition. Alan Crosby's paper provides an exemplar of how the history of a single family can be used to shed light on much wider aspects of socio-economic history in local societies, an approach of which David Hey was himself a pioneer. His reconstruction of the fortunes of the Bagshaws, a yeoman family in the Peak District, from 1600 to 1942 is a fine case study of a long-resident family of the 'middling sort', whose rootedness fostered the distinctive local cultures of pre-modern England. Nicola Verdon's essay on the First World War ploughing-up campaign in Derbyshire also illustrates the value of a local case-study approach. Using surviving records of district War Agricultural Committees, she provides a full account of the challenges and achievements of the ploughing-up campaign in the county, which saw

an increase of over 32,600 acres of ploughland between 1916 and 1918, as official encouragement was replaced by compulsion.

In a fascinating survey, which touches only briefly on the Sheffield region, John Broad explores the growth of settlements along boundaries – many of them marginal communities of 'squatter' cottages, exploiting jurisdictional uncertainties along the boundaries of parishes and counties. Several place-names recur, not only the self-explanatory 'No Man's Land/Heath' but others, notably 'Little London', which occurs at least 140 times, though the full significance of the name is far from clear. The volume is rounded off by a brief paper on south Yorkshire surnames by David Hey's friend and collaborator, the late George Redmonds, which is included in the form in which it was submitted shortly before his death. It offers a sharp reminder of the importance of local knowledge (in his case a profound familiarity with both landscape and documentation) in the study of naming, as in so many other aspects of local and regional history.

David Hey was deeply appreciative of the richness of landscape and history in the Sheffield region. 'Where else in Britain', he wrote, 'can you pass from heather moors through wooded hills and vales to the "champion country" of the magnesian limestone belt and on to the Dutch-style landscape of Hatfield Chase within a journey of only thirty miles?'[1] This meaty volume succeeds in using the varied territory of his home patch to interrogate wider themes and in doing so to illuminate a broad range of topics. David would have enjoyed it thoroughly.

ANGUS J. L. WINCHESTER
Lancaster University

JOSEPH HARLEY (ed.), *Norfolk pauper inventories, c.1690–1834* (Oxford University Press, 2020). 320 pp. £77.

The Records in Social and Economic History series provides a great service to historians in collecting, publishing and, crucially, contextualizing material often located in disparate local record offices, and *Norfolk pauper inventories* is no exception. Pauper inventories, as Joseph Harley notes, are notoriously difficult to locate in archival collections, as they are not always individually catalogued within broader collections of material relating to the operation of the poor law, leaving the historian to sift through boxes of papers in an often-fruitless search. Once located, they must also be distinguished from inventories taken for other purposes, before one begins the task of deciphering the list of household goods – often hurriedly recorded, using archaic or local terminology for the objects described – and attempting to trace the fate of the pauper in question. The publication here of 230 transcribed inventories is therefore in itself a gift to historical researchers. These are grouped by the relieving parish and each inventory is accompanied by valuable information regarding the amount of relief provided to the pauper in question and any other relevant and available biographical information. To the rear of the book is a glossary of terms explaining the less familiar names for household items, and this will prove a useful reference for all historians of domestic material culture in Norfolk and beyond. Harley also provides detail about the inventories as material objects themselves, noting their placement within the wider archive and their physical condition. He is honest regarding any uncertainty about items listed, allowing the reader to come to their own conclusions about 'Dubious Terms' and highlighting cases where damage such as smudging and fading have obscured the text.

In addition to contextualizing the published inventories, *Norfolk pauper inventories* provides a rich and accessible introduction to pauper inventories as a historical source in the four chapters that precede the sources themselves. The first chapter explains the research contexts in which pauper inventories can be of use to the historian, demonstrating Harley's familiarity with histories of poverty and consumption, and the debates over industrialization and standards of living in the long eighteenth century. The extensive references in this section signpost the reader to further work in these fields while making a strong case for using pauper inventories to redress the relative lack of scholarship on the poor's own experiences of the industrious, industrial, and consumer 'revolutions.'

The second chapter goes into more technical detail about the operations of the poor law and the dubious legality of taking an inventory of a pauper's goods. Different parishes varied in how they exercised their responsibility to distribute relief, so that the poor law in practice was a complex patchwork of provision. There was no legal basis for taking pauper inventories, so the practice depended on local customs which could differ starkly. Harley argues that the taking of an inventory could be seen as a benevolent act where it guaranteed a pauper regular assistance, as the goods were usually only removed and sold or redistributed after their death. However, the awareness of local variations in practice is crucial in making such judgements. Harley points out that in Northern England the parish might require

[1] David Hey, 'What landscape means to me', *Landscapes*, 9 (2008), p. 77.

that goods were sold before relief could be provided, suggesting a much more draconian operation. He also points to temporal shifts in attitudes to providing relief, suggesting that in the late eighteenth and early nineteenth centuries concerns about pressures on the poor law system may have led to inventories being used as evidence of material sufficiency to deny relief to applicants.

The third chapter is therefore dedicated to outlining the specific local context for the creation of the pauper inventories in the volume. Norfolk had high levels of poverty during the long eighteenth century due to the decline of the worsted industry, resulting in a reliance on low agricultural wages at the same time as enclosure was limiting access to the commons as a supplementary resource for the poor. As a result, Norfolk has the largest collection of pauper inventories of any single English county, enabling Harley to draw out trends in the provision of relief relating to the gender and lifecycle stage of paupers whose goods were assessed, and the extent of relief they were likely to receive. He is, however, cautious of generalizing from the sample, given its distinct local character.

The final chapter guides the reader through the process of reading an inventory, pointing out areas where researchers might exercise caution, for example by highlighting the multiple reasons why an inventory might underrepresent the goods of a given household. One of the great strengths of the book is its generous, accessible style, making it a helpful starting point for non-specialists or historians new to using inventory evidence, though the rigorous detail makes it a similarly worthwhile read for experienced researchers. As Harley's own extensive publications on the material culture of the poor demonstrate, pauper inventories have considerable potential to challenge simplistic portrayals of eighteenth-century poverty. They can reveal the agency of poor people in negotiating with the parish overseers, and the potential to 'make home' with small comforts even in challenging economic circumstances. They can highlight the ways in which the experience of poverty differed between individuals and at different life stages, humanizing the poor by complicating their portrayal as an amorphous mass. As Harley notes, though pauper inventories were produced 'from above' by those with power in the parish, they nonetheless offer intimate insight into domestic lives that might otherwise fade into obscurity. In this book, he has provided a tremendously valuable resource to equip historians to research the stories pauper inventories can tell.

RUTH MATHER
Nottingham Trent University

ALAN WADSWORTH (ed.), *The farming diaries of Thomas Pinniger, 1813–1847* (Wiltshire Record Society, 74, 2021). 586 pp. 7 illus. £20.

The merit of this book lies in reprinting the day-by-day husbandry activities of an early nineteenth-century Wiltshire farmer. He was Thomas Pinniger, who farmed at Little Bedwyn, then lived at leisure in a farmhouse near Chippenham, but spent most years on a farm he bought at Beckhampton in Avebury parish, west of Marlborough. He was a consistent diarist who wrote down minor details. This volume includes about 160 pages of introduction, arranged under various headings (labour, law and order, events beyond the farm and so forth), followed by 330 pages of daily entries starting in 1823 and ending in 1838, although Pinniger continued recording for three further years.

Pinniger is described as the principal representative of the Wiltshire yeoman class in his day. This is misleading: he was a gentleman farmer, involved in agricultural decisions about his 200 acres but able to buy a coaching inn, have family portraits painted, hold large sums in the bank, and invest in stocks. This was not typical of working farmers, although many may have shared his opinions. He was church-goer, turnpike commissioner, and a Protectionist, some of whose employees signed with him an appeal in favour of the Corn Laws. Coercion? They were unlikely to refuse, especially as Pinniger seems to have been a disagreeable employer who had no satisfactory workforce and fell out with several hands. Some had to travel many miles to work, particularly the specialists. Admittedly he hired a number of dishonest men – perhaps he was not a good judge of character. He was 'tight', sold the leazing and sometimes fed his labourers on 'giddy' sheep.

Pinniger also fell into disputes about boundaries and the management of water meadows in which he had a share. As the editor remarks, we hear only his side of all this, which does rather undermine the value of relying on a single diary source. Yet about Pinniger's social standing and conventional views there can be little doubt. He joined a posse which rode over a wide area capturing men supposed to be ringleaders in the 1830 riots. Most farmers, petrified by fear of arson, probably agreed with him but few engaged so directly in putting the men down. He wrote a brief account of the riots, given in an Appendix.

The agricultural content of the diaries is in sum considerable. A handy Glossary and several Appendices are added to the editor's comments on a number of topics. Little of the farming detail surprises in view of what is in general accounts. Statistical material is scarce and much of what is available most conveniently appears in the Appendices, set out as information

on categories such as livestock, harvests and market prices. A prime interest was the weather, noted even on his wedding day, and he endlessly juggled farm operations to match its waywardness. Occasionally he had more grass than his flock could eat, and he took in sheep from other people whereas at different times drought put him at a disadvantage. Part of coping with fluctuations in workload involved exchanging teams of horses with his neighbours but he made sure to keep a record.

It is stated that no comparable diaries are available for Wiltshire. There are two problems with this. First, diary material overlaps with other types of farm records, notably account books, agent's reports to landowners, and collections of letters. Among the imperfections of any single source, diaries have their own quirks. We may accept the reliability of what is being penned without being clear about the context or knowing what is excluded. Diarists take their own affairs and local arrangements for granted and even the most assiduous feels no need to commit absolutely everything to writing. Pinniger's opinions are only indirectly ascertainable, and his private life is scarcely mentioned – his wife hardly gets a look-in. His love life is omitted, apart from enigmatic drawings of hearts in the margins during the period before his marriage. What else is left out?

Secondly, Wiltshire is not the most relevant unit of comparison. Counties are administrative units rather than agricultural ones. Beckhampton Farm was on the chalk and comparisons with ecologically similar farms beyond the county boundary might have been enlightening. Even on the Wiltshire chalk no comparison is made, for instance, with farming a dozen miles away at Aldbourne, for which ample documentation survives and where Pinniger knew the Browns whose descendants still farm there. Pinniger himself did not keep his affairs within the county boundary, visiting distant fairs and buying implements from Tasker's, right down in Hampshire. The limitations of county studies are illustrated by the identification of George Castle of 'Laten' Down, from whom Pinniger bought sheep at Ilsley Fair. The editor states that Castle possibly, then probably, came from Latton, Wiltshire – but Latton is only half a mile from the Thames, has no down farms, and its farmers were Habgood and Cook. George Castle was surely the farmer of that name from Lattin Down, Berkshire, on the chalk seven or eight miles from Ilsley, and next to which Castle descendants farm to this day.

This book is heavier on documentation than interpretation. Many of the extensive footnotes are informative, though straying occasionally into common knowledge and at the other extreme into one or two abstruse scientific definitions. Pinniger was not a forthcoming diarist, being observational rather than thoughtful. His notes do consist of hard husbandry facts but, again, what is excluded is uncertain. A close-up diary may suffer from the eye-witness fallacy; it is unclear that outside reports are not more enlightening than a diary because the onlooker sees more of the game. Rather than transcribing so very much semi-repetitive material from these diaries, it might have been helpful to print sample pages and allot more space to comparative analysis.

ERIC L. JONES
University of Buckingham

VANESSA DOE, *Improving agriculture in nineteenth century Rutland* (Rutland Local History and Record Society, 2018). viii + 128 pp. 71 illus. £12.50.

The primary focus of this book is Richard Westbrook Baker who from 1829 to 1861 was steward of the Exton estate in the county of Rutland. His primary concerns were the improvement of agricultural practices on the estate and the wider county and the well-being of farm labourers. Born in Hertfordshire in 1797, he moved to Rutland in 1808: by 1814, he was working on the Exton estate but it was not for another fifteen years that his employer Sir Gerard Noel Noel appointed him as steward of the estate.

After a review of Baker's early years and education, chapter 1 examines Sir Gerard's connections to the family followed by a description of his acquisition of the Exton estate. Prior to Baker's appointment as steward, he also involved himself in parish affairs being a member of the select vestry and he was appointed Overseer of the Poor in 1821. From this came an understanding of the plight of rural labourers which led him to establish the Rutland Association with the intention to raise a petition to parliament on the state of agriculture and the related rural distress.

With enclosure of the parish came the need for new farms to be built away from the existing farms which were located in the villages: however, there was some reluctance by tenants to accept these farms in that there was a well-developed pecking order in the local communities, whereby the closer you lived to the centre of the community, the more respected a farmer you would be. By 1828, Baker was farming 249 acres, as well as running a coal wharf on the Melton to Oakham canal. It is noted that a model farm was built at Cottesmore in 1853 with livestock housed around a square courtyard with a central water trough.

Chapter 3 then examines his role as estate steward and his influences on the agricultural practices of the estate.

He clearly recognized the need for improvements to be made: a lack of progress with drainage, poor livestock management and a lack of attention to the value of manure. Farm buildings were in poor order and there was still continued use of the village centre farms, rather than farms being located near the centre of the new land allocations which arose from the enclosure process. With regard to livestock, Baker was a breeder of Shorthorn cattle and, in this way, he was able to demonstrate at first hand what could be achieved: he also organized ploughing matches, agricultural shows and estate inter-farm competitions. He did not use leases to instruct farmers to undertake improvements: rather, he engendered a spirit of emulation to achieve his aims.

As well as the estate in Rutland, Sir Gerard also owned an estate in Gloucestershire at Chipping Campden extending to around 3000 acres, managed by a second steward. This book adds to scholarly knowledge by revealing the reason why some 16 small plots of land on the Exton estate were owned by residents of Chipping Campden. Although distant from the Rutland constituency which Sir Gerard represented in parliament, individuals on the Campden estate wished to support him in his political activity and as a result of their purchase of land were able to acquire voting rights in Rutland, a practice known as faggot voting which was abolished in 1884.

Chapter 4 looks at improvement in land management. A Farmers and Graziers Club was established in 1838 which considered drainage methods and farm mechanization: part of the latter included the development of the Rutland plough designed by Baker and manufactured by Ransomes of Ipswich, given that in the 1820s, Baker had described ploughing in the estate villages as akin to 'the disturbance made by grubbing pigs'. Other implements trialled included harrows, chaff cutters and flour mills, as well as steam ploughing.

Livestock improvement is then examined starting with livestock improvers elsewhere who may have influenced Baker in his endeavours. Baker won many medals both locally and at the annual Smithfield fatstock shows: he was also involved in the setting up of the Rutland Agricultural Society which exists to this day.

In Chapter 6 aspects of rural society are examined, in particular, poverty amongst farm labourers. To address this issue, Baker established cow pastures in some of the estate villages, to enable labourers to graze the cows which would previously have grazed the wastes and open fields before enclosure. Some of these pastures included a 'hovel': this was a building sub-divided to provide both fodder storage and winter housing for stock owned by a number of labourers. He also introduced a spade allotment system whereby small plots of land under ¾ acre had to be cropped in three equal areas of grain, potatoes and vegetables, and worked only by hand, outside of normal farm labouring hours. The final chapter concludes by reviewing his successes and achievements, noting that he had been described as a 'foremost agriculturalist of his day'. A series of appendices follow, mainly containing transcribed material from archive sources and newspapers, along with a useful bibliography.

The book is well produced with few minor typographical errors: the only distraction comes in the introduction where there are numerous examples of repetition. Overall, this book provides an insightful exposition of the role of the estate steward in the mid-nineteenth century.

ALAN WADSWORTH
Evesham, Worcestershire

WILLIAM EVANS, *The Victorian model farm in south Gloucestershire and north Somerset* (Avon Local History & Archaeology, 2018). 37 pp. 19 illus. £3.50.

This short booklet opens by setting the background to model farms in general, drawing on Susanna Wade Martins' book on the subject, and situates them in terms of agricultural, political and social contexts, with Prince Albert's farm at Windsor presented as a 'model' for model farms. Four farms in south Gloucestershire and three in North Somerset are reviewed before examining Eastwood Manor Farm at East Harptree as the major focus of the book. Owned by William Taylor, his plans and concepts were implemented by Robert Smith: having established himself as a breeder of cattle and sheep in Rutland, Smith was also agent to John Knight and Frederick Winn Knight, responsible for implementing their extensive reclamation project on Exmoor. The booklet concludes by considering the success of model farms in the Avon area in terms of agricultural and financial parameters. In doing so, this short book localizes the general concept of Victorian model farms to one specific geographical area. Whilst the publication is well presented, the diagrams therein could be made clearer.

ALAN WADSWORTH
Evesham, Worcestershire

DAVID FRITH, *The Hornsey Enclosure Act, 1813* (Hornsey Historical Society, 2021). 92 pp. 11 maps, 18 figs. £12.00.

Anyone who has wrestled with a tightly rolled collection of parchment sheets forming an enclosure award, along with its unruly map counterpart, will appreciate what

David Frith has done in preparing this book, for here is an enclosure award and its associated map tamed! The parish of Hornsey is some six miles to the north of the centre of the city of London and includes what were in 1813 the villages of Highgate, Muswell Hill and Crouch End, as well as Hornsey itself. The parish extended to just over 3000 acres and was rural in character, producing hay for the city's horses: at this time, some eight per cent of the area remained to be enclosed. Having introduced the parish, the purpose of the Enclosure Act is presented, section by section in Chapter 2, followed by an examination of the map. Whilst only a small part of the parish remained to be enclosed, it appears as though a full survey was undertaken, considered by David Frith to be in anticipation of the tithe commutation to come.

Chapter 4 presents the detail of the award and examines the roads and footpaths prescribed therein, before considering the division of the common and waste land: starting with the ecclesiastical recipients specifically named in the act, Frith then looks at the allocation of the remainder, noting that land tax values were used to determine proportional allocations not just of land, but of the weight attached to objections and the division of any surplus or deficit in expenditure. A table of the plots sold to defray expenses is given, whilst an appendix contains the allocation of land sorted by recipient surname and then by plot number.

In the next chapter, the landowners are presented: although one-half of the associated property index is missing, a fair attempt has been made at filling the gaps. The commons of Hornsey, Highgate and Muswell Hill are reviewed in separate chapters, before the costs of implementation are examined. In conclusion, David Frith notes that the high costs of administering the Act were due to the full survey undertaken: however, the objectives of the Act had been met in that 'improvement' by enclosure of the remaining parish land was achieved. This reviewer has found only two typographical errors in the whole book, thereby confirming the high quality of production. In this book, Frith has provided a model for the presentation of other enclosure acts across the country.

ALAN WADSWORTH
Evesham, Worcestershire

HEATHER HOLMES (ed.), *Scottish agricultural implement and machine makers, 1843 to 1914: a directory* (Scottish Record Society, Electronic Series Volume 2, 2020). lxvi + 918 pp. £45.00.

This directory is the second volume in the Electronic Series of the Scottish Record Society and as such they are available as electronic books only, provided as searchable PDF documents through the Record Society's online partner TannerRitchie. Heather Holmes starts her introduction to the directory by reviewing similar directories and compilations of data from England and Wales, which contain some Scottish material. She then identifies four broad groups of evidence, namely: trade directories, the agricultural press, catalogues of archives, and the records of the Royal Highland Show. The latter was the key event for exhibiting agricultural implements and machinery across Scotland, thereby encouraging their development. The use of newspapers has provided a rich source of information through the advertisements placed, reports of agricultural shows, accounts of machine trials, as well as articles referring to specific businesses. Using this material, Holmes presents some evidence to show that local manufacturers were developing implements to meet the local agricultural conditions.

The entries in the directory itself are described using up to 15 headings, but all entries have a minimum of three headings, those being the name of the business, the date(s) of activity and the sources of evidence. The extent of the entries depends on the size of each business and the evidence available.

Having explained the sources used to produce the directory, a survey of agricultural implements and machine makers is then presented, drawing out the key information from the data in the directory. An initial analysis considers the characteristics of makers' activities, the involvement of family members in businesses, the geographical distribution and the size of the business. The development of the industry and its reputation beyond Scotland is then considered before looking at the growth over time in the use of agents selling implements on behalf of one or more of the manufacturers. The survey ends with the identification of a number of themes running throughout the book.

Whilst the period covered by this volume is from 1843 to 1914, the editor does not explicitly state why 1843 was chosen as the start date: rather, the reader is left to note that this was the date of the first agricultural newspaper in Scotland, the Ayrshire Agriculturalist, and that a complete run of this title, and its successor the North British Agriculturalist, is available from 1843 to 1914.

This directory of Scottish agricultural implement and machine makers represents a *magnum opus* in terms of its production and content. Its usefulness has already been confirmed by this reviewer, who has used it to enhance his own research on English farms. Whilst a wide range of sources has been used to assemble the directory, Heather Holmes recognizes that there are other sources which have not yet been used. Its delivery

in electronic format means that revised versions can be made available in the future, without the need for another print run.

ALAN WADSWORTH
Evesham, Worcestershire

GEOFF SANSOME (ed.), *The diary of a Claines Farmer, 1883* (Geoff Sansome, 2017). 78 pp. 37 illus. £12.95.

This book presents a transcription of a diary for the single year 1883 written by the Worcestershire farmer Isaac Sansome and in doing so provides multiple insights into the workings of a small farm on the outskirts of a large city. Extending to 70 acres, the farm is primarily pastoral in nature with orchards growing apples and pears. The city of Worcester provides a ready market for the hay produced on the farm, as well as the fruit and cider, and provides easy access to suppliers of feedstuffs, equipment for the farm, as well as the domestic victuals necessary to maintain life. Unusually for a farming diary, there is little reference to the weather, and certainly no daily commentary.

There is an extensive record of daily income and expenditure which the editor of the book has used to prepare an approximate balance sheet. In the year of the diary, the farm makes a small loss before domestic expenses and goes some way to explaining why he needed to approach his landlord for a reduction in rent at Michaelmas: this is not unsurprising given that this was a time of agricultural depression.

Short summaries are provided at the start of each month before the transcription is presented enabling the reader to understand the main activities in the farming year. Data from the 1881 census, along with local knowledge of the village and surrounding area, has been used to provide an extensive series of footnotes explaining who was who, amongst the farmers, tradesmen and individuals referenced in the diary entries, as well as definitions of terms used.

A number of clear black-and-white photographs are used to illustrate the area, as well as four of Isaac himself at different stages in his life, taken from the family collection. The daily detail of farming activities, sales and purchases, and the social side of life provide the reader with a degree of granularity below that provided in county summaries such as that in Gaut's Agriculture of Worcestershire. Although this is the only known diary written by Isaac, it is likely that other diaries would add to the story told here of one farmer's efforts to make a living in a time when making a profit was not the primary focus but rather to be part of the local economy and community.

ALAN WADSWORTH
Evesham, Worcestershire

MARSHA O'MAHONY, *The scratch of the hop: Hop picking in Herefordshire, Worcestershire and Shropshire* (Logaston Press, 2021) 288 pp. illus. £15.

Marsha O'Mahony's book is an excellent social history of the hop industry, underpinned by meticulous research into the phases of the hop-growing year, based on a rich archive of oral history, much of which was recorded by herself, and photographic evidence and illustrations. Her book shifts the focus from Kent to the West Midlands and border counties as the centre of the hop industry. Hop and fruit-growing were often carried out side by side and for this reviewer there are some interesting comparisons to be drawn between these two small industries, which had such a big impact on rural life.

Like fruit-growing, hop cultivation was an intensive form of horticulture, with its own special skills and knowledge, which was passed through generations. It also transformed the farming landscape, with its dense pattern of hop poles and supporting frameworks upon which to train the plants, which grew perennially. This book shows how hop yards were constructed and maintained and how materials and techniques changed over time.

The centrepiece of the book is the necessarily long and detailed chapter on hop-picking – harvest time. Until just after the Second World War, hop growers employed a large seasonal army of pickers, drawn from the traveling community and from poorer districts of nearby urban areas (South Wales and Birmingham). For a short, intense season hop-picking connected town and country, urban and rural, in a way which no longer exists. The author looks at how the pickers were recruited and organized, how they were accommodated and cared for, how they worked, what they were paid, why they did it. Post-war mechanization of hop-picking brought about a revolution in the industry, drastically reducing the labour requirement for harvesting, but not for the care and maintenance of the hop yards. There is an interesting chapter on the British engineering firms who developed the new picking machinery, starting just before the war, and how this gradually took over the picking process in the late 1940s and 1950s.

At the end of the hop-growing year there is the process of drying, an arcane, magical process, with its own skilled workforce, operating the kilns, which were such a distinctive feature of hop-growing districts. A chapter on hop-drying describes this process in excellent detail, through to the bagging and bailing of the finished product, ready for brewing. Again we see the replacement of traditional methods through the introduction of new techniques, automation and

modern sensing equipment to control temperature and humidity.

The marketing of hops is then considered and here we have a brief summary of the economic history of hop-growing, which could have been developed further, or perhaps here is scope for a different book. The chain of distribution was a complicated one, in which hop factors graded and sold the hops on behalf of growers to merchants who acted on behalf of the brewers. There was no direct selling from producer to customer. The process of buying and selling took place in wholesale markets, such as the Corn Exchange in Worcester. Comparisons with fruit growers are interesting, as they often engaged in direct selling locally or to fruit processors under contracts, but also sold on commission to agents and wholesalers, who carried out a grading function, operating in wholesale markets in large urban areas. Some brewers, such as Guinness, maintained their own hop farms, and we see the same vertical integration in the fruit industry, with jam makers such as Chivers & Sons Ltd, and Wilkin & Sons Ltd, managing their own orchard land.

The author notes the decline in the hop acreage from a late nineteenth-century highpoint of 77,000 acres to 16,500 by 1932, due to foreign imports and new tastes for lighter ales, which reduced demand for traditional domestic hops. This pushed growers into voting for the creation of a Hop Marketing Board. The Board fixed guaranteed prices with the brewers and allocated quotas for growers, which helped to stabilize the industry. At this time fruit growers were also being pressured by government and the NFU to adopt a marketing board, which was firmly rejected in a ballot in 1935. Fruit growers looked askance at the controls hop growers now faced. Instead, a number of fruit cooperatives were set up on a county basis, to pool grading, packing and selling. This trend strengthened in the post-1945 period. This did not occur in the hop industry until well after entry to the European Economic Community (EEC), when in 1982 the Hop Marketing Board was deemed a monopoly in violation of EEC trade laws. Five grower-led hop cooperatives were formed, now reduced to three, members of the British Hop Association, formed in 1996.

There is a good chapter on the brewing industry, which describes the renaissance in independent micro-breweries in more recent times and the positive impact this has had on hop-growing. A final chapter focuses on hop research and developments in the future. This considers the history of control of pests and diseases from the nineteenth to the twentieth centuries, which parallel similar methods adopted by fruit growers. Much of this research and plant breeding took place at the hop department of Wye Agricultural College, later privatized as Wye Crops Ltd, under the aegis of the British Hop Association. The most significant recent development in hop breeding has been the introduction of dwarf varieties, now accounting for 23% of the domestic acreage. A similar trend has occurred in the modern fruit industry, replacing the traditional orchard with intensive plantings of dwarf spindle bushes, quick to grow to maturity, cheaper to manage, spray and harvest. Dwarf hops have led to similar changes in crop management systems and harvesting, with the introduction of new mobile picking machines. In order to survive, both the hop and fruit industries have been innovative, open to new techniques and practices, based on sound practical science. Marsha O'Mahony's book is in itself an essential archive on the hop industry, whilst offering an optimistic vision of its future, albeit it on a small scale.

JONATHAN SPAIN
Shepreth, Cambridgeshire

SIMON GOOCH, *Edwin Gooch: Champion of the farmworkers* (Poppyland Publishing, 2020). 138 pp. 90 illus. £9.95.

Simon Gooch's biography of his grandfather, Edwin Gooch, the President of the National Union of Agricultural Workers (NUAW) and Labour MP for North Norfolk, is a touching and very personal account of the life of a man who worked tirelessly for improvements in the lives of agricultural workers in his county and nationally. The book is richly illustrated with numerous images from the author's personal collection, and is punctuated with points of humour and personal recollections from family members which make it a very readable account. Many of the other characters who appear in the text have already been the subject of biographies, and the author ably demonstrates that Edwin Gooch's work is worthy of similar attention.

The book's key strengths lie in its personal approach, showing the development of the agricultural trade union movement through the lifetime and experiences of one man. This allows it to cover a lot of ground in terms of intriguing links to wider social and political histories, while retaining a sharp focus on the matter at hand. It also serves as an accessible introduction to the topic for a non-specialist reader. Over the course of 18 chapters, Gooch details the life of his grandfather, and his impact on the agricultural trade union movement in the mid-twentieth century. This period saw a great deal of change, politically, socially, and agriculturally, and more details in the referencing or direction to further reading would have been a welcome addition

to a work which incorporates tantalizing glimpses of the wider history of inequity between landowners and labourers prior to the nineteenth century, wartime, journalism, the Great Depression, women's suffrage and entry into political life, Communism in Britain and the history of the Labour party, to name but a few topics.

The first four chapters set the scene for Gooch's involvement in the NUAW. Gooch's world and work is immediately placed in the context of the writings of Adrian Bell and George Ewart Evans, and the work of Joseph Arch and George Edwards, in a county with a long history of protests from agricultural labourers stretching back to Kett's Rebellion in 1549. Acknowledging this local history, the author establishes that the book's focus is to be on 'the attempted resolution of those ancient inequities in the mid-twentieth century', and uses some of the tributes paid to Gooch after his death to demonstrate his place among these names.

The chapter 'Mr Edwards with his Agent' explores the relationship between Gooch and the veteran trade union pioneer George Edwards, which shaped much of his life and approach to politics. This leads well into a potted history of the agricultural trade union movement. Here this complex history is condensed into an easily digestible form by focusing on the personal experiences of Edwin Gooch. This gives a useful summary of the salient points of the wider story without becoming excessively bogged down in the politics and overwhelming the reader.

From here, the book follows Gooch through his rise to local prominence and the development of his conciliatory approach to relations between workers and landowners. The following chapter, 'The Great Strike', gives us the first substantial quotation from Gooch's own pen, in which he links his own work and the legacies of Joseph Arch and Robert Kett, making the connections to local labour history explicit. In this chapter, the author recognizes the criticisms Gooch received in the period after the Great Strike regarding his conciliatory role in the negotiation. He uses these to demonstrate the impact of Gooch's personal 'Methodism-derived Socialist ethos' on his approach to his role in the NUAW.

Matching Gooch's move to prominence in the NUAW, the next chapter, 'Our County Work', opens with the first full page portrait. From this chapter onwards, the author discusses the conflicting requirements on Gooch's time, forcing him to juggle his union and paid commitments with his family time, against a background of local, national and international events. These chapters are helpful in distilling the multiple challenges facing the government through the wartime and immediate post-war years down to their effects on one man. The book cleverly weaves national and international events into the events which loomed large in Gooch's private life: wartime agricultural policy, the devastating 1953 East Coast floods, and Britain's relationship with Russia contrast with the deeply personal in the loss of Gooch's wife Ethel.

The penultimate chapter, 'Champion of the farmworkers', is largely dedicated to tributes to Edwin Gooch following his death in 1964. It concludes with the words of Bert Hazell, Gooch's successor as NUAW president and MP for North Norfolk: 'he was never aggressive enough from the farmworkers' point of view. He was too kindly.' 'Maybe so,' the author notes, 'but he achieved much through his patient negotiations and could write and speak stirringly in public on the farmworkers' behalf'.

The concluding chapter discusses the changes which took place in the decades after Edwin Gooch's death in the world of the farmworkers which he had known so well. The author relates the development of the National Union of Agricultural Workers through various incarnations, into the Rural, Agricultural and Allied Workers' Trade Group, within Unite, noting the irony that an amalgamation with the Workers' Union had been one of the suggestions made by Edwin Gooch as early as 1924, demonstrating the prescience and deep level of understanding inherent in Gooch's approach to his work and the community he served.

The personal and family history aspect of the book means that the author risks straying into 'rose-tinted' territory, and, indeed, he acknowledges in the early pages that the book has become something of a tribute to the land workers of the past. However, the text skilfully blends a personal story with wider industrial, social and political history, drawing the reader in and bringing Edwin Gooch to life, while using his career as a window to shed light on the competing forces at play during this period. The book largely relies for academic comment on Alun Howkins' *Oxford Dictionary of National Biography* entry on Edwin Gooch, while more critical pieces about him are dismissed rather than dismantled. Nevertheless, the book makes a compelling case for the inclusion of Edwin Gooch as one of the key players in the movement for agricultural labourers' rights and fair treatment. It is to be hoped that in future his legacy receives greater attention in historical investigations of rural life in the mid-twentieth century, as well as in the developing historiography of the trade union movement itself.

JANE ROWLING
Calder Rivers Trust

WISEArchive, *Water, mills and marshes: Life and work on the Broads, 1920–2020* (WISEArchive, 2020). 294 pp. £15.

Water, mills and marshes presents the work of WISEArchive, a volunteer oral history group set up in 2005 to record accounts of working lives in Norfolk. The book forms part of the Heritage Lottery-funded 'Water, Mills and Marshes Project', managed by the Broads Landscape Partnership Scheme, with Broads Authority involvement. Oral history here takes its place within a wider engagement with the heritage of the Norfolk Broads region, and this well-produced book presents a range of voices recounting their working lives. Short introductory and concluding essays by Tim O'Riordan bookend individual testimonies grouped in sections on 'Life and Childhood on the Marshes', 'Water', 'Mills', 'Marsh' and 'Conservation and Ecology'. A website at wisearchive.co.uk documents the wider work of the WISEArchive group.

For readers of the *Agricultural History Review* the book is notable in including accounts of agricultural working lives, although male voices predominate in the land-working sections of the book. The 'Marsh' section includes occupations commonly covered in accounts of the Norfolk Broads, such as reed-cutting, thatching and the maintenance of remote grazing marsh by 'marshmen', but also covers wider work in agriculture, animal health and knackering. In a region where grazing marsh is a valued landscape in terms of ecology and amenity, such accounts allow appreciation of the organization and management of the grazing which shapes the marsh. Broadland appears not only as a valued ecological region but as a working agricultural landscape, shaped by wider historical connections such as the cattle brought annually from Ireland via Birkenhead to graze on the marshes, and Scottish farmers moving to the region in the 1920s. A set of accounts cover the Cantley sugar beet factory in the Yare valley, recounting harvest, processing, engineering and managerial labour, the agricultural life of the region generating an industrial processing plant in a rural area (though only ten miles or so from the city of Norwich). The book also shows livings from the land made through seasonal work; thus Bernard Shepherd appears in both the reed-cutting and sugar beet sections, moving from one to the other through the year. Since the publication of this volume at least one of the marsh voices featured has died, in the process demonstrating how a private life, once recorded, can go public. Marshman Bill Lacey died on 5 July 2021 aged 94, his passing as one of the 'last marshmen' noted in the local and national press, and with an item on BBC Radio Four's obituary show, 'Last Word', using recordings from WISEArchive.

The 'working' voices in this oral history are not only working-class voices. *Water, mills and marshes* includes testimony from those whose working connection to Broadland derives from professional expertise in science and conservation, whether around ecology or heritage. The campaign to rid the area of introduced coypu is thus covered by accounts from both trappers on the ground and scientists in the lab and field. O'Riordan's framing essays give a valuable background to the region's history, ecology and management, and its possible future under climate change, with a possible flooded return to the 'Great Estuary' of Roman times, a Broadland without broads. The book could also however be given a cultural framing with reflection on the history of the recording and expression of voices speaking of and for the place. This is not the only recent oral history project, for example the 2009 Marsh workers of the Broads project by Paul Mace for the Broads Reed and Sedge Cutters Association gave a parallel coverage of a specific form of marsh labour, with a book and accompanying DVDs, again with Heritage Lottery funding. A few individuals appear in both projects. There is also a history of voices styling themselves as local, notably through the performance of dialect, most famously in Broadland the mid-twentieth-century Potter Heigham garage owner, dialect performer and writer Sidney Grapes. Beyond attention to some local working terminology, however, dialect has a very minor presence in *Water, mills and marshes*, the local voices communicating in plain English.

Water, mills and marshes thus gives a regional portrait of great variety and value, although there is one notable group of people with significant connection to the region whose voices are absent. Tourism is a major element in the regional economy, and while boatbuilding, boatyards, river inspection and heritage sailing receive attention here, the voice of the holidaymaker is seldom heard. Occasional celebrity visitors are noted, as when Brundall boatbuilder Roy Forder recalls: 'Our clerk came from Potter Heigham where Cliff Richard moored his boat, *Pamanda*. He persuaded Cliff to store *Pamanda* at our yard and I put in a new bilge pump for him' (p. 82). For a project devoted to working lives within the region the lack of summer holiday voices is perfectly appropriate, but it would be interesting, if challenging, to move beyond the conventional oral history remit of exploring deep and intimate working connections to place to gather voices of those with more passing understanding, not least given that holiday encounters with the region have profoundly shaped its economy, and therefore the working lives of its residents. Holiday voices beyond those of the professional travel and guidebook

writer are hard to trace, indeed in conducting my own research on the region's cultural landscape these were in some ways the most elusive of voices, though Norwich library holds a series of inter-war holiday diaries and personal boating logs which give insight into the place connections shaped by leisure. An oral history of Broads holidaymaking, from the one-off weekend cruiser to the year-on-year repeat sailor, would be instructive in complementary fashion to *Water, mills and marshes*. The boatbuilding, wherry-restoring, beet-processing, coypu-killing, mill-wrighting, cattle-tending, dyke-cleaning lives recounted through WISEArchive have been lived alongside those taking a break from work, spending their money on the waterways. *Water, mills and marshes* itself records many pleasures, of childhood and work, sailing and craft, but in a regional portrait the pleasures (and anxieties) of Broadland holidays would also be telling.

DAVID MATLESS
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JUDITH CURTHOYS, *Cows and curates: The story of the land and livings of Christ Church, Oxford* (Profile Books, 2020). 288 pp. 16 illus. £35.

Cows and curates is an engaging, comprehensive and well-documented study of estate and clergy management by Christ Church Oxford, a unique institution being both the cathedral for Oxford diocese and a college of the university. The estates have financed its educational and ecclesiastical functions from 1564 to today. Christ Church has excellent archival records of its work in 185 parishes and its landholdings across counties from Devon to Yorkshire and Montgomeryshire to Norfolk but with the majority in Oxfordshire and surrounding counties. Originally founded by Cardinal Wolsey in 1525 as Cardinal College, funded by the suppression of more than twenty monastic houses, it ceased to exist with Wolsey's fall in 1529 but in 1546 Henry VIII re-established it as Christ Church.

Corporate landlords faced similar agricultural challenges of depression, prosperity and innovation but their management style was different. The wide dispersal of Christ Church's estates made estate management challenging and, as a result, the dean and canons appeared remote from the farmers of their land. They made progresses but much land was tenanted by aristocracy and gentry whom subtenants regarded as their real landlords. Fixed rents meant that income was partly generated by fines on renewal of leases or copyholds, which compensated landlords for inflation, in a system known as beneficial leasehold. Being 'hands-off' landlords meant the dean and canons did not share the desire of many sixteenth- and seventeenth-century landlords to convert copyhold to leasehold tenure but rather appreciated their subtenants continuing to pay court dues. In common with other landlords, the dean and chapter realized the value of their timber for construction and ship building

Christ Church was disrupted by the seventeenth-century civil wars with many of its lands damaged by fighting. Charles I lived very expensively in the College in the 1640s replacing fee-paying students. The dual function as a university college saved it from abolition in 1646. After the Restoration the chapter clerk transcribed all deeds and lease registers into the *Book of Evidences*, described by Curthoys as Christ Church's *Domesday Book* – a very valuable record still in the archives. However, a lack of terriers made it difficult to establish property boundaries and ownership. The dean and chapter needed more income to maintain college buildings and run the cathedral. Professional surveyors and land agents were employed to make terriers and accurate valuations of each property to justify increased renewal fines payable every seven or fourteen years by reluctant tenants. Beautifully drawn maps recorded the estate from *c.*1700, many of which are illustrated in the sixteen pages of excellent colour plates in this volume.

Students from the College were presented to the 100 parishes where Christ Church held the advowson and great tithes but many employed curates to perform the parish duties. Some parishes complained of neglect and argued this encouraged non-conformity. Parsonage houses were often in disrepair until improvements were made in the late eighteenth and nineteenth centuries. Similarly, many churches were almost rebuilt in the Victorian period. In 2020 Christ Church still had links to 80 incumbencies as widely dispersed as in 1546.

Enclosure on College lands mirrored what happened in the rest of England with Tudor enclosures for sheep pasture and seventeenth- and eighteenth-century enclosures for improved arable and stock rearing. Christ Church, like many colleges, was slow to embrace enclosure and never initiated the process. In some parishes tenants initiated enclosure without the knowledge of the College which then needed to protect tithes and ensure that increased yields led to raised renewal fines. In 1811 renewal fines were increased to one and a quarter times the real annual value of the property. If tenants failed to renew after 14 years the College ran out leases and issued a new lease at market or rack rent. Christ Church suffered the effects of Swing riots in 1830–31 against enclosure and agricultural mechanization.

In common with the crown and the church, colleges were slow to run out beneficial leases and embrace

more profitable rack rents. Colleges from 1858 were encouraged to sell lands and convert to rack rents but by 1886 Christ Church had borrowed £200,000 (three times its revenue budget) to compensate for lack of entry fines while leases were run out and for repairing properties as tenants losing leases ceased to maintain them. Agricultural depression followed from 1870 when cheap imports of grain and livestock, combined with new cattle diseases, caused many tenants to default, but the College retained them as it lacked the resources to manage farms in hand.

Bequests of land and money alongside sales of some properties continued. They were given a farm in Arreton on the Isle of Wight in 1732 to found Portsmouth Grammar School, whose pupils could progress to Christ Church. Christ Church benefited from sales of land to canal and railway companies. After 1858 the College was able to offer long building leases and also profited from the construction of hotels for travellers. At the beginning of the nineteenth century, Kentish Town was a farm but by 1850 Christ Church had 500 houses on long building leases in the area. Urban rents increased hugely averting bankruptcy for the College.

Increased horticulture, especially on College estates in the Vale of Evesham and vegetable crops compensated for falling prices for traditional produce, and improved transport and food preservation techniques facilitated delivery to urban centres. In 1913 agricultural land still contributed two-thirds of the College income. The College also profited a little until 1939 from leases to mine coal under its lands. Some colleges sold their land, but Christ Church still owned 10,500 acres in 2020 which are professionally managed and provide half the College's income with commercial and residential property yielding more than rural. This book, as well as being a fascinating study of a unique institution, contributes to debates on the effectiveness of collegiate and ecclesiastical landlords.

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DAVID CROUCH (ed.), *The Victoria County History of the counties of England. A history of the County of York: East Riding*, X, Part 2, *Howden Town and Liberty* (Boydell and Brewer, 2020). 178 pp. illus. £95.

This second volume completes the study of Howden Township and Liberty, which form a complex region involving competing and anomalous jurisdictions. Formerly one of the two liberties of the Bishop of Durham, it is examined along with Wallingfen, which in Roman times had formed part of an inlet of the Humber at the feet of the Wolds. Though not a part of Howdenshire it offered important resources to the surrounding townships. The rich pasture, fish, game, peats, rushes, reeds and turves of Wallingfen were managed by an elected body of gentry and yeomen outside either ecclesiastical or royal control. Distancing from the usual controls imposed by royal officials or clergy can be seen in other aspects of the East Riding of Yorkshire, and particularly in Hull where there was no proper legal quay for the accurate assessment of duties until the construction of the first enclosed dock, opened in 1778. Though it had no approved assay office, Hull had its own system of marking for silver and gold which persisted until the early eighteenth century without any external regulation.

Frequent inundations from the Ouse and the making of banks and dykes in response are recorded as early as 1274. In 1445–46 a staith was completed at Howdendyke revetted with stapled faggots and detailed records survive for the reigns of Henry VIII and Elizabeth I. These staiths were a hazard to navigation and also affected the river's behaviour; the tidal bore, known as the Aegir, associated with the equinoctial high tides was exaggerated wherever the river narrowed. The lead wave could reach a meter in height and resulted in the scouring of the banks at the bends in the river. Maintenance was expensive and repairs to the Wet Flood Staith in 1531 required no less than 80 oak trees, 600 timber piles, 4,000 brushwood faggots, and 800 corded bundles of thorn.

The Liberty of Howden was a detached estate of the Bishopric of Durham and the bishops officers eventually established their authority after various disputes with representatives of the crown during the thirteenth century. The area known as Bishopsoil provided some 4,000 acres of common land to the north of Howden township, and was enclosed in 1777.

There was a twice-yearly Bishop's court and the remains of one court building survives next to Langley Gate, but the old Moot Hall was demolished in the early nineteenth century. The Bishop's manor house survives and the parish church of St Peter, Howden Minster, is an impressive reminder of the power and influence of the see of Durham, though much reduced from its collegiate form. After the Reformation, and the return of royal authority to Howdenshire, the choir and chapter house fell into disrepair, though the latter was reroofed in 1984 to preserve the stonework.

The settlement of Howden apparently originated as a river landing on the lower Derwent and river transport via the Ouse was crucial to its existence, both for movement of goods and people. Until the middle of the nineteenth century most riverbank settlements had jetties and Howdendyke became a thriving river port. Road access was poor, and before 1800 it was necessary

to use a ferry at Bubwith in order to reach the Wolds and Beverley while the Bishop's manor controlled a ferry between Howdendyke and Hook. It was 1929 before the development of a modern highways system linked by bridges was achieved. A railway connection had, however, been established by the construction of the Hull-Selby railway in 1840. This encouraged the development of the Howden horse fairs in an area with some fame in the eighteenth and nineteenth centuries for horse-breeding.

Howden claimed a moment on the national stage in 1924 when the former Royal Naval Air Service airfield was acquired by the Airship Guarantee Company. Despite the successful flight, from Howden, of the R100 – designed by Barnes Wallis, inventor of the 'bouncing bomb' – the loss in 1929 of the R101 – an airship designed by a government team – resulted in the cancellation of the entire national airship programme.

The volume also includes Welton, Welton Soke, and Welton cum Melton, and is divided into sections describing landscape, settlement, land ownership, economic history, river defence and drainage, social and religious history, and local government.

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East Yorkshire Local History Society

Europe and Elsewhere

J. ESCALONA MONGE, O. VÉSTEINSSON, and S. BROOKES (eds), *Polity and neighbourhood in early medieval Europe* (Brepols, 2019). 446 pp. 26 illus. 39 maps. 6 graphs. €110.

The last few years have seen a flurry of publications focusing on the 'local', inequality, and peasants (more recently referred to as the subaltern). Contributions from scholars such as Juan Antonio Quirós Castillo, Nicolas Schroeder, and Thomas Kohl have helped us to approach otherwise hard-to-see groups in new and revealing ways. One significant part of this effort has been edited volumes collecting the fruit of many scholars' labours, e.g., Castillo *et al.*'s *Social inequality in early medieval Europe: Local societies and beyond,* or Bernhard Zeller *et al.*'s *Neighbours and strangers: Local societies in early medieval Europe.* This volume complements these works, seeking to bridge the gap between the local and the supralocal. Something that has enabled such a wide view is that this volume represents the culmination of knowledge from three funded collaborations across a decade and follows two previous volumes (Andrew Reynolds, Wendy Davies, and Guy Halsall's *People and space in the Middle Ages* and Julio Escalona and Andrew Reynolds's *Scale and scale change in the early Middle Ages).* Accordingly, their collective focus has shifted from the local worlds with which they began to tracing out the pathways of power from their foundations to the summit. As the editors make quite clear, while this volume seeks to unpick relationships *between* the top and base of the superstructure of society, it attempts to do so carefully, well aware of the risks of teleological arguments surrounding the issue of state formation (p. 3). They acknowledge that we should not assume that states were inevitable or all-encompassing developments. Indeed, this project has gone quite some way to illustrate the unevenness of 'state' power across early medieval polities (I use the word state here as a convenient shorthand to denote the governing structures of medieval polities).

The essays of the fourteen scholars who have contributed to this volume cover, via a rather generous reading of the 'early medieval' time-frame, the fifth to the thirteenth centuries and focus on regions ranging from Iceland to Italy. Rather than attempting to group them together chronologically or regionally, the editors have opted to divide the material into three sections: the first focuses upon society at the local level; the second examines the supralocal; and the third surveying connections between the two.

In the first part, examining the evidence from the local, are contributions by Grenville Astill, Margarita Fernández Mier, Alexandra Chavarría Arnau, and Iñaki Martín Viso. These essays argue, in one form or another, for the standardizing effect of the state. Where the state's touch is at its lightest we find greater divergence in local farming or organizational practices. It may go without saying that in order to find evidence of local, rural neighbourhoods, the scholars in this volume have made extensive use of archaeological evidence. Astill uses evidence of land reallotment, open-field systems, and settlement nucleation, to reconsider James Campbell's maximalist interpretation of the early English state from an archaeological point of view. Mier contrasts the evidence from two villages, Vigaña and Villanueva, one near a 'power centre' and the other deep in the mountains, to highlight the differences in the communities' experiences of supralocal power. Arnau and Viso use burial evidence from northern Italy and western Iberia respectively to draw out local agency and the ways in which these methods of interment were erased or adopted by the state.

The second section, focusing on the supralocal, comprises essays by Frode Iversen, Alfonso Vigil-Escalera Guirado, Orri Vésteinsson, Letty Ten Harkel, Stuart Brookes and Andrew Reynolds. Iversen begins the section with an examination of the Thing (public

assemblies) in Iceland and its role as an ideological centre for state formation in the region. Unlike the supralocal communities in Iversen's analysis which had the potential to influence state decisions, Guirado's examination of similar small, supralocal groups in Central Spain shows that, in the face of a complex, post-Roman state, it could be much harder for regional collectives to shape state-level processes. The work of both Vésteinsson and Ten Harkel, examining Icelandic identity under Norwegian rule and Carolingian control of Frisia respectively, illustrates how light the touch of the state could be in early medieval Europe. Brookes and Reynolds's co-authored chapter brings the focus back to England and the issue of the intrusive early English state. Supporting the idea that the complex territorial and political divisions of early medieval England, such as the shire, served to reinforce top-down power, they argue that the manifestation of these systems differed on the ground.

The third and final part, examining interactions between the local and supralocal, are papers by Wendy Davies, Álvaro Carvajal Castro, Julio Escalona, and Alexander James Langlands. Central to interactions between the local and supralocal is the transference of land, a process which is best seen in charter material. Accordingly, all four chapters make extensive use of such evidence. While it is important to avoid teleological arguments for state formation, Davies flips this issue somewhat on its head. She argues that the longevity of charter practices indicates that the apparatus of the state can be surprisingly resilient even when we might expect it to have disappeared i.e., during the failure of the state itself. Reminding us that paying close attention to terminology matters, Castro suggests that the ubiquitous term 'villa', used in charters from tenth-century León and which once referred to a nebulous unit of aristocratic landholding, only came to denote a physical villa with the intensification of lordship. Escalona and Langlands both utilize the concept of Dense Local Knowledge to posit that local actors possessed a valuable asset – detailed knowledge of boundaries and the landscape – which was not accessible to lords without consultation. This proved to be a pinch point which offered ground for negotiation.

Given that this volume covers so much space and time, it is a testament to the slow form of scholarship used throughout the project that it has remained a cohesive, rather than a discursive, volume. As a result, it offers a vital window into the world of medieval European agrarian societies, both local and supralocal. One comes away from this volume, or at least this reviewer did, with a deeper appreciation for the granularity of polity formation in early medieval Europe.

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SYLVIE BÉPOIX and HERVÉ RICHARD (eds), *La forêt au Moyen Âge* (Les Belles Lettres, 2019). 424 pp. 114 illus. €26.90.

Soon after the fire that tragically consumed much of Notre-Dame of Paris's roof in 2019 there were widely reported fears that it would be impossible to find trees large enough, at least in France, to rebuild the cathedral the way it was. Such fears reflect the astonishingly persistent myth that primeval forests survived into the Middle Ages. While experts are not always capable of banishing such popular misconceptions, in this case some of the confusion may derive from the fact that, for long, even scholars have lacked an updated survey of French medieval woodlands. By helping to make better known the countless advances in research that have been made over the last generation, this collection of essays succeeds in providing such an update, even if its 27 distinct contributions do so in a fragmented way. The publication of this important book is therefore cause for celebration.

The volume's intended geographical focus, as noted on p. 7, is the territory of modern France and Belgium. Chronologically, the Middle Ages are understood here in a traditional sense as the millennium between 500 and 1500 CE. Along with endnotes, the table of contents, and indices of proper names, the book contains three brief prefaces (pp. 7–21), two concluding remarks (pp. 349–56), and three main parts.

Standing apart from the rest of the volume's historical approach, Part I, entitled 'La forêt rêvée' ('The imagined forest', pp. 25–103), addresses how woodlands are portrayed in medieval literature and hagiography. Its two chapters provide an engaging survey of the ways in which medieval writers represented arboreal spaces, and they are superbly illustrated with 47 colour images from medieval manuscripts. Part I is less impressive, however, as a scholarly update. The notes reflect recent work, at least in French, but there is no sustained discussion of methodology; there is mention neither of recent ecocritical interpretations nor of the use of hagiography as a source for environmental history by, for example, Albrecht Classen and Ellen Arnold amongst others.

From a historical perspective, then, the value of this book lies in its Parts II and III, which are organized around a series of regional studies, spread across seven chapters and many unnumbered subchapters. Part II focuses on northeastern France and Belgium,

while Part III turns to the North West, the South (the Pyrenees and the Mediterranean littoral), and three zones of low or moderately high mountains (the Vosges, the Jura, and the Morvan in Burgundy). While covering many regions, the volume omits a wide swath of south-central France, stretching from the Atlantic coast to the Alps.

Although the book lacks a substantial, synthetic introduction, Part II's first chapter, 'La forêt resources' ('The forest resources', pp. 107–21), by Corrine Beck and Fabrice Guizard, along with a subchapter by Sylvie Bépoix on 'L'évolution des espaces cultivées' ('The evolution of cultivated spaces', pp. 180–90), together provide a survey of medieval French forest history. The outline of this history consists of alternating phases of woodland expansion and retreat, according to a rhythm that is familiar from older accounts. For example, the most substantial medieval attack on woodlands took place from the eleventh to the thirteenth centuries, after which woodlands regained ground during the crises of the later Middle Ages. That current research confirms this familiar sequence is in itself a valuable finding. But Beck and Guizard also emphasize a point echoed elsewhere in the volume: even in periods of less anthropogenic pressure, few woodlands resembled the dense, wild forests of medieval and modern legend. They instead comprised multifunctional, mosaic landscapes, thoroughly shaped by already age-old practices of agro-pastoralism.

In terms of the sources used, about half the essays of parts II and III rely mostly or entirely on texts, almost always to good effect, especially for the later Middle Ages. For periods before the fourteenth century, however, the penury of written sources makes it difficult to advance significantly our understanding of French (and European) woodlands.

It is here that this volume makes its greatest contribution: it includes ten essays that present recent archaeological and paleo-scientific findings, all accompanied by helpful figures and clear, colored illustrations. These essays will familiarize readers with burgeoning research in the study of such things as pollen deposits (palynology), tree rings (dendrochronology), charcoal deposits (anthracology), and mills, furnaces, kilns, and other industrial sites. Some essays also address settlement patterns and other anthropogenic modifications of the landscape by drawing on either archaeological surveys of pottery fragments and other artifacts or the new method of LIDAR (Light Detection and Ranging), which uses airborne lasers to detect hidden features of the earth's surface. The value of combining such methods is perhaps best illustrated in an essay by Vanessa Py-Saragaglia and her co-authors, who reconstruct in impressive detail the forest history of several sites in the Pyrenees (pp. 276–99).

The most noteworthy contributions, however, are five of the scientifically oriented essays that study the forests of northern France and Belgium through dendrochronological analysis of oak timbers from churches, castles, manor houses, and other archaeological sites. Thus, Vincent Bernard and his co-authors, making use of more than 7000 core samples of timbers from almost 400 sites across the northwestern quadrant of France (pp. 243–58), present a graph showing the average age at which oak trees were cut down across the entire millennium from 500 to 1500 CE (Figure 4, pp. 252–53). Although samples from the early Middle Ages are still too few, this single chart provides a more scientifically-grounded snapshot of medieval French forest history within a broad region than anything previously available of which I am aware. It suggests, for example, that the use of very old oaks of 200 years or more was mostly limited to the period before 750 CE, and that the most intensive phase of felling occurred between about 1180 and 1230, when the average age of oak timbers fell to only 30–35 years.

Moreover, as these five essays show, the insights to be gained from the study of surviving construction timbers go far beyond just the age of the trees used. The variations in the widths of a tree's annual growth rings, along with the length of the trunk used and the frequency of forks, branches, knots, etc., all provide evidence concerning the environment and system of management within which the tree grew.

For example, both the above essay by Bernard *et al.* and another by Frédéric Épaud on the Paris region (pp. 142–53) show that the churches built in the new, Gothic style of the late twelfth and thirteenth centuries typically include large numbers of similar, very long and thin roofing beams, averaging 8–14 m long and 20–30 cm in diameter. Yet the trees from which these beams were made were only 50–60 years old, much younger than the 80 years or so required to reach an equivalent height in this region's forests today. These authors argue persuasively that these medieval trees must have grown not from seed, but rather from pre-existing root systems (coppice stools), which allow for rapid growth during a tree's first decades, and then continued to grow tall and straight within dense, homogenous stands of timber. This timber was produced, therefore, in well organized and protected timber 'reserves', to use a term that was only then beginning to appear in texts referring to forest management.

Épaud goes on to note that this research casts doubt on contemporary complaints about a timber shortage: it would take a reserve of only about three hectares

to supply all the beams needed for the cathedral of Bourges's gigantic roof (p. 150). This work also shows that these well-managed timber reserves—some of which Bernard *et al.* have traced to as early as the tenth century (pp. 256–7)—were established centuries before any surviving texts record how they were regulated.

These examples provide only a sample of the insights to be gained from this collection. Its editors and contributors are to be congratulated for publishing this stimulating book.

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DAVIDE CRISTOFERI, *Il reame di Siena. La costruzione della Dogana dei Paschi e la svolta del Tardo Medioevo in Maremma (metà XIV-inizi XV secolo)* (Istituto Storico Italiano per il Medio Evo, 2021). xii + 345 pp. 3 maps, 7 diagrams, 20 tables. €30.

In late medieval Italy, Tuscany represented the third most important region for transhumance, right after the Kingdom of Naples and the Papal State, and the first, in the case of Siena, whose pasturelands were managed by a communal institution – the Dogana dei Paschi di Siena. In his remarkable book, Davide Cristoferi presents a data-saturated analysis of the transformation of the Maremma from a depopulated and uncultivated landscape after the Black Death to Siena's most profitable source of income in the early fifteenth century. The driving force behind this development was the Dogana dei Paschi of Siena, a communal institution that increasingly exercised monopoly control over the pastures and the access of transhumant herds from the Apennines to winter grazing in the Maremma.

The volume is structured into five chapters and an extensive appendix. After contextualizing Siena's Dogana dei Paschi and the 'realm' of the Maremma against the crisis of the late Middle Ages, the author discusses the fragmentary source situation prior to the onset of the *Dogana*'s institutional preservation in 1419. Given this lack of institutional sources from 1353 to 1419, Cristoferi draws on a wide range of archival records from Siena, Florence, Prato, Orvieto, and Volterra. The rich documentation of Siena's communal offices and magistrates in particular allows for a detailed examination of the institutional formation and financial performance of the *Dogana*. Moreover, it offers important new insights into the complex interactions between Sienese institutions, the pastoral economy, state-building processes, and the socio-economic transformations and redistributions following the crisis of 1348.

The first main chapter (pp. 21–90) reconstructs the development of the pastoral economy and transhumance in the Maremma and the institutional formation of the Dogana in light of the economic recession following the Black Death. In the long fourteenth century, Cristoferi identifies a multitude of crises – two floods, 22 famines, 14 epidemics, 13 wars and 50 passages of mercenary armies in Tuscany (p. 26) – that had devastating effects on the region's economic and demographic capacities. Siena thus sought to compensate for its decreasing fiscal revenues by exploiting the untended arable and pasture lands of the Maremma. In 1353, the city council of Siena introduced the direct management of pastures by a new public office – from 1366 onwards called the Dogana dei Paschi – that licensed the access of transhumant herds to road networks and to common and private pasturelands in the Maremma against payment of a tariff based on species, herd size, and season. Examining its normative development, territorial expansion, and financial performance, Cristoferi underlines that Siena's initiative to centralize the management of its Maremman pastures stood out due to its degree of pervasiveness compared to other European regions. While the economic relevance of pastoralism increased across late medieval Europe, the enactment of the first statute of the Dogana in 1419 led to a 'complete re-organisation' (p. 85) of access to and use of common pastures in the Maremma.

The second main chapter (pp. 91–143) examines the acquisition of common pastures and grazing rights from local communities and the increasing presence of foreign transhumant herds in the Maremma. Cristoferi elaborates four key strategies of either acquiring possession or appropriating and regulating the *ius pascendi* of common and private pastureland used to different degrees between 1300 and 1419: military/political subjection (conquests, pacts, privileges), acquisition/expropriation of land and the associated rights of use, legislation, and jurisdiction. From 1353 onwards, Siena seized local rights to lease the use of pastures and limited the number of animals to be kept by the local population without paying for herbage. The commodification of commons and the allocation of grazing lands to the Dogana led to a significant loss of grazing areas for local working animals and to increased debt exposure and tax evasion by local communities. This not only caused large-scale competition between transhumant herds and local crops and livestock, but also the overexploitation and exhaustion of pastures. As the strain on arable and grazing resources increased, conflicts arose between local farmers and transhumant shepherds and between local communities and the Dogana.

The third main chapter (pp. 145–86) presents a synthetic analysis of the administrative organization

and the financial performance of the Dogana of Siena, including a comparison with the papal Dogana del Patrimonio di S. Pietro. Cristoferi discusses the tasks, number, and salaries of a wide range of magistrates and officers working for the Dogana in Siena and the Maremma, among them livestock counters, scribes, officers controlling the payment of herbage (*erbatico*), and armed guards securing pastures and livestock while preventing fraud and damage. The cost of the latter's salaries alone amounted to up to 1,000 fl. per year, prompting intervention by the General Council in 1356 and 1365 (p. 157). On the financial side, however, the Dogana benefited from its increasingly profitable management of transhumance. In the 45 financial years between 1353 and 1419, for which account books have been preserved, revenues from herbage, tolls, fines, and pasture rents, etc., came to 396,000 gold florins, whereas annual expenditures represented only 21% of its income (pp. 164–74). Compared to the papal Dogana, Siena licensed significantly fewer animals and still generated more income due to the higher pasture rents and herbage rates it demanded (8–8.5 fl. vs. 5–5.5 fl. per 100 sheep in 1419). Moreover, the two institutions differed in the development and extent of their monopoly claims on local pastures in the light of state-building processes in late medieval Italy (175–86).

The conclusion (pp. 187–201) discusses the exceptionality of the Dogana dei Paschi as a monopolist over common pastures in the 'realm' of Siena in the broader context of crises, socio-economic transformations, and state-building processes in late medieval Europe. The volume is supplemented by an extensive appendix which, in addition to three maps and seven diagrams, contains 20 comprehensive tables, amongst others on legal issues, collective resources, and officials, as well as on the revenues and expenditures of the *Dogana* (pp. 205–300). The book concludes with a list of archival sources, a bibliography, and indices of cited authors, persons, places, and central terms (pp. 301–42).

Cristoferi's splendid monograph is a must-read for scholars of transhumant pastoralism and highly recommended for interdisciplinary readers interested in the great transformations of rural societies in late medieval Europe and the Mediterranean.

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FABIAN KÜMMELER, *Korčula: Ländliche Lebenswelten und Gemeinschaften im venezianischen Dalmatien (1420–1499)* (De Gruyter, 2021). 516 pp. illus. £63.50.

This lively and well-researched monograph surveys the legal and socio-economic conditions on an island located near Ragusa/Dubrovnik in the Adriatic sea. Coverage extends from 1420, when it voluntarily moved under Venetian overlordship, until the end of the fifteenth century. The Serenissima respected Korčula's pre-existing statutory law and sent a *comes* as its sole representative to act as the supreme judge and mediator between local and central concerns. Typically serving for two years, these Venetians presided over a high court with six domestic judges (hearing cases from the whole island) and a complex constitution composed of the island's eponymous town (governed by a set of civic officials and a large council made up local patricians) and four *casalia* (village districts), each with intricate administrative structures. Much of the information – exceptionally rich for the region – derives from jurisdictional proceedings, supplemented by notarial records, council minutes, deeds, wills and petitions. Following surveys of existing scholarship (as yet lacking such a detailed account for components of the Venetian *stato da mar*) and the historical background (tracing the growth of Ottoman influence in the Balkans), the core chapters deal with the island's system of government, the profile of village society and the 'special case' of the shepherds. Three maps and eight photographs taken by the author provide helpful illustrations.

Drawing on an extensive conceptual review, the chosen approach combines micro-historical enquiry (to recover the personal contexts and networks of select individuals appearing in the sources) with an anthropological interest in the *Lebenswelt* of the islanders more generally (comprising elements like everyday routines, social customs, material culture and codes of honour). The analytical focus lies on the multi-layered notion of *Gemeinschaft*, understood here as the symbolic construct emerging out of the dynamics of social practice (p. 70). This definition encompasses a variety of manifestations, including not just the spatially circumscribed island *universitas* as a whole, the urban commune of Korčula in the narrower sense and the four rural districts of Blato, Čara, Smokvica and Žrnovo (each with shared responsibilities and collective capacity) but also a socio-professional subgroup like the shepherds. The latter resided in one of the villages but developed a distinct identity linked to seasonal labour patterns, contractual ties with animal owners from all over the island and collective interests often at variance with those of neighbours working in fields or vineyards. Court disputes reveal both overarching ties rooted in Korčula's statutes, age-old customs and communal institutions on the one hand, and tensions between patricians and plebeians, peasants and vintners and shepherds and those with and without offices on the other. The biggest bone of

contention was the damage inflicted on lands and crops by grazing: an inordinate amount of time and effort had to be invested to demarcate fields from pasture, identify transgressors, calculate losses, determine penalties and secure compensation. Illustrating the delicate balance between inclusion and inclusion, shepherds were often viewed with suspicion and considered less trustworthy than other villagers.

The argument offers numerous further insights along the way. One of the most notable is the substantial stake rural inhabitants held in the island's public affairs. Town-based bodies stood at the pinnacle of the constitution, but each rural district had its own assembly, lower court and legal/fiscal officials plus four constables and a host of field and vineyard wardens, not to speak of ad-hoc additions for particular tasks. While all positions were filled by the large council, the personnel changed every six months, meaning that dozens of men obtained positions of responsibility in each village every year. On some occasions, furthermore, *comes* and court went on circuit to hear cases in the localities (there was a purpose-built loggia next to the church of All Saints at Blato; Figure 5); on countless others, communal officials exercised influence over proceedings held in town; sometimes, rural representatives even petitioned the Venetian doge or senate directly. The surviving volumes of records testify to a remarkable diffusion of at least basic literacy and multilingual capacity way beyond the city walls. Written notes transmitted specific information and instructions from centre to periphery and vice-versa. Alongside, we catch glimpses of oral exchange (e.g. in a series of lawsuits over public insults hurled at the newly wed couple of Marussiza and Radovanus de Craina on 20 August 1459) and the significance of material media (in the form of tally sticks used to record contractual agreements between animal owners and shepherds). In Korčula, therefore, popular participation was extensive and the urban-rural boundary porous indeed.

As acknowledged by the author (pp. 62–3), the biggest and most regrettable thematic gap is religion. The island had its own Roman Catholic bishop and it would have been fascinating to see how ecclesiastical dimensions intersected with the multiple forms of affiliations outlined above. Given an almost total loss of church records, the emerging narrative inevitably veers towards the secular, with very little to say on parochial organization, congregational worship, fraternity life and spiritual practices, all of which must have differentiated the experience of *Gemeinschaft* further. Stylistically, to move to a few quibbles, there are rather too many recapitulations of the same points, some over-elaborate passages packed with quotations (chapter 2) and tendencies to jump from micro-historical findings to generalizing conclusions (chapter 5).

Overall, Kümmeler offers an engaging journey into the world of a fifteenth-century island society. His concluding remarks point to wider comparative potential, be it with other areas along the Dalmatian coast (such as Poljica, where feudal structures lingered more strongly), the *terraferma* around Venice or case studies even further afield. Anyone interested in concepts of community, rural economies and town-country interactions will find *Korčula* a stimulating read.

BEAT KÜMIN
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FABIEN GAVEAU, *Propriété, cadastre et usages locaux dans les campagnes françaises (1789–1960): Histoire d'une tension légale* (Presses universitaires de Franche-Comté, 2021), 480 pp. €40.

Fabien Gaveau writes about the land from an unusual perspective having managed a family farm on the eastern edge of the Paris basin whilst studying and teaching agricultural history. His book can best be described as a social history of French land law, but one with a message. The message or argument is contained in the sub-title: the history of land ownership and possession reflects a series of long-standing tensions between owners, exploiters, legislators, jurists and real estate professionals (surveyors and public notaries).

By the standards of most European countries, seigneurial lordship over the land ended quite abruptly in France. The Declaration of the Rights of Man of 1789 established the principle of private property and in 1804 the Civil Code defined ownership unambiguously as the 'faculty to enjoy the use of, and to dispose of, things in the most absolute manner' (article 544). Hence the fetishizing of the status of 'proprietor': a word which carries a special resonance in French to this day. In reality, of course, matters were not quite so simple. As the author shows, the slogan belied the reality and it was left to nineteenth-century officialdom to try and bring custom and practice into alignment with the letter of the law. A series of tensions arose which threw into question the rigorously individualistic definition of private property: disputes over collective rights (grazing, gleaning, etc.), stock transhumance, afforestation, land reclamation, marsh drainage, fishing, hydro-electric schemes and so on.

The gap between the vision of administrative elites who wished to make the countryside 'legible' and those who actually lived and worked there was never really bridged, but simply narrowed. Over time (the study extends to the 1950s) the agenda shifted and new issues emerged. The issue of legal ownership yielded – in the

face of productivist pressures – to a preoccupation with actual possession and exploitation. In 1946, for instance, a revised Statut de Fermage which had originally been an initiative of France's Vichy government placed a considerable restriction on property owners: share-crop farmers acquired a right to conventional leases and tenant-farmers a right of pre-emption should their holdings be put up for sale. In more recent decades policies of environmental management have placed further restraints on ownership.

Much of what Fabien Gaveau has to say is encapsulated within the fraught history of the Rural Code. Unlike other attempts at codification by the revolutionaries and by Napoleon, rural law proved stubbornly resistant to standardization. The first effort, in 1791, was wrecked by the inability of legislators to find a viable means of ending collective rights. Not until the final decade of the nineteenth century was a solution of sorts found for the practice of collective grazing, without which the right of landowners to enclose their property remained a dead letter. Even so, an agricultural enquiry of 1898 disclosed that nearly a quarter of rural councils had voted to maintain *vaine pâture*. While a regulation of forests reached the statute book as early as 1827, the long-anticipated Rural Code was not legislated until 1955. It is true that the extraordinary complexity of property structures in France posed a formidable obstacle. The sales of Church- and noble-owned property during the revolutionary decade created around 600,000 new owners, many of whom were micro-proprietors, and in any case much of the arable land surface was heavily subdivided.

The huge task of mapping and registering land holdings was envisaged as a corollary to the abolition of seigneurial lordship in 1789, but it only made significant headway in the early decades of the nineteenth century. These *cadastres* were initially conceived of as fiscal tools: they only evolved into a type of standardized register of land holdings subsequently. Nevertheless, they were nearly everywhere in place in France almost a century before compulsory title registration was introduced to England and Wales. Agricultural historians will probably find the pages relating to mapping and surveying the most interesting feature of the book: how property boundaries were reconnoitred and how disputes between adjacent parishes and municipalities were resolved. After the Revolution the task of defining territory was handed to surveyors with mathematical training whose understanding of space differed markedly from that of those who actually tilled the land.

Throughout his study Fabien Gaveau provides well documented illustrations of the 'tensions' that give shape to his investigation. Indeed, these illustrations often amount to substantial case studies in their own right. They serve as a reminder that this is not a book for general readers to dip in to. There is simply too much information on offer and it threatens to overwhelm the interpretive structure. From a specialist's point of view, most of the findings are not particularly new: the author synthesizes existing research, adds examples and provides a connecting chronological narrative. His use of the considerable body of English-language scholarship on the countryside in France is rather patchy, and it is a matter for regret that the study draws to a close just as the biggest land reorganization undertaken since the Revolution started to make headway. Confronted with no fewer than 145 million ownership parcels of an average area of 0.33 hectare in 1946, legislators put the authority and resources of the state behind a massive programme of plot consolidation (*remembrement rural*) in the late 1950s and 60s. To date some 15 million hectares of agricultural land has been reshaped and reallocated.

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DANIEL BENSAÏD (trans. ROBERT NICHOLS), *The Dispossessed: Karl Marx's debates on wood theft and the right of the poor* (University of Minnesota Press, 2021). 160 pp. $25.

In October 1842 Karl Marx, aged 24 years, became editor of the *Rheinische Zeitung*. Founded a few months before, the newspaper lasted barely fourteen months before the Prussian State closed it down. Under Marx's editorship the paper become one of the most widely read German publications, and he used the newspaper to develop radical critiques of important contemporary issues.

For Marx these were transformative times. As Robert Nichols explains in his introductory essay to *The Dispossessed*, Marx later explained that while editor he

> experienced for the first time the embarrassment of having to take part in discussions on so-called material interests. The proceedings of the Rhineland Parliament on thefts of wood, and so on … provided the first occasion for occupying myself with the economic questions.

The 'discussions' that Marx took part in during 1842–1843 in the pages of the *Rheinische Zeitung* might seem obscure, mark a period of intellectual transition for the young radical. As Nichols says, it was a period that saw 'Marx's break with Hegelian philosophy' and the start of Marx's embracing of socialist ideas and his development of a radical critique of political economy.

The Dispossessed is in three parts. The bulk consists of an extended article by the French Marxist Daniel Bensaïd that uses Marx's 1842 work as a jumping off point to explore issues of ownership, dispossession and the state. Bensaïd (1946–2010) was a prolific author and activist. A key French Marxist intellectual, he is less well known in Britain, so Nichols' autobiographical introduction provides useful framing for Bensaïd's essay.

The final part of the book is Marx's article, 'Debates on the Law Concerning the Theft of Wood', published in five parts from late October to early November 1842. It is an extraordinary piece. Working from fragmentary reports of the Assembly, Marx constructs a detailed critique of the transformation of property relations in the countryside. Superficially the issue seems simple – the rights of the peasantry to use wood from forests.

The issues arises, Bensaïd says, 'as a consequence of rural pauperism in full bloom'. Yet the complexities of the debate arise:

> from the fact that the integration of timber into an exchange market rendered its use-value and exchange-value inseparable from one another. At stake in the new legislation was the need to assert property rights, rigorously distinguishing property titles from entitlements based on need and thus the exchange economy from the subsistence economy. The evolution of an apparatus of penal sanction thereby institutionalised new forms of delinquency and social criminality.

In other words, what was at stake in the Assembly discussion on wood theft was a vision of how society should be organized. Emerging capitalist interests were keen to transform economic and social relations in their interests. This meant destroying old, customary, and communal organization and connecting nature to the market economy.

Marx shows how there was a contradiction between the desired new relations and the existing laws. Having 'become conscious of the conflict between the interest of forest protection and the principles of law', the Assembly voted on 'whether the principles of law should be sacrificed to the interest of forest protection or whether this interest should be sacrificed to the principles of law'. The Assembly 'trampled the law under foot', says Marx. He continues:

> The Rhinelander ought to have been victorious over the estate, the human being ought to have been victorious over the forest owner. [The estates] are legally entrusted not only with the representation of particular interests but also with the representation of the interest of the province… The sense of right and legality is the most important provincial characteristic of the Rhinelander; but it goes without saying that a particular interest caring no more for the province than it does for the Fatherland, has also no concern for local spirit.

Instead, Marx complained of the 'immoral, irrational and soulless abstraction of a particular material object and a particular consciousness that is slavishly subordinated to this object'.

Through the debates on wood, Marx begins to break with an approach that sees the law and the state as being above society. Instead, he starts acknowledging the way that the law is a tool of social forces. The process he is describing was mirrored elsewhere. It is worth noting the similarities between the situation in the Rhineland and England. The seventeenth and eighteenth centuries saw similar changes in social and economic relations in the countryside, and the mass criminalization of poaching. There is even a parallel between the provisions in the Prussian legislation for punishment based on whether criminals had blackened their faces with the Black Act of 1732 in Britain.

Bensaïd shows how Marx's conception of property goes through a transformation, breaking with cruder explanations such as Proudhon's 'all property is theft' and evolving into a more complex understanding where 'two conceptions of law that have come to clash, the rights of the property owners against the rights of the owned'. In this situation, Bensaïd concludes following Marx, 'Only force can decide'.

In the final section of his essay, Bensaïd develops Marx's insights into a contemporary critique. In an era when conservationists try to assign exchange-value to nature through a process of commodification known as 'Natural Capital', when institutions like the UN see market mechanisms such as carbon trading as the solution to climate crisis or when corporations try to privatize knowledge, Bensaïd uses Marx's work to explore the ongoing destruction of the commons. He concludes that it is 'no longer about the comparative advantage of rational economic solutions. It is rather a test of political strength'.

The Dispossessed is thus of interest on several levels. The work by Marx explore the role of the state in driving through a new set of property relations that facilitated the further development of capital. For historians of the rural economy, the parallels between nineteenth-century Prussia and Britain in the eighteenth and nineteenth centuries are fascinating. Secondly, Bensaïd's essay draws out the importance of

the debates for Marx's own development as a socialist and then applies these to contemporary capitalist society. Finally, Robert Nichols provides, for readers in Britain, an introduction to the insights and importance of Daniel Bensaïd's life and work. All together this is an insightful and compelling work.

MARTIN EMPSON
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ANDREW A. ROBICHAUD, *Animal City: the domestication of America* (Harvard University Press, 2019). 352 pp. 30 illus. £31.95.

The apparent absence of animals from twenty-first-century urban environments is a convenient illusion which, in some ways, allows urban dwellers to avoid the realities of animal suffering which sits at the core of industrial capitalism and consumer cultures. In fact, cities are ecologically diverse places, pulsing with many forms of life which entwine with and shape what we tend to think of as wholly human spheres of influence and affect. As Andrew Robichaud shows in his deeply researched and thoroughly persuasive book, though, the texture of urban multispecies engagements has its own history that needs to be uncovered, not only to allow historians to trace the roots of human-animal engagements in their present form but also to inform deeper understanding of much broader historical phenomena.

A critical intervention in the fields of urban, environmental and animal histories, *Animal City* provides a compelling analysis of the ways in which domesticated animals vanished from American cities by the turn of the twentieth century, while other forms of life – from horses put to work to provide essential transport to wild things displayed in 'civilizing' captive spaces – found new places to be seen, driven by emerging forms of consumption. In a sense, Robichaud's style of analysis and storytelling conjures a dynamic multi-species mosaic, whose configurations fluxed over the course of the nineteenth century in response to a wide range of social, economic and political influences. In doing so, the book sits alongside works such as Joshua Specht's *Red Meat Republic* (Princeton University Press, 2019) and, indeed, it also brings to mind Hilda Kean's classic treatment of the British humane movement, *Animal rights* (Reaktion, 1998), which similarly addresses the vexed connections between visibility, sentiment and politics.

Robichaud's illustration of the changing animal city is split into three key parts, tracing animal presences in several American cities, but with a focus on New York and San Francisco. The first three chapters focus on the apparent banishment of livestock from the urban environment, beginning with an examination of the forces underpinning the development of dairies in New York in the 1820s and 30s. This is followed by an analysis of spatial regulation in San Francisco, where transforming attitudes to the presence of livestock generated shifts in the organization of the city itself, leading to the creation of an 'instant animal city', the social, political and economic ramifications of which were far reaching. The second part (chapters 4 and 5) focus on the humane movement, illustrating the development of humane societies, their motivations and actions across the middle decades of the nineteenth century, while simultaneously pointing to the ways in which the human-animal relationships at the core of this work interacted with – and came into tension with – the processes identified in earlier chapters where animal suffering was rendered increasingly invisible. The focus of the final part (chapters 6 and 7) moves from the humane movement to forms of consumption rooted in curiosity and amusement, tracing the disappearance of 'uncivilized' forms of animal entertainment to the emergence of more 'enlightened' entertainments in the form of zoological gardens towards the later decades of the nineteenth century. The section begins with an especially compelling/disturbing vignette concerning an 1827 event at Niagara Falls, in which vast crowds gathered to watch a boatload of animals tumble to their deaths into the watery chasm (pp. 197–8). This is convincingly contrasted with the later emergence of zoos (focusing on Robert Woodward's zoo in San Francisco) as places associated with a mode of looking at wild animals that was supposedly far removed from earlier forms of brutalizing vicarious consumption.

Across a series of city-focused case studies, the book ably evokes a compellingly visceral sense of the realities of nineteenth-century cities, conjuring an understanding of times and places characterized by the incessant multi-sensory interactions between people and animal others in American cities. Indeed, the book is especially impressive in its ability to recognize and historicize an astonishing multitude of species. At one point, Robichaud argues that the story of human-animal engagement in the modern city matters because 'their ghosts still haunt the places in which we live' (p. 12). Throughout the book, the author masterfully directs the reader's gaze towards teeming urban animal shades, bringing them to life in ways which remind us that these were vibrant living beings whose suffering was very real (see the description of cows' physical reactions to being fed distillery mash, for example, p. 22), whether or not they were visible to people bustling through the streets of nineteenth-century American cities.

Despite deep research and expansive analysis, there are some areas where questions are evoked rather than fully answered. For instance, while the book alludes to the shifting rhythms of the city itself, pointing in limited cases to elements of the nocturnal city, for example, the seasonal dynamism of urban environments remains unexplored. Like all environments, cities warp in response to the wider conditions in which they are entangled. Illuminating this instability is, of course, a mammoth task, and not within the remit of the book's analytical and conceptual lens. Nonetheless, thinking along these lines may be a way for future scholars to build on Robichaud's work. Striking, too, were questions about other American cities, particularly those with situated in specific environmental milieus. Were urban developments similar in the deep south to those in the cities that formed the focus of this work? Robichaud's work provides an important inspiration to scholarship that might attack the question of local urban multispecies specificity.

In sum, Robichaud's *Animal City* is significant in its contribution to scholarly understanding of the nature of cities and the diverse and transforming character of historical human animal relations. This book is comprehensive in its analysis, but also focused enough to leave room for provocation which, I suspect, will generate a burgeoning of historical analyses of city-focused human-animal relations beyond the cities which are the core focus of this work. Moreover, the ways in which social, economic, political, cultural and legal forces provide the contexts of human-animal entanglements renders this work ideal for the teaching of undergraduate courses across the fields of animal, American, environmental and urban histories. Beautifully written, the work is an accessible and wholly convincing introduction to the value of studying human-animal relationships in the pursuit of a wider understanding of place and the forces that generate historical change.

ANDREW FLACK
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VIVIEN EDWARDS, *A path through the trees: Mary Sutherland – Forester, botanist and women's advocate* (Writes Hill Press, 2020). 202 pp. £23.

This is a book about a period of pioneering forestry, mostly in New Zealand. It is set in the first half of the twentieth century when timber supplies from indigenous forests were projected to run out and this catalysed a huge state planting programme in New Zealand. Mary Sutherland was at the heart of this initiative. It must have been an exciting time to be a professional forester. However, this book is much more than a study of forestry in New Zealand in the mid-twentieth century. It is about changing attitudes to forestry, about innovative research, education and silviculture, and it is also about one woman's struggle to overcome gender bias and prejudices in what was a profession traditionally dominated, indeed almost exclusively populated, by men.

Vivien Edwards has provided a well-researched and detailed account of the life of Mary Sutherland. Born in 1893 in Stoke Newington on the outskirts of London, Mary studied forestry at the University College of North Wales, Bangor, enrolling in July 1912 and graduating in 1916. In 1918 she joined the newly created Interim Forest Authority, transferring to the experimental and research branch of the newly formed Forestry Commission in 1919. Her first job was being in charge of the Windsor Crown Woods experimental nursery. In a scenario all too familiar to modern audiences, a few years later, government expenditure was drastically reduced and many skilled and experienced foresters, including Mary, lost their jobs. Unemployed servicemen returning from the First World War were given priority for any jobs and Mary began to look overseas for work, notably to New Zealand where her sister Kate was living. Edwards points out that Mary was already well respected. John Sutherland (no relation) Assistant Commissioner for the Forestry Commission in Scotland, wrote to William Massey the prime minister of New Zealand informing him that Mary had given good service in connection with timber work during the war and in her subsequent Forestry Commission employment and that 'she is capable and enthusiastic about whatever work she has to undertake'. Harold Dale, assistant secretary at the Ministry of Agriculture and Fisheries also wrote on Mary's behalf to the assistant director of New Zealand's Department of Agriculture, Frederick Pope. Nevertheless, it was without a job to go to that at the age of 30 Mary left Liverpool for New Zealand in 1923.

Three months after arriving Mary obtained a temporary position with the New Zealand State Forest Service, initially in a clerical role, and so began her long association with forestry in New Zealand. By 1924 Mary had been transferred to the silviculture branch, and sent to Rotorua on the North Island to undertake a study of the region's forestry operations, from seed collection to plantation forestry. Unsurprisingly, the local conservator Halbert Goudie treated her arrival with suspicion. Not only had Mary been sent by Head Office, namely by Leon McIntosh Ellis, the Director of the New Zealand State Forest Service, but she was a graduate and a woman. Ellis however, was a supporter

and something of a mentor for Mary. He complimented her on the report and she was then sent to assist at a Ranger School and then to Hanmer Springs on the South Island. Here she became very involved in promoting educational programmes for children, in particular school tree nurseries. Ironically, Mary told Ellis that the Forest Service should establish holiday camps for boys where they could learn about forest management. The proposal was not adopted.

Mary's work on the programme of afforestation was recognized and her position was made permanent by the end of 1926. Goudie had been replaced by William Morrison and he was also unhappy about Mary reporting directly to Ellis. Clear lines of authority are essential in any organization and this apparently muddled management structure was not helping any of the staff, least of all Mary Sutherland.

Mary played an important role in ensuring that science was incorporated into New Zealand's forest management programme. She was at the meeting in 1927 which began the process of forming a professional body, and was to play an active role in the Institute throughout her life. At this time, as well as her other duties, Mary was putting together a manual of forestation. Progress on this could not have been helped by the sudden resignation of Leon Ellis who left for Australia. He was replaced as Director by Edward Phillips Turner and Mary found herself caught between two masters, Turner and Arnold Hansson, making the completion of the manual an almost impossible task.

Forestry in New Zealand was then hit by the economic crisis of the late 1920s and early 1930s and Mary again lost her job. Whilst in the forestry service, however, she had developed contacts with the Dominium Museum in Wellington and she was offered a post as a librarian and botanist a position that became one of full-time botanist in 1935. Her work was interrupted by World War II and Mary left to do national service at the Woburn YWCA hostel. In 1946 she joined the Department of Agriculture as the department's first farm forestry adviser. Specifically, her job was to offer advice and guidance for farm shelter, tree plantations and wood lots and to write for the *New Zealand Journal of Agriculture*. Her work on farm forestry was ahead of its time, and it is clear that her gift for communication and her passion for public education coupled with her innate capacity for hard work made this a halcyon period in her career. Sadly, Mary Sutherland's work was brought to a premature end. She became ill and died early in 1955 at the age of 61.

Vivien Edwards has produced a valuable biography of Mary Sutherland. It is a story of someone's deep love of trees who had a determination to overcome antagonism and mistrust about both her gender and her graduate qualification. The book is to be recommended for anyone with an interest in land use policies in the early to mid-twentieth century, and also to those with an interest in social history and the struggle of women forging a career in a male dominated profession.

GERRY BARNES
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AMANDA MCVETY, *The rinderpest campaigns: A virus, its vaccines, and global development in the twentieth century* (Cambridge University Press, 2021). xiii + 294 pp. £22.99.

This book undertakes an informative critique of the history of rinderpest, a bovine disease more commonly known as cattle plague. It focuses on the provision of vaccines and their relationship with global development in the twentieth century. At first glance, such a subject may not necessarily appear of relevance to many readers. This is particularly true for those in the United States, a country which avoided the ravages of the disease. In a similar way, the western industrialized nations of the world were barely affected compared with the way the disease devastated not only cattle, but also bovine populations in Africa and Asia. This lack of interest also reflects the fact that humans are immune to rinderpest. Under such circumstances, it may be tempting to relegate the disease and the literature which accompanies it to a mere footnote in the annals of agrarian history.

However, such an assessment would not only be naïve but grossly misleading, doing a grave injustice to McVety's informative and perceptive critique. In six detailed chapters, complemented by extensive footnotes, the book explores how researchers on a global scale acted together to develop new vaccines. There were significant landmarks along the way: Robert Koch's immunological experiments in South Africa in the late nineteenth century; the creation of the first 'inactivated' vaccines by Kakizaki (Japan) and Kelser (Philippines) in the 1910s and 1920s; the development of more potent attenuated vaccines by researchers in India, Kenya, Canada, and China in the 1930s and 1940s. This involved growing the virus in living organisms (goats, eggs, and rabbits). This in turn heralded the development of a tissue culture-based vaccine (TCRV) in the 1960s, followed by the thermostable vaccine (ThermoVax) in the late 1980s which did not require constant refrigeration.

McVety perceptively explores how each significant step in vaccine development impacted on national and international rinderpest control programs. Inactivated vaccines prompted governments to shift from isolation

and sanitation measures to mass vaccination schemes as the main mode of rinderpest prevention. In turn attenuated vaccines made eradication possible, while the development of TCRV and ThermoVax, made it cost effective. The result was a remarkable success story, when after decades of intense vaccination campaigns, the World Organization for Animal Health and the UN Food and Agriculture Organization (FAO) declared the world free of rinderpest in 2011.

The main strength of the book is the way in which McVety integrates the history of vaccine research with a broader and perceptive critique of the role of non-human actors in this story. In particular, the book provides a valuable insight into the interrelated issues of the development of scientific internationalism and national security, exploring how this resulted in the creation of the Office International des Epizooties (World Animal Organisation) and the global circulation of rinderpest viruses and vaccines during the interwar years. It explores how this subsequently became enmeshed in the tensions of the Second World War, the Cold War and global decolonization. McVety expands the standard Cold War narratives to show how these tensions were framed not only by economic and political concerns, but also by biological ones. During the Second World War, for example, several countries undertook research into the possibility of using rinderpest as a biological offensive weapon, but also developed defensive responses if it was used against them. Furthermore, the book also highlights contrasting postwar responses to rinderpest, showing how an international coordinated response was far from evident. The colonial powers in Africa tried to resist Food and Agriculture Organisation interference by creating a special branch for veterinary health within their CCTA (Commission for Technical Cooperation in Africa south of the Sahara). As such, McVety's study makes a significant contribution to the emerging historiography on late colonial resistance against UN agencies.

By adopting a top-down approach, focusing primarily on political elites, international institutions and high-level scientists, *The rinderpest campaigns* does not cover all aspects of the eradication story. Scant attention is paid to the field work of vaccinators (their routines, difficulties etc.) and the attitudes and response of livestock owners to rinderpest and the vaccination campaigns. It is only towards the end of the book that the author begins to tentatively investigate the crucially important role played by community-based animal health workers in dealing with the disease in the 1990s and 2000s. As the author briefly explains, their contribution was considerably more successful than both national and international groups in vaccinating and monitoring the incidence of disease.

The rinderpest campaigns does not by any stretch of the imagination constitute a definitive history of rinderpest control and eradication. It is however an accurate, authoritative and accessible, account of the way in which the virus and its vaccines became enmeshed in the machineries of national security, international cooperation and development. In light of COVID-19 McVety's account provides a very relevant, perceptive and enthralling insight into the trials and tribulations of vaccine research and the inherent multi-faceted obstacles to its widespread adoption. The author should be congratulated for enhancing our understanding of a subject which is relevant to our current circumstances.

JOHN MARTIN
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CLAAS KIRCHHELLE, *Pyrrhic progress: The history of antibiotics in Anglo-American food production* (Rutgers University Press, 2020). 450 pp. 22 illus. $120.

Claas Kirchhelle's book *Pyrrhic progress: The history of antibiotics in Anglo-American food production* is a substantial and useful historical analysis of the controversies associated with the use of antibiotics in animal husbandry in the United States (US) and the United Kingdom (UK) since the end of World War II. The book reveals and discusses the politics surrounding the use of antibiotics in animal husbandry, showing how it has been oriented towards profit, served the interest of Western economies, and been instrumental to the production of cheap food, shaping the broader productivist agricultural paradigm that persists today. The book should be of great interest to a wide variety of audiences, even if its content and not always jargon-free language are mostly targeted at academics who wish to explore this emerging field of research.

One of the merits of Kirchhelle's book is the rich diversity of materials on which the author draws, which range from more traditional sources such as archival material from government and industry publications, newspaper articles, to agricultural and veterinary manuals, consumer and activist publications, fashion and lifestyle magazines, and cookery books. Antibiotic use in animal husbandry is approached in the book as a multifaceted cultural phenomenon, intersecting science, industry, governments and society. Kirchhelle reminds us that the production and use of technologies such as antibiotics in animal husbandry materialize what Sheila Jasanoff has called 'practices of state-making', where science and technology are interwoven with power,

norms and hierarchies. The author's comparative and international approach is particularly valuable here as it supports an in-depth investigation of the broad and complex issue of antibiotic culture in animal husbandry.

This approach guides the structure of the book: divided into four parts, alternating between the US and the UK, Kirchhelle divides each part identically into three chapters or 'spheres – public, agricultural, and regulatory' (p. 10). After a very brief introduction on 'the antibiotic dilemma' and the author's theoretical and methodological framework, Kirchhelle plunges into the heart of the matter with the case of the US, where the '"antibiotic era" truly began' (p. 15). The story told in the first part begins in 1949, when two researchers from the American laboratory Lederle made public their first observations on the growth-promoting effects of continuous low-dose antibiotics (AGPs) in animal feed. It ends about two decades later, when the Food and Drug Administration (FDA) organized a Symposium on the Use of Drugs in Animal Feeds to address 'public concerns about AMR' (antimicrobial resistance) in 1967 (pp. 71–72). The second part focuses on the UK, spanning from the end of World War II (a key period in the Western industrialization and intensification of animal husbandry) to 1969, when the famous British Swann report officially 'called for pioneering precautionary restrictions of medically relevant antibiotics in AGPs' (p. 75). Kirchhelle then returns to the US between 1967 and 2013, before completing the fourth and final part of the book looking at the UK between 1970 and 2018, when Europe decided to phase out the prophylactic use of antibiotics in animal husbandry.

The very rich and exhaustive analysis of the four parts ends with a surprisingly short conclusion in the form of a 'four-story' note. Albeit interesting, this note does not seem to live up to the expectations that the reader may have at this point on a continuation of the conversation with the scholarship alluded to in the introduction, such as the works of Sheila Jasanoff, Ulrich Beck, and Niklas Luhmann. Whereas the choice of 2018 for the last part of the book on the UK case seems to coincide with a regulatory decision in Europe, that of 2013 for the US seems less obvious: rather than ending with another failure of the US administration to put regulatory restrictions in place, Kirchhelle's empirical and theoretical contributions would have benefited from an exploration of the mechanisms that ultimately drove the US (like the UK, 11 years earlier) to ban the use of antibiotics as food supplements in 2017. Further, although serving as opening and closing of the book, the experiences and practices of farmers also seem to have been overlooked in the book. It feels as if they are quickly conflated with, if not replaced by, a series of dominant and often limited discourses and media representations of trade unions and the farming press. While the author admits that 'many of [the sources] are elite and were written *about* rather than *by* actors themselves' (p. 11), more could have been imagined and done to bring out the less visible actors and rather marginal voices in Kirchhelle's stories. This purpose would have been better fulfilled by including other sources of information, such as videos, images, diaries, and interviews, for a more critical and comprehensive exploration of the role of different publics and their perceptions on the topic. Could the linear, and perhaps too rigid, chronological organization separated by types of actors (as stable and definable entities) have prevented the author from navigating more freely across different publics and epistemologies? This question is not just limited to humans as actors. Indeed, the book offers many anecdotes and images in which farmed animals are represented, and their individuality and relationship to humans could have been further highlighted and explored.

Kirchhelle succeeds, however, in producing a clear and comprehensive descriptive review of the Anglo-American history of agricultural antibiotics from the perspective of science, industry and government. Careful cross-referencing between sections and chapters undoubtedly helps the reader navigate the complexity across different spheres of technocratic powers, interests, and their co-production. Not everything can be covered in one single book and the meticulous work done by Kirchhelle is certainly commendable: the book stimulates the reader imagination for developing further stories and historical investigations of farmed antibiotics that would be more-than-Western, more-than-elitist and more-than-human.

CAMILLE BELLET
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ANDREW N. CASE, *The organic profit: Rodale and the making of marketplace environmentalism* (University of Washington Press, 2018). xv + 272 pp. £22.99.

The organic profit is not just the story of Jerome Rodale ('apostle of nonconformity' as Carlton Jackson termed him in his 1974 biography), but of the Rodale commercial brand: established by Jerome and maintained by his son Robert. And because the book is a study of 'marketplace environmentalism', Andrew N. Case has chosen a punning title, to indicate the ambivalence at the heart of the Rodales' achievement. Jerome Rodale had no doubts about his own central significance for the American organic movement. In 1964, he wrote: 'The whole organic farming and gardening

movement in the United States owes its existence to me. I am its acknowledged leader'. Rodale was asserting himself against the impact of Rachel Carson's *Silent Spring* (1962). Twenty years earlier he had launched the journal *Organic Farming and Gardening*, and was evidently piqued that Carson made no reference to his early warnings about the dangers posed by industrial-chemical farming methods. Case demonstrates that Rodale was justified in considering himself a prime mover in the creation of US organicism.

Given the anti-semitism displayed by certain sections of the early organic movement in the UK, it is somewhat ironic that the movement's chief American spokesman was Jewish. Rodale was born Jerome Irving Cohen in 1898, anglicizing his surname in 1921 in order to improve his career prospects. A man richly endowed with the entrepreneurial spirit, he was variously an accountant, a businessman running an electrical manufacturing company, the publisher of diverse magazines, a playwright, and, most importantly for the purposes of this review, a gardener and farmer passionately interested in nutrition and health. His 1945 book *Pay Dirt* is a major text of the American organic canon.

Although city-bred, Rodale seems always to have wanted affiliation with the land, and in 1930 seized an opportunity to move his business to Emmaus in Pennsylvania. A keen gardener, he had also developed a concern for personal health, and responded enthusiastically to an article he chanced upon written by Sir Albert Howard. He wrote to Howard and their correspondence led him to buy a farm in order to practise the Englishman's 'Indore' method of soil enrichment. Case sets Rodale in the context of US agricultural developments of the 1930s and '40s: the Dust Bowl, the rapidly increasing influence of industrial-chemical farming methods, and the articulation of an alternative approach, based on return of biological wastes to the soil. Another of Howard's American disciples was the novelist Louis Bromfield, whose Malabar Farm in Ohio was a factor in persuading Rodale to take up farming. Other influences included Edward Faulkner's *Plowman's Folly* (1943) and the homesteader Ralph Borsodi.

When in 1942 Rodale founded *Organic Farming and Gardening*, it was gardeners rather than farmers who proved receptive to his message. Within a few years he was claiming 50,000 readers, and they provided him with a body of evidence and experience outside the conventional pathways of science. This openness of approach helped to create a sense of community and provide a means of gathering information. But, as Case points out, 'While [the readers] were building a method, they were also helping Rodale build a market' (p. 39). The organic movement has always been about fostering health, and Rodale's first article about agriculture, in 1942, was titled 'Are Food Crops Fit for Human Consumption?' The answer was of course that those produced with chemical inputs and pesticides were not, and his gardener-readers provided much information about how their change to eating organically-produced food helped improve their health.

To protect them against other hazards, Rodale in 1950 founded the magazine *Prevention*, challenging the food industry, doctors and nutritionists with a natural health philosophy. *Prevention*'s pages were increasingly full of advertisements for 'natural' goods such as vitamin supplements, and Rodale 'tested the boundary between selling advice and selling products' (p. 75). He became a figurehead for the environmental movement, challenging powerful commercial forces in the food and farming industries; but he was also an entrepreneur who knew how to make money and embodied a very American spirit of self-promoting capitalism.

I have concentrated on Rodale's links with the organic movement, but Case's book is an exercise in wider social history. It analyses the way in which 'marketplace environmentalism' reflected changes in American cultural life and shopping habits, with the term 'organic' coming to represent a 'personal style of living that reflected and enacted environmental values' (p. 149): a form of consumerism arguably incompatible with the organic movement's original radicalism. Anyone who visits the Daylesford Organic farm shop in Oxfordshire can observe the same process at work in England, turbo-charged.

Was Jerome Rodale someone who saw a bandwagon on which he could make a name for himself? Case is scrupulously fair-minded in his assessment of the Rodales' achievements and motives. There is no reason to doubt the genuine commitment of Jerome and Robert to the principles and practice of organic farming, but Robert was less combative than his father and helped detach 'organic living' from the counterculture and situate it within a more conventional lifestyle. In Case's view, this development has resulted in organic food becoming a niche brand which makes its consumers feel better about themselves, but has a minimal impact on America's food production methods. Ultimately, market forces cannot be relied on to protect the environment and provide people with healthy food; which implies that the Rodales' strategy may in fact have been misconceived.

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MARÍA JOSÉ SEVILLA, *Delicioso: A history of food in Spain* (Reaktion Books, 2019). 344 pp. 97 illus. £25.

When I told a colleague that I was reviewing a book on food in Spain, her first reaction was, 'Really, another book on Spanish food?' I can see her point. Go to any bookshop and one can find a plethora of books on the subject. But few in English have so far made a profound, deep investigation into the history of food in Spain. That is the goal of María José Sevilla's new book, *Delicioso*, promoted as the first in English to do so. The latest volume in Reaktion Book's series on the history of different national cuisines, the book succeeds in the difficult task of being both a well-researched, academic tome on an often side-lined topic, while also being an enjoyable book that appeals to the general reader. Spain is a land of extraordinary diversity, a consequence of both its geography and a complex history of trade, migration, and invasion. This is the main point of Sevilla's introduction, where she also explains her connection with Spanish cuisine as a native food writer who has lived outside the country for many years, giving her insight both as a local and an outsider.

The book then follows a historic trajectory, presenting Spanish cuisine from prehistory to the present day, with the final chapter on the contemporary regional *cocinas* (cuisines) of Spain. Chapters generally begin with a description of the historical events and political scene in the relevant period of Spanish history under discussion. This discussion follows onto a consideration of Spanish agricultural economy of that era. Except for the introduction of agriculture into the peninsula (interestingly, later than the rest of Europe), a sense of disappointment often pervades this sub-section. The mismanagement of this area of economic life since medieval times was to cause many of Spain's problems going into the modern era. The description of the *Mesta* system of livestock rearing at the expense of cereals and crops in chapter 3 is particularly useful, and later chapters update the reader on its unfortunate consequences in ensuing centuries.

On occasion food is interwoven with this historical backdrop from the beginning, such as in chapter 4 on the Spanish Habsburgs (sixteenth to eighteenth centuries) and chapter 5 on eighteenth-century cuisine and its role in the new Bourbon monarchy. In others the history is so complex that it needs a thorough analysis before food enters the text, such as in the second chapter entitled 'Moors, Jews and Christians', which addresses a major theme in Spanish history, the Moorish invasion in 711 AD and ensuing occupation over the ensuing centuries. It is interesting that Sevilla emphasizes the difficult relationship that contemporary Spaniards have with this era, despite its formative influence on Spanish culture, as well as its food.

An interesting feature of the book is the short overviews of 1–2 pages of important culinary elements in Spanish cuisine today, such as 'Bitter Oranges', 'Saffron' or 'Marzipan', which have their origins in the era under discussion. These are enjoyable asides that reveal much about the connectedness between past and present in Spanish cuisine. The only downside is they occasionally interrupt the flow of the narrative in the rest of the chapter. I should emphasize that the book is beautifully illustrated with detailed colour pictures and photographs, a feature that is especially important when talking about food, where a visual representation is more effective than a lengthy description.

Another strength of the book is the emphasis Sevilla places upon cookbooks and culinary literature. As a food researcher myself in Catalan cuisine (one of Spain's regional cuisines), I welcome this development, as understanding culinary literature is so important when studying food and cuisine. This is a theme throughout *Delicioso* from the third chapter onwards. Important cookbooks and culinary manuals of each era are treated with an in-depth analysis of content and the influence of these texts on Spanish society in the time, furthering understanding of the period and the development of food.

There are some rare moments where the phrasing or word choice is awkward. For instance, the earliest Catalan king, normally called 'Wilfred the Hairy', is called 'Wilfred the Shaggy'. Occasional factual errors also appear, such as on page 112 the reference to the death of Charles I's father in 1516, when it was in fact his grandfather who died. As a specialist in Catalan cuisine, I can say that Sevilla manages to cover this area well enough, however it becomes clear that her expertise is situated in different areas of Spain (her reference to chickpeas as an important ingredient on page 282 would send some Catalan chefs into paroxysms).

The final chapter on the regional cuisines or *cocinas* of Spain is the weakest, albeit the most relevant for today. Perhaps because of the author's background as a food writer, the writing here tends to stray into food and travel writing. This happens occasionally in earlier parts of the book (such as 'the taste for flowers, the cool patios bursting with colour, the soothing sounds of fountains … are all still imprinted on the fabric of the people of Andalusia', p. 45) but becomes most evident in this chapter. While understandable considering the mouth-watering delicacies under discussion, some readers may find this change uncomfortable, especially when contrasted with the more business-like tone of previous chapters. The final sub-section on the future

of Spanish cuisine is the closest this book gets to a conclusion, and some readers may be disappointed to find that there is no grand argument that pervades the work. But that was never the intention. Instead, Sevilla has succeeded admirably in providing an historical overview of food, agriculture and cuisine in Spain from prehistory to the present day. It will be of use to scholars of Spain, food, and agriculture, as well as general readers interested in this area. On a personal level, I wish this book had been available to me when I made my early research into Spanish and Catalan cuisine.

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WILLIAM R. CARLETON, *Fruit, fiber, and fire: A history of modern agriculture in New Mexico* (University of Nebraska Press, 2021). 228 pp. $55.

New Mexican farmers have been known for producing apples, cotton, and chile. During the twentieth century, these crops defined the state's agriculture and the people who raise them. William Carleton, editor of *Edible New Mexico*, traces the emergence of apples, cotton, and chile from traditional crops raised by Hispanic farmers to heavily capitalized Anglo, industrial-scale production. In each case, while university scientists developed new varieties, processors and marketers changed the history of each crop to help make them appeal to a broad spectrum of consumers, often by promoting them as traditional crops while using science to change them for commercial purposes.

Carleton argues that industrial agriculture and traditional farming systems co-exist and influence each other in New Mexico. He examines apple production during the early twentieth century regarding the quality of the fruit and its cultural and environmental landscape as well as its association with Anglo-driven modernity and sense of virtue. His development of cotton farming between the wars emphasizes immigration from the South and reliance on the state's land-grant college and experiment station for the development of new varieties. As a result, a Southern-style paternalism developed that aligned with modern concepts of scientific management and industrial efficiency to create a new agricultural landscape. Carleton also traces the transition of the state's most iconic crop, chile pepper, from a traditional crop raised by small-scale farmers for home use to a crop bred for Anglo tastes and a national market.

Carleton emphasizes the ways that apples, cotton, and chile changed the agriculture and culture of New Mexico. The success of each crop depended on modernization in the form of technology, specialization, and government assistance. Newcomers considered traditional crop varieties as inferior and indicative of agricultural based on tradition rather than science. Anglo investors and farmers homogenized the crop varieties. Railroads shipped the produce to distant markets. The traditional, small-scale Hispanic farmers could not compete. Improvement meant the adoption of Anglo varieties which, in turn, meant white cultural superiority. New Mexico's commercial apples represented whiteness, science, and cultural superiority over Hispanic varieties, farmers, and cultural practices. Large, well-ordered rows of apple trees changed the landscape. New apple varieties required social controls, such as mandatory spraying for insects and orchard inspections, that changed the culture of apple raising. Apple production became identified with Anglo not Hispanic agriculture. Marketing also belied the truth about traditional varieties and ignored Hispanic and Native apple raisers. Many small-scale apple producers, however, blended traditional methods and new technologies to establish New Mexico as a major apple producing state.

Cotton also became an important crop between the two world wars. State land-grant scientists developed varieties suitable for the dry climate that also proved protective from the boll weevil and cross pollination. Federal government expenditures for irrigation, transportation, and research also made large-scale cotton farming possible. Newcomers often displaced Hispanic farmers, and tenancy and sharecropping emerged as new agricultural labour systems. Hispanics became the cotton workforce managed by Anglos. Racial tensions increased. Cotton farming became one-crop farming with a migrant labour force, and New Mexico became a winter waystation between the southern Great Plains and Arizona and California thereby changing the human geography of New Mexico as well as the look and physical use of the land.

Chile also represented New Mexico's Hispanic and Native cultural heritage which Anglos denigrated in racist terms. When Fabián García at New Mexico's land-grant college developed a new chile variety more appealing to Anglo tastes, it blended Hispanic and Anglo culture and gave New Mexico a new identity. His new variety had superior canning qualities compared to traditional varieties. Canned chile peppers meant progress and modernity. García drew upon the Mexican-U.S. borderlands for seed varieties that he crossed until he achieved the desired strain. The development of a new chile, however, also required changing consumer tastes and conveying that the new variety was mild, flavorful, and represented the best ingredient for authentic New Mexican cuisine. By the 1950s, farmers no longer merely raised chile pepper

for local, seasonal consumption. Chile peppers had become a major crop for commercial sale. Marketers promoted chile-based foods and identified chile as a gourmet dish and rather than a poor Mexican crop and food. A north-south competition among chile farmers in the state developed over modern and traditional varieties, but fears of genetic engineering threatened to displace traditional and hybrid varieties and ruin place-based recognition for the crop. Hispanic farmers considered chile a symbol of their cultural heritage, but Anglo farmers associated their cultural identity with newly developed university varieties and touted them as traditional crops.

During the twentieth century, science merged with traditional practices to produce a new form of agriculture in New Mexico. Although Anglo elites intended to raise apples, cotton, and chile as evidence of white, cultural superiority and expertise, environmental and cultural realities forced adjustments based on unforeseen circumstances. Carleton emphasizes that agricultural industrialization and modernization does not preclude the incorporation of traditional practices. He also contends that boosterism and advertising created false cultural identities regarding these crops that frequently departed from the scientific truth.

This clear and well-written, solidly researched study traces the ways in which traditional agricultural practices have influenced science-based, industrial agriculture regarding the production of apples, cotton, and chile in New Mexico. Science and the spoken and written word combined to explain the development of these crops often defined by cultural differences between Hispanics and Anglos. American agricultural historians will find this study revealing and suggestive for similar investigations regarding the development of modern agriculture across cultural borderlands where competing ideas and traditions merge to change the agricultural landscape for crops, people, and the land. It also is essential reading for anyone interested in the history of New Mexico. Carleton has written an informative and engaging agricultural history for New Mexico that significantly contributes to the larger agricultural history of the United States.

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STUART MCCOOK, *Coffee is not forever: A global history of the Coffee Leaf Rust* (Ohio University Press, 2019). 306 pp. 28 illus. $34.95.

From the late nineteenth century, Coffee Leaf Rust (CLR) has posed the largest environmental threat to coffee production worldwide. CLR reduces the yield of coffee plants by disrupting the production of nutrients that allow the plants and their fruit to develop. The pathogen, a fungus called *Hemileia vastatrix*, is endemic in many parts of Africa, but it only becomes an effective disease when it finds a susceptible host and under specific environmental conditions. The preferred host of the fungus is *Coffea arabica*, which is less genetically variable and therefore more vulnerable to pests and disease than its main cousin and commercial rival, *C. canephora*, also known as robusta coffee. Rainfall, temperature, sunlight and cropping patterns are the main conditions influencing spore gemination and dispersal. At high altitudes, the fungus causes little damage to coffee plants, while at low altitudes, in warm and humid climates, co-existence is almost impossible. The triangular relationship between pathogen, host and environment sits at the heart of Stuart McCook's superior study of CLR's devastating trek across the global south after its first outbreak in 1869 and the efforts of scientists, farmers, and coffee companies to contain its impact.

Since this is in large part a study of disease control, the book mainly focuses on historical events in the climatic middle belt, 'the space where coexistence is possible but requires effort' (p. 6). McCook examines the global distribution of CLR chronologically, starting with a chapter on the pathogen's natural environment in Ethiopia, giving valuable historical background to current theories of coffee agro-forestry systems. While the fungus was present in the coffee forests of southwest Ethiopia, it was contained by the conditions under which coffee was grown: the forests sheltered plants from heat, wind, and heavy rainfall, while low coffee population densities and the presence of counter-fungi further prevented rust from developing. From Ethiopia *C. arabica* travelled to Yemen. While the fungus possibly never joined its host across the Red Sea, it would in any event have struggled to survive in Yemen's dry environment, as it needs droplets to germinate. During the eighteenth century, arabica moved, still free of rust, from Yemen to farming systems across Asia, the Indian Ocean, and the Caribbean. In India and Java, coffee was initially grown by smallholders as a garden or forest crop, but as the global coffee trade expanded in the nineteenth-century, colonial regimes across the global south began to favour mono-cropping and forest clearing to expand outputs, thereby increasing the vulnerability of the coffee plant.

Subsequent chapters document the first outbreak in Asia and the Pacific, the effects of CLR in colonial Africa, and its long-foreseen arrival in South and Central America in the 1970s. The chapter on Ceylon, the epicentre of the global leaf rust epidemic, introduces many of the book's key arguments. The first

lesson is that the outbreak and spread of the disease must be explained historically. McCook argues that the fungus arrived from East Africa in Ceylon through colonial maritime networks in a period of intensifying trade in the Indian Ocean region. On top of Ceylon's wet climate and strong monsoon winds, the spread of the fungus was helped by the development of estate farming, which posed few physical or genetic barriers for rust spores to disperse and reproduce. The effects of deepening global integration and the ecological risks of monocropping are recurring themes in the book. The second lesson is that CLR alone seldom causes coffee production to collapse, but in combination with low coffee prices it can be fatal. From the first outbreak, farmers have devised different strategies to live with CLR, ranging from chemical control to the introduction of rust-resistant coffees. But low coffee prices could quickly make these expensive strategies unsustainable, forcing planters to abandon coffee. In Ceylon, smallholders swapped coffee for cash crops they could integrate in their farming systems, like spices, rubber, coconuts, and palm products, while estate farmers switched to tea.

The third lesson is that while CLR has thus far not affected total global coffee outputs, it has caused fundamental shifts in the world coffee market. A fascinating illustration of this is the rise of robusta coffee after 1900, which tastes rather bitter in the cup but has come to represent almost half of global coffee production. In the Dutch East Indies, CLR forced coffee farmers in the lower climatic belt to abandon coffee completely and turn to rubber instead, but growers higher up began experimenting with disease-resistant varieties introduced from Africa, most notably robusta. Within decades, most farmers in Java and Sumatra had replaced their arabica stands with robusta, forcing European and American coffee markets to adapt. This period also witnessed the start of scientific efforts to breed disease-resistant hybrids of robusta and arabica varieties, of which Timor and Catimor are successful examples. The turn to robusta continued in Africa, where colonial governments began to stimulate coffee production based on naturalized and introduced cultivars as global demand for coffee increased after World War One. It soon became evident that endemic rust limited settler-dominated arabica cultivation to a few highland areas, whereas predominantly African-grown robusta thrived in the lower climatic belts. Major African producers, like Angola, Congo, Côte d'Ivoire, and Uganda, pushed increasing amounts of robusta onto the market, shaping the taste of ordinary coffee blends and southern European espressos alike.

The final chapters of the book, dealing with the post-war period, are strongly focused on efforts to manage CLR in Latin America, for which McCook has been able to rely on a large body of scientific literature. While they lack the compelling narrative flow of the earlier chapters, McCook effectively highlights the similarities between recent and earlier containment strategies, especially the expense and limitations of chemical control and the vulnerability of coffee farmers to the vagaries of the global market, with economic uncertainty resulting in poor crop management, neglected farms, and continued planting of varieties susceptible to CLR. The book ends on the sour note that coffee companies and consumers push farmers to grow high-quality arabica coffees, whereas the threat of CLR and global warming makes this increasingly difficult. This is a magnificent study that should of interest to global and environmental historians as well as social and agricultural scientists.

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ALANA MANN, *Food in a changing climate* (Emerald Publishing, 2021). 272 pp. £16.99.

CHRIS OTTER, *Diet for a large planet: Industrial Britain, food systems, and world ecology* (Chicago University Press, 2020). 400 pp. 65 illus. $49.

Alana Mann's well-timed, compact book provides a persuasive critique of the complex interrelationship between ecologies, cultures and political economies in respect of the globalized food supply industry. The central thesis is that the commodification of food has accentuated climate change and, in turn, made consumers more vulnerable to the impact of extreme weather events and even pandemics. Mann explores the origins of this fossil fuel-based system of food production and how international trade in food has become increasingly dominated by a declining number of mega-companies which have focused on producing crops for the industrialized, developed global north. This, according to the author, is the prime reason for the emergence of the exploitation of the environment and, the poverty and hunger which is evident in the global south. This has led to widespread monoculture and in its wake environmental harm and misery for local communities, with the marginalization of farmers and food workers and a corporatized, globalized system of food production and supply. For the industrialized nations in the north, this has in turn contributed to unhealthy diets, surplus production and hyper-consumerism. Throughout, Mann cites, but does not always necessarily fully endorse, the findings of an extensive raft of sources which often castigate the prevailing food industry in a multiplicity of forms.

The unsustainability of this industrial food system is perceptively argued and the solutions, according to the author, are self-evident. These include the application of new technologies, the revival of traditional knowledges and the promotion of diversity among food producers to protect their livelihoods. Mann provides a critical assessment of, for example, engineering nutrition, where the damaging effects of food production might be mitigated by the application of genetically modified organisms which enables the production of cultivated meat replacements in laboratories. Cultivated meat can produce significantly lower emissions than the meat produced from methane-burping cattle or grain-eating pigs and poultry. Such a solution would have dire implications for the dominant industrial livestock industry which, some sources claim, is one of the most important causes of global warming. Mann explores the causes and consequences of what is identified as the industrial grain-oilseed-livestock complex with its focus on meat production for the wealthier nations of the world. Cutting the overconsumption of conventional meat in rich countries will not only reduce obesity, but is also seen as vital in helping to alleviate the climate crisis. This would also have implications for many developing countries whose populations aspire to consume more meat. However, how such a change could be implemented in practice receives scant attention.

The author's unashamedly politically-inspired critique advocates for the pressing need for a rejuvenation of local and regional food systems which have been eroded by the overwhelming quest for global economic efficiency. Mann recognizes that agricultural practices which include indigenous and local knowledge can contribute, to a greater or lesser extent to overcoming the combined challenges of climate change as well as ensuring a more robust system of food security. The ways in which this revival can be achieved in practice are covered in a rather general sense and focus mainly on Australian examples.

Food in a changing climate is primarily concerned with providing a critique of what is portrayed as the present malaise rather than exploring the historical long-term causes of international specialization, which was facilitated by the development of free trade and colonialism. It deals with colonialism in a rather general way without specifically identifying and evaluating the crucially important role Western Europe played in this process. The neglect of Britain is particularly noticeable. It was in effect Britain's dietary transformation, with the outsourcing of the country's nutritional needs that was responsible for transforming international trade and establishing the global food system.

Overall, this account based on a critical appraisal of the causes for the existing precarious system of globalized food supply significantly enhances our understanding of the complexity of these issues. This book will appeal to the tastes of those interested in the history of food, environment, industrial consumption and global capitalism, particularly those committed to changing it. For those living in the industrialized north who are the main beneficiaries of the present system, the stark and uncompromising message it conveys may prove rather unpalatable, particularly to those who have the power to create a more sustainable global food system.

Complementing the critical analysis of the existing global food system is Chris Otter's *Diet for a large planet,* which explores the historic shift to a diet rich in animal proteins and refined carbohydrates, particularly white bread and sugar. As Otter notes, these developments cannot be categorized as being exclusively confined to modernity, the Anthropocene or the Great Acceleration. Instead, their origins can be traced back to the 'large planet' philosophy of the nineteenth century, and the British food system which allowed more people to enjoy a more calorie-rich diet. Here Otter covers what Mann omits: the historic role of Britain's dietary transformation in the shaping of our present global food system.

In this persuasively argued critique, Otter traces the origins of the modern diet to Britain's eating habits and the way different types of food were perceived in the nineteenth century. Focusing on Britain's desire for meat, sugar and wheat, *Diet for a large planet* shows how the country's almost insatiable historic desire for these commodities has transformed global land use and, in turn, increased carbon emissions and facilitated extinctions. The outsourcing of the country's nutritional needs and the foodways which emerged paved the way for a global agri-food system that consumes more resources than the planet is able to sustain. Otter's perceptive analysis shows how prevailing diets of choice, consisting of red meat, wheat bread and sugar are linked to luxury, wealth and power, and contribute to environmental degradation and climate change.

Otter is primarily concerned with exploring the long-term causes of international specialization which was facilitated by the development of free trade and colonialism. The historical ideological foundations which underpin the emergence and dominance of the British commitment to free trade are perceptively explored. In his seminal work *The wealth of nations*, the ardent supporter of free trade, Adam Smith, persuasively argued that government intervention in the food supply system was responsible for causing rather than

preventing famines. More importantly, he argued that if commodities could be acquired more cheaply from overseas then it was in Britain's interest to import them. This was further refined by the Ricardian model of comparative advantage which was practised, vindicated and perpetuated until well into the twentieth century. Otter's historical perspective significantly enhances our understanding of how and why the prevailing global system has become politically and epistemologically so firmly ingrained.

Implicit in Otter's thesis is the idea that these changes occurred in a linear fashion without any significant reversals. Scant attention is paid to the non-trivial changes in the British diet which were implemented by the state in response to the food shortages of both the First and Second World Wars, especially the latter. The enforced reduction in imports of staples such as wheat, meat and sugar necessitated an unprecedented state-directed transformation of the nation's diet. The experience of state-directed food production and food distribution of the Second World War reveals the extent to which the country's eating habits can be successfully transformed in order to deal with a food shortage of unparalleled proportions. To cite but a single example, the enforced reduction in wheat which took place during the Second World War led to considerable efforts to change the type of bread baked. As introducing bread rationing was considered unacceptable, efforts focused on increasing the extraction rate (the amount of flour extracted from the wheat) so that it contained a greater amount of bran, used in what was called the national loaf. In the longer term, this led to the development of milling varieties of British wheat, which could be used instead of hard-grained varieties used in bread production. In a similar way, Otter pays scant regard to the post-war scientific efforts to enhance the output and productivity of British agriculture in order to reduce dependency on imported food. Consideration of the wartime and post-war developments, largely neglected by Otter, would have enabled a slightly more positive interpretation of the inherent weaknesses in the prevailing global food system. Overall, *Diet for a large planet* offers a rather frightening, pessimistic prognostication into the future of what is deemed to be our unsustainable global food supply system and its adverse impact on the environment. The book will be particularly appealing to those interested in Britain's role in the global food system, environment and patterns of food consumption.

Diet for a large planet and *Food in a changing climate* complement each other well and provide informed assessments of the workings and development of our present global food system. Together they enhance our understanding of its vulnerabilities and why reform is so essential.

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MARY VIRGINIA ORNA, GILLIAN EGGLESTON, and ALVIN F. BOPP (eds), *Chemistry's role in food production and sustainability: Past and present* (Oxford University Press, 2020). 256 pp. £115.

This edited collection examines the past, present and future of the role of chemistry in food production. The collection is split into four parts: 'Setting the Context', 'Sustainability in the Past', 'Sustainability in the Present', and 'Food and the Future'. Sixteen substantive chapters examine chemistry in food production from different perspectives, ranging from Eggleston's chapter on the history of sugar and sweeteners through to Sarkadi's chapter on the effects of fertilizer on food supply.

Chapter 1 sets the scene for the whole edited collection, describing the past, present and future of chemistry in food production. The past describes the history of agriculture, food additives, and the development of fertilizers. The present provides an overview on nutrition and diet, food analysis, food and the environment, and packaging and preserving food. The final section discusses the future of chemistry in food production.

Chapter 2 moves on to discuss the role of the United States Department of Agriculture (USDA) in food production. This chapter is less about chemistry per se, but more about how the USDA manages food security, food safety, and nutrition alongside environmental stewardship. The history of agriculture is examined in chapter 3. A chronology of agricultural breakthroughs from the eighteenth century through to the twenty-first century is provided in tabular form. This is followed by a discussion of the introduction of some of these scientific and technological developments such as the seed drill, pasteurization, the creation of fertilizer through the Haber-Bosh process, and the development of pesticides such as DDT.

Chapter 4 changes focus to the history of sodium chloride, or what is commonly known as 'table salt'. The different histories of salt are described including the use of salt as a meat and fish preservative, the use of salt in medicine, salt taxes in Egypt, China and North America, and salt in religious beliefs and practices. Salt as a nutrient is also examined along with controversies surrounding salt consumption in the twenty-first century. Chapter 5 focuses on the history of sugar and sweeteners. Seven phases of history are examined dating from 8000 BCE through to the twenty-first century.

Attention turns to Harvey Wiley and the transformation of the American diet in chapter 6. Harvey

Wiley brought the adulteration of food and potentially harmful additives, to the attention of the American public at the turn of the twentieth century. His ideas concerning the purity of food are a lasting legacy, and continue to shape the manufacturing and marketing of products today. The theme of adulterated food continues in chapter 7. This describes the history of the use of colourants in adulterated food.

Alcohol is the subject of chapter 8. This chapter explains how examples of alcohol consumption for medicinal purposes have been found dating back to 100,000 years ago. Often, dissolved botanicals were mixed with alcoholic drinks to treat many different ailments.

Chapter 9 discusses the effects of fertilizer on food supply. This chapter provides a brief overview of the history of fertilizers before introducing the reader to some of the chemical compositions of fertilizers. A very brief paragraph explains the positive benefits for using fertilizers, and then the discussion moves to the risks of fertilizer use.

The evolution of flour in America is the focus of chapter 10. This chapter describes wheat, gluten, milling and bleaching. The discussion then moves to examine the gluten-free movement and explains how this has had a detrimental effect on wheat production, and on the flour and milling industries. In chapter 11, attention turns to nutritional advice and how chemistry may assist. This chapter examines the science of nutrition, as well as some of the problems associated with eating such as diabetes and obesity.

The use of chemical analysis in food safety and food authentication is the focus of chapter 12. In this chapter, the focus returns to the adulteration of food and food safety. Heavy metals, mycotoxins, and pesticides can be found in foods, and these can be deadly. Chapter 13 has a complete change of focus and is a relatively short chapter discussing rising sea levels and the consequences for Louisiana fisheries.

The history, controversy and hope of genetically modified organisms is discussed in chapter 14. This chapter describes genetic modification and genetically modified food. The debates surrounding genetically modified food are also briefly discussed. This discussion is quite dismissive of some of the valid concerns around genetically modified food. The chapter concludes by arguing that genetically modified foods are required in order to feed a growing population.

Chapter 15 discusses food preservation and packaging. It starts by discussing hunter-gatherers before moving on to the domestication of plants and animals. This discussion about domestication also covers mechanization, and the green revolution. Attention then turns to food spoilage caused by a range of mechanisms such as pests, time, and oxidation. The final section of this chapter discusses food packaging. A detailed review of packaging materials is presented including paper, metal containers, polymer-based packaging, and active packaging. In the final chapter, the discussion focuses on the past, present and future of food chemistry. This examines 'natural' ingredients, especially as consumers are demanding products that contain simple and recognisable ingredients. This is another chapter that discusses food adulteration, although this chapter also describes some of the processes which can be used to detect food fraud.

This edited collection covers a range of topics. The chapters are all very informative and work well as stand-alone pieces. However, there is no flow between the chapters. For example, there are four chapters which discuss adulteration of food, but these are spread throughout the book. It would have been easier for the reader if these had been grouped together. The edited collection could also have been improved by including a concluding chapter. This would have helped because the book covers such a wide range of different chemical applications in food production. However, this edited collection will prove useful and informative for those undertaking research in the area of chemistry in food production.

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Forthcoming conferences

British Agricultural History Society Spring Conference, 2023

This conference will (provisionally) be held on
Friday 14 and Saturday 15 April 2023, at the Jubilee Conference Centre,
University of Nottingham.

Rural History 2023

The sixth biennial conference of the European Rural History Organisation (EURHO), Rural History 2021, will take place in Cluj, Romania, from Monday 11 to Thursday 14 September 2023.

Further details of all these conferences will be available from the Society's web site at www.bahs.org.uk

Grain quality and seasonal patterns in grain prices: Evidence from eighteenth-century Flanders and northern Italy*

by Wouter Ronsijn, Giulio Ongaro, and Laura Prosperi

Abstract

This article explores the reasons why seasonal patterns in historical grain prices series often deviated from the expected pattern of low prices post-harvest and gradually rising prices until the next harvest. We analyse eighteenth-century Flemish and northern Italian grain prices to focus on the role of storage technologies, alternative seasonal patterns in supply and demand, and particularly quality variation. We argue that quality was not consistent throughout the harvest year because (1) grain quality improved in store and (2) grain producers selected different qualities for sale at different times of the year. Consequently, seasonal patterns in grain prices were affected by (1) the quality of stored grain gradually improving, (2) the balance of old and new grain available for sale and (3) the dumping in the market of poor-quality old grain, not ordinarily sold, when a new, successful harvest was in sight. These factors mattered, in addition to supply-and-demand effects that varied between cereals and regions, depending on storage technologies and buyers' preferences.

Grain storage occupied an important place in daily life in pre-industrial Europe, to ensure consumption until the next harvest came in and to mitigate the impact of harvest fluctuations. A better understanding of the storage behaviour of market participants is essential to figure out how societies were able to overcome the disruptions caused by harvest fluctuations. Famines gradually faded from European history not only due to improved agricultural production but also the ability to distribute surpluses in space and time, which were impossible without storage.[1] Numerous publications exist on food storage, especially grain, dealing with technologies, stocks kept by public authorities, or the rhythm of harvesting and threshing

* The authors have made available an online appendix containing information on (1) Cases, data and source; (2) Seasonal patterns; (3) Sint-Niklaas trade volumes; (4) Market volatility; (5) Interest rates; (6) Weather observations; and (7) References. The online appendix can be accessed from the *Agricultural History Review* Volume 70 Articles page on the British Agricultural History Society website, www.bahs.org.uk.

[1] G. Alfani and C. Ó Gráda (eds), *Famine in European history* (2017); D. Collet and M. Schuh (eds), *Famines during the 'Little Ice Age' (1300–1800): Socio-natural entanglements in premodern societies* (2018); J. Dijkman and B. van Leeuwen (eds), *An economic history of famine resilience* (2019); E. Vanhaute, 'From famine to food crisis: what history can teach us about local and global subsistence crises', *J. Peasant Stud.* 38 (2011).

grain.[2] Yet much uncertainty remains as to the extent of stocks and people's motivations to keep them, and one of these debates is focused on seasonal patterns in grain prices.

The two main explanations for seasonal patterns in historical grain prices come from Ernest Labrousse, and from Deirdre McCloskey and John Nash.[3] Both expect low grain prices shortly after the harvest, and steadily rising prices until the new harvest comes in, creating a sawtooth pattern across years. McCloskey and Nash believe grain price increases reflect storage costs. Whoever stored grain must, on average, have been covered for the costs incurred. These include barn costs and the value of spoilt grain, but the main component, according to them, is the interest on the capital tied up in the grain. While grain is kept in store, the capital it embodies cannot be otherwise gainfully applied, an opportunity cost mirrored in grain price increases. Labrousse's explanation for this pattern is based on supply and demand fluctuations during the harvest year. According to him, prices were low after the harvest because many small-scale grain producers were compelled to sell, either because they needed cash or because they lacked adequate storage facilities. Prices rose later in the harvest year, especially during the *soudure* months, when stocks from the previous harvest were running out while the new harvest was still in the fields. During these months, elevated prices benefited those able to keep stocks until then, such as large grain producers, tithe collectors or speculators. From McCloskey and Nash's perspective, the higher prices paid at this time of the year reimbursed the storage costs incurred by those able to keep reserves.

A major problem with these two accounts is that prices did not always behave as predicted. In England, in medieval as well as modern times, prices matched the model very well: low when the harvest is just in, rising afterwards.[4] Yet elsewhere, the timing of the seasonal cycle was often different. Rye prices in Nuremberg (1498–1855), wheat prices in Chartres (1748–90), and prices of both in Saxony (1763–1874) tended to be high or rising (not low or declining), around and/or shortly after harvest time, and to drop (not rise), during winter and spring. A similar pattern is implied in Karl Persson's figures for expected returns in Cologne, Siena and Pisa (1550–1700). Likewise, wheat prices declined during the harvest year in some parts of the late medieval Low Countries, including Bruges, while rising in other parts.[5]

[2] For a recent overview, see W. Ronsijn and N. Mignemi, 'Introduction: stocks, seasons and sales', in W. Ronsijn, N. Mignemi and L. Herment (eds), *Stocks, seasons and sales: Food supply, storage and markets in Europe and the New World, c.1600–2000* (2019).

[3] *Esquisse du mouvement des prix et des revenus en France au XVIIIe siècle* (Paris, 1932), p. 160; 'Corn at interest: The extent and cost of grain storage in medieval England', *American Economic Rev.* 74 (1984). For a recent application of the latter, see W. Keller *et al.*, 'Capital markets and grain prices: assessing the storage cost approach', *Cliometrica* 14 (2020).

[4] G. Clark, 'Markets before economic growth: the grain market of medieval England', *Cliometrica* 9 (2015), pp. 275–9; L. Brunt and E. Cannon, 'Do banks improve financial market integration?', Royal Economic Soc. Annual Conference 2002 36 (2002), p. 6.

[5] W. Bauernfeind *et al.*, 'Rational investment behaviour and seasonality in early modern grain prices', *European Rev. Economic Hist.* 5 (2001), pp. 287–90; M. Uebele *et al.*, 'King's law and food storage in Saxony, *c.*1790–1830', Paper presented at the European Historical Economics Soc. Conference, London, 6–7 Sept. 2013 (2013), pp. 8–9; G. Béaur, 'La "soudure" n'est plus ce qu'elle était. Contribution à l'étude du mouvement saisonnier du marché du blé et du marché de la terre d'après le cas de la région de Chartres au XVIIIe siècle', in J.-F. Chauvard and I. Laboulais (eds), *Les fruits de la récolte* (2007), pp. 95–9; K. G. Persson, 'The Seven Lean Years, elasticity traps, and intervention in grain markets in pre-industrial Europe', *EcHR* 49 (1996), pp. 700–1; J. Dijkman, *Shaping medieval markets: the organisation of commodity markets in Holland c.1200–c.1450* (2011), p. 295.

Furthermore, if prices behaved as Labrousse, and McCloskey and Nash claim, then storing grain longer than one year was rarely rewarding. Assuming that old grain is sold at the same price as new, all storage investments are lost when prices drop back to their base level after the harvest. For that reason, the reward for carrying over grain into the next harvest year, as Persson observed, is theoretically negative, and only positive if the next harvest turned out poor.[6] Yet grain was regularly carried over between harvest years, as has been inferred from grain prices and other data from different parts of Europe.[7] Direct evidence of grain being carried over has been found in farmers' account books.[8] Among these is Liam Brunt and Edmund Cannon's recent analysis of the Corn Book of a manor near Cambridge in the first half of the nineteenth century. The bulk of this farm's wheat output was not sold until the last months of the harvest year, and almost a quarter of it was carried over into the next harvest year.[9] If prices behaved as predicted and producers wanted to maximize profits, carrying over a quarter of the harvest would be entirely irrational.

In this article we reconsider the existing explanations for seasonal patterns in grain prices using qualitative sources and recently collected data for eighteenth-century Belgium and Italy. In so doing, our goal is to widen the current understanding of historical grain price series, by integrating factors and information stemming from the agricultural, technical and trade expertise of the time. We argue that the elements affecting seasonal patterns in prices differed according to the type of cereal and the productive and commercial contexts. More specifically, we focus on quality variation, the effects of grain producers combining commercial and subsistence strategies, as well as storage technologies and demand patterns. We find that quality was not consistent because (1) grain quality improved in store and (2) grain producers selected different qualities for sale at different times of the year. Consequently, seasonal patterns in grain prices were affected by (1) the quality of stored grain gradually improving, (2) the balance of old and new grain available for sale and (3) the dumping in the market of poor-quality old grain, not ordinarily sold, when a new, successful harvest was in sight. These factors mattered, in addition to supply-and-demand effects that varied between cereals and regions, depending on storage technologies and buyers' preferences. In the next section we discuss these and other elements shaping seasonal patterns suggested in the literature on grain prices. In the third section we describe the data used in this paper. We reconstruct seasonal patterns in prices and trade volumes in the fourth section and focus on the effect of quality variation in the fifth section. In the final section we present our conclusions.

[6] Persson, ' Seven Lean Years', pp. 701, n. 12.

[7] R. Nielsen, 'Storage and English government intervention in early modern grain markets', *JEcH* 57 (1997), pp. 16–17; N. Poynder, 'Grain storage in theory and history', Paper presented at the Third Conference of the European Historical Economics Soc., Lisbon, Oct. 29–30 1999 (1999), pp. 18–19; Clark, 'Markets before economic growth', pp. 279–80; R. Edvinsson, 'Harvests and grain prices in Sweden, 1665–1870', *AgHR* 60 (2012), p. 10; Uebele *et al.*, 'King's law and food storage', pp. 13, 24–5.

[8] P. van Cruyningen, *Behoudend maar buigzaam. Boeren in West-Zeeuws-Vlaanderen, 1650–1850* (2000), pp. 238–41; F. Scholten, 'Landlords as rational investors? Grain storage on noble manors in the Rhineland area, 1650–1850', in Ronsijn *et al.* (eds), *Stocks, seasons and sales*, pp. 24–7.

[9] 'A case study of corn sales: Harston Manor's corn book 1823–1842', in Ronsijn *et al.* (eds), *Stocks, seasons and sales*, pp. 70–3. See also L. Brunt and E. Cannon, 'English farmers' wheat storage and sales in the late eighteenth and early nineteenth centuries', *EcHR* 75 (2022), pp. 932–59.

II

Why did grain prices at certain times and in certain areas not behave as expected? Obviously, there are other factors that may interfere with the effect of interest rates or Labrousse's supply-and-demand scheme. A first point is that grain producers conceivably did not see their grain stores exclusively as a form of investment, but also as an insurance against the possibility of future harvest failure. Several studies, starting from McCloskey and Nash's approach and finding that grain prices did not behave as they were supposed to, have concluded that actors involved in grain production also displayed risk-aversion, holding on to some supplies regardless of the cost. Martin Uebele, Tim Grünebaum and Michael Kopsidis accept that '[s]torage decisions were a mix of commercial and precautionary behaviour', just as Walter Bauernfeind, Michael Reutter and Ulrich Woitek saw a 'cautionary savings motive' in peasant behaviour.[10] While storing grain came with certain risks, it could reduce other risks, and according to Nicholas Poynder this 'convenience yield' needs to be taken into account.[11] Persson concluded that 'inventories were held primarily as a sort of insurance against unexpected events, to cover private consumption in the current harvest year, and for short-term speculation.' In contrast, long-term storage would only have been the domain of traders operating on a larger scale, with access to more and better information, and with substantial financial reserves to cover for losses that they were bound to incur frequently.[12]

Secondly, the quality of the grain arriving in the market may not have been consistent throughout the year. This quality was consistent only if two conditions were met: first, the grain that is sold at any time is a random sample of the entire stock, and second, the grain does not undergo any changes in quality while in store. Liam Brunt and Edmund Cannon have cast doubt on both these points. Recently, they found that old grain fetched higher prices than new, suggesting that any drop in the value of grain stocks resulted from physical losses rather than quality deterioration.[13] In another study they argue that during years of shortage, wheat offal (i.e., poor-quality grain, impure and consisting of small or broken grains) might appear in the market in the months leading up to the new harvest, exerting a downward pressure on price levels.[14]

These two points interact. Grain producers combined commercial with subsistence strategies, but these were linked to different kinds and qualities of grain. It has long been observed that peasants kept their inferior grains such as rye for their own consumption, while marketing their wheat or other cash crops.[15] Paul Warde saw in this 'a clear preference to cover subsistence needs first'.[16] The same is probably true for poorer lots of more market-oriented crops. Grain

[10] Uebele *et al.*, 'King's law and food storage', p. 26; Bauernfiend *et al.*, 'Rational investment behaviour', p. 294.

[11] Poynder, 'Grain storage in theory and history', pp. 14–17.

[12] Persson, 'Seven Lean Years', pp. 701–2.

[13] Brunt and Cannon, 'Case study of corn sales', pp. 67–8; Brunt and Cannon, 'English farmers' wheat storage'.

[14] L. Brunt and E. Cannon, 'Variations in the price and quality of English grain, 1750–1914: Quantitative evidence and empirical implications', *Explorations in Economic Hist.* 58 (2015), pp. 89–90.

[15] F. Braudel, *Civilization and Capitalism, 15th–18th century*, I, *The structures of everyday life: The limits of the possible* (1981), p. 134.

[16] P. Warde, 'Subsistence and sales: the peasant economy of württemberg in the early seventeenth century', *EcHR* 59 (2006), p. 314.

producers generally put much greater effort into cleaning and sorting grain meant for sale than they did into grain for their own or their animals' consumption.[17] Yet during the time of the year when demand and prices were high, they may not have bothered as much, just like some consumers resignedly switched to cheaper, poorer-quality alternatives in times of dearth. The arrival of cheaper varieties or lots during certain parts of the year will interfere with the expected seasonal pattern in grain prices.

Thirdly, differences in grain price patterns may reflect differences in storage technologies. Grain was not usually sold before it was threshed, but it could either be threshed right after the harvest, or stored in sheaves to be threshed later, during winter and spring. The former was the rule in southern Europe, and along the Mediterranean and Atlantic coast, whereas the latter was applied in north-west Europe.[18] In north-west Europe, the rhythm of threshing was closely tied in with other agricultural operations, making it difficult for producers to deviate from the usual pattern.[19] Where grain was threshed early rather than late, producers had more liberty to adjust to price expectations (or interest rates) and decide when to take their crops to the market. Conversely, where grain remained in the sheaves for longer, it could be stored outdoor in stacks, so that lack of storage space rarely created a pressing need to sell.

Fourthly, the expected seasonal pattern can be disturbed by other factors with a seasonal component. One of these is interregional arbitrage. Market integration means that supply-and-demand conditions in one market lead to adjustments in other markets. However, these adjustments may to an extent be confined to those months when the condition of roads and waterways enabled transport. For example, Dijkman hypothesized that the decline in wheat prices during the harvest year in parts of the late medieval Low Counties may be due to the arrival of overseas imports, which were interrupted in winter and resumed in spring.[20] More generally, market prices can be affected by seasonal fluctuations in transport costs, threshing wages, or even consumer preferences.[21] In the months before and during harvest, uncertainty and anxiety over its outcome will add noise to the usual pattern in prices.[22]

There is no room in this article to explore all these factors in detail. We reconstruct and compare seasonal patterns in grain prices in Flanders and northern Italy. We interpret similarities and differences in these patterns in light of what is known about storage technologies, consumption and demand patterns, and interregional and international trade in these two regions, but we pay particular attention to the effect of intra-year quality variation. With the notable exception of the work by Brunt and Cannon, the issue of quality variation has been mostly neglected in the study of seasonal patterns in grain prices.

[17] J. Meuvret, *Le problème des subsistances à l'époque Louis XIV*, 3, *Le commerce des grains et la conjoncture* (1988), pp. 19–21, 40.

[18] F. Sigaut, 'A method for identifying grain storage techniques and its application for European agricultural history', *Tools and Tillage* 6 (1988), pp. 21–4.

[19] L. Herment and W. Ronsijn, 'Seasonal patterns in food markets in north-west Europe in the second quarter of the nineteenth century: the evidence of periodic markets in France, England, and Belgium, 1820 to 1850', *AgHR* 63 (2015), pp. 71–8.

[20] Dijkman, *Shaping medieval markets*, pp. 295–6.

[21] Scholten, 'Landlords as rational investors?', pp. 27–32; J. Komlos and R. Landes, 'Anachronistic economics: Grain storage in medieval England', *EcHR* 44 (1991), p. 41; van Cruyningen, *Behoudend maar buigzaam*, pp. 74–5; Brunt and Cannon, 'Do banks improve financial market integration', pp. 6–7.

[22] R. W. Hoyle, 'Prices and seasons in late seventeenth-century England', in Ronsijn *et al., Stocks, seasons and sales*, pp. 42–9.

III

The data used for this paper are eighteenth-century prices recorded at four Belgian and three Italian markets. The Belgian data are all from markets in Flanders: Sint-Niklaas (1722–1794), Eeklo (1701–1792), Aalst (1750–1802) and Nieuwpoort (1700–1792); for Italy we have data from three markets in northern Italy: Milan (1700–1786), Romano (near Bergamo) (1718–1797) and Udine (1700–1797).

Flanders and northern Italy were internally very diverse in terms of population densities and agricultural performance and production structures. On balance, Flanders was a densely populated region but still managed to export grain in the eighteenth century.[23] In contrast, the situation in northern Italy was far more varied: some areas, such as the province of Bergamo included in this paper, were net importers of grains from other parts of Italy. Other areas, such as Milan or Udine, were, roughly, self-sufficient or even exporters of grains. However, in years of scarce harvests these areas could import cereals from central and northern Europe or from the eastern Mediterranean. Therefore, while there were areas with a strong agricultural sector, such as the low Lombardy plain around Milan, there were other areas where population densities outstripped resources. Among these were the area around Romano and the Friulian mountains near Udine, who relied on grain imports.[24] Market volatility differed between Flanders and northern Italy. Northern Italian markets experienced quite strong price swings with remarkable regularity. Flanders also had such price fluctuations, and even stronger shocks as in 1740, but also had longer periods of relatively stable prices (see online appendix). The impact of famines during the eighteenth century was relatively mild in both regions, except when complicated by warfare.[25] Despite the internal diversity of Flanders and northern Italy, markets in these regions were quite well integrated.[26]

Grain prices in both northern Italy and Flanders were free, in the sense that governments did not directly interfere with prices. The exact arrangements differed from town to town, but in both areas public authorities recorded the prices of market transactions, without imposing them. The records served as maxima for grain purchases by public bodies and validated a sort of 'fair price'. They were also the foundation for fixing the bread's weight. This was where public institutions really intervened in order, basically, to mediate between the food needs (and the purchasing power) of the population and the claims to a profit of the bakers. During

[23] C. Vandenbroeke, *Agriculture et alimentation dans les Pays-Bas autrichiens* (1975).

[24] L. Faccini, *La Lombardia fra '600 e '700: riconversione economica e mutamenti sociali* (1988); L. Mocarelli and G. Ongaro, *Work in early modern Italy, 1500–1800* (2019), p. 26; F. Costantini, *In tutto differente dalle altre città: mercato e contrabbando di grani a Bergamo in età veneta* (2016); A. Fornasin, 'Il mercato dei grani di Udine. Indagine per una storia dei prezzi in Friuli (secoli XVI–XVIII)' (Nota di Ricerca no. 4 del Dipartimento di Scienze Statistiche dell'Università degli Studi di Udine, 1999); A. Zannini, 'Sempre più agricola, sempre più regionale. L'economia della Repubblica di Venezia da Agnadello al Lombardo-Veneto (1509–1817)', *Ateneo Veneto* 9 (2010).

[25] G. Alfani *et al*., 'Italy', in Alfani and Ó Gráda (eds), *Famine*; Daniel R. Curtis *et al*., 'Low Countries', in Alfani and Ó Gráda (eds), *Famine*.

[26] V. Bateman, 'The evolution of markets in early modern Europe, 1350–1800: a study of wheat prices', *EcHR* 64 (2011); D. Chilosi, T. E. Murphy, R. Studer, and A. C. Tunçer, 'Europe's many integrations: Geography and grain markets, 1620–1913', *Explorations in Economic Hist.* 50 (2013).

famines, public intervention in the grain market could be more intrusive, through the sale at fixed prices of cereals kept by the local food institutions (the *Annone* in Italy) or charitable and religious institutions.[27] More common were indirect attempts to influence prices, by prohibiting exports, ordering stocks to be brought to the markets and banning the sale of grain outside the official marketplaces.

We will look at six different cereals: wheat, rye, maize, millet, barley and buckwheat. Considering a variety of cereals from different areas allows us to see the effect of differences in quality, demand and storage technology. All these cereals were typically harvested around summer, from June to August, but the timing varied by region, crop and variety. In northern Italy, wheat and rye got ripe sooner than in Flanders; the harvest of the different so-called 'minor' cereals (millet, maize, barley and buckwheat) covered a longer period; while winter varieties (of, for example, wheat or barley) could be harvested before spring-sown varieties. Moreover, local climatic peculiarities could interfere with the general harvesting pattern.

Wheat was the highest-valued and most commercial cereal in both Flanders and northern Italy. Grain producers were more inclined to sell wheat than minor grains. For example, Flemish data show that in the early nineteenth century 23 per cent of the wheat harvest and only 12 per cent of the rye harvest appeared at the public markets.[28] In both regions, urban consumers preferentially ate wheaten bread, while rye, buckwheat (in Flanders), millet and maize (in Italy) figured more prominently in the diet of peasants and the poorer strata of the urban populations. During the eighteenth century, consumption of maize (in Italy) and potatoes (in Flanders) grew remarkably.[29]

Storage technologies differed between Flanders and northern Italy.[30] In Flanders, all cereals except buckwheat were mostly stored in the ear in sheaves until they were threshed piecemeal during winter and spring. These sheaves could be stored indoors in barns but when space was lacking also in outdoor stacks.[31] In contrast, northern Italian cereals were threshed shortly after the harvest and stored as kernels in granaries and warehouses, exceptions notwithstanding.[32] Since most threshing was carried out much earlier in Italy, and grain in the two

[27] L. Clerici (ed.), *Italian victualling systems in the early modern age, 16th to 18th century* (2021); K. van Honacker, *Lokaal verzet en oproer in de 17de en 18de eeuw. Collectieve acties tegen het centraal gezag in Brussel, Antwerpen en Leuven* (1994), pp. 395–438; G. van Houtte, *Leuven in 1740, een krisisjaar: ekonomische, sociale en demografische aspekten* (1964), pp. 50–72.

[28] W. Ronsijn, 'Mediated and unmediated market dependence in the Flemish countryside in the nineteenth century: two paths of rural development', *Continuity and Change* 28 (2013), p. 98.

[29] G. Coppola, *Il mais nell'economia agricola lombarda (dal secolo XVII all'Unità)* (1979); L. Mocarelli and A. Panjek (eds), *Maize to the people! Cultivation, consumption and trade in the north-eastern Mediterranean (sixteenth–nineteenth century)* (2020); C. Vandenbroeke, 'Aardappelteelt en aardappelverbruik in de 17e en 18e eeuw', *Tijdschrift voor Geschiedenis* 82 (1969).

[30] Sigaut, 'A method'.

[31] W. Ronsijn and L. Herment, 'Les modalités du stockage des céréales en Flandre et dans la France du nord en l'an II et III', in M. Lauwers *et al.* (eds), *Mises en réserve: production, accumulation et redistribution des céréales dans l'Occident médiéval et moderne (Actes des 40e journées internationales d'histoire de Flaran, Abbaye d'Arthous, 12–13 octobre 2018)* (Toulouse, 2022), pp. 109–26.

[32] In northern Italy granaries and warehouses were the typical storage facilities, at least for public storage. Silos were uncommon in this part of Italy. B. Marin and C. Virlouvet (eds), *Entrepôts et trafics annonaires en Méditerranée: Antiquité-Temps modernes* (2016). Households also used wells and pits (e.g. in Milan: Historic Civic Archive of Milan [henceforth HCAM],

regions was usually threshed before sale, the new harvest was available for marketing much sooner in Italy than in Flanders. An exception in Flanders was buckwheat, which like in Italy was threshed immediately after the harvest. Unthreshed buckwheat could not be taken from the field without great losses on the way. Neither could it be left in the fields for too long since bad weather would damage it. For these reasons it was threshed in the field shortly after the harvest, and because threshed grains are more difficult to store, especially when they were new and still damp, most of the buckwheat was sold in the months following harvest.[33] Maize in Italy, stored in large granaries (where maize usually occupied a minor place), was held in kernels like all the other grains, but part of the harvest was stored by households in the ear, hanging from the ceiling either outdoors or indoors.[34] Rather like buckwheat in Flanders, it was mainly a short-term supply: considered highly perishable, producers were recommended to sell it within the year, and notably by winter.[35]

There are no direct observations of storage costs in eighteenth-century Flanders and Italy that would permit a meaningful comparison. Yet we do have two other relevant indicators: interest rates and weather observations during harvest time (for details and sources see online appendix). Eighteenth-century interest rates appear to be similar across the two areas. Our data are from rates applying to two different types of credit, heritable annuities in northern Italy and mortgages in Flanders, but in both places, almost all observations range between 3.5 and 6 per cent. Harvest-time weather observations serve as a proxy for the possible difference in grain dampness at harvest time, which affects storage costs in two ways: the extent of losses due to spoilage, or the amount of labour required to shovel threshed grain in store.[36] Northern Italy and Flanders have similar levels of precipitation in July, but northern Italy had more rainfall in June and August. Conversely, Flanders had more days with precipitation during July and August, and higher relative humidity, while temperatures were lower than in northern Italy. Therefore, if June's rainfall made northern Italian grain damper, it was likely to dry faster. Since Italian grain was stored threshed, it required regular shovelling when damp. Then again, losses of Flemish grain stored in outdoor stacks may have been considerable, as these were built on the ground rather than on special platforms as in England.[37] Fixed costs

Note 32 *continued*
Gride, C. 3, f. 43). Occasionally, unthreshed grain could enter the town walls, as local public authorities sometimes imposed grain threshing within three days from its introduction into the town (as reported for Novara: HCAM, *Gride,* C. 3, Grida 1648).

[33] P. Lindemans, *Geschiedenis van de landbouw in België* (1952), pp. 72, 120; L. van Acker, 'Boekweit in West-Vlaanderen, een vergeten gewas', *Biekorf*, 105 (2005), p. 120.

[34] G. Cantoni, *Trattato complete di agricoltura compilato dietro le più recenti cognizioni scientifiche e pratiche* (1855), pp. 712–3.

[35] D. Gasparini, *Polenta e formenton. Il mais nelle campagne venete tra XVI e XX secolo* (2002), p. 30.

[36] With regards to agricultural output, climate historians tend to focus on weather trends at sowing or harvest time, disregarding the after-harvest grain vulnerabilities, highly relevant for the carry-over and the actual yearly grain availability. On typical climate issues dealt by historiography see T. M. L. Wigley, M. J. Ingram and G. Farmer (eds) *Climate and history: Studies in past climates and their impact on Man* (1981); W. Behringer, *Kulturgeschichte des Klimas: Von des Eiszeit zur globalen Erwärmung* (2010) and more notably see: F. C. Ljungqvist, P. Tehjil, B. Christiansen, A. Seim, C. Hartl and J. Esper, 'The significance of climate variability on early modern European grain prices', *Cliometrica* 16 (2022).

[37] J. Sinclair, *Hints regarding the agricultural state of the Netherlands compared with that of Great Britain* (1815), p. 82.

per unit of grain were higher in Flemish barns (which the unthreshed grain shared with the straw) than in Italian granaries, but Flemish open-air stacks had much lower construction costs. In conclusion, all these peculiarities prevent us from making any general claims about the difference in storage costs between the two regions.

Wheat, rye, buckwheat, maize and millet were mainly for human consumption, though demand for them was not in all cases consistent throughout the year. Many consumers probably turned towards grain of poorer quality or cheaper varieties when wheat prices were high.[38] Cheaper varieties included millet and maize in northern Italy, which were mixed in common bread, typically together with rye, varying with local food habits and taste.[39] However, millet and maize consumption were highest during winter and spring, when they were usually eaten as porridge. This was the cheapest way to consume them, avoiding the cost of grinding and baking. Millet soup was allegedly very popular in the cold months, also among consumers who could afford more expensive grains and who, indeed, promptly shifted towards them during the summer.[40] Last but not least, millet was not solely used for human and animal consumption but also as an effective preservative for a range of more perishable food items, such as pumpkins and melons. Above all, it was used to store the more noble grains, often being mixed with wheat in order to better preserve the latter.[41] In Flanders, most barley was used for malting and brewing. The malting and brewing seasons were mainly confined to the cooler months, from October to May, because malt made during warm weather was of poor quality, and brewers avoided it.[42] For these reasons there was a pronounced seasonal pattern in the demand for maize, millet and barley.

For these cereals, we have data covering most of the eighteenth century. Exceptions are Aalst, where our data only cover the second half of the century, while millet prices in Romano are very few and confined to the second quarter of the century. All our data are monthly prices, except for Sint-Niklaas, where we have weekly prices. To reconstruct the seasonal pattern in the prices of these different cereals, we considered the difference between the log-transformed price and the 'normal' price at that time, which is the 13-month or 53-week centred moving average of the log-transformed price at that time. This difference is later referred to as the monthly deviation from the trend. More details are provided in the online appendix, where we also look at the first differences, as well as the variability in the seasonal pattern between years. The Sint-Niklaas data also include minimum and maximum prices per week, and regularly distinguish between old and new grain, offering us a glimpse at intra-year

[38] Labrousse, *Esquisse du mouvement des prix*, pp. 176–7, 193, 199.

[39] I. Orefice, 'La politica del pane a Milano fra XVI e XVII secolo', *Gli archivi per la storia dell'alimentazione. Atti del convegno (Potenza-Matera, 5–8 settembre 1988)* (1995), pp. 659–60.

[40] R. P. Corritore, *La naturale 'Abbondanza' del mantovano: Produzione, mercato e consumi granari a Mantova in età moderna* (2000), pp. 140, note 55.

[41] V. Tanara, *L'economia del cittadino in villa*, L.VII (1658), pp. 469–70. Although recommended for preserving all sorts of grains, it was typically mixed with wheat. In an older Italian-written agronomic treatise we find that 4 *some* (unit of volume) of millet were used to properly store 10 *some* of wheat. A. Gallo, *Le venti giornate dell'agricoltura et de piaceri della villa* (1593), p. 58. This usage seems typical of rural areas; allegedly, at least in large public warehouses, millet was later replaced by sand to keep wheat cool, preventing germination. Cantoni, *Trattato completo*.

[42] 'Malt' in *The complete farmer: or, a general dictionary of husbandry* (London, 1793). See also C. Clark, *The British malting industry since 1830* (1998), p. 4.

quality variation. Furthermore, we have data on trade volumes for Romano for the middle of the eighteenth century and for Sint-Niklaas for the second quarter of the nineteenth century. For Sint-Niklaas, there are no reasons to suppose seasonal patterns in market supplies in the second quarter of the nineteenth century would differ meaningfully from those in the eighteenth (see online appendix).

We consider three characteristics of the prices of these cereals. Firstly, we will look how prices behaved and compare this with the expected pattern of low prices post-harvest and rising prices in the subsequent months. Secondly, we consider the relation between prices and patterns in supply and demand, based on the available trade volume data and what we know about seasonal differences in demand. Thirdly, we consider the possibility of intra-year quality variation, particularly using the old and new grain prices for Sint-Niklaas, as well as other, qualitative sources.

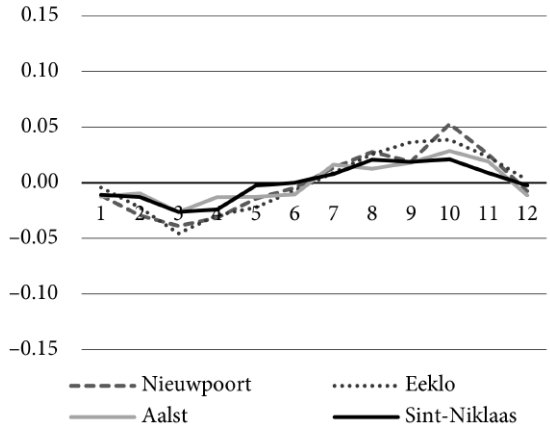
IV

Seasonal patterns in wheat, rye, maize and millet prices are shown in Figure 1; seasonal patterns in prices and trade volumes of wheat, rye, buckwheat, barley, maize and millet are shown in Figure 2. Table 1 summarizes several statistics about the seasonal price patterns. The data show that the strength, magnitude and timing of the seasonal cycle differed substantially between cereals and regions.

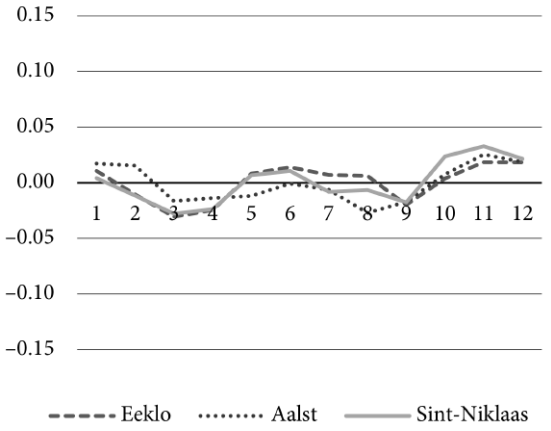
Firstly, we consider the strength of the seasonal cycle, which we define as the share of month-to-month fluctuations in the total variance in grain prices. This is what the R^2-values of the regression show. These tended to be weak, although there were differences between markets and cereals. The seasonal pattern tended to be stronger in the Italian markets. Especially strong cycles are found for wheat and maize in Udine (resp. 35.1 and 48.5 per cent) and rye in Milan (38.6 per cent). In the Flemish markets, cycles were weaker, apart from buckwheat in Sint-Niklaas (27.8 per cent). For other cereals in Flanders, monthly differences explain less than 15 per cent of price variation. If seasonal patterns were weak, they were particularly unpredictable in the months preceding and during harvest. Both in Flanders and northern Italy, yearly fluctuations around the average seasonal cycle (shown in the online appendix) were larger from about May to September. These were the months when news regarding the state of the new harvest came out, and when markets adjusted to this news. Conversely, during the other months, from about October to April, prices stuck closer to the usual seasonal cycle.

Secondly, the magnitude of the cycle, the price difference between the cheapest and most expensive months, was often quite small as well, and strongly related to the strength of the cycle. Again, cycles tended to be larger in Italy than in Flanders. The largest cycle was again that of maize in Udine, where there was an approximately 25 per cent difference between the highest and lowest prices. In Flanders, buckwheat prices at the market of Sint-Niklaas displayed the largest cycle with about 13 per cent. In other cases, the price difference rarely exceeded 10 per cent.

Thirdly and most interestingly, there were clear differences in the timing of the ups and downs of the seasonal cycle. The cycles looked quite similar for each cereal within either Flanders or northern Italy, showing the high degree of market integration in the two areas.



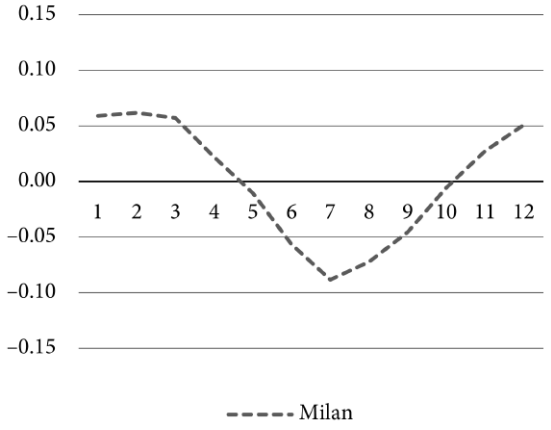
Wheat (Flanders)



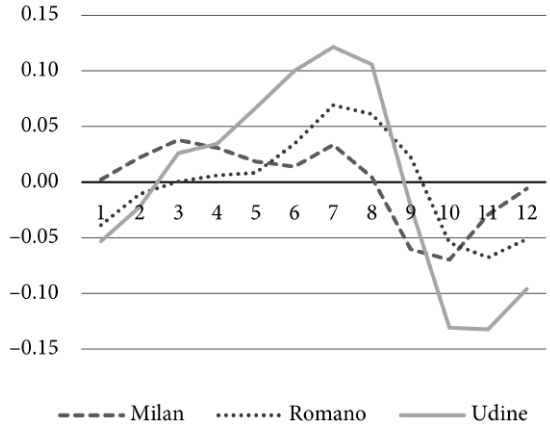
Rye (Flanders)



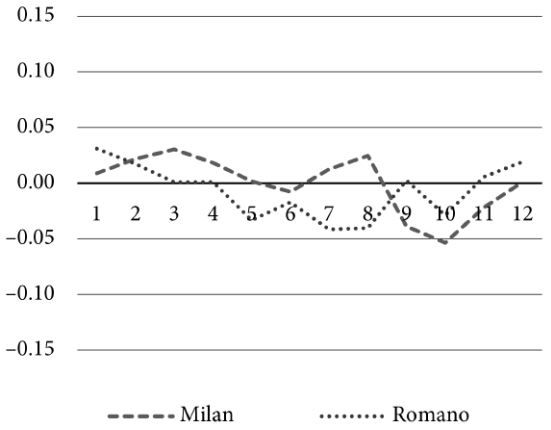
Wheat (northern Italy)



Rye (northern Italy)



Maize (northern Italy)



Millet (northern Italy)

FIGURE 1. Deviation from trend by month

Source: see online appendix.

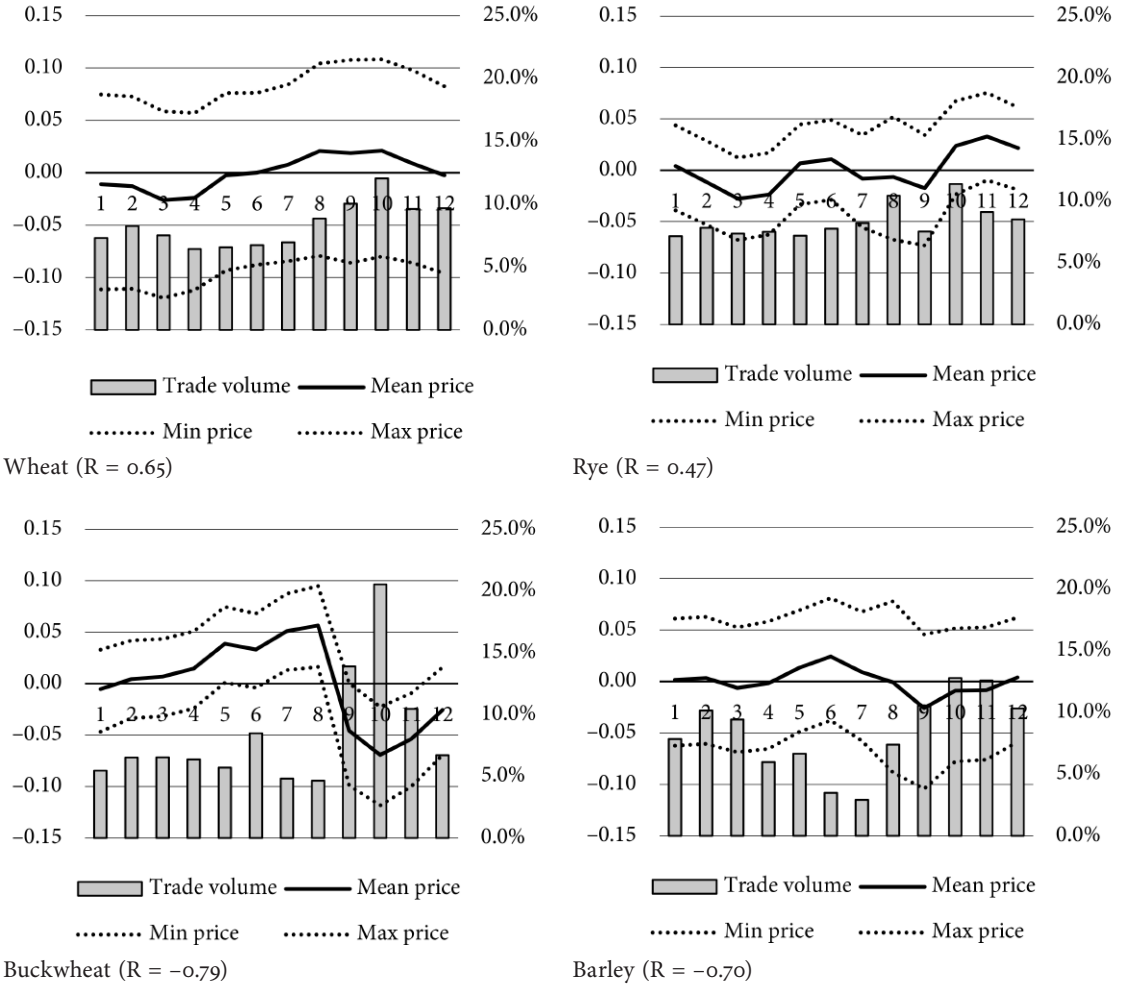
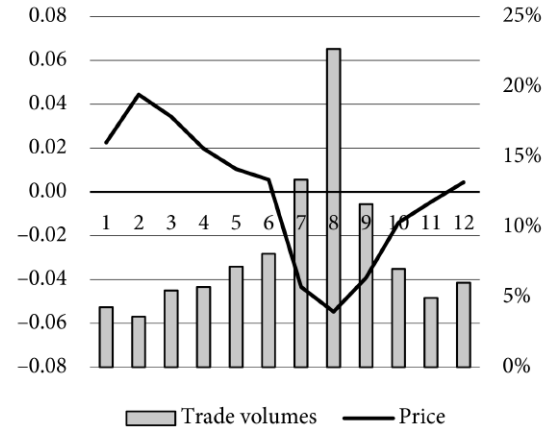


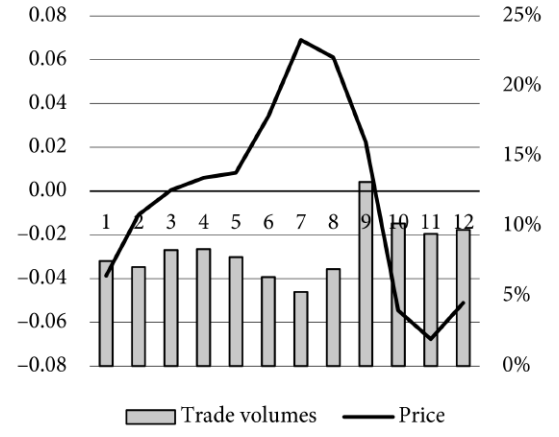
FIGURE 2a. Deviation from trend by month and trade volumes: Sint-Niklaas, Flanders

Note: Price on the left axis, trade volumes on the right axis. Correlation between trade volumes and mean price.
Source: see online appendix.

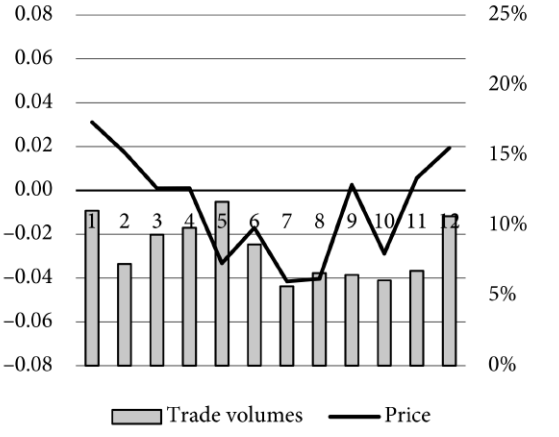
Only maize prices in Italy seemed to behave somewhat more independently, symptomatic of the trade in this crop being less intense compared to wheat. In contrast, the differences were substantial between cereals and regions. The data reveal three broad patterns. First, in several cases grain prices followed a sawtooth pattern approximating the expected pattern: wheat, rye, and maize prices in the northern Italian markets, and buckwheat and barley prices in Sint-Niklaas. In these cases, prices dropped during summer or autumn and gradually rose afterwards. However, the correspondence is imperfect: the drop in Italian wheat and rye prices predated the harvest. A second pattern can be seen in Flemish wheat prices: these likewise followed a sawtooth pattern, but with a profoundly different timing: prices were at their highest shortly after the harvest, and lowest in spring. Finally, a third pattern appears where prices display a double cycle: rye prices in Flanders and millet prices in Italy. In these



Wheat (R = –0.85)



Maize (R = –0.45)



Millet (R = 0.40)

FIGURE 2b. Deviation from trend by month and trade volumes: Romano, northern Italy

Note: Price on the left axis, trade volumes on the right axis. Correlation between trade volumes and mean price.
Source: see online appendix.

cases, prices have two peaks and two troughs each year. Flemish rye prices, like wheat, rose in autumn, dropped in winter, and rose in spring, but contrary to wheat they dropped again around harvest.[43] Italian millet prices were high in winter, average just before summer, high again during summer, and low in autumn.[44]

Finding the same cycle for each cereal on all markets in the same region, but different cycles for different cereals and regions, is a clear indication that region-specific and cereal-specific factors mattered. Differences between cereals in the magnitude of seasonal cycles (minor

[43] The first differences (see online appendix) show that the pattern in wheat prices in Sint-Niklaas was not very dissimilar from that in rye prices, but less outspoken, and hence the overall patterns of these two cereals in the deviation from trend diverged.

[44] There are too few observations of millet prices in Romano for the pattern to be statistically significant.

TABLE 1. Deviation from trend by month: magnitude and strength of seasonal cycle

	Difference highest–lowest (magnitude)	R^2 *(strength)*
Wheat		
Sint-Niklaas	0.047	0.068
Eeklo	0.084	0.134
Aalst	0.055	0.080
Nieuwpoort	0.092	0.140
Milan	0.095	0.263
Romano	0.099	0.191
Udine	0.152	0.351
Rye		
Sint-Niklaas	0.061	0.079
Eeklo	0.049	0.046
Aalst	0.052	0.047
Milan	0.150	0.386
Millet		
Milan	0.084	0.075
Romano	0.073	0.152
Maize		
Milan	0.108	0.114
Romano	0.137	0.138
Udine	0.254	0.485
Buckwheat		
Sint-Niklaas	0.126	0.278
Barley		
Sint-Niklaas	0.050	0.038

Source: see online appendix.

cereals often having stronger cycles) may be accounted for by substitution effects (consumers turning to cheaper alternatives when prices are high) or by fixed storage costs (rent for barn space weighing more on the price of cheaper grain) but not by interest rates. None of these factors can account for differences in the timing of seasonal cycles. To explain those, we first explore intra-year supply and demand fluctuations to account for the different cycles. Were there patterns other than the one proposed by Labrousse?

With the first type of cycle identified above, those following more or less the expected sawtooth pattern, there is a clear, inverse relation between prices and trade volumes. These were all cases where much of the harvest was threshed shortly after being gathered. In accordance

with Labrousse's model, trade volumes were largest after the harvest, and the release of these cereals appears to have pushed down prices. This is clear in the case of buckwheat and barley in Sint-Niklaas, where much of the new harvest was sold relatively soon. In the case of barley, the seasonal cycle was perhaps weaker because larger supplies after the harvest matched higher demand during the cooler months. This is also clear in the Italian maize prices. In the case of the Italian wheat prices, there is a strong boost in supplies and drop in prices around harvest time, but supplies started rising and prices dropping months before the new harvest came in.

The two other types of cycles do not display an inverse relationship with trade volumes, on the contrary. Rye prices in Sint-Niklaas and millet prices in Romano were weakly positively related to trade volumes, while the Sint-Niklaas wheat prices had a strong positive relation with trade volumes. High millet prices in winter appear to reflect the popularity of millet soups during these months, while the second peak during summer (not clear in the case of Romano because of the paucity of data) might be due to demand for millet to be used in storing the new wheat harvest.

It is striking that Flemish and northern Italian wheat prices almost mirror each other: in Flanders, wheat prices were low during winter and rising from spring to autumn; in northern Italy, the opposite happened. One hypothesis would be that the difference is due to storage technologies. Italian wheat was threshed early, explaining the post-harvest price drop. Furthermore, the release of old stocks to make room for the new harvest may have depressed prices in the months leading up to the new harvest.[45] This is the time when local big buyers, such as welfare and charity institutions, were able to take advantage of low prices to buy grain to feed people in need.[46] However, this hypothesis does not explain why in Flanders wheat prices and trade volumes were positively related. Another hypothesis would be that the difference between northern Italian and Flemish wheat prices is due to the trade balance. Supposing interregional and international trade slowed down during winter, we would expect prices to drop during that time in regions with surpluses such as Flanders and to rise in regions with a more complex situation such as Italy. From spring to autumn, when better weather would facilitate transport, prices in exporting and importing regions would converge, rising in the former and dropping in the latter. Unfortunately, we do not have the necessary data on seasonal patterns in grain transports to explore this further.

However, if the trade balance and storage technology were all that mattered, we would expect to see the same patterns in rye prices, which is not the case. Italian rye prices closely followed wheat prices, but in Flanders, while wheat prices were high after the harvest, rye prices dropped. A connection with the drop in buckwheat prices, like rye mostly consumed by the less well-off, can only partly explain the difference, as the drop in rye prices started earlier. Other factors must have mattered as well, including differences in grain quality, which we explore in the next section.

[45] June, July or August were not the sole months when grain 'dumping' could occur. It used to be recommended whenever it no longer looked like a well-preserved commodity, losing the features appreciated by merchants. Whenever grain became damp, for instance, the overall tendency was to sell it at once (*Della perfetta conservazione del grano. Discorso di Bartolomeo Intieri* (Napoli, 1754), p. 84).

[46] Corritore, *La naturale 'Abbondanza' del mantovano: Produzione, mercato e consumi granari a Mantova in età moderna*, p. 155.

V

Another factor potentially shaping seasonal fluctuations in grain prices is quality variation. The quality of grain taken to the market can vary between seasons for two possible reasons: firstly, grain quality can change while in store, and secondly, different qualities of the same type of grain can be selected for sale at different times of the year. If this is the case, then when we are comparing grain prices at different moments during the harvest year, we are in fact comparing the prices of different commodities.

Grain storage studies often assume, implicitly or not, that grain quality during storage at best remains consistent or at worst deteriorates. While a certain portion of each harvest was undoubtedly spoilt, there are instead many contemporary accounts that grain in store changed for the better. Hence, old grain was considered better than new. The reason why is explained, among others, by Paul-Jacques Malouin, a French chemist and physician, in his 1767 *Description et details des arts du meunier, du vermicelier et du boulenger*. He argued that one should not grind grain in the year it was harvested (it is unclear whether he meant harvest year or calendar year). Grain, after the harvest, still needed time to improve, so that most (French) cereals were at their best only in their second or third year. At least, the grain needed to have passed a winter, after which it became drier, more nourishing and less fibrous. In time, the grain lost volume and weight, as it lost humidity. Yet Malouin argued that this old grain yielded more flour (at least 5 per cent), and the flour was of better quality. Bread made from new grain was perhaps tastier and better looking, yet it was believed to be less healthy and contained more fibres than bread made from old grain.[47]

Other French, British and Italian sources confirm that old grain was superior and yielded more flour.[48] For example, in November 1765 the *Abbondanza* of Ferrara, the local public food institution, performed two baking tests simultaneously, to test the yield in flour and bread of old and new wheat separately.[49] The result was that one *sacco* (around 124.37 liters) of old wheat produced 91 kg of flour and around 84 kg of bread, while the same amount of new wheat produced only 88 kg of flour and around 78 kg of bread. In other words, old wheat in this case produced 4 per cent more flour and 8 per cent more bread. Other tests elsewhere, such as one in England in 1848, likewise showed old grain to yield more flour.[50] The difference in quality was the result of aging during storage that, within reasonable time limits, generally improved the yield. Contemporaries were well aware of the beneficial effects

[47] Malouin, *Description et details des arts du meunier, du vermicelier et du boulenger* (1767), pp. 17–19, 39, 258.

[48] For example: 'Corn has, by these means, been preserved in the granaries of this country for upward of thirty years, and it is observed that the longer it is kept, the more flour it yields in proportion to the corn, and the purer and whiter the bread is, there being nothing but the superfluous humidity evaporated in keeping', A. Edlin, *A treatise on the art of bread-making* (1805), p. 21; 'Granary' in *The complete farmer*; N. Chomel, *Dictionnaire œconomique* (1732), pp. 406–7; *The guide to trade: the miller* (1842), p. 78; *Della perfetta conservazione del grano*. There was also the belief in northern Italy, which we are unable to verify, that wheat milled in August had the highest flour yield and that flour milled in this month was less perishable. Tanara, *L'economia del cittadino*, p. 26.

[49] Historical Archives of the Municipality of Ferrara (henceforth HAMF), *Finanziaria* XVIII, b. 81, f. 487.

[50] J. B. Lawes and J. H. Gilbert, 'On some points in the composition of wheat-grain, its products in the mill, and bread', *Q. J. Chemical Soc. London* 10 (1858), p. 32.

of aging, particularly during the first months after the harvest. In Ferrara, a 1796 publication on the *Abbondanza* specified that the baking tests should be made only 'when the wheat will be well-aged'.[51] Likewise, in a discussion on the Assize of Bread in Sint-Niklaas in 1843, it was said that baking assays were usually not made before late October, 'when the grains have sweated'.[52] The reason was that the weight and volume of the wheat changed while drying out, and so did its yield in flour. No matter whether grain was sold in volume or weight, new damp grain kernels were heavy and swollen due to their moisture content while old kernels were lighter and more compact. A given volume or weight of new grain therefore tended to contain more moisture and less starch than old grain. New grain was also widely considered harmful for both human and animal consumption, which is why the authorities in Naples in 1760 prohibited its introduction before the fifteenth of August (in addition to the fact that the public warehouses were still full of old grain).[53] Furthermore, dry, aged grain was easier to store. Old kernels, when properly dried, were ranked in the market as a premium product, not just because it yielded more flour, but first and foremost because it offered the strongest assurance against future wastage.[54] In 1722 the orders to the military warehouse keepers of the Verona province specified that they must accept only grains that were well aged.[55] In the eighteenth-century state of Milan, only well-dried grain could be traded.[56] In Bologna the local food institution paid particular attention to the period in which the wheat was purchased and moved to the public granaries (only from September onward) to avoid losses due to 'receiving it fresh from the farmyard'.[57]

In the months after the harvest, old and new grain were often mixed to produce bread, because the new grain by itself was unfit for that purpose. The well-known French agronomist Antoine Augustin Parmentier wrote it was common practice in France to mix old and new grain, in order to keep the right amount of water in the mixture. Before grinding them, this sort of mixing up seems to be rather widespread and highly recommended.[58] During these first months after the harvest, grain prices from both harvests affected the market, as was observed in *Bell's Messenger*, a nineteenth-century British newspaper. In August 1825, reporting the prospect of a successful harvest, the author added the following comment on the price to be expected in the coming months:

> It is known to be necessary to use a considerable portion of old wheat in working up the new corn; and hence the price of wheat is regulated, not only by the quantity of the new

[51] HAMF, Finanziaria XVIII, b. 100 bis, f. 84.

[52] City archives of Sint-Niklaas, Modern, 4463, Note of 16 Oct. 1843.

[53] State Archives of Naples (henceforth SAN), *Regia Camera della Sommaria*, f. 246bis: sources from the State Archives of Naples have been kindly made available by Alida Clemente.

[54] On the connection between grain quality, losses and food safety, see L. Prosperi, 'La perdita delle scorte granarie: evoluzioni di pratiche, tecniche e saperi in età moderna', in A. Clemente and S. Russo (eds), '*La polizia de' grani': Mercati, regole e crisi di sussitenza nelle economie di Antico Regime* (2019), pp. 91–106.

[55] State Archives of Verona, Atti dei Rettori Veneti, b. 801.

[56] HCAM, *Località Milanesi*, c. 75, Istruzioni a Malossari de' Grani.

[57] State Archives of Bologna, *Ambasciata Bolognese a Roma*, b. 501, folder n. 21; *Diversorum*, b. 7, f. 424; *Instrumenti*, b. 2, fos. 546–7.

[58] A. A. Parmentier, *Traité théorique et pratique sur la culture des grains suivi de l'art de faire le pain* (1802), II, pp. 503–4.

> corn, but in a very considerable degree by the price and quantity of the old corn required to work with it. It is known, that this circumstance continues to affect the price of wheat for two or three months after the harvest, that is to say, until the new wheat is sufficiently hard to be ground by itself.[59]

If old grain was indeed better than new, it must have left traces in the prices. Unfortunately, across Europe grain was usually sold without written references to its age. Contrary to contemporary technical handbooks, sometimes highly focused on the difference between old and new grain, administrative records only exceptionally mention grain being 'old' or 'new', in case of natural accidents due to weather or parasitosis, jeopardizing kernel integrity or preservability.[60] For that reason, the historical grain price series typically used in the literature tend to overlook the question of grain age and the importance of this point.[61]

The price data for Sint-Niklaas are unique in that they frequently do distinguish between old and new grain, allowing us to test whether there is a significant difference in quality between both. Most of these observations are made during or shortly after harvest time. For wheat and rye, occasionally the distinction continues to be made much later in the harvest year, but this is likely due to exceptional circumstances. In these sources, new grain obviously refers to the latest harvest; old grain can theoretically refer to any preceding harvest, but probably does not extend beyond the preceding year. Only once, in 1731, did the prices explicitly distinguish between three harvests: 1729, 1730 and 1731. Where the distinction is not made, the prices include grain from both harvests or only the latest harvest. Occasionally, seed grain is mentioned separately, during the time of sowing, but those observations are not used here. The results of a paired samples *t*-test of the difference between the average deviation from trend of weekly prices of old and new wheat, rye, buckwheat and barley are in Table 2. Averages of the deviation from trend of old and new grain prices, including the series of minimum and maximum prices, are shown in Figure 3.

The results confirm that old grain was generally sold at a higher price than new. There was an overlap, with better-quality new grain matching or exceeding the prices of poorer-quality old grain. Yet despite the large within-harvest price variance, on average old grain sold at a significantly higher price than new. There was one notable exception, namely rye sold in July. During that month, old rye was cheaper than new; in August, the difference was almost negligible; from September onwards, old rye was more expensive than new. The data provide strong evidence that the quality of the grain in the market was not consistent, but they are not conclusive about the cause of quality variation: either grain quality changed in store, or grain producers selected different qualities for sale at the beginning and end of the harvest year. The observation that the price difference for old and new rye switched in a matter of months suggests that both factors were at work.

[59] Article originally from *Bell's Messenger*, repr. in *Galignani's Messenger*, 12 Aug. 1825, p. 1, col. 2–3, p. 2, col. 1.

[60] See, among many others: *Della perfetta conservazione*. See also private and household correspondence A. Vallisneri, *Epistolario (1714–1729)* (2005): see letters exchanged in 1720.

[61] G. Ongaro and L. Prosperi, *The matter of quality in the grain market: dealing with commodities' function for a wider understanding of price dynamics. Eighteenth-century northern Italy as a case study* (forthcoming).

TABLE 2. Old and new grain in Sint-Niklaas: paired samples *t*-test of difference in mean deviation from trend

Mean deviation from trend of:	*Old*	*New*	*Difference*	*Sig. (2-tailed)*	*N*
Wheat					
July	0.159	0.002	0.157	0.008	7
August	0.033	−0.021	0.054	0.001	64
September	0.049	−0.025	0.074	0.001	48
October	0.112	−0.006	0.118	0.000	35
November	0.101	−0.056	0.157	0.000	21
December	0.126	−0.102	0.228	0.001	12
January–June	0.195	−0.099	0.294	0.000	44
Rye					
July	−0.043	0.061	−0.104	0.000	27
August	−0.016	0.005	−0.020	0.018	148
September	0.006	−0.039	0.044	0.000	68
October	0.067	0.004	0.063	0.000	30
November	0.080	−0.001	0.081	0.000	17
December	0.069	−0.049	0.119	0.000	6
January–June	0.086	−0.025	0.112	0.000	24
Buckwheat					
August	0.037	0.056	−0.019	0.631	7
September	0.079	−0.012	0.090	0.000	17
Barley					
July	0.112	−0.080	0.192	0.001	7
August	0.133	−0.076	0.209	0.000	54
September	0.090	−0.071	0.161	0.000	34

Data source: see online appendix.

For Italy, we do not have the same large number of grain price observations distinguishing between old and new.[62] We do, however, have a handful of observations from the grain market of Legnago, one of the main grain markets of the province of Verona, on the Adige river. The local Venetian officer sent his colleague in Verona the weekly prices of the cereals (wheat, rye, millet, maize, rice) sold in Legnago, distinguishing different qualities (good, mediocre or low-quality wheat). Exceptionally, the words 'old wheat' appear in 1765, 1766 and 1781. For 1765 and 1781, we can compare these with prices of new grain, shown in Figure 4. As in Sint-Niklaas,

[62] An explicit reference to price differences between old and new grains is reported in SAN, *Regia Camera della Sommaria*, f. 246bis.

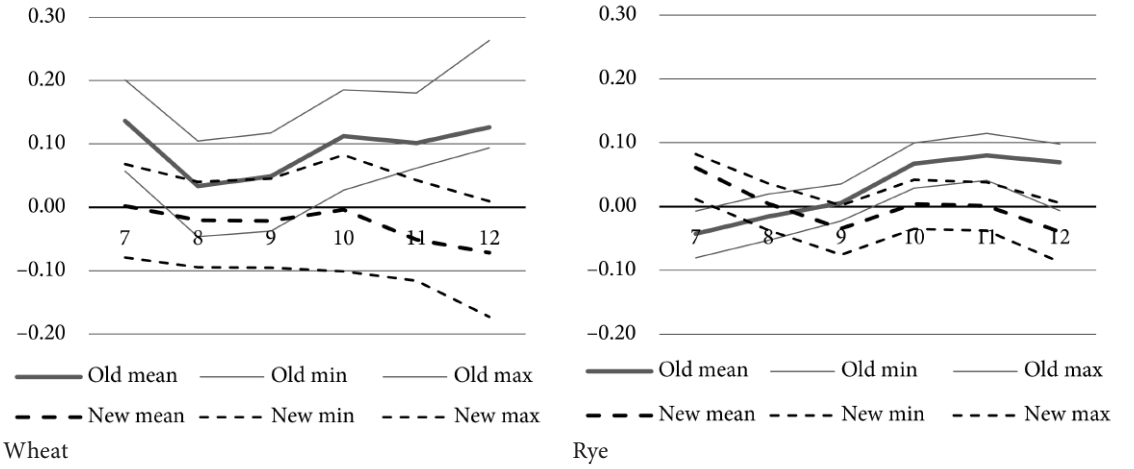


FIGURE 3. Old and new grain in Sint-Niklaas: mean deviation from trend

Note: Data for August and September are available for a larger number of years than for other months. Estimations for those other months may therefore not represent the 'normal' pattern.
Source: see online appendix.

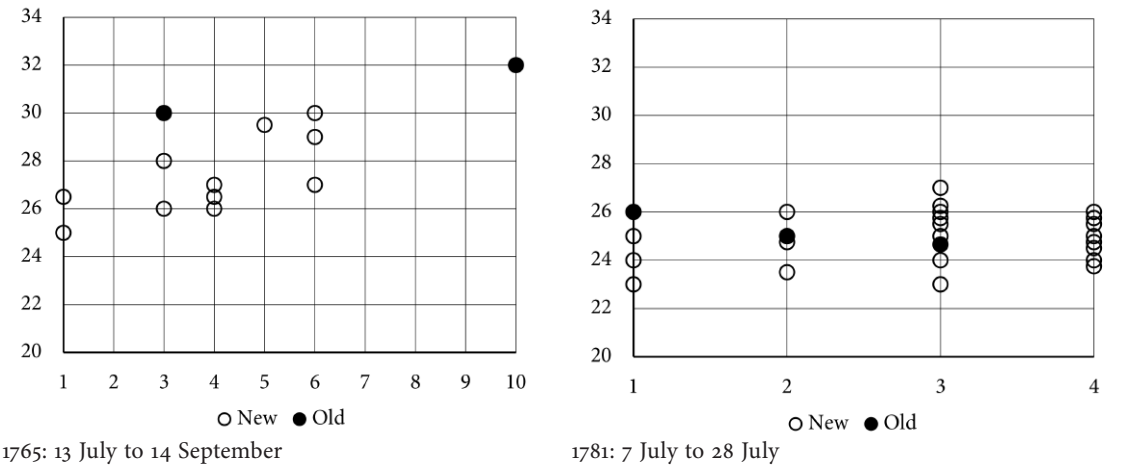


FIGURE 4. Prices of different qualities of old and new wheat in Legnago

Note: Prices in Venetian lire per 'sacco' (i.e., 114,6535 litres).
Source: State Archives of Verona, Atti dei Rettori Veneti, bb. 1042, 1043, 1184.

the data show that old grain tended to be high in price, even when there was considerable within-harvest quality variation. The best new grain could get the same price or even more as old grain, as there was undoubtedly also very poor old grain.

That in Sint-Niklaas old barley and buckwheat also fetched higher prices indicates the effect of the grain becoming more compact with age. Malouin confirmed that old barley, like other cereals, produced more and better flour than new.[63] However, the barley sold in Sint-Niklaas

[63] Malouin, *Description et details*, p. 17.

was primarily meant to be malted to produce beer, and for this purpose it was essential that it germinated. Whether old barley did so as well as new is uncertain; one nineteenth-century British source called the germination of old barley 'always hazardous'.[64] It is therefore improbable that maltsters and brewers would have paid higher prices for old barley than for new, all else remaining the same. More likely is that this barley was bought as fodder. Buckwheat was strictly speaking not a cereal and was not ground for flour. The higher prices of old barley and buckwheat can reflect the sacks in which they were sold containing more kernels than sacks with new grain.

Why old rye sold in July in Sint-Niklaas did not fetch a higher price than new requires special attention. The effect of rye aging did not differ from other cereals. According to Malouin, old rye, like old wheat, was generally better than new. Furthermore, rye storage had the additional benefit that it reduced ergot in the rye.[65] More than other cereals, rye could suffer from this fungal infection that in sufficient concentrations gave those who ate contaminated rye bread a potentially lethal disease called ergotism or St Anthony's Fire.[66] It is unlikely that the superiority of old rye would appear only during its fourteenth month in storage, and hence that the switch between July and September in the old-new price difference reflects any intrinsic change in the grain in store.

A more likely explanation for the odd behaviour of rye prices is the other potential source of intra-year quality variation: producers selecting different qualities of rye for sale at different times of the year. Ordinarily, they would sell the best lots, well winnowed and cleaned, keeping poor-quality lots for their own or their animals' consumption. Towards the end of the harvest year, with a new harvest coming in, large volumes of leftover poor-quality old rye were being dumped into the market. Good-quality rye may have been hard to find around that time of the year, and exceptionally good lots of new rye fetched elevated prices. That explains the low price of old rye during summer, together with the seasonal drop in rye prices in Flanders at this time of the year. After the bulk of this poor-quality old rye was sold, the remaining better-quality old rye marketed in later months, like other cereals, fetched higher prices, whereas the new rye was sold at low prices.

The price difference between old and new grain provides us with a fresh perspective to look at seasonal cycles in grain prices. Firstly, price increases during the harvest year should at least partly reflect grain quality improving, the kernels drying out and becoming more compact. Secondly, the peaks and troughs depend not only on what happened with latest harvest, but also on how much and which qualities were being sold of the preceding harvest. Seasonal patterns in grain prices therefore cannot be understood without considering the size of the carry-over. Grain availability in early modern times should be understood on a two-year basis, grain supplies consisting of the result of the latest harvest combined with the so-called carry-over, often one-year-old grain and, more seldomly, even older grain. In Italy, the size

[64] *Farmer's Magazine* 45, Jan.–June 1874, p. 372.

[65] J. P. Frank and H. A. Bake, *Geneeskundige staatsregeling* (1789), pp. 158, 163; Malouin, *Description et details*, p. 18.

[66] T. Miedaner and H. H. Geiger, 'Biology, Genetics, and Management of Ergot (*Claviceps* spp.) in Rye, Sorghum, and Pearl Millet', *Toxins* 7 (2015), pp. 661–2; M. Ferrières, *Histoire des peurs alimentaires* (2002), pp. 183–209.

of the wheat carry-over was likely rather small, and that of the minor grains probably even smaller. Old wheat was on occasion traded and baked: public food institutions (the *Annone*) maintained their stockpiles and supplied the bakers if needed, even in the areas where agricultural production was abundant, and also private traders in certain years put wheat in the market that was harvested one year before. For example, on several occasions (in 1715, 1736 and 1756) the *Abbondanza* of Ferrara used old wheat, or old wheat mixed with new in their baking tests.[67] Given that the wheat used for these tests was a sample of the varieties sold in the urban market and used by the bakers, in these years, exceptionally, old wheat supplied the Ferrara public and private bakeries. However, sources collected in the Republic of Venice, the State of Milan, and the Papal Legations of Bologna and Ferrara, suggest that usually in northern Italy the wheat harvest was consumed almost entirely within the same agrarian year, either in the area where it was produced, or in bordering areas with insufficient agricultural production. Therefore, in ordinary years, stocks were used up around October of the following agrarian year. The generally small amount of bread grain carried over in northern Italy is consistent with the sawtooth pattern their prices display, and could explain why seasonal cycles tended to be larger here than in Flanders. Most grain marketed after the harvest was new, and still needed some post-harvest maturation. Prices were therefore low but rose as this maturation advanced. Conversely, toward the end of the harvest year large volumes of leftover grain, sold to make storage space available for the new harvest, pushed prices down, either because the amount released for sale glutted the market, or because the remaining cereals were of poor quality, kept, like rye in Flanders, by the producers mainly for their own consumption until the next harvest would come in. For maize, where the carry-over was even smaller, price increases could be attributed not only to dropping supplies but also to the kernels drying out and becoming more compact.

Carry-overs were likely larger in Flanders. Official reports from the middle of the century mentioning the existence of considerable grain surpluses are probably exaggerated, but even Henri Delplancq, head of the Financial Council and using a more rational approach, agreed that large quantities were carried over between harvests.[68] The observation that in Sint-Niklaas in exceptional years, old wheat prices were still recorded as late as March (1756, harvest 1754) or even August (1731, harvest 1729; possibly also 1741, harvest 1739), is consistent with the existence of large stocks that could be drawn upon in time of need. These stocks had a dampening effect on the seasonal price cycle. For cereals with a larger carry-over such as wheat and rye, the existence of stores of good-quality old grain explains the counter-intuitive finding that prices here were high in autumn and declined afterwards. That old, poor-quality rye was dumped in the market at the beginning of summer interfered with this pattern and explains why the latter display a double cycle. This was less likely to happen with wheat which grain producers less often kept for their own consumption and handled with greater care. High wheat and rye prices in autumn at least partly reflect the considerable share of good-quality old grain still being sold during these months. At the same time large carry-over stores of bread grains permitted a larger part of the new harvest to age in store. The bulk of these were threshed

[67] HAMF, *Finanziaria XVIII*, b. 77, f. 266; b. 78, fos. 324–6; b. 80, f. 442.

[68] Vandenbroeke, *Agriculture et alimentation*, pp. 77–8, 84–8.

during winter and prices started dropping. Conversely, for cereals with a small carry-over such as barley and buckwheat, like maize in Italy, leftovers from the previous year had little influence. The resulting seasonal cycle fits with the expectation of low post-harvest prices, gradually increasing until the next harvest. However, our results show that this increase may not only reflect supply-and-demand conditions and storage costs, but also the grain gradually improving and becoming more compact.

VI

In this contribution, we set out to explain why seasonal patterns in grain prices in several cases deviated from Labrousse's as well as McCloskey and Nash's schemes. Our results show that there are several factors shaping the seasonal cycle, of which intra-year quality variation appears to be a major, and so far mostly neglected, aspect. Firstly, grain was not a homogeneous commodity. Grain quality differed from field to field, farmer to farmer, year to year, but also from month to month. During storage, its quality improved as it lost humidity and volume. Because of the latter, any unit of grain, whether in volume or weight, will contain more of the valued substance at the end of the harvest year than at the beginning. As the grain in store matured, its price rose. Secondly, where grain was regularly carried over into the next harvest year, the average price depended on the balance between old and new grain in the market. Carry-overs of good-quality old grain may explain the odd seasonal pattern many scholars have found, where prices are high instead of low after the harvest. These carry-over stocks permitted the new grain to mature in store, until it was better suited for bread. The need to let the new crop mature after the harvest provided an incentive to preserve the older stock for longer than one harvest year. Thirdly, grain producers pursued commercial and subsistence strategies simultaneously, and these were to a certain extent linked to different varieties and qualities of grain. They expected to make profit from certain cereals more than from others, which were grown not for the market but rather for their own and their animals' consumption. Grain producers often brought only the best part of their harvest to the market, keeping poorer lots for their own consumption. However, surpluses of these poorer lots could appear in the market towards the end of the harvest year in sufficient quantities to depress prices, interfering with the seasonal pattern. Such behaviour is consistent with grain producers combining profit-maximizing with risk-avoiding strategies. It also means that the grain being sold was not always a random sample of available stocks.

Besides quality variation, also supply and demand mattered, but there was no single pattern. What the supply-and-demand-pattern looked like, depended on the type of cereal: how it was used, how and when it was threshed and stored, and when it was consumed, imported, or exported. Some households' supplies might run out, driving up demand at the end of the harvest year. Demand for cereals used for specific purposes such as soups and porridge (maize and millet), malting (barley) or storage (millet) was highest at specific times of the year. The prospect or arrival of a new harvest and the need for space to store it could release much old grain of either good or bad quality.

Seasonal patterns depend on much more than storage costs and interest rates. We do not claim that the factors discussed in this paper entirely account for seasonal patterns instead.

What we have shown is that the factors influencing seasonal patterns were diverse and differed strongly depending on circumstances. Caution is recommended to all scholars who maintain there is a straightforward correspondence between grain prices, storage costs and interest rates, while dismissing the strong peculiarities of the preindustrial grain market.

War, taxation and the enlargement of farms in coastal Flanders (seventeenth–eighteenth centuries)

by Sander Berghmans

Abstract

Wars always have had a huge impact on societies. If a war lasts for a long period of time, it is even capable of fundamentally changing economic structures. This was a factor in an evolution that took place in coastal Flanders during the seventeenth and eighteenth centuries. In this area, large farms became larger as they were able to absorb small leasehold farms that had gone bankrupt during periods of war. This article investigates the dynamics of this process by examining a large farm in coastal Flanders. It first identifies how such a farm was operated. Subsequently I will look at the impact of war in order to identify the mechanics behind the enlargement of the farms. This article demonstrates in particular how the collection of war taxes played a crucial role in the bankruptcy of the small farms and the survival of the large ones.

Wars were a recurring aspect of life for most medieval and early modern farmers.[1] Warfare did not only imply that farmers were at risk of being killed, but could also lead to the destruction of property, epidemics and market disruption in those places directly hit by the presence of soldiers.[2] Even the more distant communities were affected by warfare due to the challenges of over-taxation and the requisition of food, property and labour. An increased taxation had a large impact on farmers, who were often forced into bankruptcy. However, due to the different nature of farms (e.g., resources, structure or forms of exploitation) not every type of farm was hit in the same way by wartime taxation. As a result, some farms defaulted faster than others, which reshaped local demographics, landownership and labour relations.[3]

[1] M. P. Gutmann, *War and rural life in the early modern Low Countries* (1980), p. 675; E. Thoen, 'Oorlogen en platteland : sociale en ekonomische aspekten van militaire destruktie in Vlaanderen tijdens de late middeleeuwen en de vroege moderne tijden', *Tijdschrift voor Geschiedenis* XCI (1978).

[2] Property: Thoen, 'Oorlogen en platteland', pp. 363–70; epidemics: I. Devos and T. Van Rossem, 'Oud, ouder, oudst: regionale en lokale verschillen in sterfte in het graafschap Vlaanderen tijdens de zeventiende en achttiende eeuw', *Jaarboek de zeventiende eeuw* (2017), pp. 40–5; market disruption: Thoen, 'Oorlogen en platteland', pp. 367–70.

[3] T. Soens, M. Massard-Guilbaud, and R. Rodger, 'Threatened by the sea, condemned by man? Flood risk and environmental inequalities along the North Sea coast (1200–1800 AD)', in G. Massard-Guilbaud and R. Rodger (eds), *Environmental and social inequalities in the city. Historical perspectives* (2011), pp. 91–111.

The recurrent wars that struck coastal Flanders during the late seventeenth and eighteenth century caused such a war-inflicted movement. Coastal Flanders had been dominated by leasehold farms since the late medieval period, e.g., already 90 per cent of the land in the Furnes castellany was leased out by the end of the sixteenth century.[4] During the seventeenth and eighteenth centuries, leasehold farms rapidly grew in size.[5] Until recently, this rapid evolution has been mainly explained by focusing on the economic advantages that large farms had due to a more efficient use of capital, labour, land or knowledge. For example, it is maintained that large farmers needed fewer horses and labourers for each hectare they worked due to economies of scale. Moreover, they were able to speculate on rising grain prices and the insights gained from their accounts – which were seldom kept by smaller farmers – helping the large farmers to understand their business operations.[6] However an acceleration in this evolution can be seen in coastal Flanders during periods of war. A large amount of smaller and medium-sized farms went bankrupt, while larger farmers survived.[7] Despite having an efficiency advantage, this is surprising, as large farms would economically be expected to suffer more during periods of war. They are more exposed to shifts in market prices of factors of production and cannot easily withdraw from markets and focus on self-sufficiency in case of war or crises.[8] Moreover these farms were more capital intensive and as capital is the factor most easily confiscated from a farm, one would assume that these farms are more vulnerable.[9]

This article addresses the issue by investigating how the Rooswalle farm, a typical example of a large farm owned by the abbey of the Dunes, dealt with war. As wartime taxation was a crucial factor in the survival of a farm, I will also link the farm's strategy to the practices of the local tax farmer. The tax farmer could play a key role in either worsening or softening the impact of wars for the local farmers. He could force the farmers to pay all the war taxes and contributions immediately, or he could grant deferral of payment. In some cases, he could even decide to favour or disadvantage some individual farmers.[10] In this way, he may have contributed to the survival of certain farms. An in-depth analysis of these factors facilitates an insight to important and understudied aspects of the survival and expansion

[4] P. Vandewalle, *De geschiedenis van de landbouw in de kasselrij Veurne (1550–1645)*, Gemeentekrediet historische uitgaven, 66 (1986), p. 95.

[5] T. Lambrecht, 'Agrarian change, labour organization and welfare entitlements in the North-Sea area, *c.*1650–1800', in S. King and A. Winter, *Migration, settlement and belonging in Europe, 1500–1930s: comparative perspectives* (2013), pp. 205–10.

[6] F. Delleaux, *Les censiers et les mutations des campagnes du Hainaut français: la formation originale d'une structure socio-économique (fin XVIIe–début XIXe siècle)* (2012), pp. 25–45; P. J. van Cruyningen, *Behoudend maar buigzaam: boeren in West-Zeeuws-Vlaanderen, 1650–1850* (2000), pp. 362–4.

[7] T. Soens and E. Thoen, 'The impact of central government taxation on the Flemish countryside (end 13th–18th Centuries): Some Reflections', in S. Cavaciocchi (ed.), *La fiscalità nell'economia europea, Seccoli XIII–XVIII/Fiscal Systems in the European Economy from the 13th to the eighteenth Centuries, XXXIS Settimana du Studi* (2008), pp. 961–64.

[8] M. Olsson and P. Svensson, 'Peasant economy–markets and agricultural production in southern Sweden, 1711–1860', in V. Pinilla (ed.), *Markets and agricultural change in Europe from the 13th to the 20th century* (2009), pp. 75–106, at pp. 99–101.

[9] F. Becuwe and W. Brulez, 'Het gewicht van de oorlog in de kasselrij Veurne 1680–1780' (1983), pp. 23–40.

[10] F. De Wever, *Pachtprijzen in Vlaanderen en Brabant in de achttiende eeuw: bijdrage tot de konjunktuurstudie* (1972), pp. 196–8; H. Van Isterdael, 'Landbouwstructuren in het Land van Aalst (17de–18de eeuw)', *Het Land van Aalst* 40 (1986), pp. 297–8.

of large leasehold farms during the war struck period of the late seventeenth and early eighteenth century.

I

Ever since the start of its reclamation from the sea (twelfth century), coastal Flanders – which is the most north-western part of the county of Flanders (Map 1) – had been characterized by a variety of farm sizes. Large and small farms co-existed and both farmers and investors (especially religious institutions) owned land.[11] These farms mainly produced commercial crops and fattened cattle and sheep. From the fourteenth century, several inundations and increased waterboard taxes forced local farmers into bankruptcy. Unable to pay for the reclamation of their lands or the high waterboard taxes, farmers had to sell or abandon their property. Large investors (mainly urban investors and large religious institutions) took advantage of this situation and accumulated vast numbers of farms; either by reclaiming the inundated farms themselves or by purchasing the land of the bankrupt farmers. From then on, leasehold farming would become the most common form of exploitation in coastal Flanders, differentiating itself from inland Flanders (Map 1) where a mixed ownership pattern remained in place.[12]

Along with the shift in ownership, an early development in this structure of exploitation took place by the end of the middle ages. Some of the smallest (leasehold) farms were incorporated into middle-sized and larger leasehold farms. Small (leasehold) farms had become unviable because of low prices for commercial farm products and the depletion of the peat reserves as peat was dug and dredged by the small farmers to supplement their agricultural earnings. As a result, the total area worked by smaller farmers continuously fell during the early modern period.[13] From 1650 onwards, the concentration of landholding in coastal Flanders accelerated which resulted in the growth in size of leasehold farms. War has been identified as a major cause for this concentration although its exact mechanisms remain unclear.[14]

II

Both inland and coastal Flanders were theatres of war during the Franco-Spanish war (1635–59), the Dutch war (1672–78), the War of the Reunions (1683–84), the Nine Years War (1688–97), the War of the Spanish Succession (1701–14) and the War of the Austrian Succession (1740–48).[15] The prolonged presence of armies in the area proved detrimental to the civilian

[11] T. Soens, 'Het waterschap en de mythe van democratie in het Ancien Régime. Het voorbeeld van de Vlaamse Kustvlakte in de Late Middeleeuwen', *Jaarboek voor Ecologische Geschiedenis* 4 (2001), pp. 40–5.

[12] E. Thoen and T. Soens, 'Van landschapsgeschiedenis naar ecologische geschiedenis: waterbeheer in de Vlaamse kustvlakte in de Late Middeleeuwen en het Ancien Régime', *Jaarboek voor Ecologische Geschiedenis* (2003), pp. 3–10.

[13] Thoen and Soens, 'Van landschapsgeschiedenis naar ecologische geschiedenis', pp. 4–5; T. Soens and E. Thoen, 'The origins of leasehold in the former county of Flanders', in B. J. P. van Bavel and P. Schofield (eds), *The rise of leasing.* CORN publication series 10 (2008), pp. 31–55.

[14] Soens and Thoen, 'Impact of central government taxation', pp. 961–4.

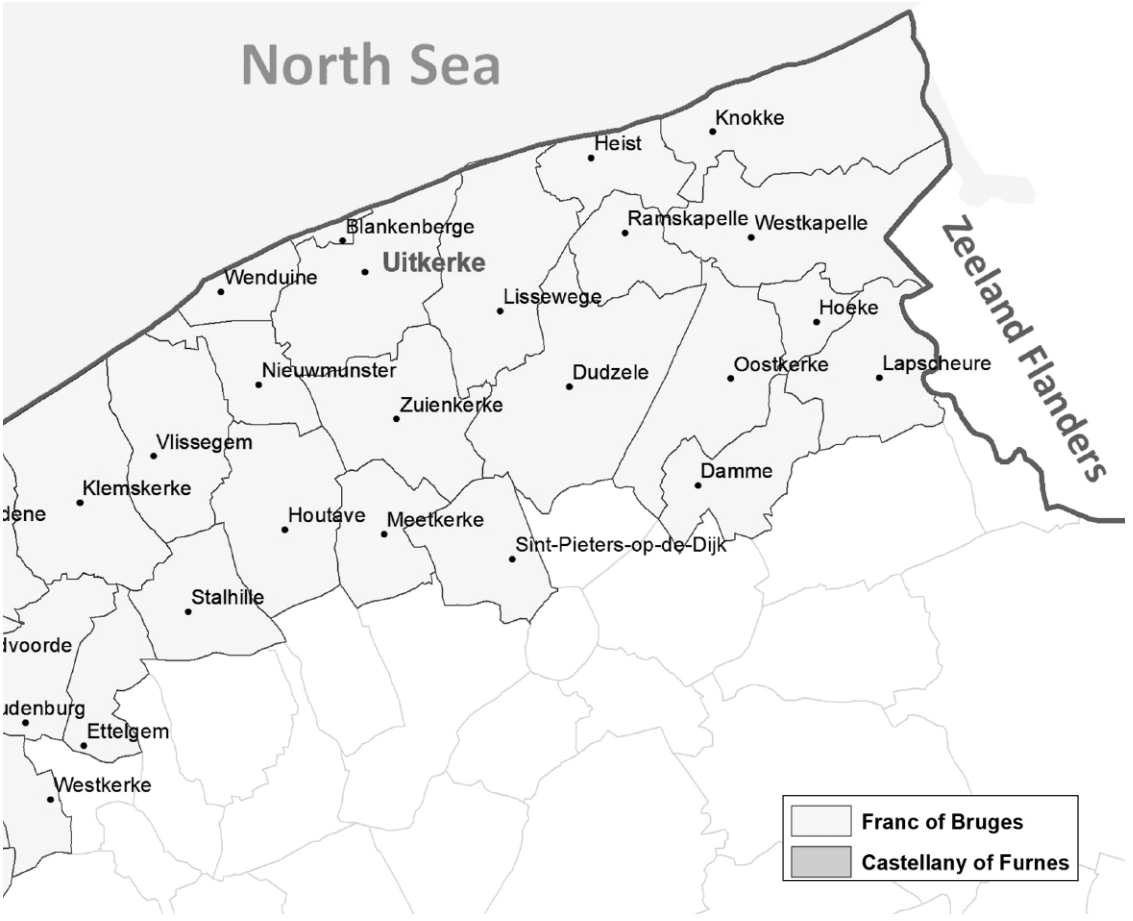
[15] M. Coornaert, *Heist en de Eiesluis: De geschiedenis, de topografie en de toponimie van Heist met een studie over de Eiesluis* (1976), pp. 168–70.

population. Fortunately, for the Flemish farmers, the wars of the early modern period were not as destructive for the local population as they had been in the middle ages. In general, the burden of war primarily consisted of taxation and requisitions. Only a limited amount of pillaging and devastation of the farms took place as most armies preferred to occupy the

MAP 1. Coastal Flanders and its *ambachten* within its contemporary Belgian borders

Source: LOKSTAT, Quetelet Center, Ghent University.





regions for longer periods of time, thus needing a functioning agricultural economy that was able to supply food.[16]

Between 1650 and 1750, taxation pressure would multiply by a factor of up to four (from 5 per cent up to almost 20 per cent) compared to the beginning of the seventeenth century as can be seen in Figure 1.[17] This taxation had an even larger impact in areas with frequent movement of troops. The requisition of horses, services and food during the wars of the seventeenth and eighteenth centuries was so high in the Furnes Castellany, that by 1754 one third of the families were described as *insolvable* (insolvent).[18] The massive surplus extraction to fund warfare caused an economic downturn, impacting the prices on the leasehold market.[19] However, there was a major difference between inland and coastal Flanders (Map 1)

[16] Gutmann, *War and rural life*, pp. 46–52; P. Lenders, *Gent, een stad tussen traditie en verlichting (1750–1787): een institutionele benadering* (1990), p. 402.

[17] Van Isterdael, 'Landbouwstructuren', pp. 297–8.

[18] F. Becuwe, *Het gewicht van de oorlog in de kasselrij Veurne 1680–1780* (unpubl. Master's dissertation, 1983), pp. 48; 250–70.

[19] C. Vandenbroeke, 'Levensstandaard en tewerkstelling in Vlaanderen (17e–18e eeuw)', *Handelingen der maatschappij voor geschiedenis en oudheidkunde te Gent* (1977), p. 25.

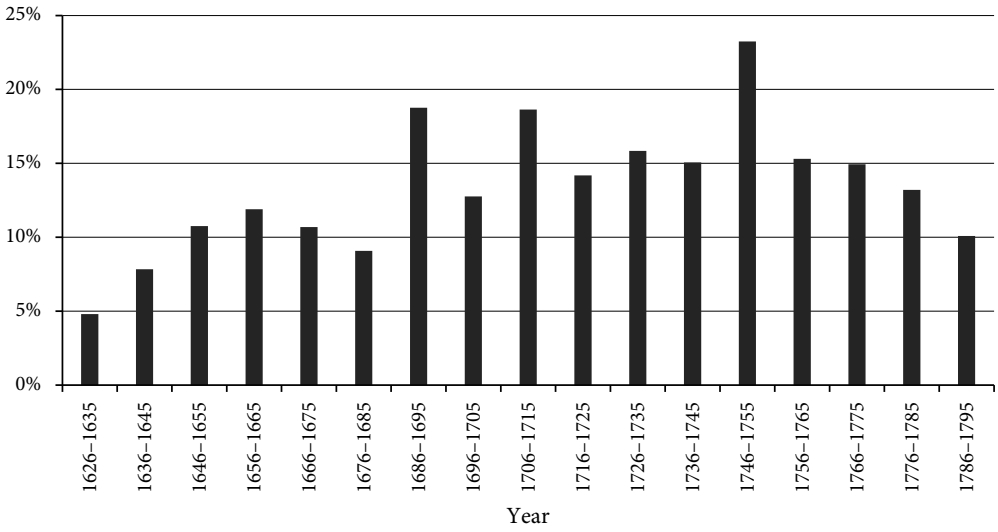


FIGURE 1. Taxes as a percentage of the gross revenue of one hectare of rye (*Land* of Aalst)

Note: These numbers represent the surplus extraction by tax collectors (therefore excluding tithes, leases and other kinds of surplus extraction) as part of the total production of one hectare of rye. These numbers were reconstructed by Van Isterdael. The land van Aalst was an administrative area in the county of Flanders containing *c.*150 villages, together with the towns of Aalst (Alost), Geraardsbergen and Ronse. Data derived from H. Van Isterdael, 'Landbouwstructuren in het Land van Aalst (17de–18de eeuw)', *Het Land van Aalst* 40 (1986), pp. 297–8.

regarding the nature of price decreases on the leasehold market. For example, in the area around Aalst (part of inland Flanders) the farmers suffered from the wars of the seventeenth and eighteenth century (Figure 1). With the increase of taxation, the farmer's financial position came under pressure. Subsequently, the landowners were often unable to collect the rents and were forced to temporarily decrease rent prices or allow delay of payment. However, once the wars ended they would start to reinstate the pre-war rent prices or even increase them.[20] In the adjacent area of Ghent, a similar scenario can be seen. During the eighteenth century, landowners were regularly forced to allow a delay of payments or to rebate the rents due to high war taxes.[21] Despite the large impact of war taxation, the decrease of rent prices in the areas of Ghent and Aalst proved temporary and rent prices would increase rapidly after peace was concluded. Because of the high population density and the low capital needs in the area, the relative cost of labour as a factor of production was low leading to labour-intensive agriculture. There was a high demand for land, incentivizing landowners to split up their lands and raise rents. The presence of proto-industrial activities in the area, made it even more convenient for landowners to increase their rents as their tenant farmers earned more money.[22] A study of the

[20] Van Isterdael, 'Landbouwstructuren', pp. 297–8.

[21] De Wever, *Pachtprijzen,* pp. 192–5.

[22] E. Thoen, 'Social agrosystems as an economic concept to explain regional differences. An essay taking the former county of Flanders as an example (middle ages–19th century)', in P. Hoppenbrouwers, and B. van Bavel (eds), *Landholding and land transfer in the North Sea area (late middle ages–19th century)* (2004), pp. 47–66; Soens and Thoen, 'Impact of central government taxation', pp. 963–96.

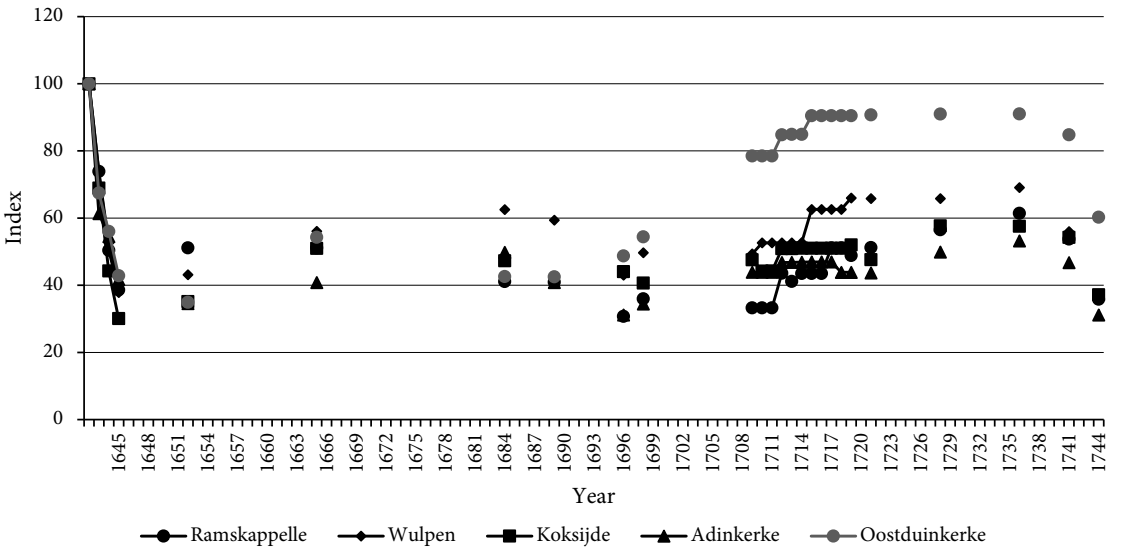


FIGURE 2. Index of real rents in five villages located in coastal Flanders (1642=100)

Source: E. Clement, 'Het cultuurareaal van de abdij ter duinen. Het Vlaamse Westkwartier tijdens de Brugse Periode (1625–1791)' (unpubl. Master's thesis, Catholic University of Leuven, 1972), pp. 130–60.

large leasehold farms of the abbeys of Saint Peter and Saint Bavo (Ghent) demonstrated that large leasehold farms decreased in size during the early modern period.[23]

In areas with higher capitalization, we see an inverse relationship to that found in Ghent and Aalst. In the Antwerp polder area, which shows similarities with coastal Flanders due to the commercial nature of the large-scale cattle breeding and more highly capitalized agriculture, rents decreased during the eighteenth century, declining to 22 per cent just after the war of the Austrian succession compared to the start of the century. In this area, large leasehold farmers threatened the owners with leaving if rent prices were not lowered during the war. They were even able to enforce their demands for lower prices even after the war had ended.[24] As these leaseholders owned a substantial amount of capital to run a farm – and were therefore difficult to replace – the landowners had to agree with these demands. A similar movement occurred in coastal Flanders where low rent prices were noticed for the property of the abbey of the Dunes in the late seventeenth up to the middle of the eighteenth century (Figure 2).[25] In coastal Flanders (as opposed to inland Flanders), war taxation directly lowered the most important factor of production needed to be a farmer: capital.[26] As farmers with sufficient capital were

[23] J. Buntinx, 'Lichtelaar te Lochristi, Redewinkel te Zeveneken en het Torregoed en Bruinewalle te Zaffelare. Een onderzoek naar de sociaal-economische betekenis van grote abdijpachthoeven en hun bewoners (late 13de eeuw–einde ancien régime)', *Handelingen der Maatschappij voor Geschiedenis en Oudheidkunde te Gent* (1998), pp. 22–33.

[24] De Wever, *Pachtprijzen*, pp. 196–8.

[25] E. Clement, 'Het cultuurareaal van de abdij ter duinen. Het Vlaamse Westkwartier tijdens de Brugse Periode (1625–1791)' (unpubl. Master's thesis, Catholic University of Leuven, 1972), pp. 130–60.

[26] Thoen, 'Oorlogen en platteland', p. 372.

scarce, landowners had to decrease their rent prices or delay the collection of payments so that their farmers would not leave.

Despite the landowners' attempts to assist the leaseholders, many farmers still went bankrupt or left their farms because of the impact of war. As a result, temporary abandonment of farms was not uncommon in coastal Flanders. In the Castellany of Furnes, approximately 20 per cent of the land was abandoned in 1694 due to the war.[27] Moreover, the population of the same castellany had decreased with 25 per cent in the period 1688–96. In contrast with the landowning farmers, it was easier for the leaseholders to leave their farms.[28] Indeed, due to this abandonment of some leasehold farms, the remaining farmers had to pay a larger share in the taxes which created a vicious cycle in which more farms (especially those in the most vulnerable position) would go bankrupt.[29]

III

As is evident from the analysis above, wartime taxation had an unequal impact on farms in coastal Flanders. The number of small (leasehold) farms, but also middle-sized (leasehold) farms decreased substantially. These farms were abandoned by their leaseholders and subsequently incorporated into larger farms. By the middle of the eighteenth century, it becomes evident that the lower and middle groups of leasehold farms had suffered tremendously during the previous century. In the villages of Ramskappelle and Sint-Joris (Furnes Castellany – coastal Flanders), the farms larger than 25 hectares already occupied 61.6 per cent of the land in 1659. This amount rose to 89.7 per cent by 1765.[30] In Bulskamp (Furnes Castellany), there was only one farmer who leased two farms in 1664. In 1689 this number had already risen to seven farmers and, in 1755, 12 farmers leased two or even more farms. Unsurprisingly, the number of farms had dropped from 159 to 142.[31] To the east of coastal Flanders (Western Zeeland Flanders: see Map 1) 52 per cent of the farms were larger than 20 hectares by the mid-eighteenth century, a result of the concentration of landholding that had taken place during the previous 100 years.[32] In the Franc of Bruges, 6.5 per cent of the landholdings in the north of Bruges were larger than 50 hectares and 22.7 per cent of the holdings were larger than 15 hectares by 1748. At the same time, more than 51.7 per cent were smaller than 0.5 hectares (Table 1), which implies that most of the people living on these very small farms had to sell their labour to these large leaseholders.[33]

The buildings of the leasehold farms that were incorporated into larger farms often fell into ruin as only one farmhouse, barn or stable was needed per farm. Discussing an inquiry of 1756,

[27] F. Becuwe, 'De oorlogen van Lodewijk XIV en hun weerslag voor het Veurne-Ambacht', *De Gidsenkring* (1985), p. 27.

[28] D. Dalle, *De bevolking van Veurne-ambacht in de 17e en de 18e eeuw* (Brussels, Paleis der Academiën, 1963), pp. 6–10.; R. Goorts, *War, state, and society in Liège: How a small state of the Holy Roman Empire survived the Nine Years' War (1688–1697)* (2019), pp. 284–5.

[29] Goorts, *War, state, and society,* pp. 290–8; H. Van Isterdael, 'De invloed van de fiscaliteit op het inkomen van de plattelandsbevolking van het Land van Aalst in de 17de en 18de eeuw', presented at the Handelingen van het eerste congres van de Federatie van Nederlandstalige Verenigingen voor Oudheidkunde en Geschiedenis van België (1988), pp. 291–308, at pp. 298–304.

[30] Vandewalle, *De geschiedenis*, p. 107.

[31] Dalle, *De bevolking,* p. 79.

[32] Van Cruyningen, *Behoudend maar buigzaam*, pp. 100–5.

[33] Lambrecht, 'Agrarian change', p. 206.

TABLE 1. Distribution of abandoned farms (1751) and holding size (1748) in the Franc of Bruges (%)

Hectares	*Abandoned farmsteads (1751)*[a]	*Holding size (census of 1748)*[b]
0–5	20.3	51.7
5–10	29	
10–30	48.4	41.7
30–50	2.3	
>50	0	6.5

Notes:
[a] SAB Bruges, Bruges Vrije Bundels, no. 359; City archives Bruges, Reeks 516, Straeten Ambacht.
[b] P. Coghe, E. Dubruque and J. Vandeghinste, *Volkstellingen 1748 Brugse Vrije* (2013).

Dalle found that there were 170 abandoned or ruined farms (mainly of small or medium size) in the polder area of the Furnes Castellany. Of the 170, only 25 were abandoned after 1713 due to negligence, whereas the other 145 were damaged, abandoned or burned during the wars before 1713. All of these 170 abandoned farms were incorporated into larger farms.[34]

The severity of the damage done to the middle groups can be understood by looking at an inquiry held in 1751 in the Franc of Bruges (Table 1). According to this inquiry, a large number of abandoned or dilapidated farmhouses were found in the villages of the Franc of Bruges. This was a concern to the castellany as it was forbidden by the 78th article of the customary law of the Franc of Bruges to destroy, abandon or neglect existing farms. The survey was intended to investigate the size, ownership, use and inhabitation of these abandoned farms.[35] For this purpose, the local authorities collected information on each abandoned farm. In the parish of Sint-Pieters-op-den-Dijk, the local official described following case:

> Belonging to Joh. Louis Delavillette a farm measuring 25 *gemet* on which the barn has completely collapsed and the stable and the wagon shed have been demolished, so the land of the farm, consisting of arable and pasture land, is from now on just 'loopend' land and can be leased out; the farmhouse is still in a decent state but the other parts are in ruinous state.[36]

These local officials identified 310 similar cases of abandoned farms, of which 120 contained information about the size. Table 1 shows that it was mainly small and medium-sized farms which were abandoned or were in bad condition. If we put these numbers against the distribution of the holding size, we notice that middle-sized farms were much more at risk of being abandoned than large or very small farms.

[34] Dalle, *De bevolking*, pp. 76–83.

[35] SAB Bruges, Bruges Vrije Bundels, no. 359.

[36] 'Competeert aldaer aen Joh. Louis Delavillette een hofste. Gh. salvo juste 25 gemet waerop de scheuere by haer geheel ingevallen is, ende het stal ende wagecot gansch afgebrokken soo dat het selve hofstedelken ommens het lant van diene bestaende in zaey en gars landt van nu af aen maar voor loopende lant en can verpaght worden synde het woonlingschken nogh wel in staete dogh de reste al vervallen' (Sint-Pieters op Den Dijck). SAB Bruges, Bruges Vrije Bundels, no. 359, Lyste van de Vervallen hofstede, fos 2–3. 'Loopend' land was land without (useful) buildings that was frequently leased out to different farmers.

Of the farms that were listed in the inquiry into abandoned and ruinous farms in the Franc of Bruges, 84.9 per cent were leased out. In 9.3 per cent of the cases the farmer was also the owner of the holding, and the type of exploitation was unknown in 5.4 per cent of the cases.[37] In 69.5 per cent[38] cases, it can be said with certainty that the farm was incorporated into another farm, with approximately 15 per cent of the farms still being independent but in a deplorable state and approx. 15 per cent of the cases having no information. The data on the abandoned farms thus shows us that mainly small and middle-sized leasehold farms were incorporated into bigger ones.[39]

Indeed, the decline of the small and middle-sized farms becomes evident by taking a closer look at lawsuits. Research on the social and economic background of litigants in the Franc of Bruges shows that farmers from middle-sized farms in the Franc of Bruges were disproportionally often found in lawsuits, 1746–52. Approximately 50 per cent of the farmers involved in lawsuits worked middle-sized farms (5–50 hectares), whereas they constituted only 22.7 per cent of the holdings in that area in 1748 (Table 1). Moreover, farmers were involved as defendants in 45 per cent of all the lawsuits which occurred before the same *Vierschaar* (court) and chamber (mainly dealing with debt disputes). Whereas farmers were in only 37.4 per cent of all the lawsuits the claiming party. This difference indicates that the middle group of farmers stood under immense pressure.[40]

The evolution towards larger farms was not an evolution that only took place in coastal Flanders. The whole North Sea area saw this evolution. In Frisia, landholdings of 5–20 hectares were on the wane.[41] In the Beijerlanden (South Holland), a large number of farmers were evicted from their homes in the period 1661–1760 because they were unable to pay rents.[42] Not surprisingly, this period overlapped with a period of high taxation. As rents had plunged since 1650, the real burden of the *verponding* (land taxes) had increased. High taxation imposed by the government had further forced the agricultural sector into distress.[43] In the eighteenth century, levied taxes would sometimes be higher than the rent price. Increasingly farmers defaulted on their tax payments. Because landowners in the Beijerlanden were held responsible for the arrears of their leaseholders, they started to use a different kind of lease contract. In these contracts it was stipulated that the owner would pay the taxes, while a higher rent was charged. In this way they would immediately know if a leaseholder was in trouble and would not have to face the sudden unpleasant surprise of years of taxation arrears.[44] In Denmark a similar transition to large-scale farming was noticed.[45] In Artois (northern France), a few large

[37] SAB Bruges, Bruges Vrije Bundels, no. 359; City archives Bruges, Reeks 516, Straeten Ambacht.

[38] 34.05% of uninhabited farms plus the 35.5% of inhabited farms in divided use.

[39] SAB Bruges, Bruges Vrije Bundels, no. 359; City archives Bruges, Reeks 516, Straeten Ambacht.

[40] A. Vervaeke, *'Met recht en rede(n)'. Toegang en gebruik van burgerlijke rechtbanken in het Brugse Vrije (1670–1795)* (2018), p. 204.

[41] O. S. Knottnerus, 'Yeomen and farmers in the Wadden Sea coastal marshes, c.1500–c.1900', in van Bavel and Hoppenbrouwers, *Landholding and land transfer*, pp. 149–86, at pp. 168–71.

[42] C. Baars, *De geschiedenis van de landbouw in de Beijerlanden* (1973), p. 200.

[43] J. de Vries and A. van der Woude, *the first modern economy: Success, failure, and perseverance of the Dutch economy, 1500–1815* (1997), pp. 100–10.

[44] Baars, *De geschiedenis van de landbouw in de Beijerlanden*, pp. 115–26.

[45] G. Olsen, *Hovedgård og bondegård : studier over stordriftens udvikling i Danmark i tiden, 1525–1774* (1957), pp. 245–57.

tenant farmers expanded their farms by incorporating smaller tenant farmers. Moreover, the majority of the important village offices were held by tenant farmers, especially by the wealthy. This shows the importance, but also the local political power of the tenant farmer.[46] In the Île-de-France an equivalent evolution took place with a lot of bankruptcies and enlargement of farms. This evolution went together with an increasing fiscal burden.[47]

IV

The combination of large capital requirements (ploughs and animals to work the heavy clay soil) and the burden of heavy taxation made it difficult for leaseholders in coastal Flanders to survive during the period of 1650–1750.[48] Nevertheless, small and middle-sized farms seemed to be more vulnerable to this toxic cocktail as these farms were more prone to be incorporated into larger farms. Economic inefficiencies or disadvantages compared to large leasehold farms have been pointed out by most authors as crucial in the decline of the small and middle-sized farms. In his study on early modern West Zeeland Flanders, Piet van Cruijningen claimed that larger farms were more efficient than smaller ones. First, they were able to use their horses in a more cost-effective way. Therefore, they needed to maintain fewer horses per hectare which resulted in a higher cost effectiveness. Second, these large farms had to hire fewer servants and maids and made more use of day-labourers during harvest time which also limited the labour costs. Third, specialization took place regarding cattle breeding. Larger farms focused more on breeding calves, whereas smaller farms kept (relatively) more dairy cows, which required more labour. Fourth, larger farms had a better position in the market as they could more easily speculate with their grain reserves, especially if they had some kind of financial buffer.[49] Similarly for Hainaut (the French part), Fulgence Delleaux demonstrated that large and middle-sized leaseholders profited from increasing prices during war as they kept producing a surplus, even under the constant pressure of taxes and requisitions. In many cases, these leaseholders were able to expand their holdings, be it by buying land or leasing more land. Especially smaller landholders had to sell or mortgage their lands to survive crises.[50] A last point that distinguished the large leaseholders from the smaller ones was their use of a better-structured bookkeeping. The farmers of the middle-sized and smaller farms sometimes kept small books in which they noted down their debts or loans, but in general they did not write down all of their transactions. This was a comparative disadvantage for the smaller farms as they had less knowledge on what happened in their farms.[51]

While these insights on the inefficiencies of smaller and middle-sized leasehold farms in coastal Flanders are very valuable in explaining the bankruptcy of these farms during

[46] J.-P. Jessenne, 'Le pouvoir des fermiers dans les villages d'Artois (1770–1848)', presented at the Annales. Histoire, Sciences Sociales (1983), pp. 705–10.

[47] J.-M. Moriceau, *Les Fermiers de l'Ile-de-France: l'ascension d'un patronat agricole (XV–XVIII siecle)* (Fayard, 1994), pp. 541, 581–635.

[48] Lambrecht, 'Agrarian change', p. 222; T. Lambrecht, 'De rechtstreekse domeinuitbating door de abdij Ten Duinen, *c.*1680–*c.*1770', *Novi Monasterii* 11 (2011), p. 171.

[49] Van Cruyningen, *Behoudend maar buigzaam,* pp. 152–6, 174–6, 362–4.

[50] Delleaux, *Les censiers et les mutations des campagnes,* pp. 24–45.

[51] Van Cruyningen, *Behoudend maar buigzaam,* p. 221.

peace time, they do not provide sufficient explanation why an acceleration took place during wartime. From an economic point of view, one would expect that the survival of large commercial farms would be at least equally – if not more – at risk during periods of war. Large commercial farms were more subject to fluctuations in prices as they could not change their strategy to self-subsistence agriculture if there were adverse price conditions. Smaller farms could easily adapt (part of) their production to subsistence agriculture. Moreover, capital was the factor of production most at risk during crises. For example, crises and wars impacted the capital of farms in Tuscany in such a manner that share-cropping became more common.[52] Governments and armies would drain a farm's capital under the form of taxes and requisitions (e.g., horses). Compared to capital, wandering armies confiscated only a limited amount of labour and land.[53] Under such a high tax pressure one would expect that the trend towards farm enlargement would slow down, but as stated earlier, this was not the case in coastal Flanders. Therefore, we need to look for causes that were unique to periods of war and crises that explain the acceleration of farm engrossment. As such the next section examines why large farms were able to survive and even expand their leaseholdings during the wars of the late seventeenth and early eighteenth century at the expense of their smaller peers.

V

This study focuses on one large farm: the Roosewalle farm owned by the Cistercian abbey of the Dunes (located in Bruges).[54] Roosewalle was a large leasehold farm that consisted of buildings and approximately 101 hectares of land.[55] The abbey owned several similar large farms, which were leased out to relatively wealthy leaseholders. The leaseholders had to provide the capital to acquire livestock, farming material, seeds and pay for wage labourers.[56] On these farms, leaseholders would sign contracts for several years, and often renewed these contracts and would even live for the rest of their lives on these farms. Although considered valuable, good leaseholders were scarce for these large farms.[57]

Before 1689, Roosewalle was leased out, but when the previous leaseholder, Jan De Zittere, died at the beginning of the Nine Years War (1688–89),[58] it was impossible to find a new and suitable leaseholder. The abbey decided to send a steward to the farm to continue operations and directly exploit the farm. In a commercially oriented area like coastal Flanders, the steward had to make sure it delivered food and services to the abbey (as well as the bishop of Bruges) and sell any surpluses in the nearby towns like Bruges and Blankenberge. He also

[52] R. J. Emigh, *The undevelopment of capitalism: sectors and markets in fifteenth-century Tuscany* (2009), pp. 97–100.

[53] Vandewalle, *De geschiedenis*.

[54] A. Lehouck, J. Van Acker, and D. Vanclooster, 'De Duinenabdij. Een machtsbastion aan de Vlaamse kust', *De Grote Rede* (2014), pp. 10–16.

[55] The farm was 228 *gemet* 2 *lijnen* and 19 *roeden*. SAB.

[56] T. Soens, *De spade in de dijk. Waterbeheer en rurale samenleving in de Vlaamse kustvlakte (1280–1580)* (2016); E. Thoen, 'Clio defeating Neptune: a Pyrrhic victory? Men and their influence on the evolution of coastal landscapes in the North Sea area', in E. Thoen, G. Borger, A. D. Kraker, T. Soens, D. Tys, H. Weerts, L. Vervaet (eds), *Landscapes or seascapes? The history of the coastal environment in the North Sea area reconsidered* (2013), pp. 410–28.

[57] Thoen, 'Oorlogen en platteland', pp. 371–2.

[58] AGSB, rekeningen Ten Duinen, no. 126 (Rekingen kwartier Brugse Vrije).

had to keep the farm operational and the buildings in a decent state of repair until a suitable leaseholder would take over the farm.[59]

Roosewalle presents an excellent case to analyse the survival of the large farm. It may seem counter-intuitive to study the sources from a directly exploited farm in order to gain insights in the survival of large leasehold farms. However, due to the lack of surviving records from leaseholders,[60] those of a directly exploited farm of a large institution represent the only alternative. Nonetheless, the Roosewalle farm proved to be a good case: it had been a leasehold farm in the previous years and it was only directly exploited to make sure a new leaseholder could be attracted after the period of crisis. There was no intention to keep the farm in direct exploitation longer than required. The accounting records of the farm also show that this farm was managed as a leasehold farm: the steward made records of not only the deliveries but also the improvements to the buildings and services to other farms. Therefore, the farm was managed as a separate entity rather than as a part of the monastery. There was of course one big difference: when the farm was leased out, the abbey could not be held accountable for the loans taken by the leaseholders.[61] When the farm was directly exploited, the farm was backed up by the owner if it defaulted on its debts.[62] One could criticize this case on account of the fundamental difference regarding the access to loans of directly exploited farms and leasehold farms. However, while the backing of a large owner might have induced the steward to accumulate debts, no owner would allow a steward to excessively indebt a farm. From an economic point of view, it does not make sense to allow such behaviour as the owner would prefer to leave the farm abandoned instead of building up debt during a period of direct exploitation. The possibility of acquiring debts was also limited by the fact that loans on a farm level were mostly debts related to locally levied taxes and sometimes to livestock traders. Unlike bankers and professional financers, these lenders did not always live nearby and therefore had little knowledge about the financial situation of an institution. One can also question to what extent these kinds of loans were voluntarily given: simply not paying the bills was a way to force someone to provide credit.[63] Whether an owner pushing for surpluses (direct exploitation) or payments for the lessee (leasehold), we can expect that in difficult periods both groups made use of the opportunity to forcibly obtain credit. Therefore, one can assume that the stewards of the Roosewalle farm behaved in similar fashion to leaseholders of other large farms on the credit market or with regards to their tax payments. Nevertheless, failing to pay creditors or farm owners resulted in different outcomes. Leaseholders went bankrupt, while stewards were removed from their positions.

The sources used for the study of the Roosewalle farm are the annual accounts of the local stewards (*hofmeester)*. These annual reports give insight into all of the financial transactions conducted by the steward. In the first chapter of the annual report, all of the revenues were discussed. Information on the amounts of goods and services, type of transaction, the people

[59] Lambrecht, 'De rechtstreekse'.

[60] T. Lambrecht, *Een grote hoeve in een klein dorp: relaties van arbeid en pacht op het Vlaamse platteland tijdens de 18de eeuw*, 122 (2002), pp. 2–3.

[61] AGSB, rekeningen Ten Duinen, no. 145 (Roosewalle).

[62] As happened in 1710 for the Roosewalle farm. This was however caused by the illness and debts of a steward. AGSB, rekeningen Ten Duinen, no. 145 (Roosewalle), 1710.

[63] T. Paul, *The poverty of disaster: Debt and insecurity in eighteenth-century Britain* (2019), pp. 80–5.

involved and the price was written down. Very often these transactions were grouped by month or year. In a second part, the expenses were written down in a similar fashion. In the last chapter, the deliveries to the abbey were discussed. Not only financial information was provided but also a description and an explanation of important events (e.g., death of cattle, bad harvest or the impact of war) was given. Moreover, stewards regularly made attempts to legitimize their actions; e.g., by giving an overview of all the beneficial results of their work: deliveries of goods and services to the abbeys and reparations of the farm buildings. Accounts exist for every year except for 1714, when no annual report was made, because the steward had died.[64]

VII

Along with the study of annual reports of Roosewalle, an in-depth study of the accounting records of the tax farmers of Uitkerke has proven to be an equally important source for this case study.[65] In Flanders, taxes were levied on the parish or *ambacht* (an administrative unit compromising several parishes) level and leased out to tax farmers. The tax farmer made use of '*pointers*' and '*zetters*' (henceforth called 'tax collectors'), who were local inhabitants, to collect and allocate (*ommestellen)* the taxes in every village. Taxes in seventeenth- and eighteenth-century coastal Flanders were generally allocated among the villagers taking into account their land usage. For every *bunder*, approx. 0.44 hectare, land in use, one had to pay a percentage of the village's taxes. The most notable type of land exempted from taxation were the *vague landen*; i.e., land for which the owner could find no suitable leaseholder. Subsequently, these lands were put under the control of the tax farmer. Quite often, he leased these lands out at very low prices in order to recuperate at least a part of the sum these lands had to contribute in the taxes.[66]

The first chapter of the tax farmer's accounting consisted of the *uytsend*: the money, goods and services that had to be provided to the government or the armies. To pay the government and armies, a tax farmer had two important sources of 'income'. First, he collected the taxes themselves. Second, he also received money from leasing the previously mentioned *vague landen*.[67] Additionally, the tax farmer also had various expenses. Administrative and operational expenses of different sorts were seen as an expense, but also the arrears and insolvencies of farmers could be found in the expense chapter.

[64] This caused a problem during the analysis of the data; some (but not all) of the revenues and expenses in the accounts were totalled for the two or three years the annual report covered. As I was not able to discern the percentage attributable to each of these years, I divided the total of a revenue or expense equally over the two or three years. AGSB, rekeningen Ten Duinen, no. 144–5 (Roosewalle).

[65] For some years the annual accounts were bundled. As Roosewalle's lands (and all of its buildings) were mostly located in this parish of Uitkerke (88%) with only a limited amount of land in the parishes of Sint-Jans-Op-Den-Dijk (5%) and Lissewege (7%) we decided to investigate the accounts of the tax collector of Uitkerke. Percentages based on the numbers of 1709. AGSB, rekeningen Ten Duinen, no. 1709, fo. 12.

[66] K. Dombrecht, 'Plattelandsgemeenschappen, lokale elites en ongelijkheid in het Vlaamse kustgebied (14de–16de eeuw): case-study: Dudzele ambacht' (unpubl. PhD thesis, University of Ghent, 2014), pp. 265–67; E. Van Onacker, 'Leaders of the pack? Village elites and social structures in the fifteenth- and sixteenth-century Campine area' (unpubl. PhD thesis, Antwerp University, 2014), pp. 226–29.

[67] E.g., SAB Bruges, B.V. Registers, 15600, Ouytkercke 1694.

The combination of the insights of the Roosewalle farm and a tax farmer's accounts in the same village provides a unique view on the impact of war in coastal Flanders. To investigate what precisely happened, I will first discuss the Roosewalle's accounts as they provide us with information on how the taxes affected the business operations of a farm. Subsequently, the tax farmer's accounts will provide us with insights on the taxation practices, helping me to frame the impact of taxations on farms. Combining both will help us to unfold the mechanisms that led to the enlargement of the large farms in the area.

VIII

The Roosewalle farm was a diversified farm that produced the majority of its products for the markets of Bruges and Blankenberge. As can be seen in Figure 3, the farm combined husbandry with agriculture; a rather large flock of sheep and cattle was held, in combination with growing several types of grains, especially wheat. Fattening sheep was the most important source of income for the farm with flocks most often ranging between 200 and 300 animals. The herds of cattle (mainly kept for meat and dairy) most often did not exceed 40 head. Flock and herd size continuously shifted as the Roosewalle steward would lease additional lands if favourable opportunities presented themselves. The *vague landen* (land abandoned by other farmers) but also the grazing rights on the dikes and the roadsides were often leased to feed the animals. Most of these lands were leased for very short periods of time: up to one year.[68]

Not only the crop residues on the fields of other farmers were bought for the consumption of sheep but even grain deemed unsuitable for human consumption was made available for the sheep. Flock expansion was – in the early modern period – an easy and fast way to act on the availability of pasture and in this way increase the revenues of the farm.[69] Especially during periods of war, farm and flock size increased. In these periods, vacant land was available for very short leases and at very low prices. Hence the surviving farms, especially those who could afford to expand their flock – like Roosewalle – expanded their activities. After the war or if new long-term tenants for these vacant lands were found, the size of the flock would shrink again. Sometimes – most often in the periods of peace – a different strategy was pursued and part of the lands were leased out, forcing the herds or flocks to become smaller (Figure 3). Next to the revenues out of animal products, grains were grown on approximately 22 hectares of land. Unlike the pastureland, the amount of land reserved for agriculture remained fairly constant over time, both during peace and war. Due to strict leasehold terms, shifting cultivation and manuring of the land, agriculture was less suited for rapid farm expansion for short periods of time.[70] Nevertheless, like the animals and the products derived from them, the grains were sold on the market and consumed at the farm. If needed, some food items were shipped to the abbey or the bishop of Bruges.

[68] In 1691 a maximum of 326 sheep were counted by the end of the year. AGSB, rekeningen Ten Duinen, nos 144–5 (Roosewalle).

[69] A. Watkins, 'Cattle grazing in the Forest of Arden in the later Middle Ages', *AgHR* 37 (1989), p. 15.

[70] AGSB, rekeningen Ten Duinen, nos 144–5 (Roosewalle).

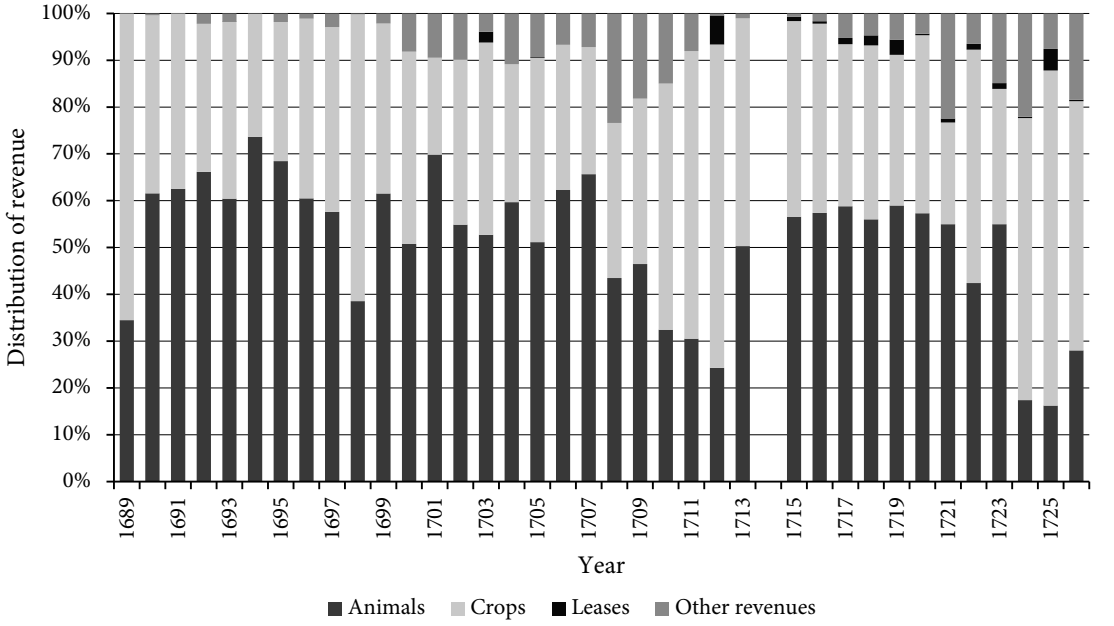


FIGURE 3. Distribution of the business revenue (including deliveries) by Roosewalle

Note: With business revenue, I mean revenues originating from farming activities, excluding financial transactions like loans or gifts from the abbey. AGSB, rekeningen Ten Duinen, nos 144–5 (Roosewalle).

If we take a closer look at the expenses, we notice that the majority of them were related to purchases of animals and sheep in particular. This can be explained by the fact that unlike the majority of the horses and cattle, sheep on the Roosewalle farm were fattened at the farm, rather than bred. On average, the expenses made for the purchase of animals accounted for 29.9 per cent of the total cash outflow. Taxes also made up a substantial amount of the money spent each year: 28.3 per cent of all the expenses. However, the importance of these expenses varied drastically. To elaborate, in 1696, 82 per cent of the expenses were tax related, whereas in 1717 they accounted for only 0.6 per cent of the expenses. Labour expenses of both day labourers and servants made up a surprisingly small share, on average only 15.2 per cent of all the expenses. While these expenses could also vary greatly each year, the total labour cost was relatively small. The remaining part of the expenses were made up of everyday goods (e.g., food, salt or kitchenware), repairs to the buildings and the services of craftsmen (Figure 4).

A more in-depth investigation of the business results in Figure 5 shows us that the farm performed fairly well during most of the years; generating cash surpluses or only limited losses. From 1711 onwards, the Roosewalle farm ran into financial trouble, resulting in several years of losses. By the year 1714–15 the farm was in large debt (1973 pound Flemish).[71] This debt consisted mainly of tax debts but also of loans worth 750 pound Flemish (Figures 7 and 8). These loans were provided by three different people. There were probably several causes for this situation: the illness of the previous steward, heavy taxation by the Dutch troops in the

[71] The value of one pound Flemish was 12 pound Parisis. AGSB, rekeningen Ten Duinen, nos 144–5 (Roosewalle).

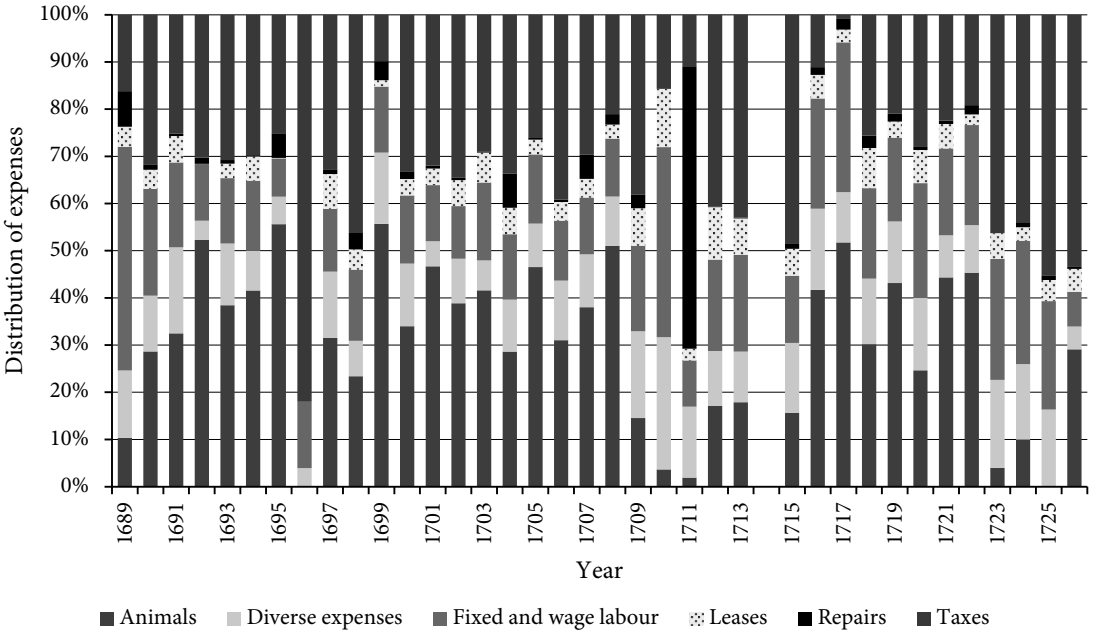


FIGURE 4. Distribution of the business expenses of the Roosewalle farm (1689–1725)

Source: As for Figure 3.

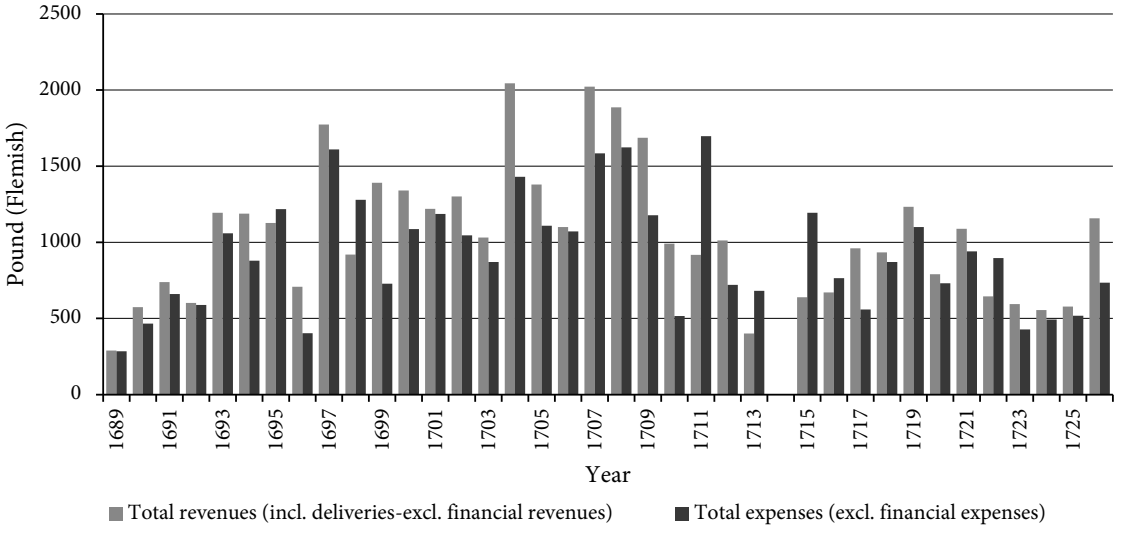


FIGURE 5. Total business revenues and expenses of the Roosewalle farm (1689–1725)

Note: Net revenue excludes financial revenues and expenses like interest payments or loans received/repayed to lenders.
Source: As for Figure 3.

area and the purchase of almost 4.42 hectares of land.[72] Soon afterwards, the steward living on the farm would die and be replaced by a new one who had the unpleasant task of putting the finances of the highly indebted farm back on track. With the help of the abbey, who paid approximately 520 pound Flemish over the next three years and the earlier mentioned loans of 750 pound Flemish, the new steward was able to keep the farm afloat. Nevertheless, the intensity with which the farm was exploited received a blow. Less revenue was generated, mainly due the shrinking sheep flock size.[73]

Despite its temporary struggles, the operational performance of the farm (Figure 5) remained strong; in most years, the total revenues exceeded the expenses; even during periods of war. After 1714, the situation became more difficult, and the farm was only able to send a small amount of surpluses to the abbey. Nevertheless, apart from 1711 and 1715 the farm achieved a positive net revenue or only a rather small and acceptable loss that did not need the intervention of its owner (Figure 5).

IX

Notwithstanding the serious impact of taxation as shown in Figure 4, the Roosewalle farm was able to survive the crisis years with relative ease. This is surprising, as the area in which Roosewalle was located was struck by two wars: the Nine Years' War (1688–97) and the War of the Spanish Succession (1701–1714).[74] Both of the wars had a large impact on the region. French, Dutch, English as well as Habsburg troops constantly aimed to take control of the area and forced the people of the Franc of Bruges to contribute to the war effort. As the requisitions of horses, labour, goods and money varied among different parts of Flanders, largely depending on the concentration of troops, the burden of war could vary accordingly for these parts.[75] This varied impact has been mentioned in the accounting records of Roosewalle. In 1704, the passage of the armies, made it impossible for the shepherd to drive the sheep for a second time over the pastures. Roosewalle delivered a chart, wagon and servants for the siege of Lille (1708), housed several dragoons during the War of Spanish succession and provided food to these soldiers.[76]

Despite these services and deliveries in kind, monetary taxes were the most important burden of war. Taxes made up about 28.3 per cent of the expenses with almost no difference between war years (28.7 per cent) and non-war years (27.7 per cent). Nevertheless, large variation in the distribution were noticed ranging from 82 per cent (1692) to 0.64 per cent (1717) of the expenses. Surprisingly, the taxes as a percentage of the revenue took a smaller share out of the revenues during war years (24.6 per cent vs 27.1 per cent during peace). This is despite the fact that the average expense of taxation was larger during war years; almost 300 Flemish pound on average during war years in comparison to the 255.17 during peace years (Table 2).

[72] AGSB, rekeningen Ten Duinen, no. 145 (Roosewalle), 1714–15.

[73] AGSB, rekeningen Ten Duinen, nos 144–5 (Roosewalle).

[74] Coornaert, *Heist en de Eiesluis*, pp. 168–70.

[75] Ibid.; F. De Potter, *Geschiedkundige schets van de stad Blankenberge* (1866), p. 35.

[76] AGSB, rekeningen Ten Duinen, no. 145 (Roosewalle), 1704, 1708, 1701–13.

TABLE 2. Average of taxes paid by Roosewalle (1689–1725) during peace and war years

Peace years	*Pound Flemish*	*War years*	*Pound Flemish*
Average taxes during peace years	255.17	Average taxes during war years	299.30
Taxes during peace years (excluding first two years of peace)	227.25	Taxes during war years (including the first two years of peace)	304.32

Source: As for Figure 3.

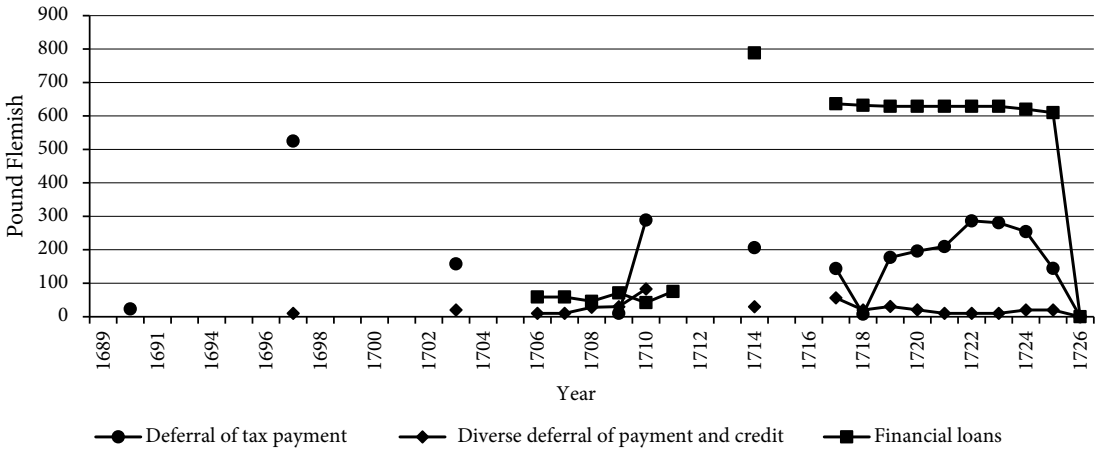


FIGURE 6. Old debt of Roosewalle (originating ≥2 years earlier)

Note: These numbers are derived from a debit/credit statement at the end of some of the annual reports.
Source: As for Figure 3.

These apparently small differences in tax payments between war and peace years can be explained easily; large parts of the taxes were not paid in the fiscal year of levying, but with a delay of one or more years (Figures 6 and 7).[77] If we consider the first two years of peace to be fiscal war years, we notice that the gap in taxation between peace and war years increases. In comparison to the 227.25 pound Flemish during the peace years, Roosewalle had to pay on average 304.32 pound Flemish in taxes during fiscal war years. Deferral of tax payment therefore decreased the pressure on the farm as taxes took such a high share in the expenses.[78]

When we take a closer look at the accounts of Roosewalle, we notice that deferral of tax payment was Roosewalle's most important source of 'debt' during, but also after periods of war. The deferral of tax payment was demanded almost every year, demanded almost every year, and repaid mostly within 2 years, with a maximum of up to 4 years. Other ways to fulfil the capital needs of the farm were less abundant and flexible. Direct financial loans were more expensive although they appear to be of great importance from 1714 if we take a closer look at

[77] If we include the first two years after every period of war within the group of war-struck years, the difference between average taxation in war periods (304.23 pound Flemish) and non-war periods (227.24) increases to 77 pound Flemish. AGSB, rekeningen Ten Duinen, nos 144–5 (Roosewalle).

[78] AGSB, rekeningen Ten Duinen, nos 144–5 (Roosewalle).

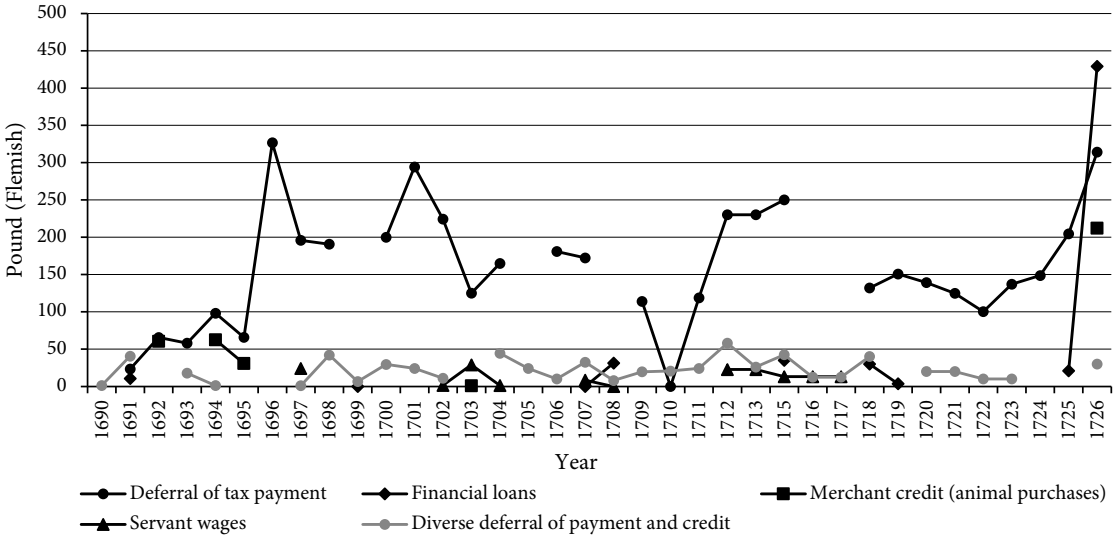


FIGURE 7. Expenses of which at least a part originated in an expense ≥2 year earlier

Source: As for Figure 3.

Figure 6. However, Figure 7 shows that the majority of this debt had been taken for the a term that exceeded five years and was therefore not regularly payed off like other debts.

If the farm had had to pay rents, delay of the rent payment would also have been necessary to avoid the further outflow of capital. Landowners often allowed some kind of delay, but would also try to collect as much rent as possible.[79] Therefore, deferral of tax payment was equally, if not more, important for leaseholders compared to directly exploited farms like Roosewalle.

X

Making use of the tax farmers' credit proved to be an economical, fast and accessible manner to protect the capital of the Roosewalle farm. Nevertheless, we still do not know how important the deferred tax payments were for Roosewalle. Figure 8 shows the impact of the tax credit on total business net revenues, or to state it differently: the business revenue minus the business expenses. For the 16 years for which we have information on both new tax credit and net revenue, only two years show a negative result if we calculate the difference between business revenue and expenses. However, if we exclude deferral of tax payments from this calculation, there would have been seven additional years of loss. Not surprisingly, the highest impact of tax credit on the net revenue is observed during periods of war (Nine Years' War [1688–97] and War of the Spanish Succession [1701–14]). Moreover, these numbers also indicate that the efficiency advantages investigated by other authors were not sufficient to save large farms like Roosewalle during wartime. War could have had such a high impact that any farm would have gone bankrupt without outside help. Therefore, we can state that (tax) credit was of crucial

[79] De Wever, *Pachtprijzen*, pp. 196–8; Van Isterdael, 'Landbouwstructuren', pp. 297–8.

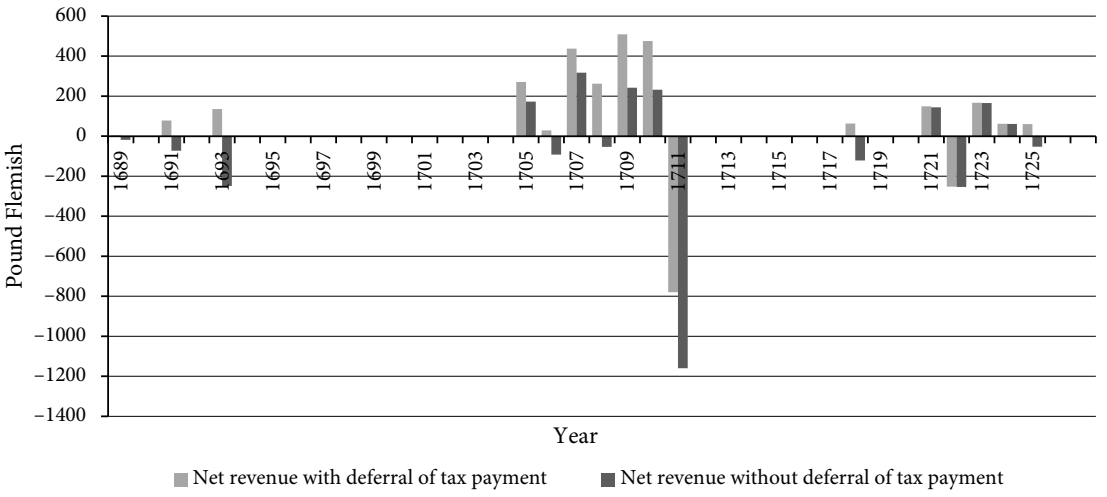


FIGURE 8. the impact of tax credit on the business net revenue

Note: Net revenue excludes financial revenues and expenses like interest payments or loans received/repayed to lenders. Tax credit is not considered to be a financial revenue or expense, but as a delayed payment.
Source: As for Figure 3.

importance; it protected farms against a sudden and massive outflow of the much-needed capital to operate a farm in coastal Flanders.

To further investigate the deferred tax payment, the accounts of the tax farmers of the parish of *Uitkerke* have been thoroughly investigated. However, it was not possible to link any of the deferred tax payments in the records of Roosewalle, to the content of the tax farmer's accounts. In fact, there were no traces of deferred tax payments (to Roosewalle or another farm) at all in the accounts of the tax farmer, despite the fact that deferred tax payments were mentioned every year in the accounting records of Roosewalle.[80] The tax farmer's bookkeeping however contained the arrears and insolvencies that were not negotiated or agreed upon by the farmer and the tax farmer. Those farmers who had arrears were the ones in serious financial distress. Most often, they had only one year to fix this situation. From the second year on, the tax farmer would try to recover the tax arrears in court.[81]

As can be seen in Table 3, people with arrears were generally smaller farmers. The same people were also declared insolvent: their property was publicly sold by a *stockhouder* (a sort of auctioneer). Sometimes, Roosewalle purchased goods out of these insolvencies. The largest farmer noted down as having temporary arrears worked 45 hectares, proving that the very large farmers working more than 50 hectares were not declared insolvent.[82]

[80] This explains why no research has been done to investigate this topic; due to the lack of farmers' archives, one had to trust the tax farmer's bookkeeping.

[81] J. J. B. Stalins, *Het Vlaems settingh-boecxken: Inhoudende d'oprechte practycke vande Vlaemsche pointinghen ende settinghen, ghetrocken uyt de okaccaeten, ordonnantien ende reglementen [...]. (by d'hoirs van Ian vanden Kerchove [...]* (Ghent, 1694), pp. 86–90.

[82] And in only 5 of the 96 cases the farm owing money was larger than 30 ha. SAB Bruges, B.V. Registers, 15603, Ouytkercke 1698 and 1516, Ouytkercke 1707.

TABLE 3. Distribution of taxpayers in arrears (n=113) in tax farmers' records and distribution of farms and surface worked by these farms, according to their size in the parish of Uitkerke

Farm size (ha)	*Tax payer in arrears (1680–1720)*[a]	*Number of farms in 1748*[b]	*Surface (%) worked by farms in 1748*[b]
0–5	68	49	6
5–10	1	18	8
10–30	13	16	17
30–50	4	9	24
>50	0	9	44

Sources:
[a] SAB Bruges, B.V. Registers, 15600–15610, Ouytkercke 1694–1707. As some farmers were insolvent for multiple years (e.g., insolvent in year 1707 and 1708), I included them multiple times: in 15 of the 113 cases (13.3 per cent), I can state with certainty that a farmer was insolvent for two years or more.
[b] As for Table 1.

A quick look at the accounts of the tax farmer of the neighbouring parish of Lissewege shows that there was a similar practice in place.[83] We can, therefore, expect that some kind of arrangement was made by the tax farmer and the Roosewalle farm and other large leaseholders that allowed them deferral of tax payment. In this way, large farmers were protected from being declared insolvent by the tax farmer.

XI

It is still unclear why this special treatment for large farmers was practised. Deferral of tax payments was not allowed by the law and tax farmers could be held personally accountable if they could not collect tax payments later on.[84] Therefore, a tax farmer kept the deferral of taxes out of his official accounts, keeping it hidden from the regional officials.

Despite the personal risk for the local tax farmer, the deferral of tax payments was widespread. This is rather strange as arrears and insolvencies where the tax farmer had acted strictly were not the tax farmer's responsibility. Issues deriving from the uncollectability of taxes caused by insolvencies had to be paid by the village community. Neither the manual nor the tax farmer's bookkeeping mentioned any direct reason as to why a tax farmer would allow for deferrals, especially when he could be held personally accountable upon failure to recover the deferred tax payments.[85]

Nevertheless, we can deduce some reasons as to why the large farmers could more easily receive credit from tax farmers than their smaller counterparts. A first reason is the fact that the tax farmer collaborated with the earlier mentioned 'pointers and setters' (tax collectors)

[83] SAB Bruges, Brugse Vrije, Schifting Sanders no. 535.

[84] Translation: If the tax farmer allows delay [of tax payments] due to negligence or indulgence, then he does so at his own risk. Stalins, *Het Vlaems settingh-boecxken*, p. 86.

[85] Stalins, *Het Vlaems settingh-boecxken*, pp. 86, 87–90.

to collect the taxes. The tax farmers were only able to raise taxes with the help of these local tax collectors. The tax collectors were elected by the village elite: the richest leaseholders and farmers of a village. In fact, many tax collectors were recruited amongst the village elites. Moreover, the village elite dominated the negotiations of the village loans needed to pay (extra) ordinary taxes.[86] Tax farmers thus had to make sure they remained on speaking/friendly terms with these people.

A second reason is an economic one and relates to the scale of the farm. A person with a leasehold or a tax debt of 20 pounds could be expelled from his farm and forced to sell his labour in the coming years. In this way, he could repay his tax arrears. For someone with debts of several hundred pounds (as was the case with Roosewalle), it would be impossible to pay off all his debts with his labour. Therefore, such a farmer might have been given a second chance to use his skills and capital to pay off his large debts by continuing with the farm. It is, however, beyond the scope of this paper to discuss whether this decision followed an economic rationale or if there was some kind of escalation of commitment involved.[87] The scale of the farm may also have impacted the choices of tax farmer in a different way; there might have been a risk of the smaller leaseholder leaving his farm overnight (something quite usual)[88] with his limited belongings, whereas a larger leaseholder was unable to do this without leaving a lot of his capital (horses, cows, sheep, etc.) behind.

Moreover, the farmer's replaceability was important for the tax farmer as it determined the future tax payments of the villages. Smaller leaseholders were easily replaceable or their lands could be absorbed by larger farms. Moreover, they did not form such a large burden for the tax farmer in case of insolvency, even if no new tenant was found. The lands were very easily leased out as *vague landen* and the impact of each individual bankruptcy was rather small. If a large farmer was declared bankrupt, he would have been forced out of his farm. In periods of war and trouble, it would be more difficult to find a replacing leaseholder with enough capital willing to run a farm.[89] In this way, the bankruptcy of a large leaseholder would severely handicap the ability of the tax farmer to collect the taxes in the future. For example, 44 per cent of the land in the parish in Uitkerke (1748), where Roosewalle was located, was part of four very large (>50 hectares) farms. Forcing the large farms into bankruptcy would therefore have been disadvantageous for the tax farmer: the inability to collect taxes would have induced the authorities to take the guarantees the tax farmers had provided.[90] Therefore, it was more advantageous in the long term to spare the largest leaseholders for a few years by deferring their taxes and collect these later in time. This meant that large leaseholders were in fact protected twice during war by both tax farmers and landowners. Because they owned a substantial amount of capital they were difficult to replace during wartime; not only as a taxpayer, but also as a leaseholder. Large farmers had indeed a great bargaining power due to

[86] Dombrecht, 'Plattelandsgemeenschappen', Van Onacker, 'Leaders of the pack?', pp. 226–9.

[87] B. M. Staw, 'The escalation of commitment to a course of action', *Acad. Management Rev.* 6 (1981), pp. 577–80.

[88] SAB Bruges, B.V. Registers, 5739–5741; 15600–15611, Ouytkercke 1680–1720.

[89] L. Vervaet, 'Het Brugse Sint-Janshospitaal en zijn grote hoevepachters in de 15e en 16e eeuw: wederkerigheid en continuïteit in functie van voedselzekerheid', Revue belge de philologie et d'histoire 90 (2012), pp. 1132–42.

[90] Stalins, *Het Vlaems settingh-boecxken*, pp. 84–90.

the difficulty of finding replacements and the large rent arrears they could build up in a very short period of time.[91]

These reasons clearly indicate that large farmers and tax farmers in coastal Flanders were mutually dependent on each other for their survival. The tax farmers would allow large farmers to accumulate debt, while the large farmers protected the fiscal potential of the village. Their combined power enabled them to pull themselves together through a war, although at the cost of the smaller farms. As such, the political and economic ties of these village elites proved to be of crucial importance in the enlargement of farms in coastal Flanders.

XII

The high taxation and requisitions that forced the smaller leaseholders to default also had another side effect.[92] During crises the lands of these bankrupt farmers were leased out at very low prices or at the cost of taxation. If no new leaseholder was found, these lands became *vague landen*: abandoned lands for which there was no taxpayer available and which were therefore leased out by the tax farmer.[93] As stated earlier, these *vague landen* were often used as pastureland and leased at discount prices, moreover no taxes had to be paid on this type of land. As the large farmers received deferral of tax payment, they were often able to lease these *vague landen* (or just the abandoned farms) and were left with enough capital to expand their flocks. When too many pieces of land became *vague landen*, this would increase taxes for the other tax payers as there were fewer tax payers to pay for the village taxes, forcing other smaller farms into bankruptcy. In fact, the castellany of the Franc of Bruges (*Brugse Vrije*) saw this as a serious issue with some large farmers evading substantial amounts of taxes by leasing *vague landen* at extreme low prices, sometimes even lower than what the actual taxes on these lands would have been if these were not *vague landen*. To deal with this problem, the castellany sent out an ordinance (formulated in 1684–1685) that condemned this practice, prohibiting it again in 1705. However, the large leaseholders continued to lease *vague landen* at extremely cheap prices.[94]

In Uitkerke the surface of the *vague landen* rapidly rose during the most difficult periods of the wars, but also drastically decreased once the situation improved, as can be seen in Figure 9. For two years we know the surface of the *vague landen* leased by Roosewalle. In 1697, the farm leased almost 9 hectares (20 *gemet*) of *vague landen*; an expansion of more or less 9 per cent of the worked lands, whereas in 1705 this was 5.3 hectares (12 *gemet*).[95] After 1713 (end of the War of the Spanish Succession), Roosewalle would not lease *vague landen*.[96] Unsurprisingly, the leasing of *vague landen* decreased after the war. The leasehold market normalized in peacetime and landowners could find new leaseholders for their abandoned farms and lands.

[91] De Wever, *Pachtprijzen*, pp. 196–8; Lambrecht, *Een grote hoeve in een klein dorp*.

[92] Coornaert, *Heist en de Eiesluis*, p. 175.

[93] T. Lambrecht, 'Krediet en de rurale economie in Vlaanderen tijdens de 18de eeuw' (unpubl. PhD thesis, University of Ghent, 2007), pp. 56–8.

[94] SAB Bruges, Aanwinsten, 631, twee reglementen nopende de vague landen (1705), folio 26–7.

[95] AGSB, rekeningen Ten Duinen, nos 144–5 (Roosewalle), 1697 and 1705.

[96] Or any other type of abandoned land. AGSB, rekeningen Ten Duinen, nos 144–5 (Roosewalle).

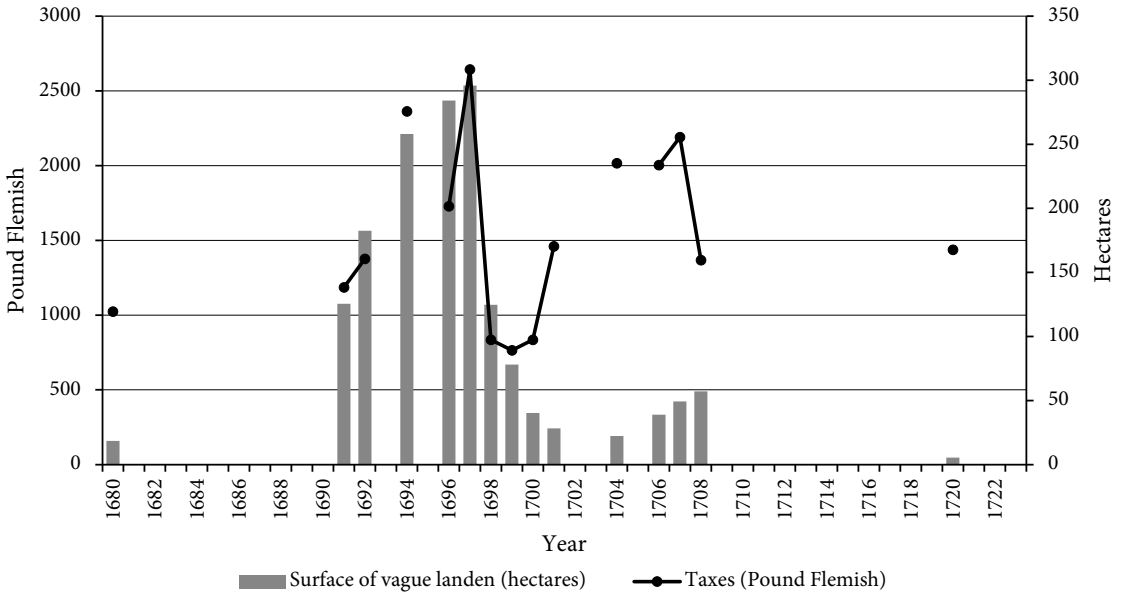


FIGURE 9. *Vague Landen* and taxes in the parish of Uitkerke (1680–1720): total taxes, surface area and amount of taxes that could not be levied on this land

Source: SAB Bruges, B.V. Registers, 5739–5741; 15600–15611, Ouytkercke 1680–1720.

These were not necessarily returning small leaseholders, larger farms would sometimes take this opportunity to incorporate these lands into their farm: Roosewalle would, for example, lease an area called the *warande* (approx. 4.5 hectares) during peace time. Moreover, the Roosewalle farm purchased almost 4.42 hectares (almost 10 *gemet*) of additional land in the period 1714–15.[97] This situation, together with the operational success of the Roosewalle farm – as described earlier on – during war years shows that the large farms profited from the misery of their smaller peers.

XIV

Earlier research has stated that the efficiency of large farms was the main reason for farm enlargement in the North Sea coastal area. While this paper does not dispute these findings, this research has identified an additional factor that accelerated farm enlargement in coastal Flanders during wartime. After an analysis of the Roosewalle farm, this article has shown how large leasehold farms in coastal Flanders were able to flourish in the crises of the late seventeenth and early eighteenth century at the cost of their smaller peers. The capital-intensive farms of coastal Flanders were hard hit by wars as wartime taxation seized part of their capital. The impact was so large that their efficiency advantages became negligible. Several methods were used in an attempt to ensure the survival of the farm. For example, farmers

[97] AGSB, rekeningen Ten Duinen, no. 145 (Roosewalle), 1718, 1714–15.

could ask the owners of the land to delay the payment of their rents.[98] However, this was not enough; as increasing losses during wartime would extend the need for additional credit. Leasehold farmers could borrow money from (semi-)professional moneylenders, but the lack of a collateral, such as land, was a serious hindrance in acquiring very expensive debt from these lenders. The case of Roosewalle shows that even farms that were directly exploited by their owners faced issues, but only approached money lenders as a last resort. Because there was a low level of reciprocity of transactions (buyers also selling their products to the seller) in coastal Flanders, credit facilitated by merchants or craftsmen was equally low. Therefore, the farmers in coastal Flanders turned toward tax farmers.

Being able to negotiate deferral of tax payments from tax farmers was of crucial importance to safeguard the capital needed to continue farm operations: not receiving deferral of tax payment could mean bankruptcy as this case has indicated. This study has demonstrated that smaller farmers were at a disadvantage in negotiating the deferral of tax payments, whereas large farmers/leaseholders were more easily allowed deferral of tax payment. Large farmers exercised great socio-political power during the negotiations of village loans and the appointment of local tax collectors. Moreover, the size of these farms and the scarcity of farmers willing (or able) to exploit large leasehold farms, gave them a considerable amount of economic power. Forcing large farmers into bankruptcy would have affected the fiscal potential of a village in the long term. A third argument that may have convinced the tax farmer to allow deferral of payment was the fact that small leaseholders could easily leave overnight with their movables, whereas a large leaseholder could not easily move with a huge flock/herd, several ploughs and so on.

While large farmers benefited from their privileges, farmers working on smaller farms were not allowed deferral of payment. When the arrears of these smaller farmers increased, the tax farmers were quick to declare these people insolvent. That the larger farmers were able to reach an agreement with these tax farmers (or at least could evade bankruptcy) meant that they had enough money to continue operations and even capitalize on the insolvencies of the small and middle-sized leaseholders. The abandonment of the small and middle-sized leasehold farms allowed large leaseholders to expand their farms by leasing *vague landen* (one-year leases of abandoned farms and lands at very low prices) during wartime and incorporate these farms via normal leases once the war was over. The small and middle-sized leaseholders that survived the war came out weakened, as they had not been able to benefit from the opportunity to temporarily expand their activities at a very low cost. Their financial frailty and the quick succession of wars further undermined their future prospective. This resulted in a reinforcing of inequality in which the rich farmers of coastal Flanders became richer and the poor increasingly became poorer.

[98] Lambrecht, 'Krediet en de rurale economie', p. 160.

The significance of Peruvian guano in British fertilizer history (*c.*1840–1880)

by Lesley Kinsley

Abstract

Peruvian seabird guano was first imported into Britain in bulk in 1840 where, due to its uniquely high nitrogen content, it was enthusiastically received by farmers and scientists. Many came to perceive it as crucial in boosting soil nutrients to achieve levels of agricultural production to feed the rapidly rising and urbanizing population, despite intense scientific disagreements over the use of nitrogenous fertilizers. The 'guano age' (1840–80) coincided with a high farming era and an acceleration in the application of scientific principles to agriculture including the implementation of chemical technologies. This article puts Peruvian guano centre stage due to its unique concentration of chemical nutrients and its re-identification as an artificial fertilizer. It examines how, in losing its natural identity, it become a facet of chemical technology and assumed significance as 'more than a fertilizer' in its direct and indirect influence on emerging ideas of agricultural sustainability.

This article addresses the introduction of new agricultural fertilizers into nineteenth-century Britain and the sometimes too narrow understanding of the role of 'guano'. It demonstrates how the bulk importation of Peruvian seabird guano as a soil fertilizer was significant not only in 'real' terms as a fertilizing agent, but also in scientific and agricultural narratives of this period. Guano's soaring popularity in the 1840s and 50s led to its widespread use, particularly by high farmers.[1] Figure 1 illustrates how Peruvian guano imports rose steadily in the 1840s and peaked in the 1850s at over 300,000 tons per annum. As a proportion of British imports were re-exported to Europe, guano consumption peaked in the 1850s at over 200,000 tons per annum. British agricultural chemists discovered that, of all global seabird guanos, Peruvian has the highest nitrogen content. Figure 2 illustrates how, due to high demand, guanos were sourced from other locations, but all of these proved to be less nitrogenous. In 1860 Peruvian guano contained five times as much nitrogen as exported Chilean nitrates, although by 1870, as the quality of reserves dwindled, this had reduced to two-fold.[2] Vaclav Smil notes that Peruvian guano was the most important commercial nitrogen fertilizer from 1840 to 1870.

[1] High farming is defined as increased intensity cultivation through increased inputs of capital and labour: F. M. L. Thompson, 'The second agricultural revolution, 1815–1880', *EcHR* 21 (1968), pp. 62–97. It encompassed greater use of machinery, infrastructure and fertilizers, technical changes in crop rotation, livestock improvement and greater market orientation.

[2] Vaclav Smil, *Enriching the earth: Fritz Haber, Carl Bosch and the transformation of world food production* (2001), p. 43.

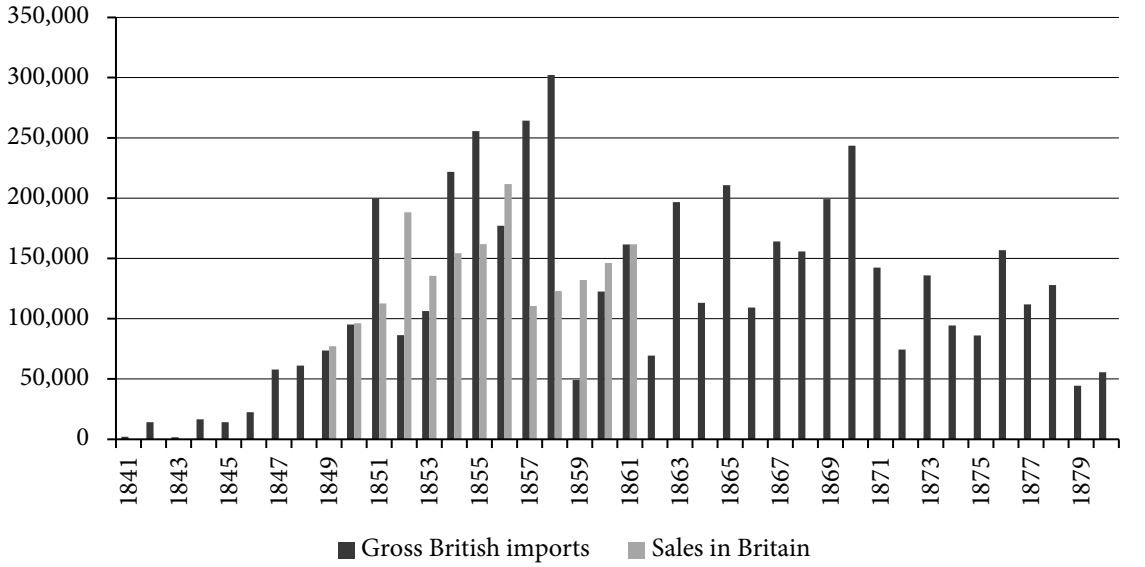


FIGURE 1. Peruvian guano gross imports in tons into Britain (some onward transport to Europe) and British sales during Gibbs' monopoly (1843–1861)

Source: Constructed by the author from tabular data provided by W. Mathew, *The house of Gibbs and the Peruvian guano monopoly* (1981), p. 252. Sales in Britain are from the Gibbs' incomplete data sets: Antony Gibbs & Sons Collection, London Metropolitan Archive, CLC/B/012/MS11047; 11057; 11057A. L. J. Kinsley, 'Guano and British Victorians: an environmental history of a commodity of nature' (unpubl. PhD thesis, University of Bristol, 2020), p. 73.

The unique habitat of Peru's 'guano birds' occurs where the concurrence of arid climate and nutrient upwelling from depth creates a rich marine environment.[3] Here, birds have evolved to feed on the high availability of oily anchoveta fish and produce copious amounts of nitrogen-rich excrement unique to Peruvian shores. In turn, due to the very low rainfall of the region, this excrement retains its otherwise easily leached nitrogen and accumulates in quantity. Its dry, powder-like form enables low-cost extraction by hand, as illustrated by the of mid-nineteenth-century sailing ships queuing to receive guano shovelled down chutes by indentured labourers.[4]

Guano was not just a material phenomenon. By the 1840s chemistry was established as the dominant science for agriculture, and this nitrogen-rich and somewhat exotic fertilizer became the focus of intense interest among agricultural chemists and part of their engagement in wider public debate about agricultural progress.[5] From 1840, coincidental with the beginning of the guano age, agricultural chemists began to focus on the agricultural importance of nitrogen and the proportion it made up in fertilizers was increasingly used to

[3] The Peruvian cormorant (either known as *Phalacrocorox bourgainvillii* or *Leucocarbo bougainvilliorum*), was colloquially known as 'guanay'. The Peruvian booby and pelican also contributed to the guano reserves.

[4] E. D. Melillo, 'The first green revolution: debt peonage and the making of the nitrogen fertilizer trade, 1840–1930', *American Historical Rev.*, 117 (2012), p. 1040; L. J. Kinsley, 'Guano and British Victorians: an environmental history of a commodity of nature' (unpubl. PhD thesis, University of Bristol, 2020), p. 85.

[5] P. M Jones, 'Making chemistry the 'science' of agriculture *c.*1760–1840', *Hist. of Science* 54 (2016).

classify them.[6] Thus Peruvian guano contributed to the classification of agricultural fertilizers based on their nitrogen content and was frequently used as a benchmark in manure field trials. Section I examines the role Peruvian guano played in the search by agricultural chemists to discover how plants access nitrogen, and how this influenced British farmers in their application of novel fertilizers. After observing guano use in Peru in the 1830s, Jean Baptiste Boussingault set up field trials in Alsace (commencing in 1836) to assess how plants used nitrogen. The results of these trials were ground-breaking and the first step towards understanding the importance of leguminous plants in the nitrogen cycle.[7] Despite Justus von Liebig's considerable influence on agricultural chemistry in Britain in the 1840s, his long-lasting misjudgement about the importance of nitrogenous fertilizers and disagreement with John Bennet Lawes and Henry Gilbert would call this nitrogen-focused discourse into question in the 1840s and 1850s. Yet in the end Liebig's mineral fertilizer, containing no nitrogen, failed to threaten guano use and was a commercial failure.[8]

The increasing application of scientific approaches to practical farming, particularly through Victorian high farming, were reflected in the Royal Agricultural Society of England's (RASE) motto 'Practice with science'. Nicholas Goddard notes that a review by the Society of this motto in 1856 concluded that, 'guano had done more than anything else to get rid of the prejudice against science amongst ordinary farmers and commented that those who had first ridiculed its application soon boasted about how many tons they had applied.'[9] Indeed, Smil argues that the guano mania of the 1850s resembled the world crude oil market of the 1970s.[10] Arguably, later concerns about 'peak oil' were preceded by fears of 'peak guano' a century earlier.[11] Ultimately, guano reserve depletion, the nitrate War of the Pacific (1879–83) and cheap imports of corn all contributed to a decrease in guano use and an end to the guano age in the late 1870s.

Despite its obviously natural origins, agricultural chemists and farmers classified this substance as an artificial fertilizer alongside industrial by-products and chemically manufactured manures. 'Artificial' was then universally applied to any fertilizer produced off-farm. Only much later, notably with the industrial fixation of nitrogen in 1909, did this term become confined to factory-made chemical fertilizers. Efficacious, powder like and highly portable, Peruvian guano was utilized in the nineteenth century in a similar way to its factory-made successors. It gave farmers a taste of what was to come, and stimulated chemists' search for the ideal fertilizer. This is probably why some historians have tended to focus on this aspect of its materiality, as a precursor to the chemical age.[12] However, it is a naturally produced substance and a vital constituent of a marine ecosystem and avian habitat, which was intensely degraded by mid-nineteenth-century extraction and export.[13]

[6] A. Page and L. Herment, 'The price of nitrogen at the end of the nineteenth century', *Jahrb. f. Wirtschaftsg* 62 (2021), p. 51.

[7] J. B. Boussingault, *Rural economy in its relations with chemistry, physics and meteorology,* trans. George Law (New York, 1865), pp. 255, 342. First published as: *Economie Rurale* (1843).

[8] J. Liebig, *Principles of agricultural chemistry: With special reference to the late researches made in England* (1855), pp. 48–50.

[9] N. Goddard, *Harvests of change: The Royal Agricultural Society of England, 1838–1988* (1988), p. 90.

[10] Smil, *Enriching*, p. 42.

[11] Kinsley, 'Guano and British Victorians', p. 190.

[12] F. M. L. Thompson, 'Agricultural Chemical and Fertiliser Industries', in E. J. T. Collins (ed.), *The agrarian history of England and Wales* [hereafter *AHEW*], VII, *1850–1914* (2 vols, 2000), II, pp. 1020–1.

[13] A. J. Duffield, *Peru in the Guano Age* (1877), p. 89.

As evident from James Caird's survey and first-hand accounts of farmers in the 1850s, guano provided more than a gateway to a world of artificial chemicals. Its use also helped to facilitate a greater appreciation of the benefits of good farmyard manure management. This is addressed in Section II. Guano's high nutrient content promoted crop growth, but the bulky organic matter in well managed farmyard manure both fertilized and conditioned a soil. This 'conditioning' ability to improve soil structure and texture remained highly valued and was something that guano could not provide, as is also the case with chemically manufactured fertilizers.

Section III addresses the contradictory impact of guano extraction seen in terms of environmental and agricultural sustainability. On the one hand, the guano trade massively disrupted the coastal ecosystems of Peru and widened, to global proportions, an already apparent rift in nutrient cycles. This rift, created by the extraction of nutrients, including the harvesting of crops, from one place and moving them to another was already long in evidence at a smaller scale in the supply of food to towns and the importation of oil cake from the European continent. Liebig was probably the first scientist to articulate this, and his idea of rift was briefly picked up by Marx.[14] The size of the guano trade rift has been the focus of recent scholarly discission.[15]

On the other hand, guano also helped to provoke what we would understand as environmentally sensitive thinking. While many chemists sought the ideal chemical fertilizer and tended to view soils purely as a receptacle for such a substance, they were increasing their knowledge of nutrient cycles, a knowledge that would strengthen the view that nutrient wastage was a problem and nutrient balance mattered. Alongside farmers, they noted the negative impacts of guano over-application. Section III also addresses how, through its high profile, guano stimulated and gave its name to the development of solutions to sewage problems. Successful attempts to realise this additional opportunity for home-produced excremental fertilizers, in the form of 'humanure', would have helped to reclose rifts in the nutrient cycle. This dual, sustainable solution for public health and agriculture did not immediately come to fruition, but arguably influenced twentieth-century sewage treatment.

I

Peruvian guano's sustainable use by indigenous people is well reported in Spanish literature and scholarly research. Its name was derived from the Quechuan term 'wanu', a general Inca term for dung. With a particularly high nitrogen content, it is also rich in phosphates, two of the key nutrients required for plant growth as recognized in Inca guano conservation and sustainable community use for centuries. For them, it was highly culturally significant.[16]

[14] J. Liebig, *Chemistry in its applications to agriculture and physiology* (1843), p. 165; K. Marx, 'The process of capitalist production as a whole', in *Capital: A critique of political economy*, ed., F. Engels (3 vols, 1867, repr. 1974), III, p. 813.

[15] J. B. Foster, 'Marx's theory of metabolic rift: Classical foundations for environmental sociology', *American J. Sociology* 105 (1999); B. Clark and J. Foster, 'Ecological imperialism and the global metabolic rift: unequal exchange and the guano/nitrates trade', *International J. Comparative Sociology* 50 (2009); M. Schneider and P. McMichael, 'Deepening, and repairing, the metabolic rift', *J. Peasant Stud.* 37 (2010); Kinsley, 'Guano and British Victorians', p. 12.

[16] G. T. Cushman, *Guano and the opening of the Pacific world* (2013), pp. 1–7.

Spanish colonizers tolerated and influenced the local trade as evident in artefacts such as the Bollaert slab with its intertwined Inca and Spanish Christian symbolism.[17] In 1840, after two decades of political and military turmoil following Spanish rule, the nascent Peruvian state came to view guano as a cash cow and took the first step in guano's capitalist commodification by privatizing Peru's guano reserves for mass extraction and bulk export.[18] British merchants, most notably Antony Gibbs and Son, with an established presence in Peru since the 1820s, found themselves well placed to export guano to Britain's hungry fields. The Gibbs family held the monopoly for exports to Britain and on to Europe for nearly 20 years.[19] A limited resource, guano was transported over vast distances, re-categorized as an artificial fertilizer and, in becoming a capitalist commodity, its sustainable use ceased.

While eighteenth-century Spanish literature on Peru's guano reserves received little international attention, Alexander von Humboldt succeeded where this had failed.[20] Succumbing to its ammoniacal pungency (1804) while observing the bustling guano trade in Callao, he sent samples to Parisian colleagues for analysis. Their results, published in 1806, were cited by Humphry Davy in his British Board of Agriculture annual lectures and resulting seminal textbook on agricultural chemistry (1813).[21] In bringing together many European experiments carried out during the late eighteenth and early nineteenth centuries, Davy reinforced the idea that the system of nature was circulatory and therefore soil exhaustion needed to be addressed by replacing nutrients.[22] This history of investigating the food of plants and qualities of the soil has been explored by environmental historians and historians of science, notably Paul Warde and Peter Jones.[23] Guano's first significant arrival in Britain in 1840 conveniently coincided with an explosion in publications on agricultural chemistry. The early recognition of the nitrogen in Peruvian guano led to its use in field trials as a benchmark nitrogenous manure. This bestowed upon it a vibrant influence in scientific research into plant use of nitrogen through such trials.[24]

Boussingault's field trials on rotations in Alsace (1838–41) revealed the ability of leguminous crops to accumulate soil azote (nitrogen) from the atmosphere. Wheat crops following legumes in rotations markedly increased.[25] Experienced farmers had already been using leguminous plants in crop rotations and green manures, but Boussingault's work scientifically reinforced

[17] 'Bollaert slab' [https://www.britishmuseum.org/collection/object/H_1859-0322-1]; L. Kinsley, 'The Bollaert slab: a fertile discovery', *The Hispanic-Anglosphere* [https://hispanic-anglosphere.com/online-exhibitions/the-bollaert-slab-a-fertile-discovery].

[18] W. Mathew, *The house of Gibbs and the Peruvian guano monopoly* (1981); Kinsley, 'Guano and British Victorians, pp. 44–96.

[19] Kinsley, 'Guano and British Victorians', ch. 2.

[20] G. J. Leigh, *The world's greatest fix: a history of nitrogen and agriculture* (2004), p. 80.

[21] A. Laugier, 'Xxi. Extract of a memoir of Messrs. Fourcroy and Vauquelin upon guano', *Philosophical Magazine, Series 1* 24 (1806), pp. 126–31; H. Davy, 'Elements of agricultural chemistry: A course of lectures for the Board of Agriculture', *The Monthly Magazine* 35 (1813), p. 598; H. Davy, *Elements of agricultural chemistry* (1813), pp. 263–5.

[22] P. Warde, *The invention of sustainability: nature and destiny, c.1500–1870* (2018), pp. 243–53.

[23] Jones, 'Making chemistry'; Warde, *Invention*; Page and Herment, 'Price of nitrogen'.

[24] A. Page, '"The greatest victory that the scientist has won in the fight against nature": Nitrogenous fertilizers in Great Britain and the British empire, 1910s–1950s', *Hist. of Science* 54 (2016), p. 388; Jones, 'Making chemistry', p. 190. 'Manure' was then commonly used for any soil-fertilizing substance.

[25] J. Boussingault, *Rural economy* (1865), pp. 255, 342; Richard Aulie, 'Boussingault and the nitrogen cycle', *Proc. American Philosophical Soc.* 114 (1970), pp. 447–9.

this practice. Boussingault was the first to suggest nitrogen 'fixation' by an intermediary, coming close to revealing the role of bacteria in legume root nodules, in identifying what he called 'mycodermes'. Nonetheless, nitrogen-fixing bacteria remained undiscovered until 1887, a year after his death.[26] Boussingault's findings were reported in papers from 1836 and finally in his two volume *Economie rurale* in 1843. The reception and significance of his work in Britain is evident in the quick translation of his book and its many editions. In confirming that animals sourced nitrogen from plants and their nitrogen-rich excrement boosted soil fertility, Boussingault endorsed the use of Peruvian guano, indeed any nitrogen-rich fertilizer, and the use of legumes in fodder. He produced some of the most comprehensive manure tables of the 1840s.[27]

However, fuelled by his skill as a self-publicist, the most famed agricultural chemist of this moment was Justus Liebig. Liebig's first significant appearance in Britain, as visiting lecturer for the British Association for the Advancement of Science (BAAS) in 1837, laid the foundation for his ensuing widely read and quickly translated publication *Organic chemistry in its application to agriculture and physiology* (1840).[28] In 1840, an understanding of photosynthesis, the origins of plant carbon, criticism of humus theory and some understanding of the role of minerals in plant metabolism was already in place. W. H. Brock argues that Liebig's book was in fact a much less finished work than Boussingault's *Rural economy,* and Liebig would produce many revised editions and change his opinions over time, provoking some hot-tempered discourse.[29] Liebig's work weighed strongly against early nineteenth-century thinking that believed plant nutrition was provided by an organic particle or vital force. He proposed that organic life could process inorganic materials, and his work advanced the thinking on the need to manage the circulation of such inorganic elements as a major challenge for agriculture, remaining optimistic that science could produce an 'unbounded increase in organic life'.[30] Early contributors to the RASE's *Journal* drew extensively on his work, including his plant ash analysis and his conclusions that soil constituents removed in cropping should be restored to feed resulting depleted soils. This is what Liebig described as a 'system of robbery' in a literal translation of the German, which was scientific recognition of the break in nutrient cycles.[31] His early recognition of the loss of valuable nutrients via human and animal excretion into city sewers after their removal from farms in crops provided an added dimension to the sewage debates of the 1850s and '60s. These gathered momentum in the 1850s after many cholera outbreaks in British cities due to poor sanitation. Liebig bemoaned the high cost of Peruvian guano imports when he felt the agricultural solution was to be found in local sewers.[32]

[26] J. Boussingault, *Rural economy* (1845), pp. 47–9; Boussingault, *Rural economy* (1865), pp. 238, 344, 274.

[27] Boussingault, *Rural economy* (1845), pp. 391–3.

[28] J. Liebig, *Organic chemistry in its applications to agriculture and physiology* (1840).

[29] W. H. Brock, *Justus von Liebig: the chemical gatekeeper* (1997), pp. 148–9, 166.

[30] Warde, *Invention*, pp. 301–2; Nick Hopwood *et al.*, 'Cycles and circulation: a theme in the history of biology and medicine', *Hist. and Philosophy of the Life Sciences* 43 (2021), p. 22.

[31] Goddard, *Harvests of change,* pp. 87–9; Erland Mårald, 'Everything circulates: agricultural chemistry and recycling theories in the second half of the nineteenth century', *Environment and Hist.* 8 (2002), p. 73.

[32] J. Sheail, 'Town wastes, agricultural sustainability and Victorian sewage', *Urban Hist.* 23 (1996), p. 193.

Liebig's mineral theory was in part an expression of his misgivings about Albrecht Thaer's humus theory from the beginning of the century, which drew on the idea of vital, organic particles as the food of plants.[33] Warde contextualizes this in arguing that Liebig did not entirely demolish Thaer's idea, but reformulated it in terms of the need to circulate inorganic elements, rather than organic molecules.[34] Nevertheless, in arguing that organic matter was unnecessary for soil fertility unless it contained minerals, Liebig potentially threatened the use of all nitrogen-rich manures, including guano and farm animal manures.[35] In 1843, he argued that field fertility could not be enhanced by nitrogenous manures, deducing that nitrogen only came into the soil directly from the atmosphere dissolved in rain and maintained this view until 1856.[36] Liebig's mineral manure, containing no nitrogenous material, was a commercial failure and tarnished his reputation in Britain.[37]

Doubting the ability of farmers to understand the science of agriculture, Liebig also favoured theory over field experimentation for discovering the ideal fertilizer. He argued that field experiments tended to be too generalized to accommodate the variation in local conditions, but he did initially advocate the idea of an ideal fertilizer, in his case, containing minerals only.[38] Scottish chemist and co-founder of the BAAS, James Finlay Weir Johnston, countered this and argued that science 'had no duty to practical agriculture' to enable 'any' crop growth on 'any' soil or soil substitute – it 'will not do' to advocate a 'universal medicine'. Critical of Liebig's aggressive approach to practically acquired agricultural knowledge, Johnston argued that it required an intimate knowledge of soil type to correctly tailor a manure to local circumstances and increase its productivity.[39] Also disagreeing with Liebig's views on nitrogen, he encouraged farmyard manure and guano use and became widely viewed as a guano expert within scientific circles.[40]

As Jones points out, the kind of unsystematic field experimentation prized by Johnston had been in evidence since the mid-seventeenth century.[41] Johnston criticized chemists for delaying agricultural improvements through neglecting both experimental agriculture and the diffusion of practical knowledge.[42] Concerned, like Liebig, about accuracy, he nevertheless encouraged farmers to carry out field tests, providing comprehensive advice for farmers on soil sample analysis and instructions on the application of many manurial substances.[43] Supported by farmer premiums from the RASE and the Highland and Agricultural Society of Scotland, Johnston published over one hundred pages of farmers' field experiments (1842–43). Most used guano as a benchmark fertilizer.[44] His *Experimental agriculture,* aimed at farmers, included

[33] J. Liebig, *Letters on modern agriculture* (1859), pp. ix, 1–22.

[34] Warde, *Invention,* pp. 301–6; Mårald, 'Everything circulates', p. 67.

[35] J. Liebig, *Organic chemistry,* p. 72; Jones, 'Making chemistry', p. 193.

[36] J. Liebig, *Principles of agricultural chemistry* (1855) p. 115; Liebig, *Letters on modern agriculture*, pp. 213–14; Page and Herment, 'Price of nitrogen', p. 51.

[37] Jones, 'Making chemistry', p. 194.

[38] Liebig, *Principles of agricultural chemistry,* p. 47.

[39] J. Johnston, *Contributions to scientific agriculture* (1849), p. 55.

[40] 'Report of the Sixth Ordinary Meeting, Wednesday 21 December 1853', *J. Soc. Arts* 2 (1853), p. 87.

[41] Jones, 'Making chemistry', pp. 175, 193.

[42] J. Johnston, *Lectures on the applications of chemistry and geology to agriculture* (1847), pp. 14–17.

[43] J. Johnston, *Instructions for the analysis of soils* (1847).

[44] J. Johnston, *Applications* (1841), Appendix, 'Suggestions for experiments in practical agriculture'.

robust advice, and urged diligence in their field trials, while his *Catechism of agricultural chemistry* for schoolteachers ran to no less than 33 editions.[45]

While unregulated farmer trials gave cause for concern among the new generation of agricultural chemists, John Bennet Lawes, founder of Rothamsted Agricultural Experimental station (1843) and his partner, Liebig-trained chemist, Henry Gilbert, were able to achieve a higher degree of standardization in their own field trials. These experiments, on 'agriculturally exhausted land', defined as the tail end of a rotation before manure application, compared the efficacy of different manures on different crops (and remain in progress at Rothamsted today).[46] Before they published their first trial results in 1851, politician and reforming agriculturist Philip Pusey produced a journal article ratifying them as 'scientific', disproving some aspects of Liebig's mineral theory and demonstrating the suitability of ammonia (as a source of nitrogen) for corn crops and phosphates for turnips. Pusey argued that the expensive, logistically complex importation of highly nitrogenous Peruvian guano, and its high availability in the 1850s, was delaying attempts to fix nitrogen in a chemical fertilizer.[47]

Like Liebig, Lawes argued that the soil contributed little, if anything, to crops, 'acting only as a reservoir' for applied manures, regarding food production as an industrial manufacturing process.[48] In 1843, Lawes synthesized the only successful chemically manufactured fertilizer to date, his much-replicated superphosphate, and used the profits to fund his work at Rothamsted. This did not out-compete Peruvian guano but achieved success where Liebig's mineral fertilizer had failed. Following publication of Lawes and Gilbert's results, a long exchange of public and hot-tempered correspondence with Liebig followed.[49] While Lawes and Gilbert recognized the efficacy of Peruvian guano, particularly in suggesting that Liebig's mineral manure would benefit from its addition, it assumed no singular importance in their results. However, in ratifying Boussingault's work, they boosted use of all nitrogenous fertilizers, including Peruvian guano.[50] In the late 1850s, Liebig eventually conceded that Peruvian guano was useful as a supplement on specific crops, and that it and farmyard manure were superior to Chilean nitrates, due to their additional mineral content.[51] His concerns that continued use of guano, or any highly nitrogenous manure, might lead to exhausted soils without careful attention to

[45] J. Johnston, *Experimental agriculture, being the results of past and suggestions for future experiments in scientific and practical agriculture* (1849), pp. v–vii, 4–5; J. Johnston, *A catechism of agricultural chemistry and geology* (1845), pp. 38–9.

[46] J. B. Lawes and J. H. Gilbert, 'On Agricultural Chemistry: especially in relation to the Mineral Theory of Baron Liebig', *JRASE* 12 (1851), p.4.

[47] P. Pusey, 'On the progress of agricultural knowledge over the past eight years', *J. Royal Agricultural Society of England* [hereafter *JRASE*] 2 (1850), pp. 382–92.

[48] J. Lawes, *Is higher farming a remedy for lower prices? Being the substance of a lecture delivered before the East Berwick Agricultural Association* (1879), p. 6.

[49] R. Aulie, 'The mineral theory', *Agricultural Hist.* 48 (1974), pp. 377–8; 'Agriculture: The composition of plants', *Aberdeen J.,* 23 July 1851, p. 7; Liebig, *Principles of agricultural chemistry*; J. Lawes and J. Gilbert, *Reply to Baron Liebig's 'Principles of agricultural chemistry'* (1855); Kinsley, 'Guano and British Victorians', pp. 120–3.

[50] Lawes Agricultural Trust, *1847–1900, The letters of Sir John Bennet Lawes to Sir Joseph Henry Gilbert,* 3 July 1876, Rothamsted Research Library and Archives 2008: J. Lawes and J. Gilbert, 'Liebig and the Mineral Theory', *JRASE* 24 (1863); J. Lawes, J. Gilbert and E. Pugh, *On the sources of the nitrogen of vegetation: with special reference to the question whether plants assimilate free or uncombined nitrogen* (1862).

[51] J. Liebig, *Letters on modern agriculture* (1859), pp. 60, 162, 168–9.

ANALYSES OF DIFFERENT VARIETIES OF GUANO.

	Angamos Guano.	Angamos Guano.	Peruvian Guano.	Chilian Guano.	Bolivian Guano.	Saldanha Bay Guano.	Sharks' Bay Guano.
Moisture	10·90	12·55	9·30	20·46	16·00	17·92	14·47
Organic Matter, &c.	67·36	61·07	57·30	18·50	13·16	14·08	7·85
Sand, &c.	1·04	5·36	0·75	22·70	3·16	2·80	14·47
Phosphates	16·10	13·76	23·05	31·00	60·23	59·40	29·54
Alkaline Salts, &c.	4·60	7·26	9·60	7·34	7·45	5·80	33·67*
	100·00	100·00	100·00	100·00	100·00	100·00	100·00
Nitrogen (equal to)	19·95	18·24	15·54	4·50	2·11	0·63	0·35
Ammonia	24·19	22·12	18·87	5·47	2·56	0·76	0·47

* 29·54 per cent. of this was Gypsum.

The above are Analyses made at the Kennington Laboratories. The samples were from cargoes received in London within the last six months. The Chilian and Bolivian Guanos are much inferior to those formerly imported, in consequence, we believe, of all the finer qualities having for some time been worked out.

FIGURE 2. Analyses of different types of guano

Source: J. C. Nesbit, *On Peruvian guano: Its history, composition and fertilizing qualities; with the best mode of its application to the soil* (1856), p. 28.

additional nutrients eventually became more widely accepted. This is evident in the practical experience of farmers, who also became concerned about over luxuriance of crops at the expense of the fruiting part.[52]

Peruvian guano's popularity led to attempts at replication as early as 1843, evident in Johnston's inclusion of modified and replicated guanos in his field test records.[53] Johnston's results therefore acknowledged the early chemical mixing and alteration of guanos and he revealed a significant further step in guano losing its 'naturalness' and its 'redesign' as a new commodity. Alteration also occurred in the form of adulteration and this, along with the importation of seabird guanos from locations other than Peru, led to a demand for the services of analytical chemists to assess the quality of guano and other manures. As evident in the proliferation of targeted advertisements in agricultural press, farmers, agricultural societies, and estate managers sought the services of chemists to assess guano purity, and such purity was part of merchants' sales pitch to justify their guano prices.[54] Chemists also used guano in

[52] Ibid., pp. 182–3; J. Mechi, *How to farm profitably* (1860), p. 274; William Good, *The theorists confuted or the practical farmers vindicated: with a reply to Mr Mechi* (1851), p. 207.

[53] Johnston, *Lectures* (1844), Appendix 4, 4.1, 4.3, 4.4.

[54] An edition of Nesbit's, *The history and properties* can be found in the Tyntesfield archive owned by William Gibbs, company director of Antony Gibbs and Sons, who held the monopoly on British gunao imports. Advertisements for Nesbit's assaying services were included in these publications: J. Nesbit, *On agricultural chemistry and the nature and properties of Peruvian guano* (1854), frontispiece.

their own fertilizer mixes and many made attempts to replicate it.[55] While university-educated analytical chemists, such as A. Voelker and J. T. Wray, worked for agricultural societies, high demand led many chemists to develop careers outside elite circles.[56] John Nesbit was such an example and an important linchpin in the history of guano's development as a commodity. Benefiting from public scientific lectures and societies for the dissemination of scientific education, he analysed and mixed manures, set up Kennington Agricultural College, exhibited at the Great Exhibition, and produced popular publications on guano.[57]

Nesbit addressed variations between guanos of differing provenance (see Figure 2). Johnston argued that Britain's wet climate and seabirds could neither produce quality guano, nor in quantities suitable for exploitation.[58] Thus, early on its commercial exploitation in Britain, we find fears of the depletion of guano reserves, which led to sea voyages to discover other sources outside Peru. Such a belief in the possibility of substitution matches well with geographer, Noel Castree's analysis of 'abstraction' in the capitalist commodification of nature. All seabird guanos are rich in phosphates, but the Peruvian product proved to be unique in both its high nitrogen content and levels of accumulation.[59] Influenced by Rothamsted's results, Nesbit provided instructions for the suitability of different guanos for different crops.[60]

The use of chemical knowledge increased the confidence of many farmers in their ability to increase food production and guano was an important part of their toolkit. In the 1840s, farmers were adjusting to the push for greater productivity, new logistics provided by rail transport, and an 'advice explosion' created by scientists and agricultural societies. These provided an important context for the vogue for new fertilizers like guano and superphosphates. The 'advice explosion' had taken a long time in building, but now took on new dimensions. Warde reports that, by 1800, there were plenty of theoretical explanations for crop growth (albeit sometimes contradictory), widespread debate about plant foods and problems relating to deficiencies, and a recognition of the need to maintain the balance between pasture in its provision of dung, and tillage as its receptacle. In addition to nutrient provision, the conditioning qualities of dung had already been recognized in 'loosening' the soil. Warde also outlines how an image of the ideal farmer as an agricultural reformer and man of science had already been formed by the dawn of the nineteenth century and what was needed now was

[55] J. C. Nesbit, *Lecture on the application of chemistry to agriculture: delivered at Farnham December 17, 1846, with observations on artificial manures* (1847), pp 4–6.

[56] Kinsley, 'Guano and British Victorians', pp. 72, 139.

[57] I. R. Morus, 'Manufacturing nature: Science, technology and Victorian consumer culture', *British J. Hist. of Science* 29 (1996), pp. 403–34; 'Mr J. C. Nesbit's agricultural lecture in Cornwall', *The Farmer's Gazette, Nottinghamshire Guardian,* 18 Dec. 1856, p. 6; J. C. Nesbit, *On Peruvian guano: Its history, composition and fertilizing qualities; with the best mode of its application to the soil* (1852 and 1856); J. Nesbit, *On agricultural chemistry and the nature and properties of Peruvian guano* (1856); J. Nesbit, *The history and properties of the different varieties of natural guanos* (1860); 'Nesbit, J. C., Kennington, Exhibitor. Phosphate fossils for manure', in the *Official Catalogue of the Great Exhibition* (2nd edn, 1851), p. 14; 'Mining and minerals', *London Daily News,* 22 May 1851, p. 6; 'Prize lists of the Great Exhibition', *London Daily News,* 17 Oct. 1851, p. 2.

[58] J. Clark, P*ractical instructions for using guano as a manure: illustrated by practical results* (1845), pp. 10–11.

[59] N. Castree, 'Commodifying what nature?' *Progress in Human Geography* 27 (2003), pp. 273–97; C. Cordle, 'The guano voyages', *Rural Hist.* 18 (2007), pp. 119–33, Kinsley, 'Guano and British Victorians', pp. 17–19.

[60] Nesbit, *History and properties*, pp. 6, 13–49, 'British Guano equal in quality to Peruvian,' *Agricultural Gazette,* 14 Feb. 1846, p. 111; 'Mr John Nesbit,' *Illustrated London News*, 19 Apr. 1862, p. 394.

better communication and advice.[61] There is little doubt that agricultural chemists were instrumental in filling this gap, but Liebig, despite being an excellent self-publicist, was a theorist who often questioned the ability of farmers to understand his work. With a rise in the number of agricultural societies and publications, it was scientists like Lawes, Johnston and Nesbit who gave many public lectures and had greater leverage in the translation of theory into practice.[62]

II

The high farming of the 1840s required considerable capital investment: in fertilizers, machinery, and infrastructure. Guano played its part in this capital-intensive power shift in agriculture.[63] Agriculture attracted new wealth, including successful industrial manufacturers, many with a relative lack of experience. For them, guano often appeared to offer a 'quick fix' as an artificial fertilizer. Indeed, its material efficacy helped to bring new and marginal land into production. Some accusations against such new entrants into farming attributed the growing popularity of guano to its use as a status symbol. Farmer and politician, Thomas Gisborne, criticized a lack of cost-benefit analysis applied to high farm capital investment. Bought-in manures, particularly Peruvian guano, were expensive, suffered risky price fluctuations, were easily leached in wet seasons, and less effective in dry summers. He cautioned against overplaying guano's impact and its promotion as a quick and easy fix. This could lead to 'guano mania' and the creation of a 'guano king.' He strongly supported the broad efficacy of good farmyard manure and cautioned against amateurishness, trendsetting, and the use of new manures as their 'pretty toys'. For him, guano use did not always generate profit, and eventually helped to bankrupt many high farmers, as ultimately reflected by the renowned agriculturist, John Mechi.[64] William Heywood, steward at the estate of Dunham Massey in Cheshire, criticized new entrants using farming as 'a pleasant kind of recreation or amusement that may be indulged in.'[65] The landowner Lord Kinnaird's exhortation to 'farm high, use guano' also elicits a form of fetish in an over-exaggerated perception of the fertilizer's value among wealthy farmers.[66] Marx's metaphors of delusion and illusion in the fetishization of a commodity might be seen to interfere with a rational valuation of guano, but it had become more than a fertilizer and achieved a value beyond the monetary.

Despite copious publicity for guano and the high availability of field trial results, an accurate assessment of where and how farmers used it is problematic. In the absence of reliable quantitative data, farmer-produced primary sources, including James Caird's two controversial pamphlets on high farming (1849 and 1850) and his agricultural survey of England (1850–51)

[61] Warde, *Invention,* pp. 243–64.

[62] J. F. W. Johnston, *Lectures to tenants and others on the estate of the Duke of Northumberland, Alnwick, 25 November 1843* (1843); J. B. Lawes, *Scientific agriculture with a view to profit: Read before the Maidstone Farmers' Club, December 15th, 1870* (1889).

[63] D. Worster, 'Transformations of the Earth: Toward an Agroecological Perspective in History', *J. American Hist*. 76 (1990), p. 1090.

[64] Thomas Gisborne, *Essays on agriculture* (1854).

[65] W. Heywood, *High farming. how far is it expedient? Let nature answer* (1867), pp. 2–41.

[66] T. Ross, *Lord Kinnaird's letter to his tenantry on profitable investment of capital or 11 years practical experience in farming, answered by Thomas Ross, farmer Wardheads and revised, Lord Kinnaird* (1849); G. Troup (ed.), 'High farming', *Tait's Edinburgh Magazine*, 17 Jan. 1850, pp. 44–9.

shed some superficial light on this issue.[67] Caird's ceaseless campaigns for the gathering and reporting of agricultural statistics were not to be realized in England until the mid-1860s, and this realization did not include data on manure use.[68]

While Peruvian guano was valued for its portability and nitrogen content, farmyard manures remained highly valued for their nutrients with the added benefits of their bulky organic content to soil texture and structure. Farmyard manures generally maintained nutrient cycling within farm boundaries at lower costs than expensive imported fertilizers. As Boussingault's manure tables indicate, however, many manures were already imported into the farm when guano arrived. Off-farm industrial by-products, some imported from continental Europe, including sawdust, oil cakes, abattoir products such as dried blood, bones, glue, and food processing by-products, including animal black, were used alongside traditional animal manures.[69]

Caird's well-read high farm study (Auchness Farm, Wigtown,1849), while attracting strong support from *Tait's Magazine*, was highly criticized by 'Cato the Censor' (James Strachan Barty) writing in *Blackwood's Magazine* in 1850. This is echoed in a disagreement between Lord Kinnaird, of Rossie Priory on the Carse of Gowrie estate, and his tenants, which also elicited a response from Barty.[70] While recognizing guano's efficacy, Barty was critical of its additional use by some as a political and status-building tool. Even *Tait's* criticized the more confrontational Lord Kinnaird of 'rather standing by and shouting than lending any great hand. His shout is 'Farm high, and use guano,' being a far abler writer than a farmer.' [71]

Barty maintained that guano frequently caused over-luxuriance and 'the productive powers of the soil', had limits beyond which 'you cannot go with safety. A point when mother earth revolts against the voracious avarice of her child, and spurns from her the exotic stimulants of art.' He portrayed Auchness farm as a case study of over-investment, arguing that its manure costs, up-scaled nationally, required an exponential increase in guano and bone imports. Indeed, Peruvian guano's popularity eventually waned due to a combination of factors. It was viewed as a high-cost fertilizer which, according to the Gibbs' company records fluctuated between £24 and £26 per ton in 1841, levelling out to £10–£12 per ton for most of the 1840s and 50s. Other farmers learned that over-application of guano caused over-luxuriance in crop leaves and stems causing drooping and low productivity of 'fruiting' heads.[72] In the case of nitrogen-rich Peruvian, they also learned that nitrogen is easily leached from soils and therefore feared it had only short-term potency. As seabird guano is a finite resource,

[67] J. Caird, *High farming under liberal covenants, the best substitute for protection* (1849); J. Caird, *High farming vindicated and farther illustrated* (1850); J. Caird, *English agriculture in 1850–1851* (1852).

[68] Caird, *English agriculture*, p. 474; 'Agricultural statistics', *Essex Standard and General Advertiser for the Eastern Counties*, 1 Mar. 1854, p. 4; J. Caird, 'On the agricultural statistics of the United Kingdom', *J. Statistical Soc. London* 31 (1868), pp. 127–45; M. Overton, 'The critical century? The agrarian history of England and Wales 1750– 1850', *AgHR* 38 (1990), pp. 185–6.

[69] Boussingault, *Rural economy* (1845), pp. 391–3; Liam Brunt, 'Where there's muck there's brass: The market for manure in the Industrial Revolution', *EcHR* 60 (2007), pp. 340–3.

[70] Caird, *High farming* (1849); Cato the Censor (James Strachan Barty), 'Caird's high farming harrowed', *Blackwood's Edinburgh Magazine* 67 (1850), pp. 447–75; Ross, *Lord Kinnaird's letter;* J. S. Barty, *Peter Plough's letters to the Right Honourable Lord Kinnaird on high farming and free trade* (1850), pp. 36, 38–9.

[71] Troup (ed.) 'High Farming', p. 44.

[72] Barty, *Peter Plough's letters*, p. 36.

the depleting numbers of guano birds, due to the destruction of their habitat, could not keep up the high demand for their excrement in the mid-nineteenth century and fears of resource depletion abounded. Liebig highlighted the dangers of farmer dependence on a limited resource.[73]

Caird carried out his agricultural survey of 32 counties of England, sponsored by *The Times* of London, in 1850 and 1851.[74] There is no obvious sampling procedure. Farms visited included many larger landed estates and those of wealthy new entrants, no doubt keen to be interviewed about their improvements. County samples varied, including in-depth accounts of agriculture on two or three larger estates, and research sites such as the Royal Agricultural College at Cirencester, and Lawes' work at Rothamsted. The county of Staffordshire, for example, included nine large estates and several tenant farms on each of those estates. Caird travelled widely and made general observations on practice on smaller farms. He also interviewed farm agents, some local processors, and manufacturers. In the absence of reliable statistics, something Caird later campaigned for, a regional keyword search within this survey, of crop type, manures and method used, reveals, at a superficial level, regional distinction in agricultural practice.[75] Caird concluded that – while the Norfolk four-course rotation remained popular, particularly on lighter soils – rotations with more stages, including root crops, other green crops and corn (white) crops, were becoming a feature of 'improvement' on heavier soils. The number of rotations varied with regional soil and climate as did the balance between arable and livestock farming, which was still frequently combined.[76] Clover, trefoils and vetches were used in pasture, as fodder and as green manure. Clover provided many acres of amenity and fragrance usefully countering the stench of the guano fields.[77] Sainfoin use was falling, whereas the use of peas and/or beans was increasing in rotations.

The survey finds large quantities of guano being applied to root crops, mostly used as fodder. Folding on root crops was also common for dual-purpose feeding and fertilizing. Lawes' findings on the importance of nitrates for corn crops were only just emerging and the use of nitrate rich Peruvian guano on corn crops is little reported. As pointed out by Mathew, much Peruvian guano was initially wasted on root crops, which would have benefited more from phosphatic fertilizers.[78] Nevertheless, farmers applied guano and farmyard manure to green and root crops with the logic that corn crops always followed in rotation, making use of remaining nitrate residues. How plants accessed nitrogen was being hotly debated at the time, so to a great extent decision making rested on the knowledge, skill and expertise of each farmer. This was particularly evident on smaller western family farms, where guano was

[73] Liebig, *Letters on modern agriculture*, p. 186.

[74] Caird, *English agriculture*. The frontispiece provides a map of county divisions by farming type and average wages.

[75] For a detailed summary, see Kinsley, 'Guano and British Victorians', pp. 172–4.

[76] Caird, *English agriculture,* pp. 501–3; Paul Brassley, writing in 'Arable Systems', in Collins (ed.), *AHEW,* VII, I, pp. 456–71, concludes that Caird's survey shows a concentration of arable, with sheep on lighter soils, which required greater manuring and more livestock farming, particularly cattle on heavier soils. It also reveals a high proportion of mixed arable and livestock, particularly dairy and arable on lower lying land.

[77] L. Raven-Hill, 'Our Spring Poet', *Punch [Historical Archive],* 30 Apr. 1902, p. 316; G. Chorley, 'The agricultural revolution in northern Europe, 1750–1880: nitrogen, legumes, and crop productivity', *EcHR* 34 (1981); T. Kjaergaard, 'A plant that changed the world: the rise and fall of clover 1000–2000', *Landscape Research* 28 (2003).

[78] Mathew, *House of Gibbs*, p. 179.

carefully used in rotations. A mixed farming approach through rotation remained common, with animal husbandry strong in the west and north. The introduction of more highly bred animals, with purpose-built indoor winter stabling, enabled integrated manure collection and storage systems.

Caird maintained that mixed farming approaches often better suited British landscapes and would help to meet rising demand for meat and dairy products. He recommended increasing grassland, meat and vegetable production, better husbandry providing more employment opportunities, and decreasing land in corn production, due to the threat of foreign competition. Caird believed that that new 'artificials' like guano would result in increased corn production despite a reduction in tilled land, also maintaining that northern and western rich grasslands and well-manured crop fields, already producing corn in rotation, would be excellent insurance as a reservoir for short-term corn production in times of crisis.[79] As well as noting improved farmyard manure management, he reported rotations ranging from four to seven cycles with crop sequences reflecting local variations in landscapes including geology, soils, gradient, altitude, aspect, water availability in its different forms, sunlight and microclimate in general. Such variations are abundant over short distances in British landscapes. So, while science played a role in increasing efficiencies in all areas of agriculture, local knowledge mattered.

Caird's survey demonstrated where guano boosted productivity and brought more land into cultivation. Guano's greater use on the Cotswolds boosted soil productivity beyond the richer soils of the Vale of Gloucester, where he criticized 'backward' practices. Effectively used on higher land in West Cumberland and Derbyshire, it also boosted wheat production on poorer Yorkshire Wold soils and more generally on clays. A double application of guano on poorer Northumbrian Cheviot soils yielded an equivalent crop to a single application on richer soils. He argued for greater guano application on thin chalk soils in Buckinghamshire. In all cases, the greater production, collection, and improved management of farmyard manure achieved better results on lower-lying, easily accessible land. Overall, Caird's survey revealed that farmyard manure and use of legumes in rotation received more mentions than guano, which was closely followed by sheep folding (see Figure 3). The use of bones was less frequently mentioned and superphosphate less still, indicating that guano was a more significant supplementary fertilizer. Agricultural night soil use reduced considerably in the mid-nineteenth century as sanitary reform decreased the use of cess pools in cities, and a wider range of fertilizers became available.[80]

Where capital was available for investment in farm infrastructure, machinery and fertilizers, more guano and superphosphate were used. Caird made scant reference to the already well-publicized Tiptree Farm, Essex, owned by successful self-publicist, John Mechi, who made his fortune as a cutlery and razor manufacturer. His work and ideas exemplify how novice, but aspiring, high farmers behaved, and how they were received in the agricultural community. He constructed his manor house and model farm in 1841 and his lectures and annual nationwide convocations of agriculturalists were widely featured in the press and periodicals.[81] In the

[79] Caird, *English agriculture*, pp. 269, 276, 289, 323, 486–7.

[80] M. Alan, 'From cess pool to sewer (1848–1880)', *Victorian Literature and Culture* 30 (2002), p. 356.

[81] 'The annual gathering at Mr. Mechi's Farm, Tiptree Hall', *The Examiner,* 24 July 1852, p. 471.

	DAIRY/GREEN CROP REGIONS		CORN REGIONS		OVERLAP REGIONS	
	Mentioned as used	Not mentioned	Mentioned as used	Not mentioned	Mentioned as used	Not mentioned
Farmyard Manure/Town dung	13	2	14	2	3	1
Leguminous crop in rotation	12	3	14	2	4	0
Guano	10	5	8.5	7.5	2	2
Folding (mostly sheep)	10	5	7	9	2	2
Bones	6	9	5.5	10.5	0	4
Superphosphate	4	11	3	13	2	2
Night soil	2	13	1	15	0	4

FIGURE 3. Comparative use of guano with other methods of soil fertility improvement, 1850–51

Source: L. J. Kinsley, 'Guano and British Victorians: an environmental history of a commodity of nature' (unpubl. PhD thesis, University of Bristol, 2020), p. 176.

1840s, Mechi believed guano to be the most important manure, enabling him to cultivate marginal heathland and clay.[82] However, after such heavy investment, guano did not bring him the long-term profits he anticipated.

Mechi's early practice was criticized by farmers like William Good, who had worked at the 'dung-face' for far longer. Good maintained that soil health was compromised by the over-application of concentrated nutrients. He believed that guano, although benefiting crop growth, subsequently left soils in poorer condition than traditional tillage. Tempered by his acknowledgement that guano performed well on bringing poorer soils into production, he argued that farmers would be 'unable to replace that which they had taken.' Good voiced growing concerns about guano's shelf-life. After its initial success, Good argued that farmyard manure then proved to be more beneficial as guano 'forced' crops too hard, leading to a 'diseased crop', 'premature ripeness' and 'drooping at the root'. In tune with growing public concern, he reiterated concerns about dwindling guano supplies.[83] Good's main gripe was not against improvement *per se*, but that new self-promoting entrants into farming lacked agricultural skill.

Learning through practice, Mechi eventually concluded that guano was no more valuable than cattle urine. He criticized urine wastage and invested heavily in liquid manure production, urine collection tanks and piped systems.[84] Like generations of skilled farmers before him, Mechi came to realize that farmyard manure was essential for heavy land as it 'acts mechanically as well as chemically – loosening the soil'. Nevertheless, he continued to use Peruvian guano to bring poorer and distant soils into production, and as a supplemental fertilizer, but moved his focus to animal manures, installing covered yards to replace open

[82] J. Mechi, *A series of letters on agricultural improvement* (1845), pp. 15, 21, 23–4, 42, 55–6, 121.

[83] Good, *Theorists confuted,* pp. 176, 186, 191–2, 207, 263.

[84] British Library, 7074.k.35, Mechi, John Joseph, 1844, 'Letters on agricultural improvement' (Six Letters), Letter 3, 5; J. Mechi, *Copy of a paper on the subject of British agriculture read before the Society of Arts on 22 November 1850* (1850), p. 8; *Mechi's experience in drainage* (1847), p. 14; Mechi, *A series of letters,* pp. 47, 95.

dung heaps. Mechi calculated that he later manured at half the cost of the guano he had initially used.[85]

In summary, after the initial rush to often over-apply guano, guanos from different origins were more carefully tailored to different crop types using the lessons learned from scientific field trials and the observations of farmers who used it. More experienced farmers balanced their guano application against improved standards of farmyard manure production and storage. Guano became more commonly used to kick-start marginal land into production, and as supplementary manure in improved crop rotations alongside the efficient collection, storage, and management of farmyard manures.

III

Whilst this article focuses on debates about the use of guano in Britain, it was also available as a commodity in North America and Europe, and many examples of parallel thinking, and much cross fertilization of ideas can be found.[86] Indeed, the focus of environmental scholars of guano in recent decades has been towards the western hemisphere and the global implications of nutrient cycle disruption and the unsustainable impacts of mining and export.[87] The guano trade was the first global example of long-distance fertilizer transport in bulk and considerably widened an already evident nutrient rift. In this, guano birds acted as unwitting agents in colonial expansion via trade, labelled 'ecological imperialism' by Crosby.[88] This was a two-way process, opened up by the Peruvian government when they privatized their guano resources for profit. Equally British merchants saw this as a profit-making opportunity, using their own resources to export them over long distances to increase food production for the urbanizing labour force. After an initial period of high demand, British farmers soon discovered the negative impacts of misuse on certain crops, high prices and the greater benefits of well managed farmyard manures to soil texture and structure. Fears of adulteration, complexities in the logistics of sourcing guano and fears of diminution of guano reserves would in turn contribute to the emerging recognition of the dilemma of sustainability.

British farmers would have benefited from taking more notice of the literature noting the carefully measured use of guano by indigenous farmers in Peru.[89] Liebig's criticism of British high farming's appetite for fertilizers included his famed portrayal of Britain 'hanging like a vampire on the neck of Europe' in raiding war graves for bones, and his recognition of the high wastage of nutrients in run-off.[90] These views were widely shared by other chemists and began to filter through to agricultural practice. The beginnings of concern about the widening rift between humans, nutrients, and soil evident in the writing of Liebig reflects the emergence of

[85] Mechi, *How to farm profitably*, p. 124.

[86] J. Johnston, *Notes on N. America* (2 vols, 1851); R. A. Wines, *Fertilizer in America: from waste recycling to resource exploitation* (1985).

[87] Cushman, *Guano;* Melillo, 'First green revolution', pp. 1028–60; Clark and Foster, 'Ecological imperialism', pp. 311–44; Schneider and McMichael, 'Deepening, and repairing', p. 477.

[88] A. W. Crosby, *Ecological imperialism, the biological expansion of Europe, 900–1900* (sec. edn, 2004), pp. 10, 11.

[89] Kinsley, 'Guano and British Victorians', pp. 45, 56, Leigh, *The world's greatest fix,* pp. 78–80.

[90] A. D. Hall, *Fertilisers and manures* (1915), p. 108.

a subtly different concern amongst Victorians, not solely related to landscape, aesthetics, and the beauty of nature, but to the 'health' of the soil beneath their feet. Liebig's first book (1840) contained indications of this thinking, but by his 1843 edition, this idea of the loss of nutrients from farms into city sewers had become clearer. On reading Liebig, Marx also concluded that 'the vitality of the soil is squandered'.[91]

Paul Warde argues that soils became the most 'fundamental conundrum' of the mid-nineteenth century. They have remained so ever since. He suggests that it was Justus von Liebig who elaborated a profound critique of civilizations undermining themselves through mismanagement of the soil, a first significant emergence of the idea of the dilemma of sustainability. Warde illustrates how this was already becoming a conventional opinion in the mid-nineteenth century and the observations of many chemists and farmers about their guano use support this view. He argues that the modern problem of agricultural sustainability had arrived and asks: 'could experts successfully engineer the flow of nutrients to a society whose practices systematically endangered its existence?'[92]

Nevertheless, the dominance of chemists in agricultural science arguably, and paradoxically, engendered the view of guano as artificial with Peruvian as the ideal chemical fertilizer, and enhanced a view of the soil solely as a receptacle for these means. Liebig presented all nutrient cycles as chemical and it was only later that Louis Pasteur led germ theorists in an understanding of micro-organisms as agents of decomposition.[93] Darwin's recognition of the importance of biological agency in soils in the 1880s almost coincided with the discovery of nitrogen-fixing bacteria, but failed to contribute significantly to any recognition of the importance of soil organisms, despite a previous and passing reference by Lawes.[94] Indeed, arguably this understanding only more fully emerged with the organic movement in the 1930s, when Albert Howard's and Eve Balfour's work acknowledged the necessity of the living components of soils for their fertility.[95] The focus of many agricultural chemists on achieving mono-cropping through chemical technology could hardly be called environmentally sustainable, but this was countered by their increasing concern about increased fertilizer application and nutrient wastage in sewage and agricultural run-off. Guano use aided this important early recognition of environmental problems created by the intensification of food production.

Liebig's criticism of the bulk mass transport of bird excrement halfway round the planet to Britain, where its valuable nutrients were excreted into city sewers, rivers and oceans, became widely accepted.[96] Johnston supported Liebig's view that 'wealth' was also lost in allowing

[91] Liebig, *Chemistry in its applications*, p. 165; Marx, *Capital*, III, p. 813.

[92] Warde, *Invention*, pp. 300–4, 329–32; Liebig, *Organic chemistry*.

[93] Hopwood *et al.*, 'Cycles and circulation', p. 23; Mårald, 'Everything circulates', p. 72.

[94] Lawes and Gilbert, 'On Agricultural Chemistry', pp. 30–3; Justus Liebig, Lyon Playfair and John Webster, 'Organic chemistry in its applications to agriculture and physiology', *North American Rev.* 53 (1841), p. 168; C. Darwin, *The formation of vegetable mould through the action of worms, with observations on their habits* (1883); M. Rossiter, *The emergence of agricultural science: Justus von Liebig and the Americans, 1840–1880* (1975), pp. 20–1.

[95] A. Howard, *An agricultural testament* (1940, 6th edn, 1950), pp. 35, 42, 48, 76; Eve Balfour, *The living soil* (1943).

[96] 'Liebig on Sewage', *Essex Standard*, 21 Jan. 1859, p. 2.

liquid manures to run to waste and this was particularly true in the case of Peruvian guano, exacerbated by its highly soluble nitrogen.[97] Johnston's holistic thinking on nutrient cycling also made a contribution to the emergence of sustainable thinking. Johnston straddled the natural theological/empirical divide in communicating his ideas.[98] Christopher Hamlin describes this as 'chemico-theology'.[99] This recognition of Johnston's contributions to the creation of the idea of the 'dilemma of sustainability' is evident in Marx's description of him as 'the English Liebig' and in Mårald's work on circulation.[100]

In popularizing Carl Sprengel's 'law of the minimum', Liebig articulated how the efficacy of fertilizers is limited by the availability of the scarcest chemical nutrient, but he also foresaw how continued use of guano could 'impoverish' the land, indicating a growing understanding of the dangers of excess.[101] Boussingault also understood the limits of production in soils but, like Johnston, was less convinced that chemical technology could enable the same crop to be grown in the same soil *ad infinitum*. Liebig was not alone in creating a view of soil only as a chemical receptacle, leading some twentieth-century ecologists to hold a view of nineteenth-century chemists as responsible for all the evils of modern industrial, chemically focused agriculture.[102] While guano use contributed to a belief in chemical technology to control nature for food production, it took the industrial fixation of nitrogen by Haber and Bosch in 1909 and the passing of two world wars before this was more fully realized.[103]

Chemists' concerns about soil fertility became widely embraced by Victorians, including by writers like Dickens and Marx. After reading Liebig and Johnston's work, Marx changed his opinions on agricultural potential, arguing 'Constantly growing urban populations crowded together in large cities' cause 'an irreparable break in the coherence of social interchange prescribed by the natural laws of life…as a result the vitality of the soil is squandered'.[104] Agricultural guano use stimulated parallel concerns amongst farmers about fertilizer over-application as they were developing a more detailed understanding of the importance of broader soil health. William Heywood's argument that 'ploughing so deeply and forcing so highly' (other farmers had noted guano's forcing capabilities) 'may in the end terminate in a derangement of nature's order', is another recognition of the dilemma of sustainability.[105]

Mechi's later campaign to replace guano with town sewage, reflected the views of Liebig and others and achieved huge publicity.[106] Significantly, he argued, as Liebig did, that 'another century may teach us all agricultural wisdom' through sustainable sewage use and the avoidance of unnecessary expensive imports. The potency of guano's popularity was evident in his use of 'liquid guano' to label town sewage.[107] Nevertheless, while supporting the view that

[97] J. Johnston, *Elements of agricultural chemistry and geology* (1842), pp. 26, 29, 33.

[98] J. Johnston, 'The circulation of matter', *Blackwood's Edinburgh Magazine* 73 (1853), pp. 550–60.

[99] C. Hamlin, 'Providence and putrefaction – Victorian sanitarians and the natural theology of health and disease', *Victorian Stud.* 28 (1985), pp. 401–2.

[100] Marx, *Capital,* III, p. 813; Mårald, 'Everything circulates', p. 68–9.

[101] Liebig, *Letters on modern agriculture*, p. 186.

[102] Liebig, *Principles of agricultural chemistry*, p. 47; C. Massy, *Call of the reed warbler: a new agriculture, a new earth* (2017), pp. 158–9.

[103] A. Page, 'The greatest victory', pp. 384–5.

[104] Marx, *Capital,* III, p. 813.

[105] Heywood, *High farming*, pp. 2–41.

[106] 'Mechi the mourner', *Punch*, 21 Aug. 1858, p. 75.

[107] Mechi, *How to farm profitably*, p. 100.

over-application of ammonia and crop removal led to exhausted soils, his grandiose vision for agriculture remained intensively industrial.[108]

With urbanization, our excrement, containing nutrients extracted from agricultural fields, became a spatially concentrated-hazard causing, for instance, cholera outbreaks, which contributed to challenging living conditions in British towns and cities, as evident in Edwin Chadwick's comprehensive report in 1842.[109] This led to the sewage debates of the nineteenth century, which coupled the need for improved sanitation to reduce disease, with achieving a sustainable agricultural solution for the fertilizer problem.[110] In Britain, guano use helped to exacerbate a reduction in the application of human excrement directly back into the soil, either from the farm itself or and by night soil cartage from cities. Cartage decreased with a reduction in cesspit use following Snow's observation of their link to cholera.[111] Liebig's negative view of Britain's importation of large quantities of fertilizer was coupled with his optimism that this could be avoided if sewage was applied to the land. This influenced Chadwick and other sanitarians, but the replacement of cess pits by flushing toilets, to reduce cholera, initially resulted in the transport of sewage into wastewater overflows and out into rivers. While this was viewed as preferable to cholera, it did move the problem downstream and still lost valuable nutrients.[112]

British Victorians utilized two main approaches to the production of fertilizers from sewage: irrigation and dry products. Lawes and Gilbert undertook extensive trials in sewage irrigation, notably at Rugby, and many agricultural chemists attempted to put a value on this to assess financial viability.[113] Lawes used guano as a benchmark in this sponsored work on sewage irrigation solutions, and the search for a profit (see Figure 4).[114] Despite the high cost of implementation, irrigation was ultimately chosen in place of dry products. Liebig's reference to the use of night soil in Chinese agriculture was picked up by other agricultural chemists, as was Boussingault's inclusion of the Parisian manufacture of poudrette in his manure tables.[115]

In a strange twist, guano had some influence on the production of dried humanures. Many rushed to manufacture humanure products in the hope of commercial profit and appropriated the term 'guano' as a powerful marketing tool. The power of guano as an idea saw the common usage of 'native guano' for humanure products by medics, sanitation engineers, farmers and the wider public. One humanure manufacturer, the Native Guano Company, formally adopted it for its company name.[116] In contributing to the design of joint solutions to public health

[108] 'More talk on town sewage', *Farmers' Magazine,* 3rd Ser. 17 (1860), pp. 253–4.

[109] E. Chadwick, *Report for Poor Law Commissioners to HM Government on the Sanitary Condition of the Labouring Population of Great Britain* (1842).

[110] N. Goddard, 'A mine of agricultural wealth: the Victorian and the agricultural value of sewage', *J. Hist. Geography* 22 (1996), pp. 274, 286.

[111] T. Choi, 'Writing the Victorian City', *Victorian Stud.* 43, (2001), p. 567; Goddard, 'Mine of agricultural wealth', p. 275.

[112] Sheail, 'Town wastes', p. 191.

[113] Ibid., pp. 201–2.

[114] J. B. Lawes and J. H. Gilbert, 'On the composition, value and utilization of town sewage: position of the sewage question', *J. Chemical Soc.* 19 (1866), p. 103.

[115] D. Worster, *The good muck: Toward an excremental history of China* (Munich, Rachel Carson Center, 2017).

[116] Kinsley, 'Guano and British Victorians', pp. 214–17; The Native Guano Company, *The sewage question settled by the purification of the water and the manufacture from town sewage of a dry and portable manure possessing highly fertilizing properties as effected by the Native Guano Company*, (1870).

Relation of Sewage to Peruvian Guano in amount of Nitrogen reckoned as Ammonia.

If Sewage per head per annum.	Contributing 1,000 tons Sewage.	If 12½ lbs. Ammonia, per head per annum, from all sources.		If 10 lbs. Ammonia, per head per annum, from all sources.	
		1,000 tons Sewage = Guano.	1 ton Guano = Sewage.	1,000 tons Sewage = Guano.	1 ton Guano = Sewage.
Tons.	Persons.	Cwts.	Tons.	Cwts.	Tons.
40	25	16⅔	1220	13	1525
50	20	13	1525	10½	1900
60	16¾	11	1830	8¾	2290
80	12½	8⅕	2440	6½	3050
100	10	6½	3050	5¼	3810
200	5	3¼	6100	2⅝	7620
1 Person = Guano.		⅔ cwt.		½ cwt.	

FIGURE 4. Lawes and Gilbert's comparison of sewage and Peruvian guano in nitrogen content

Source: J. B. Lawes and J. H. Gilbert, 'On the composition, value and utilization of town sewage: position of the sewage question', *J. Chemical Soc.* 19 (1866), p. 103.

and agricultural soil fertility problems, guano became a protagonist in the development of sustainable solutions to convert dried sewage into concentrated, portable fertilizers. This cultural idea of guano's abstraction was a strong driver in sewage solution research and led to many creative attempts to reclaim human excrement in the production of 'native guano' dry fertilizer products.[117] However, due to technological challenges, high production costs, and complaints about noxious odours, dry native guano solutions were short-lived. Liebig was disappointed in the failure of British sewage solutions to reclaim human excrement but, as Hamlin concludes, this was exacerbated by 'municipal stinginess' and lack of suitably advanced technology.[118] The focus turned to sewage irrigation, which caused problems of its own.[119] Solid excremental solutions did not re-emerge until new forms of sewage treatment allowed the wider use of sewage sludge in the late twentieth century.[120]

[117] Kinsley, 'Guano and British Victorians', pp. 192–222.

[118] Hamlin, 'Providence', p. 411.

[119] Sheail, 'Town wastes', p. 209.

[120] DEFRA and Environment Agency, 'Sewage sludge in agriculture: code of practice', 23 May 2018 [https://www.gov.uk/government/publications/sewage-sludge-in-agriculture-code-of-practice]; G. McGavin and Zoe Laughlin, 'The Secret Science of Sewage', 2021 [https://www.open.edu/openlearn/tv-radio-events/tv/the-secret-science-sewage]. Despite dangerous contamination, new science is enabling its strictly controlled use on soils, as well as its exploitation for energy.

IV

In conclusion, the impact of guano on nineteenth-century agriculture has two contradictory strands. On the one hand, guano was viewed as a chemical tool in the application of scientific technology to agriculture. During the past thirty years, environmental historians, in re-evaluating the global exploitation of guano have also revealed its role in nutrient cycle disruption. On the other hand, its use in Britain also helped to engender an emerging recognition by a wide cross-section of British Victorian society, including medics, sanitarians, and litterateurs, as well as agriculturists and scientists, of the need to work with nature. Guano's sustainable local use by the Inca and their recognition of the need to conserve a finite natural resource was countered by the nineteenth-century guano trade. This led to guano finding itself 'out of place' in an ecosystem far removed from its own and subjected to scientific and agricultural practice which drew nothing from its place of origin. The story of guano's exploitation reveals an overarching aspect of the sustainability dilemma, that of nutrient cycle disruption and the need to achieve sustainable solutions through nutrient balance and cycle re-closure. This supports Warde's argument that the sustainability dilemma had emerged in Britain by the mid-nineteenth century.

Guano did demonstrate the fertilizing qualities of nitrate in a concentrated portable form. Its high nitrogen content influenced the focus by chemists on the importance of nitrogen to plant growth and helped to stimulate a demand for industrially manufactured chemical fertilizers. However, these same chemists and skilled nineteenth-century farmers came to recognize the dangers of nutrient run-off from their soils and reduced crop productivity from overuse of guano. While chemically facilitated mono-cropping was not introduced in Britain in the mid nineteenth century, it was implemented earlier in North America and the plantation agriculture of many British colonies. Indeed, environmental historians attribute significance to guano use in North America, where it was applied in quantity to soils on more uniform geologies than those found in Britain. There, monocrops, such as cotton and tobacco, rapidly came into vogue where soils appeared ready-made to support food production with the help of guano.[121] However, they had never done so before, and now have questionable ability to do so due to over-intensification.

For Britain, in all respects, guano was a very different agricultural tool. As Caird's survey illustrated, despite examples of initial over-application, British farmers generally chose to use guano in moderation, as part of enhanced crop rotations incorporating the high use of leguminous plants and better managed animal manures. Colin Duncan summarized English eighteenth- and nineteenth-century farming as geologically varied, 'constituted out of a mosaic of finely adapted local variations based on cattle and sheep/corn husbandry' and with the tendency to 'generate steady and sustainable improvements in land productivity.' A study of guano use in Britain supports his argument that increased production resulted from more efficient nutrient recycling, improvements in soil structure, better pest management and 'intricate rotations' with the interweaving of 'finely adapted regional breeds of sheep and cattle'.[122] This was enhanced by

[121] Melillo, 'First green revolution', p. 1044.

[122] C. A. M. Duncan, 'The centrality of agriculture: History, ecology and feasible socialism', *Socialist Register* 36 (2000), p. 194.

a greater understanding of the nutrient content of manures, particularly guanos from different origins, through the experiments of agricultural chemists.

In the nineteenth century, a belief in managing nutrient cycles to achieve balance and stability in harnessing soils for production was increasingly offset by a recognition of the threat of human intervention. Concerns about imbalance and instability were stimulated by the use of artificial fertilizers and, in straddling the natural/artificial divide, Peruvian seabird guano highlighted these concerns. With a higher nitrogen content than Chilean nitrates, it was lauded for its role in farmer acceptance of chemical technology. Nevertheless, through its overuse and strong fertilizing power, it contributed to an understanding of the dangers of agricultural intensification and farmers responded accordingly.

The trade certainly damaged Peruvian marine ecosystems and contributed to the emergence of a 'nutrient rift' that spanned parts of the globe, but in the 1860s, guano gave its name to sustainable sewage solutions put forward to close that rift. Despite these later influencing twentieth century sewage treatment, 'dry solutions' were rejected. Instead, attention turned to sewage irrigation, followed by sewage farms where on-farm purification took place in passing sewage through crops.[123] John Sheail illustrates how sewage irrigation caused 'sewage sickness' when effluent production outstripped the capacity of land to take it and concerns about parasite infestations on crops emerged. With the development of new artificial sewage treatment methods, he concludes that, by the early twentieth century, 'the concept of sustainability, as applied through the integral management of urban wastes and rural land use, had not only become discredited, but was perceived to be irrelevant to the nation's needs.'[124] The artificial fixation of nitrogen would have contributed to this view, but this also added to the repercussions of the mid-twentieth-century 'green revolution' with its attendant exponential increase in the manufacture and utilization of chemical fertilizers.

Global soils and climate are now paying the price of the failure to maintain nutrient balance in the twentieth century, as are the guano birds, despite Peru's efforts at conservation.[125] The history of guano's exploitation reveals more than the interplay and disruption of cycles supporting its production. Its use also contributed, on the one hand, to the development of agricultural chemical technology and associated nutrient cycle disruption. On the other hand, such disruption led guano use to contribute to emerging ideas of the dilemma of sustainability, and the 'idea' of it to be applied to integrated sustainable solutions for agriculture and sanitation. Despite a move away from this in the early twentieth century, sewage sludge technologies saw humanure reintroduction in the late twentieth century, which then became dogged by hormone, antibiotic, heavy metal and plastic contamination. The continued search for improved and sustainable technologies to address this provides a link with the unrealized Victorian attempts to perfect a 'native guano'.[126]

[123] Sheail, 'Town wastes', pp. 196, 203.
[124] Ibid., pp. 202, 210.
[125] Cushman, *Guano*, pp. 348–9.
[126] Goddard, 'Mine of agricultural wealth', p. 287.

In the time of mast: Investigating the medieval swine pannage of south-east England

by Andrew Margetts

Abstract

The turning out of swine in woodland and the feeding of the animals on mast is an established part of modern livestock husbandry (for example, *Jamón ibérico* of Spain and Portugal or the 'pannage pork' of the New Forest). Despite this, perhaps the most famous historic records of woodland pig pasture are derived from the documentary evidence of the medieval Weald of south-east England. Though this is undoubtedly the case, the practice has received few interdisciplinary studies that feature excavated archaeological evidence. What follows is an extended review of the medieval practice of pannage, both in the Weald and beyond.

I

Medieval south-east England was predominantly a pastoral area. Though it possessed prime arable country that at one time or another was amongst the richest in the kingdom, in terms of land use, it was mainly given over to pasture, especially wood-pasture. For much of the middle ages, this environment epitomized the largest natural and cultural area of the region, the Weald.[1] The medieval practice of swine pannage has dominated our understanding of the region's medieval pastoralism. The strong connection between the medieval Weald and pig husbandry is in part reflective of scholars' historic reliance on information provided by Domesday (AD 1086). Within William the Conqueror's great survey of holdings and their value, a given woodland is measured in the number of pigs it could support in pasture (see below).

This article explores the nature of medieval pannage and the part it played in a system of transhumance. It investigates the distribution of the practice within the south east and highlights current strands of evidence for the keeping of swine. It evaluates the importance of pannage and sheds new light on the archaeology of medieval pig husbandry, both in the landscape (e.g., place-names and droveways) and excavated archaeological remains (bone assemblages and buildings). The work begins with an introduction to the study area before embarking on the more detailed evidence of the region's swine economy.

[1] D. Hooke, '*Wealdbǣra* and *Swina Mǣst*', in S. Turner and B. Silvester (eds), *Life in medieval landscapes* (2012), pp. 15–41.



FIGURE 1. The study area (drawn by the author)

II

South-east England as it is defined here comprises the modern counties of Kent, Surrey and East and West Sussex, as well as part of Greater London (Figure 1). It is formed of a number of 'character areas' or *pays* which transcend modern administrative boundaries and have provided a framework for the study of the area's historic landscape (Figure 2). It is a region of varied underlying geologies and topography, which has given rise to a number differing landscape types. Over the centuries, the region's communities have adapted these contrasting environments in different ways, this often with a view to effective exploitation through the most suitable methods of agriculture for the given soil, hydrology and topography, its *terroir*.

The area known as the Weald comprises over 60 per cent of the south east's entire landmass. It is named from the Old English for woodland and is considered to be the region's poorest arable area. It is traditionally divided between the elevated, predominantly sandstone, High Weald and the largely clay Low Weald. From the early medieval period and possibly before, this area comprised a pastoral and woodland resource in which a system of transhumance prevailed. Early communities utilized a network of droveways and based their agricultural exploitation of this marginal area on parent settlements situated within areas of greater arable potential. These areas of so-called 'primary settlement' existed at the scarp foot of the North

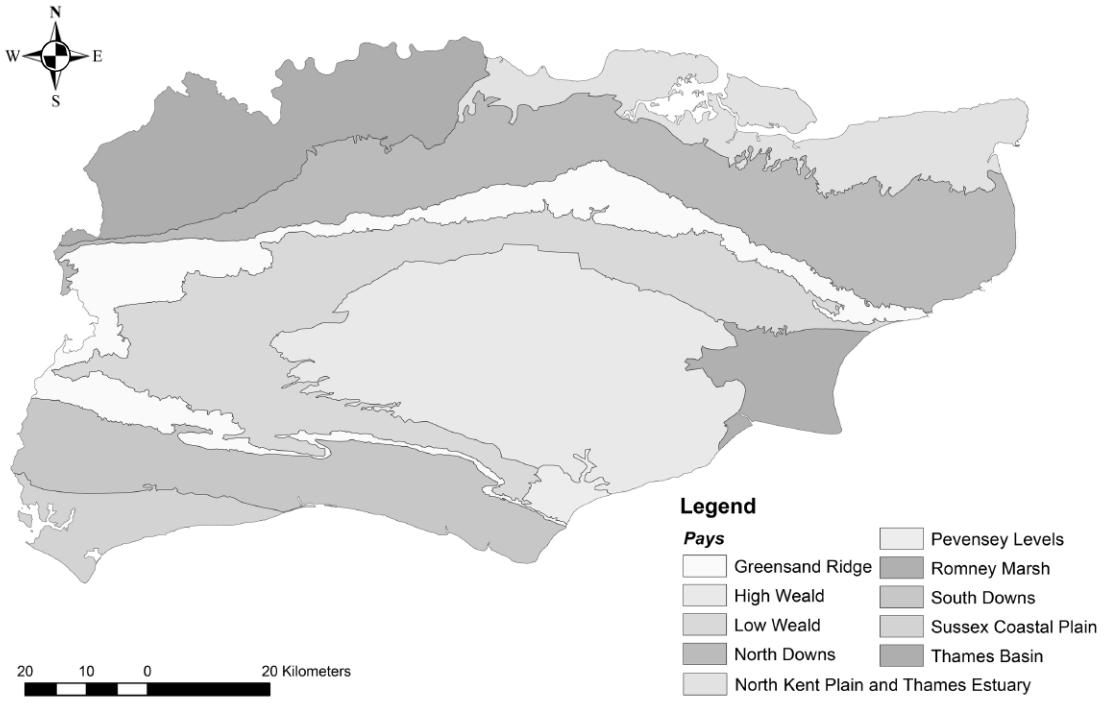


FIGURE 2. The *pays* of the south east (drawn by the author)

and South Downs (the Sussex Spring-Line and Holmesdale) as well as on the Sussex Coastal Plain and parts of the North Kent Plain and Thames Estuary.

Traces of the region's pastoral economy can be seen in modern day road networks, field boundaries and enclosures of the Wealden landscape, and through careful examination of the evidence, an evolution of rural society and settlement patterns from seasonal occupation to permanent farming communities and/or villages may be seen.[2] It is thought that during the early medieval period portions of the Weald first existed as common pasture for the relevant kingdom as a whole (e.g., the Kingdom of Kent or Sussex). Later there was appropriation of pasture, firstly by so-called 'folk-groups' and later by Anglo-Saxon multiple estates. During the tenth and eleventh centuries use of certain areas had become institutionalized into closed seasonal pastures known as *denns*. These *denns* are often simplistically interpreted as swine pastures, however, it is probable that other species of livestock were also sent to graze in the Wealden woods.[3]

[2] K. P. Witney, *The Jutish forest: a study of the Weald of Kent from 450 A.D. to 1380 A.D.* (1976); A. Everitt, *Continuity and colonization: the evolution of Kentish settlement* (1986); P. Brandon and B. Short, *The South East from AD 1000* (1990).

[3] D. Hooke, 'Pre Conquest woodland: its distribution and usage', *AgHR* 37 (1989), pp. 113–29; Hooke, *Weald-bǣra* and *Swina Mǣst*'; A. Margetts, 'The wandering herd: the medieval cattle economy of the South-East, *c*.450–1450' (unpubl. PhD thesis, University of Exeter, 2020).

III

Despite the presence of cattle and other animals, the most historically apparent use of the south east's wood-pasture, both on the manors and in the *denns* was for the pannage of swine. Pannage meant both the pasturing itself and the dues paid by tenants and others for the right to send their pigs to graze.[4] It involved the autumnal feeding of swine, mainly on acorns or beech mast (the fruit of beech, oak, chestnut, and other forest trees) in order to fatten them for slaughter. Modern science has confirmed the value medieval husbandmen placed on the mast diet, both for the flavour and for the quality of the resultant pork.[5] From a land management perspective, foraging swine have also shown benefits in terms of their impact on the biology of the forest floor.[6] Although grazing of pigs may be beneficial for open wood-pasture environments, when grazed in large numbers they cause colluviation and they inhibit reafforestation, ultimately causing the disappearance of woodland.[7]

The cost of keeping swine is neatly demonstrated by the thirteenth century *Seneschaucie*.[8] Within this document it is made clear that manors without wood or marsh or waste, where pigs could be kept away from the community's corn land, would be severely restricted in terms of the number or pigs they could keep. Only those that could be fed on the stubbles after harvest and sold before winter were recommended for retention. Indeed:

> For whoever will keep swine for a year from the cost of the grange alone, and count the cost and the allowance for the swine and swineherd, together with the damage they do yearly to the corn, he shall lose twice as much as he shall gain, and this will soon be seen by whoever keeps account.[9]

Despite its continuity throughout the period of high farming and into the fifteenth century, the roots of the pannage system lay in the early medieval period or before. Anglo-Saxon charters contain the earliest documentary evidence for the practice in England where the word commonly used for swine pastures was recorded as *denbæra*, although occasionally they are

[4] F. R. H. Du Boulay 'Denns, Droving and Danger', *Archaeologia Cantiana* 76 (1961), pp. 75–87.

[5] M. Bonneau and B. Lebret, 'Production systems and influence on eating quality of pork', *Meat Science* 84 (2010), pp. 293–300; S. Ventanas, J. Ruiz, C. Garcia and J. Ventanas, 'Preference and juiciness of Iberian dry-cured loin as affected by intramuscular fat content, crossbreeding and rearing system', *Meat Science* 77 (2007), pp. 324–30.

[6] A. L. Wealleans, 'Such as pigs eat: the rise and fall of the pannage pig in the UK', *J. Science of Food and Agriculture* 93 (2013), pp. 2076–83.

[7] A. Gebhardt, 'Soil micromorphological data from traditional and experimental agriculture', in A. Barham and R. I. Macphail (eds), *Archaeological sediments and soils: analysis, interpretation and management* (1995), pp. 25–39; R. A. Sweitzer and D. H. Van Vuren, 'Rooting and foraging effects of wild pigs on tree regeneration and acorn survival in California's oak woodland ecosystems', in R. B. Standiford, D. McCreary, and K. L. Purcel (eds), *Proceedings of the fifth symposium on oak woodlands: oaks in California's changing landscape* (2002), pp. 219–31; M. Gardiner, 'The changing character of transhumance in early and later medieval England', in E. Costello and E. Svensson (eds), *Historical archaeologies of transhumance across Europe* (2018), pp. 109–20; C. Zatyko, 'Seasonality, territories, and routes: pannage as a multicomponent practice in medieval and early modern Hungary', in P. Dixon and Cl. Theune (eds), *Seasonal Settlement in the medieval and early modern countryside*. Ruralia XIII (2021), pp. 361–70.

[8] D. Oschinsky (ed.) *Walter of Henley and other treatises on estate management and accounting* (1971), pp. 261–95.

[9] Ibid., pp. 113–4.

referred to as *wealdbæra* or, more specifically, as *pascua porcorum*, 'pasture for pigs'.[10] In the earliest charters the rights refer to the south east's folk-groups, as is exemplified by Æthelberht of Kent's grant to the abbess Mildred during the summer of 724. The grant mentions '*pascua porcorum, Brentingesleag on Limenwearawalde*' ('the wood of the men of the Limen region') and in *Weoweraweald*, 'the wood of the men of Wye'.[11]

It is probable that during the earliest phases of seasonal pig pasture, those lowest down the social scale were engaged within the yearly movement to the commons. Slaves comprised a significant body of agricultural labour during this time and the eleventh/twelfth century *Rectitudines* indicates that a swineherd may either be an unfree *æhteswane* or a free, tribute-paying *gafolswane*. Within the Sussex Weald the association of slaves with woodland pastures may be preserved in the place-name Wallhurst (*weala-hyrst*) 'wood of the Briton's or serfs',[12] although the compound of *dryhten* 'a lord' and *geselle* in Drigsell (Sussex) implies that those higher up the social scale were also engaged to some degree in transhumance practice (Drigsell; 'lord's hut, buildings or the like').[13]

South-eastern custom is generally assumed to indicate that one swine out of every ten pannaged should be surrendered to the manorial lord, but Darby's analysis of Domesday woodlands indicates that determining the ratios of pigs rendered is by no means clear cut.[14] Only a single Domesday entry for Leominster, in Herefordshire gives an explicit reference to the ratio of render to total for mast swine (*de pasnagio*).[15] In the south-eastern counties no equivalent ratios exist, a situation that is symptomatic of the variable and in many ways limited nature of Domesday.[16] Unlike the eastern counties covered by the so-called 'Little Domesday' (Essex, Norfolk and Suffolk), numbers of livestock were not recorded in the south east[17] limiting our ability to reconstruct the eleventh century pastoral economy. That being said, it must be remembered that the 'Little Domesday' itself is not without problems. The nine cows and two donkeys recorded for the whole of Suffolk for instance plainly being unrealistic.[18] In terms of swine renders in the south east, however, the documents are explicit for pigs fed on grass (*de herbagio*). For instance, at Pagham in Sussex every villein had to render one out of seven pigs[19] whilst at Malden and Battersea in Surrey the numbers were one in seven and one in ten respectivly.[20]

Because of the relationship between swine renders and woodland, the size or amount of woodland on a holding came to be recorded in terms of the number of swine paid as an annual

[10] Hooke, 'Pre Conquest woodland'; Hooke, '*Wealdbæra* and *Swina Mæst*'.

[11] P. Sawyer, *Anglo-Saxon charters: An annotated list and bibliography* (1968), Charter 1180.

[12] A. Mawer and F. M. Stenton (eds), *The place-names of Sussex*, Part 1 (English Place-Name Society [hereafter EPNS] 6, 1929), p. 211.

[13] A. Mawer and F. M. Stenton (eds), *The place-names of Sussex*, Part 2 (EPNS 7, 1930), p. 458; A. Margetts, 'To browse and mast and meadow glades: New evidence of shieling practice from the Weald of South-East England', *Ruralia XIII: the Jean-Marie Pesez Conferences on Medieval Rural Archaeology* (2021).

[14] H. C. Darby, 'Domesday woodland', *EcHR* 3 (1951), pp. 21–43.

[15] Ibid.

[16] J. H. Round, *Feudal England* (1895); R. Welldon Finn, *The making and limitations of the Yorkshire Domesday* (1972); H. C. Darby, *The Domesday geography of eastern England* (1971), pp. 1–13.

[17] H. C. Darby and E. M. J. Campbell (eds) *The Domesday geography of south-east England* (1962).

[18] Darby, *Domesday geography*, pp. 199–200.

[19] J. Morris (ed.) *Domesday Book: Sussex* (1976), entry for Pagham (2,5).

[20] J. Morris (ed.) *Domesday Book: Surrey* (1975), entries for Battersea (6,1) and Malden (19,23).

rent for the right of pasturage. Within Domesday, the amount of woodland was normally indicated by the formula '*silva de porcis*' or '*silva n porcis*', which is sometimes expanded to '*de pasnagio silvae n porci*' or '*silva* [*de*] *n porcis de pasnagio*'. The swine in these entries constituted the rent paid to a lord in return for pannage in his wood and these were normally given as a round number (e.g., 20, 50 and 150) indicating estimates.[21] Despite these records there is no satisfactory way of elucidating what acreage of woodland these figures imply and as it came to simply be a means of assessing the size and value of a woodland we should question whether it was always necessarily the case that pigs (or pigs alone) were being pastured there.[22] Indeed, that swine renders are not equivalent to the number of pigs kept in a woodland is clearly demonstrated by the evidence of 'Little Domesday'. Here the records show that the number of pigs on the demesne of a holding was rarely the same as the number its woodland was said to be capable of supporting. Usually it was less, but sometimes it was more. Pigs were occasionally recorded for holdings without any wood.[23]

Nationally, many manors kept a few pigs on the demesne, the *Recititudines* envisaged a demesne swineherd who would also look after the pigs of the peasantry in return for payments of bread.[24] Domesday, however, indicates that the number of pigs kept on most demesnes was too small to make a swineherd viable,[25] but it is well known that at the time it was peasant producers who favoured the keeping of swine. This was especially true of manors bordering the Weald. According to Harvey more than 80 manors in the five south-eastern counties received payments of over 75 pigs a year, a scale that demonstrates why lords could afford to limit their engagement with pig production.[26]

In terms of the length of the pannage season most commentators agree that it ran between August and December, however, after the Conquest an October to November date became the norm.[27] As part of the medieval agricultural cycle, swine fattening on mast was so synonymous with autumn that it became the standard calendar depiction for either October/November or November/December.[28] Medieval pictorial representations of swine pannage have also been shown by Jørgensen[29] to be particularly helpful in illustrating the practicalities of the method of feeding pigs. Swineherds are shown beating trees to dislodge the nuts, shaking the trees or climbing them to knock down the mast to foraging animals (Figure 3).

Beyond pictorial representations, William Gilpin's late eighteenth-century account of pig-keeping in the New Forest surely holds echoes of the medieval practice. He shows the swineherd's first step was to find part of the forest that was well watered and had plenty of acorns and beech nuts. He next wattled a slight circular fence around a spreading mast tree,

[21] S. H. King, 'Sussex', in Darby and Campbell, *Domesday geography,* pp. 444–5; C. W. Lloyd, 'Surrey', in Darby and Campbell (eds), *Domesday geography*, pp. 386.

[22] Margetts, 'Wandering herd'; Margetts, 'To browse and mast', p. 220.

[23] Darby, *Domesday geography,* pp. 144, 200, 256.

[24] F. Liebermann, *Die Gesetze der Angelsachsen* (1903).

[25] S. Harvey, 'Domesday England', in E. H. Hallam (ed.), *The agrarian history of England and Wales* [hereafter *AHEW*], II, *1042–1350* (1988), p. 127.

[26] Harvey, 'Domesday England', pp. 128–9.

[27] K. P. Witney, 'The woodland economy of Kent, 1066–1348', *AgHR* 38 (1990), p. 22; U. Albarella, 'Pig husbandry and pork consumption in medieval England', in C. M. Woolgar, D. Serjeantson and T. Waldron (eds), *Food in medieval England: Diet and nutrition* (2006), p. 79; D. Jørgensen, 'Pigs and pollards: medieval insights for UK wood pasture restoration', *Sustainability*, 5 (2013), p. 389; D. Banham and R. Faith, *Anglo-Saxon farms and farming* (2014), p. 130.

[28] Jørgensen 'Pigs and pollards', p. 389.

[29] Ibid.



FIGURE 3. Harvesting acorn to feed swine; detail of a miniature from the Queen Mary Psalter (BL Royal 2 B VII)

covering it roughly with boughs and sods and filling it with plenty of litter. He then drove his herd of swine (five or six hundred strong)[30] to the enclosure, giving them a plentiful supper of acorns or beech mast, during which he sounded his horn. He then turned them into the litter, where after a long journey, and a hearty meal, they slept. The next day he turned them loose, but as evening drew on he then rained down acorns again to the sound of his horn. As time went on the pigs could wander, but got used to coming home at night or to the sound of the horn, even though they often wandered two or three miles from their sty by day.[31]

IV

As intimated above, understanding of the landscape and settlement history of south-east England has been significantly influenced by its medieval record of swine pannage. Within the region's 'marginal' *pays*, such as the Weald or Romney Marsh, settlement was often tied to pastoral exploitation, which acted as a driver of colonization based initially on seasonal usage

[30] A large herd size comparable to what is still found in the Spanish dehesa and was once found in Sardinia; A. Hadjikoumis, 'Traditional pig herding practices in southwest Iberia: Questions of scale and zooarchaeological implications', *J. Anthropological Archaeology* 31 (2012), pp. 353–64; U. Albarella, F. Manconi and A. Trentacoste, 'A week on the plateau: pig husbandry, mobility and resource exploitation in central Sardinia', in U. Albarella, and A. Trentacoste (eds), *Ethnozooarchaeology. The present and past of human-animal relationships* (2011), pp. 143–59.

[31] W. Gilpin, *Remarks on forest scenery, and other woodland views* (2 vols, 1791), II, pp. 113–15.

and subsequently on more permanent occupation. The use of the Weald as a pastoral resource, particularly for swine, has dominated scholarly understanding of how settlements evolved in ancient woodland landscapes.[32]

The progression from a seasonally intercommonable Weald of the early Anglo-Saxon period to a permanently settled Weald of the late medieval period was tied to the development of the pastoral economy as well as other factors such as lordly intervention. Nevertheless, despite the prominence of swine renders in documents such as Domesday there has been some disagreement about how important the feeding of pigs in medieval woodland really was. Most commentators have historically considered the main usage of Wealden wood-pasture to be for the pannage of swine during the Anglo-Saxon period, whereas Rackham has categorized swine pasture as 'a famous, though not very important, use of wood-pasture'.[33]

The distance between some outlying *denns* and their parent settlements (*c*.15–20 km) has led to a questioning of the nature of our past understanding and the validity of seasonal pastures for pannage.[34] Rackham has stated how pannage customs were often jocular, fanciful or even deliberately prohibitive and has questioned the practicalities of breeding animals with the aim of utilizing such an unpredictable resource as the mast crop.[35]

Modern ethnoarchaeological studies of traditional free-ranging pig husbandry have nevertheless shown that unimproved long-legged breeds were capable of being moved over substantial distances, sometimes in excess of 100 km.[36] Long-distance movement of pigs to market has also been suggested for Roman Italy on the basis of zooarchaeological evidence,[37] whereas historical evidence from Hungary and other parts of central and eastern Europe also support medieval and post-medieval long-distance movement of swine.[38]

On the question of the unpredictable nature of the mast crop, studies of traditional Sardinian pig husbandry have shown how, during a bad acorn year, pigs were driven towards areas that bore different types of mast or had experienced more successful acorn crops.[39] Although we should be wary of projecting later husbandry techniques as a model for past livestock management, such analogies help demonstrate the viability of pig transhumance and use of wood-pasture for pannage in medieval England.

Jørgensen has also challenged the notion that the unpredictability of mast was an impediment to widespread pig pannage. She has cited oak silviculture studies that demonstrate how acorn production varies from very poor to very good (mast years for the pedunculate oak occurring every two to six years), but that moderate crop sizes are just as common as extreme years. Thus in the oak woods of medieval England acorns were probably available almost every year, even though the exact amount differed annually.[40]

[32] E.g., Everitt, *Continuity and colonization*; Witney, *Jutish forest*; Hooke, 'Wealdbæra and Swina Mæst'.

[33] Hooke, 'Wealdbæra and Swina Mæst'; O. Rackham, *The history of the countryside* (1986), p. 122.

[34] D. Turner, 'Thunderfield Surrey: central place or shieling?', *Medieval Settlement Res.* 12 (1997), p. 10; D. Turner and R. Briggs, 'Testing transhumance: Anglo-Saxon swine pastures and seasonal grazing in the Surrey Weald', *Surrey Archaeological Collections* 99 (2016) pp. 165–93; Margetts, 'Wandering herd'.

[35] Rackham, *History of the countryside*, p. 122.

[36] E.g., Albarella *et al.*, 'Week on the plateau', p. 155.

[37] D. Steele, 'The analysis of animal remains from two late Roman middens at San Giovanni di Ruoti', in M. Gualtieri, M. Salvatore and A. Small (eds), *Lo scavo di S.Giovanni di Ruoti e il periodo tardo-antico in Basilicata* (1981), pp. 75–84.

[38] Zatyko, 'Seasonality'.

[39] Albarella *et al.*, 'Week on the plateau', p. 156.

[40] Jørgensen, 'Pigs and pollards', p. 392.

One further outstanding question surrounding pig pannage is whether pigs were kept in the woods only during the time of mast, or for longer periods, or even permanently. Texts, including custumals, frequently refer to droving and suggest the seasonal movement of swine. For example, William Pulayn and William Ailmer of the manor of Amberley in the South Downs were to have 'at the lord's mast in the forest all their pigs for 2*d*. each and likewise in Pubeherst. In the wood called Mennesse they shall have all their pigs at the lord's mast for nothing'.[41] 'Pubeherst' or Pephurst constituted a detached Wealden wood-pasture associated with an oval enclosure (see below).[42]

One of Robert de la Wode's obligations on the manor of Ferring (Sussex) was to: 'fetch pigs and drive them to Chichester, Aldyngbourne, Ferrynge, Amberle or Durryngewyke at his own cost and from Dorkyng to London at the lord's cost'.[43] Occasionally records show that pigs were sent to a certain district as good pannage had become available and were fattened and slaughtered there (e.g., the archbishop's 'larder' at Slindon on the South Downs.[44] Du Boulay also cites an interesting arrangement at Westgate, Canterbury, where tenants had to guard the lord's pigs in pannage.[45] The group was organized in a roster: John le Suontook took the first quarter of the year, Stephen Spicer the second, Robert Lardiner and John Mot the third, and Luke Pips, Robert Godsman and John the son of Henry Joce the fourth. As pannage only becomes available in the autumn this implies the permanent pasturing of demesne pigs in the woods. The name 'Robert Lardiner' may even signify the additional function of butchering.[46]

V

In order to help answer some of the outstanding questions surrounding the nature of medieval pig pannage and associated transhumance it is possible to look to elements of the south east's landscape. The Old English place-names of the region often came to reflect a pastoral model of settlement with names such as fold (*fald/falod*), *denn* (a forest retreat put to pastoral use), *gesell* (herdsmen's buildings) and *wic* (dairy farm or specialized settlement)[47] serving to highlight areas in which pastoral economies dominated. The Old English elements *(ge)sell* ('a shed, a shelter for animals, a herdsman's hut'), *scydd/scedd* ('a hovel, a shed, a pig-sty') are common elements in both Kent and Sussex,[48] but less so in Surrey and have been related to seasonal settlement associated with transhumance huts including those used during the time of pannage.[49] The meaning of *denn* elements has been interpreted as 'a woodland pasture,

[41] W. D. Peckham (ed.), *The chartulary of the high church of Chichester* (Sussex Rec. Soc. 46, 1942), pp. 269–70.

[42] Margetts, 'Wandering herd', p. 252.

[43] W. D. Peckham (ed.), *Thirteen custumals of the Sussex manors of the Bishop of Chichester* (Sussex Rec. Soc. 31, 1925), p. 77.

[44] Du Boulay, 'Denns', p. 80.

[45] Ibid.

[46] Ibid.

[47] Mawer and Stenton, *Place-Names of Sussex*, *Part 1*; A. H. Smith, *English place-name elements*, Part 1, *The elements A–IW, maps* (EPNS 25, 1956); A. H. Smith, *English place-name elements*, Part 2, *The elements JAFN–YTRI, index and maps* (EPNS 26, 1956).

[48] Smith, *Place name elements*, Part 2.

[49] A. Margetts, *Wealdbæra: excavations at 'Wickhurst Green', Broadbridge Heath and the landscape of the West Central Weald* (Archaeology South-East (UCL)/Surrey County Archaeological Unit Spoilheap Monograph Ser. 18, 2018); Margetts, 'Wandering herd', pp. 389–90.

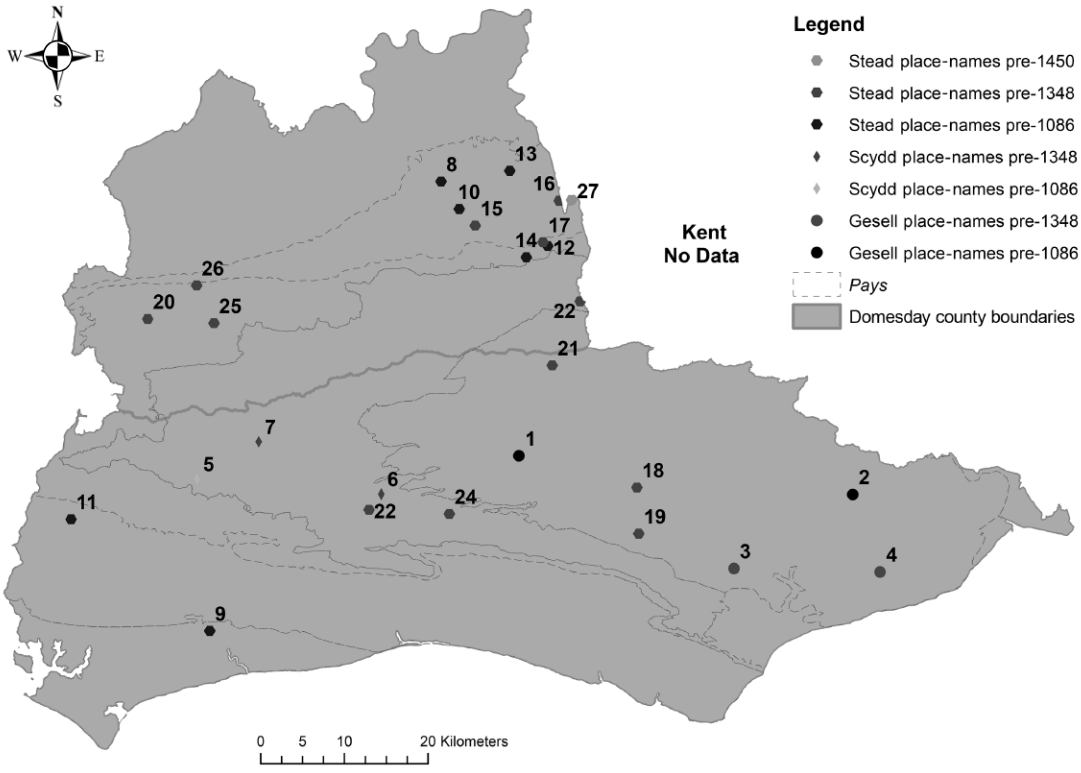


FIGURE 4. 'Shieling place-names of Sussex and Surrey recorded prior to 1450 (drawn by the author)

especially for swine'[50] and the place-name perhaps has the strongest relationship with Wealden pig pastures, despite associations with cattle and other livestock.[51] In contrast to the prevalence of *denn* place-names in Kent, major names directly related to swine in the south east are relatively rare with just three examples cited by Hallam.[52]

Important or 'major' place-names most relevant for the swine economy of the south east include those with seasonal pastoral connotations (*denn*, *falod*, *snoad*) as well as those that indicate the habitations of people engaged in the movement of livestock to the commons ('sheiling names'; *(ge)sell, scydd/scedd*, *stead*). Important place-names containing these elements were mapped for those historic counties of the south east that are provided with an English Place-Name Society (EPNS) volume (Sussex and Surrey; Figures 4 and 5). No EPNS volume yet exists for Kent so that county was omitted from the study. The bold numbers provided in brackets after a place-name (e.g., Buxshalls (**1**)) refer to its entry in the accompanying Tables 1 and 2 as well as the distribution maps.

By examining Figure 4 it is obvious that major *(ge)sell* names recorded before 1450 are entirely restricted to the Sussex High Weald. The names include elements that indicate the

[50] Smith, *Place-name elements*, Part 1, p. 129.
[51] See Margetts, 'Wandering herd', pp. 423–4.
[52] H. E. Hallam, 'England before the Norman Conquest', in Hallam (ed.), *AHEW*, II, table 1.10.

TABLE 1. 'Shieling' place-names of Sussex and Surrey recorded prior to 1450 (Margetts 2020, table 4.4)

No.	*Place-name*	*Elements 'meaning'*	*County*	*Date of first recording*	*Sub-type*
1	Buxshalls	*boc, sele* 'buildings by the beechtree'	Suss.	765	Gesell
2	Drigsell	*dryhten, geselle* 'lord's hut, buildings or the like'	Suss.	1086	Gesell
3	Bemzells	*beam, sele* 'house by (some prominent) tree'	Suss.	1296	Gesell
4	Breadsell Farm	'building made of planks or boards'	Suss.	1189–99	Gesell
5	Limbo Farm/ *Palshuddes*	*Ingas, scydd* 'sheds or swine-cotes belonging to the people of Poling'	Suss.	898	Scydd
6	Bowshots Farm	*burh, scydd*	Suss.	1296	Scydd
7	Gunshot Common	*Guma, scydd* 'Guma's shed or swine-cot'	Suss.	1279	Scydd
8	Banstead	*stede* 'place where beans are cultivated'	Surr.	675	Stead
9	Binsted	'Bean stede'	Suss.	1086	Stead
10	Chipstead	*ceap, stede* 'place where a market existed'	Surr.	675	Stead
11	Elsted	*ellen, stede* 'elder-tree place'	Suss.	1086	Stead
12	Oxted	*ac, stede* 'place of oak trees'	Surr.	1086	Stead
13	Sanderstead	*sanden, stede* 'sandy place'	Surr.	880	Stead
14	Walkingstead	*stede*	Surr.	970	Stead
15	Alderstead Farm	*stede* 'probably alder place'	Surr.	1225	Stead
16	Bedlested	*byden, stede*	Surr.	1235	Stead
17	Bursted	*beorg, stede*	Surr.	1255	Stead
18	Buxted	*boc, stede 'place of beech-trees'*	Suss.	1199	Stead
19	Crockstead	*'place where crocks or pots were made'*	Suss.	1268	Stead
20	Elstead	*ellen-stede 'place of the elder-trees'*	Surr.	1128	Stead
21	Grinstead (East)	*'green place'*	Suss.	1271	Stead
22	Grinstead (West)	*grene, stede 'green place'*	Suss.	1230	Stead
23	Haxted	*heah, stede 'high place'*	Surr.	1235	Stead
24	Hickstead	*stede 'high (or highest) place'*	Suss.	1279	Stead
25	Munstead	*stede*	Surr.	12th c	Stead
26	Polsted Manor	*pol, stede 'place by the pool'*	Surr.	1160–70	Stead
27	Lusted	*lufu, stede 'place of love'*	Surr.	1402	Stead

buildings timber construction, *bēam* in Bemzells (3)[53] and *bred* in Breadsell (4)[54] as well as an association with mast bearing trees in Buxshalls (1) and with status in Drigsell, which means 'lord's hut' or similar.[55] All are located within a mile of watercourses indicating the needs of people and their livestock. In contrast to *(ge)sell* names, *scydd* names are associated with the

[53] Mawer and Stenton (eds), *Place-Names of Sussex, Part 2*, p. 480.

[54] Ibid., p. 496.

[55] Ibid., p. 458.

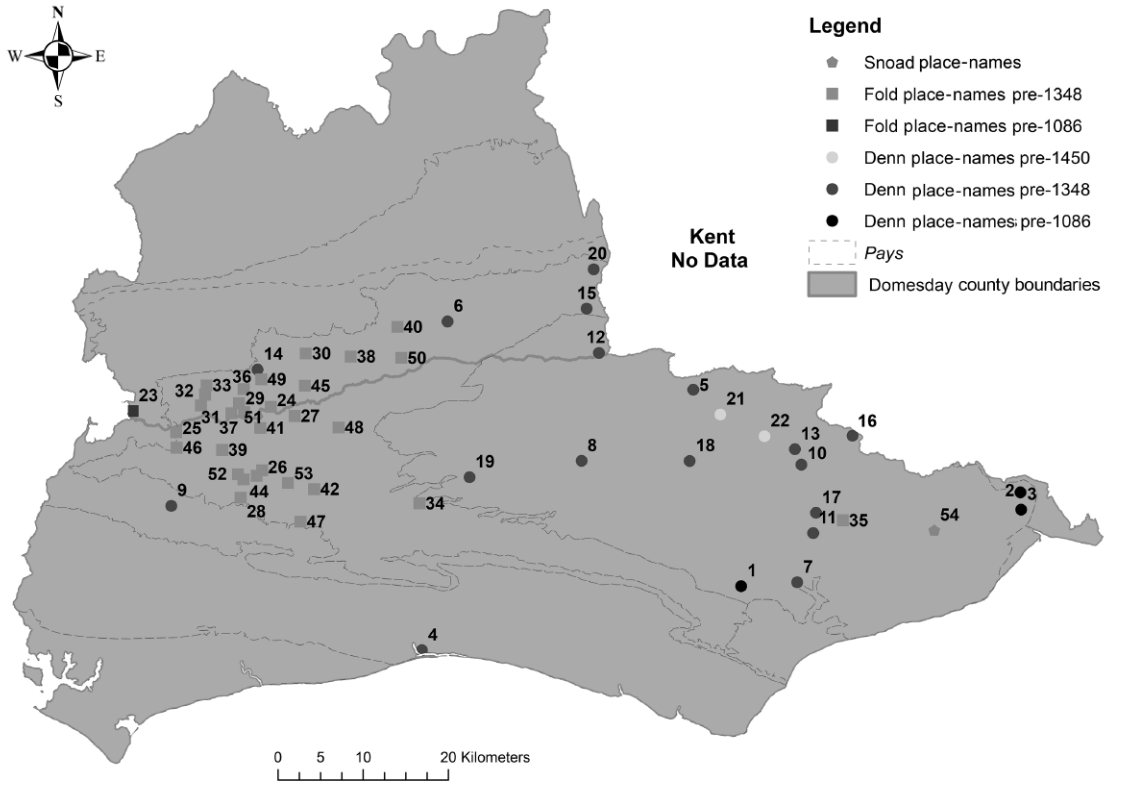


FIGURE 5. 'Den', 'Fold' and 'Snoad' place-names of Sussex and Surrey recorded prior to 1450 (drawn by the author)

Sussex Low Weald rather than the High Weald perhaps indicating localized nomenclature for 'shieling' sites between the two *pays*. They do, however, share similarities with the *gesell* names in that they too are located close to river sources; in this case Bowshots (**5**) with the Arun and Gunshot (**6**) with the Adur.

Stede place-names are more difficult to link to swine pannage and may be more strongly associated with sheep and cattle husbandry. This is possibly reflected in their early distribution, which is largely confined to the area of the North Downs. By the thirteenth century, 'steads' (from *stede*) expanded into the Weald with nine examples located in the High and Low Wealds jointly. This may, however, simply reflect the generally later date that Wealden names entered the documentary record.

In the Weald of Surrey and Sussex *denn* place-names are, in comparison to the large numbers from Kent, uncommon. Of a systematic search of the relevant EPNS volumes only 22 enter the record by 1450.[56] The '*fald/falod*' names of the region are largely located on the clay-lands of the north-western Sussex Weald and adjoining parts of Surrey This distribution

[56] Mawer and Stenton (eds), *Place-Names of Sussex Parts 1 and 2*; A. Mawer and F. M. Stenton (eds.) *The place-names of Surrey* (EPNS 11, 1934).

TABLE 2. 'Den', 'Fold' and 'Snoad' place-names of Sussex and Surrey recorded prior to 1450 (Margetts 2020, table 4.5)

No.	*Place-name*	*Elements 'meaning'*	*County*	*Date of first recording*	*Sub-type*
1	Hendon	*heah, denn* 'at the high swine- pasture'	Suss.	1086	Denn
2	Iden	*iw, denn* 'yew- tree swine- pasture'	Suss.	1086	Denn
3	Playden	*denn* 'Plega's swine-pasture'	Suss.	1086	Denn
4	Brambleden	*Den*	Suss.	1100	Denn
5	Birchden	*biercen, denn* 'swine-pasture overgrown with birches'	Suss.	1203	Denn
6	Collendean	*Cufela, denn* 'Cufela's denn or swine pasture'	Surr.	1223	Denn
7	Cowden	*cu, denn*	Suss.	1296	Denn
8	Danehill	*Den*	Suss.	1279	Denn
9	Gosdenheath	*gos, den*	Suss.	1249	Denn
10	Hammerden	*Den*	Suss.	1279	Denn
11	Haselden	*denn* 'hazel swine-pasture'	Suss.	1200–5	Denn
12	Lullenden Farm	*denn, ing* 'swine pasture of Lulla or of his people'	Surr.	1296	Denn
13	Maplesden	'denn of the maple-tree'	Suss.	1190	Denn
14	Painshill Farm (formerly Dunhurst)	*denn, hyrst*	Surr.	1235	Denn
15	Puttenden Farm	*Puda, denn* 'Puda's swine pasture'	Surr.	1198	Denn
16	Ringden Wood	*hring, denn*	Suss.	1271	Denn
17	Rounden	*ruh, denn* 'at the rough swine pasture'	Suss.	1197	Denn
18	Rumsden Farm	*rum, denn* 'spacious swine- pasture'	Suss.	1295	Denn
19	Thorndean Farm	*denn* 'thorny woodland pasture'	Suss.	1288	Denn
20	Stockenden Farm	*denn* 'stony swine pasture'	Surr.	1312	Denn
21	Danegate	*dun or den*	Suss.	1428	Denn
22	Riseden	*hris, denn 'swine-pasture overgrown with brushwood'*	Suss.	1438	Denn
23	Pitfold House	*pytt, fal(o)d 'fold in the pit or hollow'*	Surr.	909	Fold
24	Alfold	*fal(o)d 'the old fold'*	Surr.	1227	Fold
25	Barfold Farm	*burh, falod*	Suss.	1300	Fold
26	Barkfold	*falod 'Beadeca's fold'*	Suss.	1279	Fold
27	Barnsfold	*bern, falod*	Suss.	1279	Fold
28	Buckfold Farm	*boc, falod 'beechtree fold'*	Suss.	1273	Fold
29	Burningfold Hall	*ingas, fal(o)d 'fold of Brūn's people'*	Surr.	1177	Fold
30	Canfold Farm	*fal(o)d*	Surr.	1298	Fold
31	Cherfold	*cirice, fal(o)d 'church fold'*	Surr.	1298	Fold
32	Chiddingfold	*'fold (or open land) of the dwellers in the hollow'*	Surr.	1130	Fold
33	Cotterfold	*'fold of the cottars'*	Surr.	1199	Fold
34	Cowfold	*Falod*	Suss.	1255	Fold

TABLE 2. *continued*

No.	*Place-name*	*Elements 'meaning'*	*County*	*Date of first recording*	*Sub-type*
35	Darwell Furnace Farm	*deor, fald 'deer- fold'*	Suss.	1294	Fold
36	Dunsfold	*falod 'Dunt's fold'*	Surr.	1241	Fold
37	Durfold	*deor, fal(o) d 'animal enclosure'*	Surr.	1295	Fold
38	Fishfold Farm	*fisc, fal(o)d*	Surr.	1241	Fold
39	Frithfold Farm	*fryhÞ, falod 'wood fold'*	Suss.	1280	Fold
40	Henfold	*henne, falod 'hen fold'*	Surr.	1250	Fold
41	Ifold House	*Eg*	Suss.	1296	Fold
42	Kingsfold	*Falod*	Suss.	1279	Fold
43	Linfold	*lind 'lime-tree'*	Suss.	1239	Fold
44	Petsalls Copse	*pytt, falod 'fold of or in the pit or hollow'*	Suss.	1280	Fold
45	Pollingfold Farm	*ing, fal(o)d 'fold of the people of Poll(a)'*	Surr.	1279	Fold
46	Ramsfold Farm	*Falod*	Suss.	1279	Fold
47	Redfold	*Falod*	Suss.	1296	Fold
48	Slinfold	*slind 'fold on the slind or slope'*	Suss.	1165	Fold
49	Stovoldshill Farm	*stan, fal(o)d 'stone fold'*	Surr.	1229	Fold
50	Temple Farm/ Temple Elfande	*ellen, fal(o)d 'elder-tree fold'*	Surr.	1235	Fold
51	Upper Ifold	*eg, fal(o)d 'fold by or on the well-watered land'*	Surr.	1241	Fold
52	Crawfold Farm	*crawe, falod*	Suss.	1310	Fold
53	Orfold Farm	*ofer, falod 'fold by the bank'*	Suss.	1338	Fold
54	Snathurst Wood	*snad, hyrst*	Suss.	1422	Snoad

was clearly apparent to the writers of the EPNS volumes[57] and it seems that this concentration of names denote similar outlying pastures to the Kentish '*denns*'.[58] That fold names were associated with early medieval communal use of the Wealden forest is reflected in the names Burningfold (**29**) and Chiddingfold (**32**) which both contain the Old English *ing* element[59] and it seems that individuals (Barkfold [**26**], Canfold [**30**]) and even kings (Kingsfold [**42**]) were keen to claim these Wealden pastures. The use of 'folds' extended to lower sections of society too as evidenced by the place-name Cotterfold (**33**) which means 'fold of the cottars'[60] and even to ecclesiastics as shown by Cherfold (**31**) and Temple Farm/Temple Elfande (**50**).

Only a single '*snoad*' name was encountered within Sussex and Surrey, Snathurst Wood (**54**) in the eastern Sussex Weald. A '*snoad*' was an area severed from the common use of the forest

[57] Mawer and Stenton (eds), *Place-Names of Sussex*, *Part 2*, p. 550.

[58] P. Brandon, *The Sussex landscape* (1974), p. 72.

[59] Mawer and Stenton (eds), *Place-Names of Surrey*, pp. 186–7, 235.

[60] Ibid., p. 188.

and these place-names denote a contrasting type to the '*denns*'. Names in *snoad* appear to be of earlier derivation from a time before *denns* were appropriated or had become manorial. This was a time when the only parts of the forest that were not intercommonable were the parts owned by the early Saxon kings.[61]

Examination of the place-names of Sussex and Surrey has shown the High and Low Weald to be the only *pays* where names indicative of the transhumance huts of the type thought to be used in seasonal swine pannage existed. Similarly, the communal seasonal pastures indicated by the '*fald/falod*' names of the region also correspond with the heavily wooded clay lands of the Low Weald where wood-pasture was prevalent and swine could be pastured away from the community's corn-land. As well as helping confirm where pannage grounds may have been located, the place-name data also demonstrated something of the nature of transhumance huts, the status of people engaged in seasonal pasturing and the importance of water.

VI

Droveways were essential for the movement of swine during the medieval period. These routeways linked parent settlements with seasonal pastures as well as common and areas of Forest and Chase (medieval hunting grounds that were also often used for the grazing of livestock). The origin of south east England's droveways is still poorly understood, although this is beginning to change with archaeological excavation, the development of scientific dating programmes and detailed studies.[62] By examining the region's routeway layout the articulation of the south east's landscapes can potentially be realized, including in relation to the seasonal movement of animals.

Past study of the patterns of old droveways in Kent, Sussex and Surrey has shown that they clearly reflect the system of parent and outlier linked via transhumance.[63] Due to the Weald's broadly elliptical shape, roads have tended to radiate from the central high ground towards the region's circumference (see Figure 6). In order to both illustrate the south east's medieval road network, and to subsequently highlight the droveways utilized by swineherds, a staged process was devised. This was based on a transect of the south east used in an earlier study[64] (Figure 7). The historic routeway layout is shown in Figure 8 and is briefly summarized below.

Routeways developed over a long period of time and were significantly influenced by environmental factors such as geology, hydrology and topography. The varied landscapes of the south east gave rise to distinctive physical routeways formed in contrasting ways, but based largely on the movement of animals. In areas of rising ground with underlying geologies prone to erosion, deep holloways developed. By contrast, in areas of lower relief where heavy soils

[61] Witney, *Jutish forest,* pp. 61–3.

[62] Margetts, *Wealdbēra*; Margetts, 'Wandering herd', ch. 5; M. Bell, *Making one's way in the world: The footprints and trackways of prehistoric people* (2020).

[63] Witney, *Jutish forest*, pp. 132–9; Brandon, *Sussex landscape*, pp. 73–4; J. Blair, *Early medieval Surrey: Landholding, church and settlement before 1300* (1991), pp. 6, 14–5.

[64] Margetts, 'Wandering herd', ch. 5.

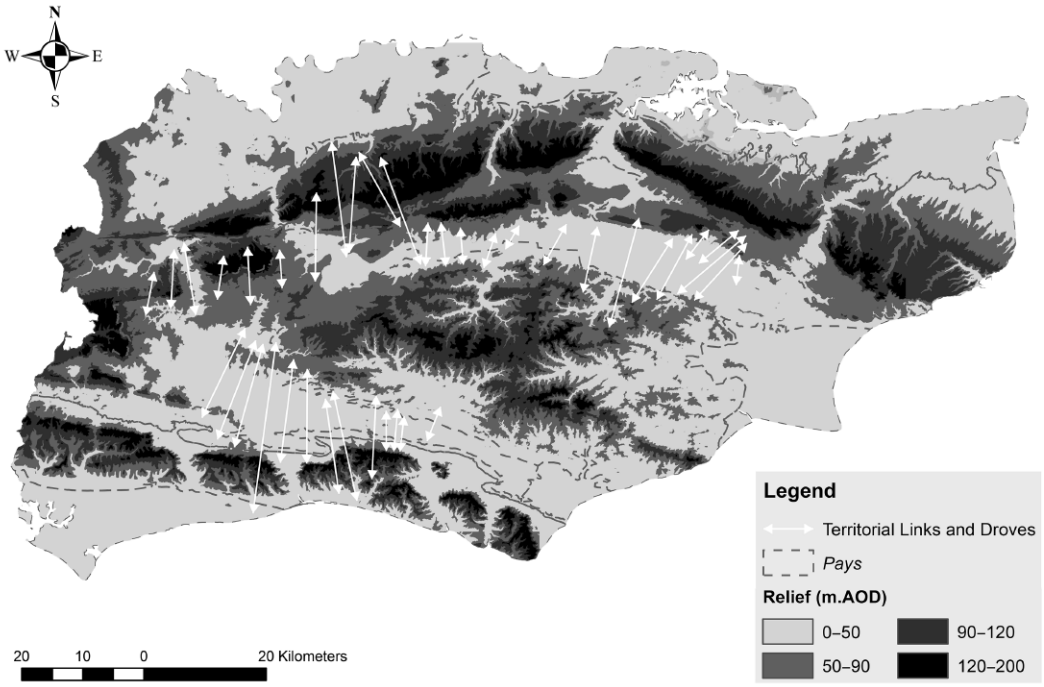


FIGURE 6. Simplified mapping of territorial links and droves of the south east showing the dominant pattern around the circumference of the Weald
(drawn by the author after P. Brandon, *The Sussex landscape* (1974), fig. 5; K. P. Witney, *The Jutish forest: a study of the Weald of Kent from 450 A.D. to 1380 A.D.* (1976), fig. 14; J. Blair, *Early medieval Surrey: Landholding, church and settlement before 1300* (1991), fig. 5)

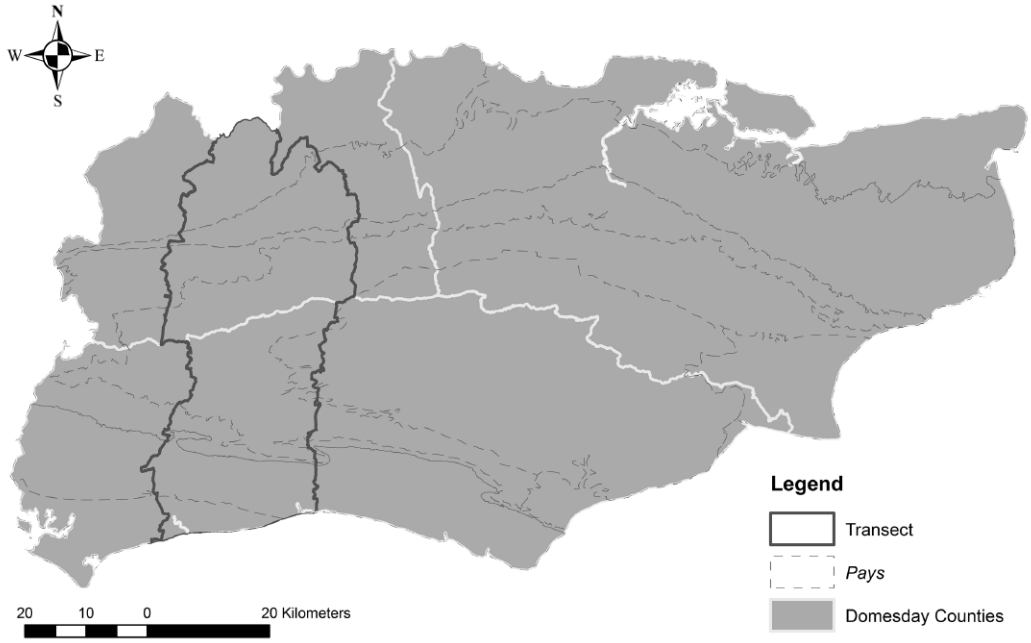


FIGURE 7. Main study area showing location of transect (drawn by the author)

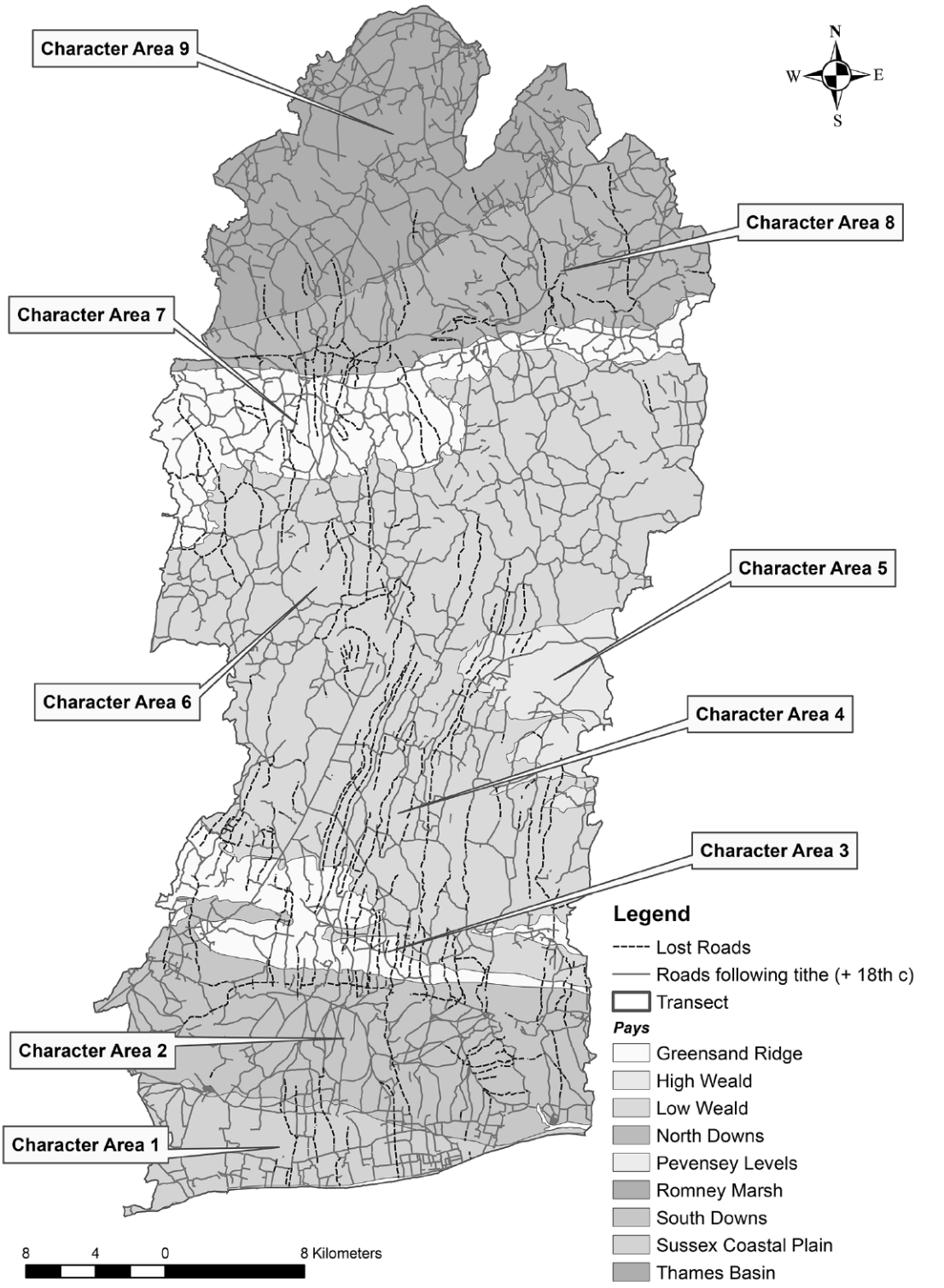


FIGURE 8. The medieval road system in relation to the *pays* of the transect study area (drawn by the author)

inclined to waterlogging existed, wide but relatively straight routes often evolved. These were habitually bounded by hedgebanks and extensive areas of roadside waste.

Local choices in land use, as well as varied systems of land management and resource exploitation may partially account for the dramatic contrasts in routeway arrangements found within character areas of the transect study area (Figure 8). Some roads appear to have been deliberately sited to allow access to extensive pastoral resources, including wood-pasture and pannage grounds. These routeways were characterized by a regular pattern of parallel roads that extended from the scarp foot of the South Downs and the parent settlements of the 'Sussex Spring-line', across the Greensand Ridge and southern Low Weald to the north-western Low Weald and the edges of the 'uplands' of the High Weald.

The parallel routes appear to be related to a systematic and large-scale division of the landscape connected to the region's banded resources and their exploitation. This pattern could be the result of early medieval multiple estates, but earlier origins are also possible. Such landscapes are most often associated with the intensively studied co-axial field-systems which have been identified in a number of areas of England.[65] These regular patterns of parallel routes bounding strip-like areas of loosely co-axial fields that characterize the southern Low Weald, contrasted markedly to the irregular more roughly organized patterns bounding polygonal or sub-oval intervening spaces of the north-western Low Weald or the sparse routeways that traverse the High Wealden plateaus (Figure 8).

It was postulated that the differences found within these contrasting road systems owes much to hydrology and topography, however, it is also possible that differences in land-use approach also played a role. The north-western Low Weald and the fringes of the High Weald are noted for their parochial detachments, themselves a legacy of earlier seasonal pastures. The High Weald was dominated by medieval Forest and Chase accounting for the sparse routeways, but was edged by small commons intimately related to droveways. Additionally, the north-western Low Weald is roughly analogous with the seasonal 'fold area' identified by Chatwin and Gardiner[66] and highlighted by the place-name evidence above. This well-wooded country possessed a higher number of commons than its more regular Low Wealden counterpart and place-names linked to seasonal settlement were prevalent. It may be that this area developed in some way differently to its south-easterly neighbor via differing forms of woodland exploitation.[67]

In summary, examination of the historic routeways of a portion of the south east demonstrates the network of roads that would have been available to medieval swine herders engaged in pannage and seasonal transhumance. It may be no coincidence that a regular layout of droveways led from the primary settlement zone fringing the Weald to the seasonal pastures within the Wealden interior highlighted by the place-name evidence above.

[65] T. Williamson, *Environment, society and landscape in early medieval England: Time and topography* (2013), pp. 93–8.

[66] D. Chatwin and M. Gardiner, 'Rethinking the early medieval settlement of woodlands: evidence from the western Sussex Weald', *Landscape Hist.* 27 (2005), pp. 31–49.

[67] Ibid.

VII

Within the south east, particularly within the Weald, a class of oval can be found.[68] The ovals are thought to relate to early intakes of land within relatively open unappropriated landscapes. They measure from *c.*9–60 hectares (*c.*22–150 acres), with the majority being over 40 hectares (100 acres). Chatwin and Gardiner[69] found this category of enclosure tended to be surrounded by roads and tracks aligned in a similar direction, to bear a resemblance to, but have no evidence of being, medieval parks, and often to become tenurially distinct by the late medieval period. They were shown to have a distribution that correlates with that of the Anglo-Saxon *fald/falod* names of the region which occur largely in the north-western Sussex Weald and across the border with Surrey. Thus they may be linked to the early, seasonal, pastoral origins of Wealden colonization.

Oval enclosures are a reasonably widespread component of the historic landscape.[70] On the whole they appear to predate the more extensive enclosure of the surrounding countryside and comprise areas distinct from the more characteristic land division (or lack thereof) which had, by the late medieval period, come to typify the areas in which they are found. It is possible therefore that many of the enclosures relate to a stage of colonization when older intercommonable pastures were being appropriated either by estates or so-called folk groups. In the downland landscapes of Sussex and Surrey, oval enclosures are present but uncommon. Such enclosures appear to be a more common feature of traditionally wooded environments of areas such as the Weald or western South Downs. The absence of oval enclosures from the High Weald may be a product of the relatively reduced size of the examined *pays* within the transect study area.

Twenty-six oval enclosures were encountered during a transect investigation of the south east.[71] They appeared to be intimately tied to waterside locations either beyond or on the edge of tidal reaches, an association which looks to have influenced both their siting and formation. The choice to be near areas with a ready water supply may account for the generally low-lying nature of many of the sites, although the vast majority occupied the slopes of rising land. Apart from the downland examples, these slopes are often south facing, possibly a product of land appropriation prior to more widespread colonization of the surrounding landscape. The areas in which oval enclosures are found are characterized by irregular routeway layouts rather than the regularly spaced roads that exist on these area's fringes. Such a situation may indicate that the ovals were the destination of regularly spaced droveways that characterize the surrounding zones. This would certainly bear out the place-name associations which show a broad correspondence with those elements which have seasonal connotations (i.e., *wic* and *fold/falod*). Thus indicating that many of the ovals probably existed during the Old English period. Indeed, the name Ringden (AD 1271, *hring, denn*;[72] *hring* meaning 'a ring,

[68] J. English, 'A possible early Wealden settlement type', *Medieval Settlement Research Group Annual Report* 12 (1997), pp. 5–6; Chatwin and Gardiner, 'Rethinking'; Margetts, *Wealdbēra*; Margetts, 'Wandering herd', ch. 6.

[69] Chatwin and Gardiner, 'Rethinking'.

[70] Margetts, 'Wandering herd', ch. 6.

[71] Ibid.

[72] Mawer and Stenton (eds), *Place-Names of Sussex, Part 2*, p. 453.

a circle', used of something circular'),[73] suggests an oval form to *denn* related landscape elements. Given the cumulative evidence it is probable that many of these relict oval features are related to early medieval seasonal pastures. Some or all of these pastures at one time or another were very likely used for the pannage of swine.

VIII

In the section on place-names above it has already been demonstrated that transhumance shelters would have been required by those engaged in seasonal pannage activities. Rare glimpses of these seasonal huts are found within Anglo-Saxon charter evidence with references such as those to 'the swineherds'' sheds of the *Palingas* or people of Poling (AD 953).[74] In the south east, *gesells, scydds,* or *schittas* may mark the Old English equivalents of shielings or *hafods* of the north and west of Britain.

New evidence gleaned from the author's excavations for Archaeology South-East (UCL Institute of Archaeology) has begun to shed light on the possible form of Wealden transhumance shelters and seasonal herders' huts. At Wickhurst Green within a detached seasonal pasture characterized by an oval enclosure two small buildings and a sub-rectangular livestock pen were encountered. The cluster of archaeological features bordered a stream.[75] The pen was defined by shallow ditches that produced a single sherd of Anglo-Saxon pottery (dating from the mid-eighth to early eleventh century; Figure 9).

The buildings would have been constructed in timber measuring roughly 3 by 4 m. In plan they resembled the stone-built shielings, *hafads,* and booley huts of northern and western Britain. It is likely they represent the habitations of graziers, those herders who were using the animal pen whilst pasturing at the Wickhurst. Strengthening the case for this early medieval seasonal activity was evidence of a further possible building located to the north west. This example had a depressed floor and was associated with a possible hearth made from a broken piece of Roman tegula. It also produced a single sherd of pre-Conquest Anglo-Saxon pottery and a nearby pit was filled with burnt bone and charcoal radiocarbon dated to the seventh to tenth centuries.[76] The limited quantity of pottery sherds retrieved from these features may be a reflection of the complete impracticality of ceramic vessels for those engaged in transhumance. Horn, leather, and wooden containers are lighter and less prone to breakage, and are far more suitable for people on the move.

The buildings evidence described above helps illuminate the kind of wooden transhumance huts that would have been occupied by those engaged in seasonal pasturing during the high point of Wealden swine pannage. It is likely that the evidence indicates thatched, post-built structures, with panels constructed of wattle and daub. The example with the depressed floor is reminiscent of sunken-feature buildings, isolated examples of which have been interpreted elsewhere as seasonal herders' huts. Though too much emphasis should not be placed on a single site, the evidence appears to demonstrate that two distinct types of medieval

[73] Smith, *English place-name elements*, Part 1, p. 265.
[74] Sawyer, *Anglo-Saxon charters*, Charter 562.
[75] Margetts, *Wealdbœra*, pp. 150–5; Margetts, 'Wandering herd', p. 388–90.
[76] Margetts, *Wealdbœra*, pp. 150–5.

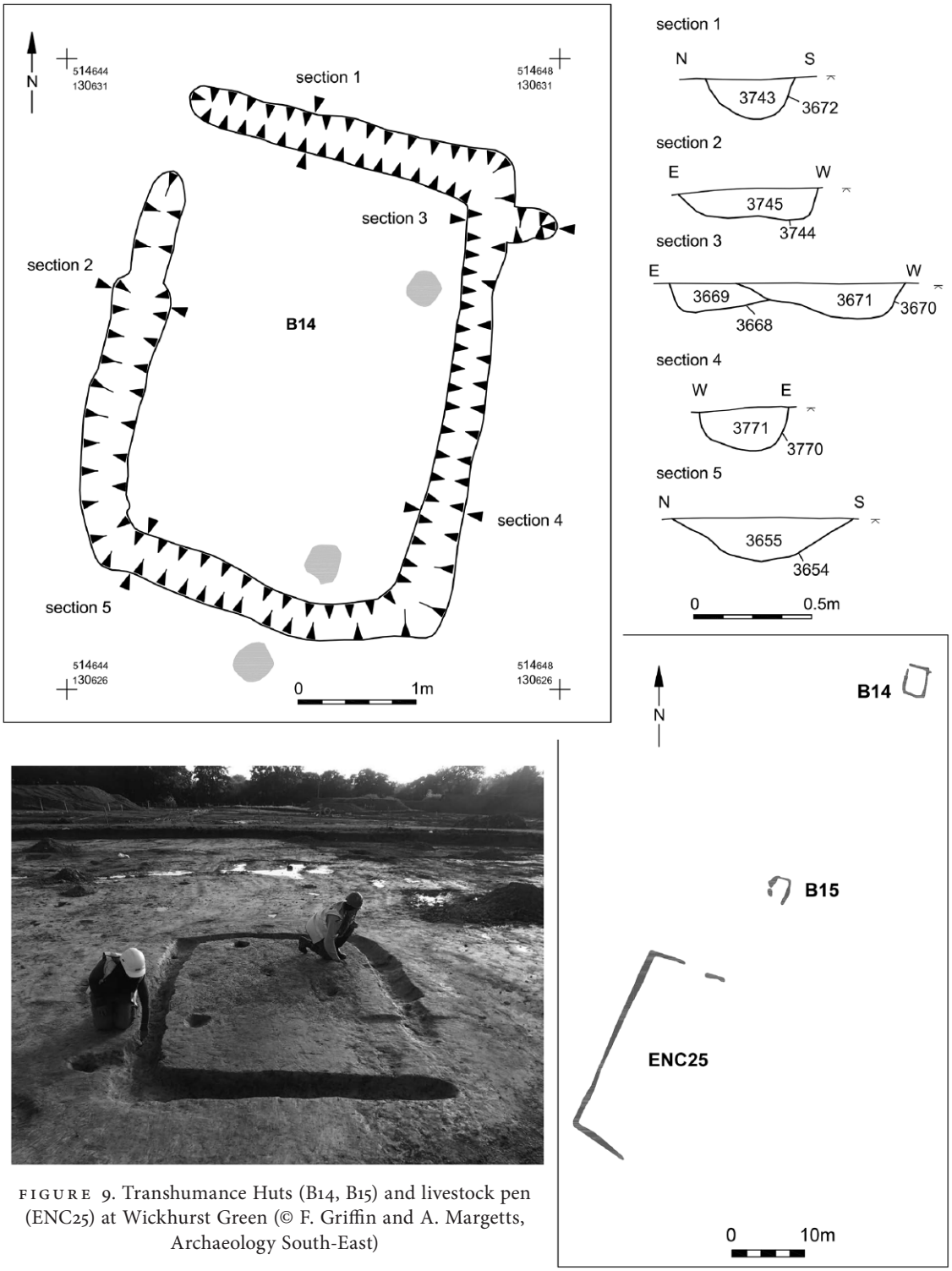


FIGURE 9. Transhumance Huts (B14, B15) and livestock pen (ENC25) at Wickhurst Green (© F. Griffin and A. Margetts, Archaeology South-East)

transhumance hut may have been exploited by swine herders in this part of England. Examples with depressed floors and small rectangular buildings constructed of wattle and daub panels and timber uprights.[77]

The word *(ge)sell* ('a shed, a shelter for animals, a herdsman's hut') is only found in charter place-names.[78] The meaning 'collection of sheds' is implied by the prefix *ge,* which is used for forming nouns with a collective sense.[79] In Kent there are instances where the element is combined with names indicating swine *(e.g.* Boarzell, *bar,* 'boar'), in Sussex with mast-bearing trees (Buxshall, *boc,* 'a beech-tree') and in Surrey with dirt (Horsell, Surrey, *horu,* 'filth, dirt'). It is unlikely the huts would have stood in isolation. As well as the prefix *ge,* names such as Wormshill (Kent, *weorn,* 'multitude') indicate they occurred in groups, some of which may have been large. The words are often combined with place-name elements with topographic or enclosure meanings[80] and appear to be associated with wooded places held in common.[81] They are associated with woodland pasture *(denbrera*),[82] especially for swine *(pascua porcorum*).[83]

IX

As well as demonstrating the pervasive nature of pig-keeping in the documentary evidence of south-east England, the exploration above also serves to illustrate something of the infrastructure and mechanics of seasonal pig husbandry. So what of the remains of medieval pigs themselves? What do excavated animal bone assemblages tell us of the degree of pork consumption in this part of medieval England?

In order to test our understanding of the south east's record of medieval swine pannage it is possible to compare and contrast the bone assemblages of the three major domesticates (cattle, sheep/goat and pig) across the region. This with a view to examining if the regional emphasis placed on swine holds up and how consumption changed over time. The analysis was based on excavated bone assemblages gathered from Sykes's *The Norman Conquest: a zooarchaeological perspective*, Archaeology South-East's project database, published site reports and the Archaeology Data Service's grey literature report library.[84]

In total, 87 animal bone assemblages were examined across the medieval period. The number of assemblages by period and *pays* are recorded in Table 3. An even spread of assemblages across the landscape zones is obviously more desirable in terms of giving a representative picture of the region. Within the study of animal bone assemblages, a minimum of 100 identifiable fragments are required to be statistically reliable, although assemblages of over 500 fragments are preferred. The emphasis here is to group data to illuminate the relative importance of regional medieval pig husbandry. As a result, the individual sizes of site assemblages are less

[77] Margetts, 'To browse and mast'.

[78] Smith, *English place-name elements*, Part 2, pp. 117–18.

[79] Smith, *English place-name elements*, Part 1, p. 197.

[80] See examples in Smith, *English place-name elements*, Part 2, p. 115.

[81] E.g. Sawyer, *Anglo-Saxon charters*, Charters 104 and 562.

[82] Ibid., Charter 425.

[83] Ibid., Charter 562.

[84] N. J. Sykes, *The Norman Conquest: A zooarchaeological perspective* (2007); the data can be found in Margetts, 'Wandering herd', appx 4–10.

TABLE 3. Medieval animal bone assemblages from the three major domesticates from the various *pays* of the south east

Pays	*Early medieval (AD 410–1066) no. assemblages () = >100+*	*High medieval (AD 1066–1348) no. assemblages () = >100+*	*Late medieval (AD 1348–1500) no. assemblages () = >100+*
Coastal Plain	1	7 (4)	3 (2)
Greensand Ridge	2 (1)	3 (2)	2 (2)
High Weald	0	4 (1)	4 (1)
Low Weald	0	4 (2)	4 (3)
North Downs	1 (1)	5	1
North Kent Plain	8 (2)	4 (3)	1
Pevensey Levels	0	2 (1)	1
Romney Marsh	0	3	2
South Downs	7 (3)	7 (3)	2 (2)
Thames Basin	2 (2)	5 (3)	2
Total	21 (9)	44 (19)	22 (10)

important. This said, the number of assemblages of over 100 fragments in a given group are shown in the table as to some degree this effects the reliability of the data.

For reasons of assemblage reliability and geographical spread the high medieval data should be considered the most reliable. Though all of the period datasets suffer from just under half of the information being comprised of small assemblages, the early medieval material also suffers in terms of the number of *pays* represented.

In examining the data it must be remembered that most zooarchaeological records are retrieved from settlement sites and are not necessarily representative of the animals that were actually being grazed in the surrounding landscape. Whilst assemblages from low status rural sites maybe reasonably representative of local pastoral conditions or cultural trends, those derived from sites belonging to the seigneurial or ecclesiastical elite could have been drawn from vast estates. Sites belonging to lay lords also had a tendency towards specialization and being geared towards the local or regional market. The remains of animals found in urban assemblages or at castle sites may have been brought on the hoof from a much wider catchment area prior to slaughter. The number of assemblages by period and settlement type are shown in Table 4.

What must also be recognized is that relative percentages of the various domesticates do not directly translate into the different proportions of animals consumed. Cattle can often be over-represented, as their large, robust bones tend to survive better in the archaeological record than those of smaller species.[85] It is also known that pigs have a larger number of bones than cattle or sheep and that animals kept for their meat were often killed young leading to

[85] T. O'Connor, 'Animal husbandry', in H. Hamerow, D. A. Hinton and S. Crawford (eds), *The Oxford handbook of Anglo-Saxon archaeology* (2011), pp. 88.

TABLE 4. Assemblages by period and settlement type

Settlement type	*Early medieval (AD 410–1066)*		*High medieval (AD 1066–1348)*		*Late medieval (AD 1348–1500)*	
	No. assemblage	*Total fragments*	*No. assemblage*	*Total fragments*	*No. assemblage*	*Total fragments*
Towns	3	380	22	33,009	14	4483
Monastic	0	0	2	383	1	164
Castle	0	0	2	3189	2	963
Manorial	0	0	5	679	0	652
Rural	18	9148	13	3304	5	773
Total	21	9528	44	40,564	22	7035

an over-representation compared to livestock kept into maturity for products such as wool and milk.[86] A further aspect of bone assemblages that is worthy of consideration is the large differences in the body sizes of cattle, sheep and pigs. This must be taken into account when assessing the relative amount of beef, mutton and pork in the diet.[87] The total fragment counts of the combined animal bone assemblages for each of the three major domesticates is shown in Table 5 alongside the relative proportions displayed as a percentage. This data is also represented on Figure 10.

In choosing a statistical method of collecting the data, fragment counts or Number of Identified Specimens (NISP) are the most frequently used methods of quantifying bones by species from archaeological sites and syntheses have most often been produced on this basis.[88] These raw fragment counts usually exaggerate the importance of cattle as their large bones tend to fragment into more identifiable pieces, while estimations based on the other method of quantification, Minimum Numbers of Individuals (MNI), tends to produce a bias towards higher levels of sheep/goat and pig.[89] As the majority of animal bone reports only provide a simple fragment count or Number of Identified Specimens (NISP), these are the data utilized here. For the reasons outlined above, a selection 'for' cattle and 'against' sheep should be assumed for all assemblages covered by this investigation.

The combined assemblages provided by this study have some significance and in the future hold potential to be used in much wider and more sophisticated studies (e.g., isotopic, age at slaughter and biometric analysis), but for a simple illustration of taxonomic proportions the combined assemblages provide us with a superficial indication of the relative importance of pigs in the south east over the medieval period. With all the caveats provided above in mind, the data shows that pigs were most important during the early medieval period. That importance declines during the high medieval period before a slight resurgence towards the end of the middle ages.

[86] S. Rippon, *Making sense of an historic landscape* (2012), p. 242.

[87] A. Grant, 'Animal Resources,' in G. Astill and A. Grant (eds), *The countryside of medieval England* (1998), pp. 162.

[88] Sykes, *Norman Conquest*, p. 9.

[89] Ibid., p. 28.

TABLE 5. The combined number of fragments and relative proportions of the three major domesticates of medieval south-east England by period

	Cattle		*Sheep*		*Pigs*		*Total*
	No. of fragments	*Cattle %*	*No. of fragments*	*Sheep %*	*No. of fragments*	*Pigs %*	
Early medieval	2848	30.0	4173	44.0	2507	26.0	9528
High medieval	16,250	40.0	17,801	44.0	6513	16.0	40,564
Late medieval	3410	48.5	2399	34.0	1226	17.5	7035

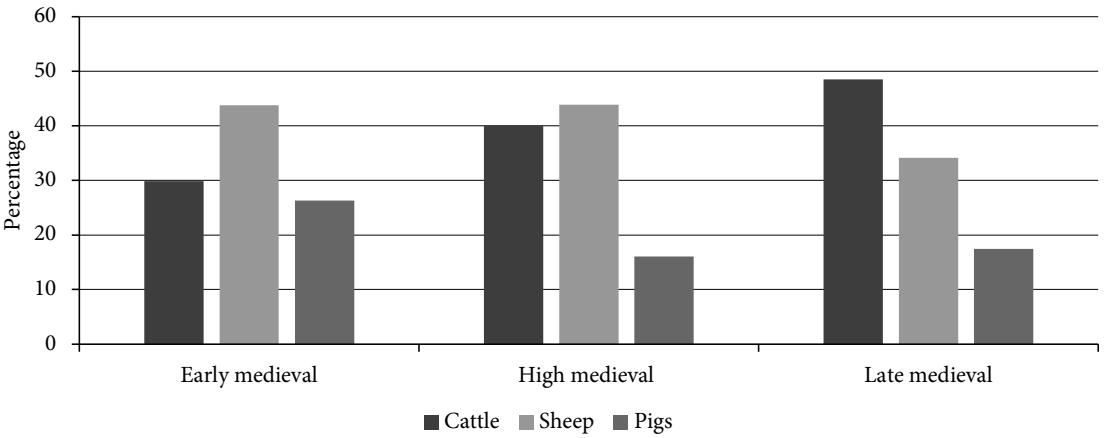


FIGURE 10. The relative proportions of the three major domesticates of medieval south-east England by period

The early medieval evidence supports the historical record of the importance of contemporary pig husbandry within the south east. The percentage of pig remains of the combined early medieval assemblages (26 per cent) is high when compared to the combined data found in national[90] and regional overviews for the period.[91] As pointed out above, the early medieval data has clear limitations. One of these is that there are currently no early medieval animal bone assemblages known from the Weald at this time. This is a product of the acidic soils of the area, which are unconducive to the preservation of bone, but also a historical lack of fieldwork in the Weald and the largely seasonal usage of this *pays* during Anglo-Saxon times.

More data and more sophisticated analysis are clearly needed to make firmer judgements on how well animal bone assemblages reflect the early medieval record of pig pannage, but as a demonstration of the importance of pig in the diet of communities that fringe the Weald, this basic study has some value. As we would expect, consumption of pig appears to have been

[90] 24%, calculated from the data contained in T. O'Connor, 'Livestock and animal husbandry in early medieval England', *Quaternary International* 346 (2014), pp. 109–118.

[91] M. Holmes, *Southern England: A review of animal remains from Saxon, medieval and post-medieval archaeological sites* (Historic England Res. Rep. Ser. 08/2017, 2017), p. 27.

important on low status rural sites, especially those in the primary settlement zone that had rights of common in the Weald.

The reduction of pig consumption during the high medieval period may reflect known patterns in the decline of the pannage system following its climax in the tenth and eleventh centuries. The diminishing number of swine can be attributed to the restriction of pannage rights, the increasing profitability of cattle and sheep and the decline in woodland cover as more of the Weald was given over to permanent settlement. The new-found value placed on the regional sheep and cattle economy is apparent as the relative proportions of these domesticates (40 and 44 per cent respectively) exceeds what would be expected nationally (38 per cent for both species).[92]

In contrast to our perception of the regional importance of pigs, high medieval swine consumption (16 per cent) actually fell below what would be considered normal nationally (24 per cent[93]). Whilst this may seem strange given the historical records that indicate the continuation of Wealden pannage until the fifteenth century, the numbers are probably more a reflection of the relative importance of both downland sheep-corn husbandry and the cattle economy at this time. When examining the data in more detail, the Greensand Ridge, Low and High Weald (areas in which we would expect pig consumption to be high), all have proportions of pig remains that are in excess of Sykes's national average.[94] Though in places these *pays* suffer from small assemblage sizes, the data likely reflects significant regionalization in the livestock economy. More animal bone assemblages from these areas are certainly required before any firmer conclusions can be made.

There was an increase in the importance of both cattle and pig during the late medieval period. The increase in cattle consumption is in line with known changes in the livestock economy that resulted from demographic decline and a switch in emphasis from arable to pastoral farming. The late medieval importance of cattle was a product of the increase of beef in the diet and the decline in demand for wool.[95] The increase in pigs was potentially tied to evidence being drawn from urban sites and the keeping of swine in backyard plots and gardens, particularly in the High Weald.[96] The evidence of good numbers of pigs from Romney Marsh and the Pevensey Levels by contrast, possibly reflects the medieval importance of wetlands for the keeping of swine on grass (see above).

X

The density of tree cover within the Weald and the common occurrence of oak, beech and other mast-bearing trees meant that wood-pasture for swine was extensive enough for it to still be worthwhile into the later medieval period. Nevertheless, historical evidence indicates it was in the early medieval period that the practice was most important. Pig-keeping appears to have been prevalent in the south east during the eleventh century.[97] The viability of the Weald

[92] N. Sykes, 'Animals, the bones of medieval society', in R. Gilchrist and A. Reynolds (eds), *Reflections: 50 Years of medieval archaeology, 1957–2007* (2009), pp. 347–61, fig 17.1.

[93] Ibid.

[94] Ibid.

[95] Margetts, 'Wandering herd', p. 432.

[96] Ibid., pp. 356–7.

[97] Harvey, 'Domesday England', p. 130.

for extensive early pig husbandry is likely to have been a product of cultural and underlying environmental factors, but also potentially significant reforestation in the post-Roman era. Studies of the levels of pig consumption on Roman and early medieval sites in France and Belgium have suggested that the keeping of pigs increased in relation to the prevalence of suitable woodland habitats.[98]

Though we have demonstrated that swine renders do not equate to the numbers of pigs kept, they do provide some indication of the extent of woodland and potential pannage grounds. In the earlier medieval south east these appear to have been vast. The total pannage dues recorded by Domesday for the whole of Kent amounted to just under 7,350.[99] The renders for Sussex and for Surrey were somewhat smaller despite the combined area being twice that of the Kent Weald.[100] Population difference does not appear to be a factor here and it is possible that the wealthier population in Kent could afford to keep more pigs or that use of wood-pasture in the west was slightly different in nature.[101]

Traditional free-range pig-keeping favours the slaughter of two-year-old beasts[102] and at the time of Domesday it is very likely that most of the swine driven to the autumn woods were young animals. They belonged to ordinary husbandman, who might have one or two breeding sows, serviced by boars either shared between neighbours or belonging to the lord. That the remnants of the old forest were a seasonal home to great herds of foraging swine is apparent in the south east's documentary evidence and to a certain extent the early medieval animal bone assemblages. People who lived close to the Weald clearly took most advantage of its extensive pannage and the Greensand Ridge as well as the primary zone of settlements on the fringes of the Downs appear to have been important pig-consuming regions. The destination of the medieval pig-herder was the Anglo-Saxon seasonal pasture, sometimes characterized by an oval enclosure and often referred to as a *denn*. This article has demonstrated that in Sussex and Surrey it was the area of the north-western Weald and the fringes of the High Weald where seasonal settlements akin to these *denns* existed. These landscapes had access to extensive woodlands, were well watered and were the destination of the south east's famous pattern of droveways. It is often these areas that are testified as pannage grounds in medieval documents and it has been shown that they were a focus of place-names linked to seasonal settlement.

Analysis of animal bone assemblages demonstrates that pigs were a ubiquitous element of the south east's medieval pastoralism. Though pig consumption featured in all the *pays* of the region, it was the Weald that comprised the major resource for feeding swine on mast (Figure 11). Historical documents show that the Crown regarded Ashdown Forest and Tonbridge South Frith as great providers of pig meat, a supply to be used whenever the king campaigned in Ireland or the Continent.[103] At times, and in places, the medieval south east

[98] S. Vanpouke, F. Pigière, A. Defgnée and W. Van Neer, 'Pig husbandry and environmental conditions in northern Gaul during antiquity and the early middle ages: the contribution of hypoplasia analysis', *Archaeofauna* 16 (2007), pp. 7–19.

[99] Witney, 'Woodland economy' p. 23.

[100] P. Brandon, *The Kent and Sussex Weald* (2003).

[101] Ibid.; Margetts, 'Wandering herd', pp. 461–8.

[102] Albarella *et al.*, 'Week on the plateau', p. 154; P. Halstead and V. Isaakidou, 'A pig fed by hand is worth two in the bush: Ethnoarchaeology of pig husbandry in Greece and its archaeological implications', in Albarella and Trentacoste (eds), *Ethnozooarchaeology,* pp. 160–74; Hadjikoumis, 'Traditional pig herding', p. 361.

[103] P. Brandon, 'Farming techniques: South-eastern England', in Hallam (ed.), *AHEW*, II, pp. 312–24.

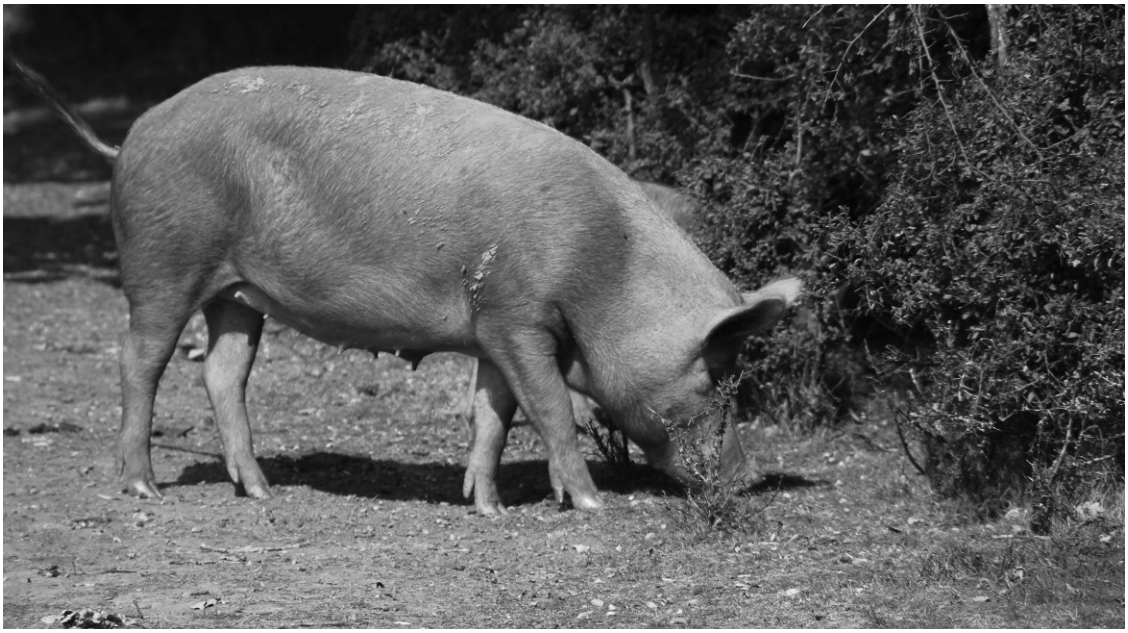


FIGURE 11. The Wealden mast diet remains exploitable by the free-grazing Tamworth pigs on the Knepp Estate, West Sussex (image courtesy of Lauren Gibson)

had high numbers of pigs when compared to national trends. This is implied by documents such as Domesday and is superficially demonstrated by the region's animal bone assemblages. The numbers help justify the historic regional emphasis placed on this livestock type. We should remain wary, however, as to how accurately records of swine pannage directly reflect the numbers of pigs kept on a particular holding or estate.

On the basis of the work attempted here we can be confident that pannaged pigs of the peasantry were largely turned out in the Weald on a seasonal basis and were unlikely to have been kept in the area all year round. Less representative lordly patterns may have been more complex. Documentary material when supported by the evidence of the south east's animal bone assemblages and road network, is illustrative of a system where pigs were brought back to their home settlements for consumption. The evidence appears to favour a phase of personal transhumance in the earlier medieval period that gave way to impersonal transhumance by the twelfth and thirteenth centuries. The latter was driven by manorial obligations and seigneurial control and could take place over distances of around 15–20 km. By the late medieval period pannage was in severe decline. The slight rise in the consumption of pork in the animal bone assemblages was likely being driven by more intensive and sedentary husbandry when compared to what had gone before. Of course, it remains possible that some swine were slaughtered in the Weald during the time of pannage, but the high numbers of pig remains in areas that bordered these *pays* probably help demonstrate that the Weald was a central resource to be utilized by the more permanently settled surrounding zones. This at least was the situation during the high point of swine pannage in the tenth and eleventh centuries and for the main pig producers, the peasantry.

Hiding in plain sight: St Kilda's other race of 'ancient sheep'*

by Andrew Fleming

Abstract

The 'St Kilda sheep' kept in British landscape parks in the late nineteenth and early twentieth centuries belonged to a race of primitive northern short-tails, probably dating back to the Iron Age. Exported from St Kilda in the mid-nineteenth century, they were bred to black by a coterie of rich and aristocratic owners, as the St Kilda name was becoming increasingly fashionable. From the 1880s, after the greater antiquity of 'Bronze Age' Soay sheep came to be recognized, authorities questioned the racial integrity of the St Kildas. Denying their specific provenance, they renamed them Hebrideans. The last part of this article discusses the selection pressures and modes of 'management' of St Kilda sheep on their native island. It is suggested that, in the Iron Age, sheep may have looked less like Soays, and more like St Kildas before they were bred to black, or perhaps Borerays.

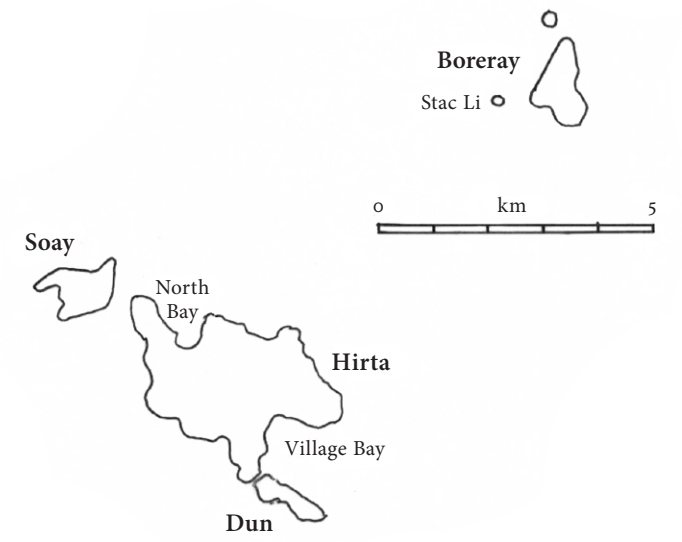
> [Hebridean sheep] are always just out of emotional range. They remain resolutely primitive.
>
> John Lewis-Stempel, *The sheep's tale* (2022), p. 103

'Rare breeds' or early 'races' of livestock, which have often survived owing to accidents of history, cater for a variety of interests. They carry a genetic inheritance worth conserving for the maintenance of diversity and the opportunities which it provides for modifying existing breeds or creating new ones. Such livestock might display characteristics which once went out of favour but are now more highly esteemed. As Harriet Ritvo has demonstrated, the fate of old-fashioned livestock after the introduction of 'improved', more 'commercial', breeds illustrates contemporary perceptions of zoological science and the objectives of animal breeding, as well as illuminating the lifestyles of those who conserved old breeds and experimented with them. Archaeologists and prehistorians have naturally been interested in the light shed by 'primitive' races of livestock on the history of the complex process known as 'domestication', on the objectives and practice of past animal husbandry, and on the economic and social roles of early domesticates. They also have to try to answer the

* I thank Josephine Pemberton for helpful comments on an early draft, and Christine Williams and Ken Ballinger for introducing me to their sheep and discussing them.



MAP 1. Great Britain



MAP 2. The St Kilda archipelago

deceptively simple question: what would these animals have looked like?[1] Every breed or race is a human cultural artefact, a 'brand' with its own history, mythology, and prestige.

This article touches upon Soays, Hebrideans and Borerays: three 'races' of 'primitive' sheep associated with the St Kilda archipelago, which lies some 60 km west of the Western Isles of Scotland (Maps 1 and 2). At the outset it should be noted that early commentators on the historical status of old races of sheep faced the problem of the wide dispersal of their objects of study, which in north-west Europe survived mostly on remote islands and archipelagos. In the early nineteenth century such sheep were rapidly being replaced by more 'advanced' breeds.[2] When dealing with 'races' of relatively similar sheep, early authorities faced well-known 'lump or split' dilemmas. The names assigned to such old races were governed by perceived phenotypes, traditional breeders' terminology, and hypotheses about their history. By the second half of the nineteenth century, certain old-fashioned sheep were being moved from their long-established home regions, to be kept in landscape parks, sold or given away, and/or crossed with other breeds.

Readers of this journal will doubtless be familiar with the Soay sheep often seen at British rare breed centres or accompanying reconstructions of Iron Age round-houses; they will probably know that these primitive sheep lived for centuries on Soay, one of the islands in the St Kilda archipelago. This article, however, is mostly about the origins of an elegant, often black, sheep which, in the late nineteenth and early twentieth centuries, was more likely than the Soay to be encountered in English parklands. It was first known as the 'St Kilda' and later as the 'Hebridean', the name which has survived to the present day. Nowadays, Soays are recognized as descendants of earlier ('Bronze Age') sheep, whilst the sheep formerly known as

[1] H. Ritvo, *The animal estate: the English and other creatures in the Victorian age* (1987); G. Barker, *The agricultural revolution in prehistory: why did foragers become farmers?* (2006).

[2] D. Low, *The breeds of the domestic animals of the British Islands*, II, *The sheep* (1842), p. 8.

St Kildas are considered to be descended from a race of pre-Norse, 'Iron Age' sheep, cognate with other northern short-tails (also known as Scottish Dunfaces), such as the Manx Loghtan, the North Ronaldsay and the Shetland, which are believed to have been introduced to north and north-west Britain sometime between *c.*500 BC and *c.*AD 500.[3]

In this article I am principally concerned with the St Kildas, or Hebrideans. They were small sheep, black or dark brown; some of the rams sported four or more relatively straight horns, so that they were occasionally described as 'grotesque' or 'bizarre'.[4] Owing to their 'proved attractiveness…as villa ornaments and pets' the popularity of these sheep endured for the first two or three decades of the twentieth century. On the eve of the First World War it was estimated that there were over 50 British flocks of 'four-horned sheep', as they were sometimes called.[5] After 1900 or so some authorities maintained that the St Kildas did not come from St Kilda; they started to call them Hebrideans, and their provenance was widely taken to be North Uist, in the Western Isles. In the mid-twentieth century, Hebridean numbers declined and the race appeared to be facing extinction. However, interest revived in the 1970s; the Hebridean Sheep Society was founded in 1994, and these sheep have since gone from strength to strength. In terms of sustainability and niche marketing, Hebrideans offer certain valuable characteristics. There are now some 23,000 of them, more than all the other British northern short-tails put together. Like Shetlands, they are a 'rare breed' which has prospered in recent years. John Lewis-Stempel's recently published *The sheep's tale* ('the story of our most misunderstood farmyard animal'), has evidently been considerably influenced by his experience of keeping Hebrideans.[6] For images of modern Hebridean sheep, see Figure 1.

In 2001 the late David Kinsman published *Black sheep of Windermere*: *a history of the St Kilda or Hebridean sheep*. He cited eight 'possible places of origin' in north and west Britain for these sheep if they were first exported in the eighteenth century, or four if they were moved south around 1880, as he suggested. However, Kinsman's text effectively identified just two likely origins, St Kilda or North Uist (with a decided preference for North Uist), which left the 'St Kilda' name unexplained.[7]

More recently, the following was written: 'we [livestock] inspectors considered one of the breed names, St Kilda, to be a somewhat fanciful invention by southern owners that was intended to add an aura of mystery and romance to their sheep, and preferred the more accurate name Hebridean'.[8] However, the sheep in question *did* come from St Kilda, as I shall

[3] D. Kinsman, *The black sheep of Windermere* (2001); M. Ryder, *Sheep and man* (1983); J. Clutton-Brock, *Domesticated animals from early times* (1981).

[4] Kinsman, *Black sheep; Hampshire Chronicle*, 18 Oct. 1902; J. C. Ewart, 'Domestic sheep and their wild ancestors. I. Sheep of the urial and mouflon types', *Trans. Highland and Agricultural Society of Scotland* [hereafter *TransHASS*], Ser. 5, 5 (1913), p. 186.

[5] *Lakes Chronicle and Reporter*, 23 Sept. 1887; J. C. Ewart, 'Domestic sheep and their wild ancestors. I. Sheep of the urial and mouflon types, *TransHASS*, Ser. 5, 25 (1913), p. 186. Not all 'four-horned' sheep were necessarily St Kildas.

[6] D. Braithwaite (ed.), *Hebridean sheep: old breed for new times* (2009); O. R. Dyrmundsson and R. Niznikowski, 'North European short-tailed breeds of sheep: a review', *Animal* 4 (8) (2010), pp. 1275–82. J. Lewis-Stempel, *The sheep's tale: the story of our most misunderstood farm animal* (2022).

[7] Kinsman, *Black sheep,* especially pp. 97–100.

[8] J. M. Watson, 'Some thoughts on the origins of the Hebridean breed of sheep', in Braithwaite, *Hebridean sheep,* p. 20.



FIGURE 1. Modern Hebridean sheep: a) ram; b) ewe and lamb

demonstrate. In his account of their dispersal, Kinsman gave prominence to the role of two flocks kept near Windermere in north-west England in the 1880s. It is now possible to show that the original spread of these sheep occurred thirty earlier than this, as a consequence of a particular historical event. In what follows, I discuss some of the implications of the new narrative in relation to genetics, selection pressures and past modes of sheep 'management' on Hirta (the only seriously habitable island in the St Kilda archipelago), as well as current understandings of the physical appearance of sheep in the British Iron Age.

I

Early references to pre-modern St Kilda sheep (other than Soays) have been summarized by John Love. In 1578 their horns were described by Bishop Leslie as longer than those of a buffalo, and in 1698 as extraordinarily large, with Martin stating that the sheep of St Kilda differed from those of the adjacent isles '*only in the bigness of their horns, which are very long*' [my italics]. The illustration cited by Kinsman of a well-observed multi-horned black ram depicted in the early fourteenth-century Luttrell psalter also seems pertinent here. Sir Geoffrey Luttrell, for whom the psalter was made, was involved in English military campaigns in Scotland.[9] According to Martin, in 1697 St Kilda sheep were 'speckled, some white, some philamort [orange/brown]'. In 1764 Macaulay stated that the natural colours of the wool were black, white, grey and brown. St Kilda sheep on Hirta in the 1850s/1860s were described as relatively small, 'and had shorter wool and were white in colour, with a few black ones among them'.[10]

[9] J. Love, *Natural history of St Kilda* (2009), pp. 220–2; M. Martin, *A description of the Western Isles of Scotland* (1716), p. 280 (first published 1698); Kinsman, *Black sheep,* pp. 23–4.

[10] M. Martin, *A voyage to St Kilda* (1753), p. 17; K. Macaulay, *The history of St Kilda* (1764), p. 213; H. J. Elwes, 'Notes on the primitive breeds of sheep in Scotland', *The Scottish Naturalist* (Jan 1912), p. 26.

Kinsman has described how northern short-tails, which include the 'Hebrideans', are very well adapted to the climate of the region and were once a key component of traditional household economies, providing milk, wool, meat and other useful products. Lewis-Stempel has noted that only about 5 per cent of his Hebrideans have needed help with dropping their lambs.[11] In the eighteenth and nineteenth centuries, northern short-tails were gradually replaced by more 'advanced' breeds, as large sheep-farming enterprises were developed in the Highlands and Islands, often at the expense of traditional communities. It seems that Cheviot sheep were introduced to St Kilda probably in the first decade of the nineteenth century, and 'thrived remarkably well', though they evidently had little impact on the appearance of the sheep on Hirta, where unimproved sheep were not phased out until the late nineteenth century.[12] In 1873 St Kilda acquired a new factor, John Tolmie MacKenzie, who promoted the commercial production of tweed more vigorously than his predecessor, enlisting the support and collaboration of the Fergusons, the family which provided the ground officer, who by 1877 owned 150 sheep. In his early years as factor, Mackenzie introduced Blackface tups.[13] When John McDiarmid carried out his survey of St Kilda's agricultural economy in 1877, he was evidently witnessing the transition to commercial tweed production and the keeping of more modern sheep. During his visit, the male islanders inspected his Ulster coat closely, one of them exclaiming excitedly 'we could manufacture that ourselves!' Already, McDiarmid noted, St Kilda tweeds were 'a good deal sought after for suits'. 'A number of their sheep are blackish-brown', he wrote, 'and when their wool is properly mixed with the white, it gives the cloth a slight brownish tinge, which is the only colouring it receives'. McDiarmid characterized the sheep on Hirta as 'a cross between the old St Kilda breed and the blackfaced'. In 1878 they were described as 'of the Norwegian breed, small and black-faced and with very short tails'. MacDiarmid suggested that if fresh Blackface tups were annually introduced the sheep would soon be very good Blackfaces.[14]

II

At the Perth agricultural show in 1833, a Mr Stewart, from Chesthill near Loch Tay, exhibited 'an ox from St Kilda, noticed as a curious specimen'. Two years later, the Highland and Agricultural Society's show at Ayr featured 'a stot [bullock] from St Kilda', fed by Colonel F. Macadam Cathcart at Craigengillan in north Kirkcudbright, south-west Scotland. At the same show, 'rams and ewes from St Kilda, showing four horns each, were examined by all with considerable interest'.[15] It is not clear who exhibited these animals. Cathcart was the convenor of the show, Sir Thomas Francis Kennedy the deputy convenor. The two men lived about 25 km apart. The immensely rich coal-owner, Kennedy, owner of a thousand acres (*c.*400 hectares) around Dalquharran in Ayrshire, is much the more likely candidate for ownership of the sheep. Unlike Cathcart's home, Dalquharran Castle was surrounded by a substantial

[11] Kinsman, *Black sheep*, pp. 55, 60, 96, 97, 232–5. Lewis-Stempel, *The sheep's tale*, p. 34.

[12] *Inverness Journal and Northern Advertiser*, 21 Oct. 1814.

[13] *Shields Daily Gazette*, 23 July 1877. By 1877 the recently introduced Blackface tups had been on Hirta for 'six or seven years' (J. McDiarmid, 'St Kilda and its inhabitants', *TransHASS* 10 (1878), p. 245).

[14] McDiarmid, 'St Kilda'; *Greenock Advertiser*, 3 Aug. 1878.

[15] *Inverness Courier*, 12 Feb. 1834; *Caledonian Mercury*, 8 Oct. 1835; *Carlisle Journal*, 10 Oct. 1835.

landscaped park. Kennedy was a Whig MP, who retired from Parliament in February 1834. Around this time he visited St Kilda on his yacht *Kitty*, with a French guest; he had been there before, and wanted to see the islanders again.[16] The trip took place in late June. If the sheep were acquired in 1834, Kennedy could have arranged for them to be transported on the boat used by the factor, whose visit was imminent; alternatively, they might have been sent off on the steamship *Glenalbyn*, which made two late summer visits that year.[17] The *Glenalbyn* ended her trips at Oban, where sheep could have been transferred onto a Glasgow-bound steamer. Kennedy's guest described them as 'Norwegian'; they had short tails, brown wool as in Iceland, were multi-horned, and provided excellent mutton.[18]

Among eminent breeders, breeding parkland sheep was something of a sideshow; the improvement of cattle, especially Shorthorns, was a much more serious matter. At the 1835 Ayr show, Kennedy won several prizes, including one for the best bull of the Shorthorn breed.[19] It is not clear whether the St Kilda sheep introduced to the Ayr region were sold or given to others; Cathcart died in 1865, Kennedy in 1879.

In what follows, it is important to note that knowledge of the movements of sheep in the nineteenth century is extremely patchy. Many transactions must have been private sales or gifts which have left little or no paperwork. Research for this article has been based mostly on newspaper reports digitized in the British Newspaper Archive. Other sources might well throw more light on social relationships between breeders. Much of this, however, might be considered otiose. The fact that livestock breeders shared certain objectives – such as, for example, turning out St Kilda sheep as uniformly black as possible – implies that they often agreed on their direction of travel. When not meeting up at sales or agricultural shows, owners and breeders doubtless exchanged correspondence. Some associations of breeders were more formally organized than others; the Shorthorn Herd Book dates back to 1822, and the Shorthorn Society was founded in 1874. However skilled and knowledgeable individual breeders might have been, each successful breeding enterprise soon became a cluster of transactions, livestock with new and valued characteristics being admired and coveted. Doubtless advice was frequently and eagerly sought. Fame was the spur, initially at least; successful breeders would discover that their successes were also lucrative.[20]

III

In the summer of 1852, about a third of the population of Hirta departed for Australia. Some of the emigrants, at least, sold their sheep before they left, the money raised helping to defray expenses.[21] The islanders who remained, not then preoccupied with commercial tweed production, would have had no need for extra sheep; as elsewhere in the region, the maximum size for a flock kept by a household solely for domestic requirements was ten, with charges

[16] F. Bourgeois de Mercey, *Scotia, souvenirs et recits du voyage* (2 vols, 1842), II, p. 90.

[17] *Caledonian Mercury*, 1 Sept. 1834; *Caledonian Mercury*, 4 Aug. 1834; *Inverness Courier*, 13 Aug. 1834.

[18] Bourgeois de Mercey, *Scotia*, pp. 113–14.

[19] *The Scotsman*, 30 Jan. 1836.

[20] Ritvo, *Animal estate*, ch. 1.

[21] E. Richards, 'St Kilda and Australia; emigrants at peril 1852–3', *Scottish Historical Rev.* 71 (1992), p. 137.

levied on every sheep above that number.[22] In the mid-1850s, the North Yorkshire landowners Mark Milbank (1819–83) and his brother Frederick (1820–98) visited St Kilda on Lord Hill's yacht. According to Frederick ('F. A') in 1860, Mark 'arranged to purchase' '28 ewes and two rams' which were 'very wild and hard to catch'. The brothers chartered a boat, and 'after many perils' the sheep were landed at Loch Seaforth on Harris. They weighed 23 lbs (*c*.10.5 kg) when fat; their colours were 'a sort of dun, bluish grey, and dark brown, and all bore 'the patch on the rump like the red deer'; their wool was 'of the finest kind, almost, if not quite, equal to the Shetland, and each sheep will produce from 3 lb to 4 lb (1.4–1.8 kg).[23] The sheep purchased by Mark Milbank were taken to England 'by steam to Glasgow, and then by railroad…their legs being tied together for the whole distance. They became in a short time thoroughly domesticated, and have thriven wonderfully well'. By 1860, they had become 'naturalized in a Yorkshire park', producing two lambs annually, and providing 'most excellent eating'. 'I may mention', wrote Frederick, 'that my brother has a large herd of these sheep, and has killed many for the table … the wool makes capital stockings', its fineness requiring no dye'. In 1860, Mark Milbank showed sheep at the first show held by Bedale Agricultural Society; his tup and two ewes from the islands of St Kilda were 'highly commended', along with a tup and two ewes from North Uist (as well as sheep from Brittany).[24]

The Milbanks held estates at Barningham in the extreme north of the North Riding of Yorkshire (as it then was) and at Thorp Perrow (near Bedale in central Yorkshire). At Loch Seaforth the brothers were guests of Lord Dunmore, who constructed Ardvourlie Castle in the early 1860s mainly to accommodate the Milbanks' regular Harris shooting parties.[25] The Milbanks presumably chartered a boat to fetch the sheep from St Kilda. In the mid-1850s it was evidently already possible to transport a small flock of lively sheep over a long distance by rail, using the lines of more than one railway company. If this move took place after November 1855, it would have been possible to disembark the sheep at Bedale station, only 2.5 km from Thorp Perrow; if it happened earlier, they could have alighted at Leeming Lane station, some 5 km away. Digitized newspapers mention almost nothing of what happened later to the Milbank flocks of St Kildans. The Thorp Perrow sheep were apparently still there in the mid-1880s (see below).

IV

At the Highland and Agricultural Society's show in Glasgow in July 1867, 'several pens of black four-horned St Kilda sheep attracted much attention'. They were shown by Sir John Orde, from

[22] National Archives of Scotland GD 41/529, Diary of Sir Thomas Dick Lauder; R. Wallace, *Farm livestock of Great Britain* (4th edn, 1907), p. 521.

[23] Josephine Pemberton (pers. comm.) points out that this description would fit Soays, though she also notes that the weights quoted are very low as compared with modern Soays. However, there seems to be no source which indicates that the Milbank sheep are likely to have been Soays (which 'belonged' to the laird, and would have to be procured from the island of Soay if sold). It is hard to ignore the coincidence between the time of their purchase and the availability of extra sheep after the emigration – a coincidence which also applies to the sheep purchased by Sir John Orde.

[24] *North British Daily Mail*, 13 Nov. 1860; *Yorkshire Gazette,* 13 Oct. 1860.

[25] *Glasgow Herald*, 6 Mar. 1879.

Kilmory, near Lochgilphead in Argyll near the south end of the Crinan Canal. The St Kilda sheep exhibited had 'a black face, black legs, brown-black shaggy knotted wool, which on the older animals turns dark gray'. In form, the animal was 'narrow – pinched up with the rotundity and fulness of a dried prune'. 'Originally obtained from the island of North Uist, and now gradually spreading, this breed exists in St Kilda and other islands and some districts of the mainland in a semi-wild state'. At three years the sheep attained 'a dead weight of about forty pounds [18 kg] the carcass'. The wool was described as 'particularly fine and lustrous'. The reporter was impressed by the sheep's 'four black horns, two shorter ones involuted downwards almost enclosing the face, and two very long ones arching upward and outward, admirable pointed weapons, which, from the fire of its black eyes, the creature is evidently ready enough to use'. One reporter was sceptical, describing the sheep as 'wholly black, diminutive in size, and except as curiosities…of comparatively little value for the production of either mutton or wool'. However, the sheep at the show were commended.[26]

The key figure at Kilmory was Sir John Orde's farm manager James Aitchison (or Aitcheson) who developed a considerable reputation as an improving farmer and livestock breeder. In 1845 he won first prize at Lochgilphead Show for his Swedish turnips. In 1855 he advertised Southdown sheep and small Indian cows for sale; in 1863 he was selling Brahmin (aka Brahman)/Highland crosses as draught oxen. Aitchison's work with white cattle was spectacular and famous; by 1879 his crosses between semi-wild white Highland cattle and West Highlanders had produced stock which had reached 'a high state of efficiency'. In 1861, at the banquet held at the Highland and Agricultural Society's show at Perth, the Duke of Atholl, president of the society, proposed a toast to the health of the judges, making a point of mentioning Aitchison's name.[27]

Orde, who had been to St Kilda in 1834, on the *Glenalbyn*, purchased North Uist (in the Western Isles) in January or February 1855.[28] No one at the time was in any doubt that Sir John's interesting sheep came from St Kilda; they too may well have been sold at the time of the emigration to Australia. The factor of St Kilda may have sold them directly to Orde's North Uist factor or offered for them for sale at Lochmaddy market (North Uist). Later, in the 1870s, Orde's North Uist estate manager, Mr MacDonald, was keeping some 'strange four-horned sheep' at Newton, the home farm (from which St Kilda happens to be visible).[29] It seems likely that back in the mid-1850s he had been able to obtain enough St Kilda sheep to split the flock, perhaps after a couple of breeding cycles: sending some south to Kilmory and cannily keeping some back on the home farm. Some such manoeuvres were probably partly responsible for the misleading 'North Uist' label which the sheep acquired later.

[26] *Daily Review* (Edinburgh), 31 July 1867; *Evening Mail*, 5 Aug. 1867; *Newcastle Courant*, 2 Aug. 1867; *Elgin Courier*, 2 Aug. 1867.

[27] *Glasgow Herald*, 14 Nov. 1845; *North British Agriculturalist*, 5 Sept. 1855, 25 Nov. 1863; *Dundee Advertiser*, 30 July 1879; *Dundee, Perth and Cupar Advertiser*, 2 Aug. 1861.

[28] M. Robson, *St Kilda: church, visitors and 'natives'* (2005), p. 338; *Inverness Courier*, 22 Feb. 1855.

[29] J. Harvie-Brown and T. Buckley, *A vertebrate fauna of the Outer Hebrides* (1888), quoted in Kinsman, *Black sheep*, p. 83. H. J. Elwes, *Memoirs of sport, travel and natural history* (1930).

V

In October 1887 two 'St Kilda rams (four horns)' were offered for sale by the home farm of Vaynol Park, near Bangor in north-west Wales. In the early 1890s and in 1905, St Kilda sheep were available from the same source.[30] Vaynol was the seat of George Assheton Smith, owner of the nearby Dinorwic slate quarries and one of the biggest landowners in Wales with over *c.*30,000 acres (120,000 hectares).[31] In his park, Assheton Smith kept a herd of white park cattle, which he founded in 1872 with 22 animals from Sir John Orde's Kilmory herd, and increased by adding 'the remaining 32' in 1886 after Orde's death. St Kilda sheep might have arrived at Vaynol as early as 1870, the year after Assheton Smith had come into his majority, and also the year when Orde shipped two specimens of Indian humped cattle to Vaynol. Alternatively, they might have arrived with the 1872 cattle shipment, or conceivably later, at any time up to the mid-1880s.[32]

From autumn 1888, the breeders of livestock at Vaynol were the Lort family at the home farm. Sometime before 1900 V. P Lort induced a St Kilda ram to serve several goats.[33] After the death of Assheton Smith in 1904, the Lorts moved away from the Old Hall at Vaynol; Lort took up residence at Bryniau Heulog, just outside Vaynol Park. In the years before the First World War he corresponded with James Cossar Ewart, livestock breeder and Regius Professor of Natural History at the University of Edinburgh, about the experimental crossing of different breeds or races of sheep. His work took in not only St Kilda sheep but also Soays and Manx Loghtans. Bryniau Heulog evidently operated for some years as an unofficial out-station of the Edinburgh University farm and its sheep-breeding experiments. Lort also sent Soay sheep to H. J. Elwes, a naturalist and keen sheep breeder, at Colesbourne Park near Cheltenham.[34]

VI

In 2001 Kinsman suggested that 'all the oldest parkland flocks' of St Kildas could be traced back to two flocks kept in the 1880s near Windermere in the English Lake District. One (Figure 2) belonged to Revd Thomas Staniforth at Storrs Hall, on the east bank of Lake Windermere and just south of the town, the other to J. D. Bridson on the nearby Belle Isle, an island in the lake. These sheep were at Windermere by at least the mid-1870s. In August 1877 Bridson held

[30] *North Wales Chronicle*, 24 Sept. 1887; *The Field*, 19 Sept. 1891, 17 Sept. 1892, 20 Oct. 1894, 28 Jan. 1905.

[31] *North Wales Times*, 26 Nov. 1904.

[32] *The Sketch* 26 May 1897; Kinsman, *Black sheep*, p. 141.

[33] William Lort (*c.*1825–91) arrived at Vaynol in the autumn of 1888 (cf. *Brecon County Times*, 9 Sept. 1887, and *North Wales Chronicle*, 8 Dec. 1888). As an old friend of George Assheton Smith and an established breeder of dogs and horses, he became Assheton Smith's amanuensis. After his death in 1891 his son V. P. continued his father's breeding activities at the Vaynol Home farm. William Lort's daughter Eurgain also became a successful and respected livestock breeder, setting up a pony study at nearby Castell Mai. See *The Field*, 30 May 1891; *Crewe Chronicle*, 27 June 1891; *Pall Mall Gazette*, 7 Aug. 1912, 13 Mar. 1913; *North Wales Weekly News*, 9 Aug. 1923. For the experiment with goats, see *The Field*, 10 Feb. 1900.

[34] Fleming, 'Soay sheep: the back-story', *Cambridge Archaeological J.* 3 (2021), pp. 8–9; see catalogue of University of Edinburgh Archives Online for correspondence between Ewart, Elwes and 'G. P.' [presumably V. P.] Lort.



FIGURE 2. St Kilda sheep at Storr's Hall, Windermere, in the 1880s

Source: Kinsman, *The black sheep of Windermere*.

sheepdog trials on Belle Isle. One report noted that 'No 1 [dog] had a four-horned black Scotch sheep among the lot'. Another provided behavioural information: 'some of the sheep selected were black Scotch horned ones, and in place of being driven by the dogs, they speedily turned on the latter, and drove them, using their horns to some effect in butting the dogs. Having rid themselves of the dogs, several of them took a swim in the lake, and had to be rescued by boats'. In 1871 Bridson had competed at the Leeds Smithfield Club Exhibition, for 'the best pen of three horned Scotch, Lank, or mountain wedders of any age'; if the sheep which he entered were St Kildas, he must have acquired them in the 1860s.[35]

The Revd Thomas Staniforth took over Storrs Hall in 1859. He was a very wealthy man, a famous Shorthorn breeder who travelled widely in search of the finest breeding stock; he was also a founder member of the Shorthorn Society. J. D. Bridson, a parvenu from a family of industrialists, was considerably younger than Staniforth. He must have been keen to boost his social credentials in the Lake District; it would have been natural for him to have stocked his island park soon after he started renting Belle Isle in 1865, probably obtaining sheep from his neighbour on the lakeshore. Bridson had been visiting the area for several years. At the Belle Isle sheepdog trials, admission was by ticket only, 'to keep off the rougher element'.[36]

[35] *Soulby's Ulverston Advertiser and General Intelligencer*, 30 Aug. 1877; *North British Agriculturalist*, 29 Aug. 1877; *North British Agriculturalist*, 13 Dec. 1871.

[36] *Yorkshire Gazette*, 13 Aug. 1887; *Soulby's Ulverston Advertiser and General Intelligencer*, 5 Sept. 1878; *North British Agriculturalist*, 13 Dec. 1871.

Kinsman attempted to trace a connection between the owners of the Windermere flocks and Sir John Orde at Kilmory. He noted that Orde and Staniforth were both educated at Eton and Christ Church, Oxford (there was a four-year age difference). Orde's son and Bridson's brother were both members of the Royal Northern Yacht Club in the 1870s. The Assheton Smith family were also prominent sailors in northern waters. From 1829, Vaynol's previous owner, Sir Thomas Assheton Smith (1776–1858) had commissioned no fewer than eight steam yachts from the pioneer Clyde shipbuilder Robert Napier, sailing them out of Port Dinorwic. In the 1880s, George Assheton Smith's 500-ton steam yacht *Pandora* had the capacity to operate in the North Atlantic and Artic oceans; she did so in 1882 and again in 1886, when Assheton Smith and his friend William Lort (V. P's father) went to the north coast of Norway 'in search of sport'. In 1891 a party of naturalists visiting Vaynol were shown three eider ducks caught on a voyage to Greenland by the *Pandora*. Sheep at Vaynol Park in 1901 included some from Iceland.[37]

The *Pandora* apparently did three trips to Scotland between 1882 and 1893, although there seems to be no record of the Assheton Smiths having been to St Kilda.[38] It is important to remember, however, that visits made by those who did not write about them will largely have evaded scholarly scrutiny. It is not clear whether Staniforth, whose sailing exploits seem to have been confined to Lake Windermere, was acquainted with Sir John Orde. However, it is highly likely that the Assheton Smiths and the Ordes knew each other, and quite conceivable that the Windermere sheep arrived via Vaynol rather than via Kilmory. The interest created by the showing of St Kilda sheep at Glasgow in 1867 (see above) may have been the stimulus for their acquisition by Staniforth and/or Bridson; alternatively, they may have responded to an advertisement of sheep for sale from Kilmory in 1872 (or perhaps a comparable one around the same time): 'St Kilda or four-horned black sheep. A few of these curious and now very rare sheep for sale. Lots of four or more ewes and ram, or lambs of 1872, to suit purchaser'.[39] Although the fine detail eludes us, it is evident that Kinsman's account requires revision – not least to take account of the fact that St Kildas *did* originally come from St Kilda. We also need to recognize that the Windermere flocks held no particular primacy in the establishment and dispersal of St Kilda sheep, which resulted from a series of transactions taking place over several decades. By the 1880s, there were distinct classes for such sheep at a couple of the Highland and Agricultural Society of Scotland's shows.[40]

VII

By the first decade of the twentieth century, a few men had become interested in *Soay* sheep (also long associated with the St Kilda archipelago), because of their high relevance to the history of domestication and livestock management. They also experimented with breeding

[37] Kinsman, *Black sheep*, p. 136; *Berkshire Chronicle*, 18 Sept. 1858; *The Field*, 30 May 1891; *Crewe Chronicle*, 27 June 1891; *Westminster Gazette*, 19 Aug. 1901.

[38] *Lloyd's Weekly Newspaper*, 17 Sept. 1911.

[39] *The Field*, 28 Dec. 1872.

[40] H. Holmes, 'Regional patterns in the exhibition of breeds of cattle and sheep at the Royal Highland Show 1872–1905', *Folk Life* 50 (2013), pp. 122–40. The shows were held at Dumfries (1886) and Glasgow (1888).

from Soays, in the hope that crosses with more developed breeds might produce sheep with commercially viable properties. Those who kept St Kildas, by contrast, were mainly concerned with owning attractive parkland livestock. Few owners kept both St Kildas and Soays. When livestock from Storrs Hall were sold in September 1887, after the death of Thomas Staniforth, a 'Mr Rivers' was among the purchasers of St Kilda sheep. Evidently not everyone recognized General Pitt-Rivers the archaeologist. However, one journalist claimed that he purchased 'the greater portion of the Storrs flock' and knew that he had 'a few animals of that breed in his park'.[41] Pitt-Rivers was already keeping Soay sheep at Rushmore Park on Cranborne Chase in Dorset, having become interested in them because he needed to find a 'primitive' sheep whose bones might be compared with those found on his Romano-British sites. Probably it was one of Staniforth's obituaries after his death on 8 July 1887 which drew the General's attention to the existence of *another* primitive race of sheep from St Kilda. He seems to have written almost immediately to John Tolmie Mackenzie asking for 'St Kilda sheep'; he wanted 2 rams and 10 ewes. Mackenzie wrote back on 18 August, pointing out that such sheep were kept 'on an island which is almost inaccessible'.[42] However, at this point Pitt-Rivers would have become aware of the forthcoming and well-advertised sale of St Kilda sheep at Storrs Hall.[43] He presumably attended the auction on 8 September in person.[44]

'Pastor', from the *Fanciers' Gazette,* described the Storrs Hall sheep as 'quaint little creatures, principally black, with the peculiarity of having four, even five, horns'; apparently those who attended the sale were 'charmed with these little oddities'. According to *The Field*, they made 'admirable ornaments around a country residence, and so when sold realized far more than ordinary sheep would have done'.[45] In 1890, talking to the Wiltshire Archaeological Society about his excavations on Cranborne Chase, Pitt-Rivers stated that 'the sheep [whose bones he had excavated] were of a long, slender-legged breed, the like of which is only to be found at present in the Island of St Kilda'. Sheep bones from the Roman city of Silchester were soon being interpreted in accordance with Pitt-Rivers' views. It seems that the General continued to feel that Soays provided the best comparative material for his Dorset Romano-British sheep.[46]

VIII

On Hirta itself, weaving had proved highly successful as a commercial enterprise. By the first decade of the twentieth century, traditional St Kilda sheep had largely been superseded. The process seems to have been slow. In 1885 'a considerable proportion of the sheep' were still 'of the old St Kilda breed'; the others were 'a cross between that and the blackfaced variety.'

[41] *Lakes Chronicle and Reporter*, 9 Sept. 1887; *The Truth*, 27 Sept. 1887.

[42] Fleming, 'Soay sheep'. On p. 5 I assumed, almost certainly incorrectly, that the sheep meant by the factor were Soays. In fact, the 'almost inaccessible' island was probably Hirta itself, where not all the St Kildas had been phased out at this date.

[43] E.g., *North British Agriculturalist*, 3 Aug. 1887; *Penrith Observer*, 16 Aug. 1887.

[44] Someone else read his paper to the British Association for the Advancement of Science in Manchester on 6 Sept. (Rethinking Pitt-Rivers – A year in the life: 1887 http://web.prm.ox.ac.uk/rpr/index.php/pitt-rivers-life/51-a-year-in-the-life-1887.html).

[45] *Lakes Chronicle and Reporter*, 23 Sept. 1887; *The Field*, 10 Sept. 1887.

[46] *John Bull*, 13 Sept. 1890; *Reading Mercury*, 30 Jan. 1892; Ewart, 'Domestic sheep', p. 187.

Perhaps the islanders were in no hurry to lose the qualities of the older race. As late as 1905 it was reported that 'folds are erected here and there for the shelter of the small black sheep, the most audacious creatures I have ever looked upon, each of them having four horns'. Perhaps a few old-fashioned sheep were being retained to tempt potential buyers among the tourists. However, by 1930 the sheep were described as 'a mixed breed owing to crossing with Blackface, Cheviot and Leicester rams'.[47]

From the later nineteenth century, the name 'St Kilda' was regularly given to British houses and streets, hotels and boarding-houses, marine vessels, and at least one racehorse. Perhaps in the mistaken belief that there had once been a saint named Kilda, it was attached to a number of churches and high-class schools. In 1898 the North Bristol School for Girls, founded in 1861, was suddenly renamed St Kilda's Collegiate School for Girls, not long before it moved from King's Square to the edge of Durdham Down in Clifton.[48] During the 1870s an actress bore the stage name Miss Edith St Kilda; the 1880s saw appearances by Miss Maud St Kilda, a popular travelling variety artist.[49] From 1877, regular summer steamship trips to St Kilda helped to spread the salience of the name among the middle classes.

'St Kilda' had evidently become one of those names exuding a certain aura, rather like, say, 'Clarendon', 'Albany', or 'Montpelier'. In due course the prestige of the name evidently 'trickled down' to the general populace in the usual way, because of its cachet in elite circles. Traditionally, knowing about St Kilda was about being rich or privileged enough to be able to visit this particular *ultima Thule* in the comfort and exclusivity provided by a yacht, often a steam yacht. (Sir Thomas Acland's *Lady of St Kilda*, for instance, contained a top-of-the-range Broadwood piano, which was played by his musically-gifted wife Henrietta when the Aclands treated the St Kildans to an impromptu concert in 1834;[50] it may nowadays be inspected at Killerton Park, Devon). St Kilda *aficionados* knew the difference between run-of-the-loom handwoven tweeds and *St Kilda* tweed, which was sold at a premium price in top department stores in London, Dublin and Edinburgh, and quite widely available elsewhere. The fabric was in considerable demand among the sporting fraternity. In 1911 the St Kildans sent a suit-length of tweed to King George V, who supposedly wore his St Kilda suit when in Scotland. Five years after the evacuation, those islanders who still visited Hirta in summer, partly in order to continue weaving, made a suit-length of tweed as a silver jubilee present for George V. Production of St Kilda tweed reached its zenith around 1910.[51]

Another way of brandishing the name was to keep St Kilda sheep in one's park. Those who did so were members of a national elite: men from major landowning families, often with aristocratic pedigrees, or men who had acquired great wealth through extractive or industrial enterprises. Often these categories coincided. Most of these men were listed in Bateman's

[47] R. Connell quoted by Kinsman, *Black sheep*, p. 92; *Carlisle Journal*, 29 Aug. 1905; National Records of Scotland AF 57/32, note made 8 July 1930.

[48] *Bristol Times and Mirror*, 25 June 1898; *Bristol Mercury*, 5 Jan. 1899.

[49] *The Era*, 7 May 1876; *North Wales Chronicle*, 15 July 1882; *Manchester Times*, 20 June 1885; *Derbyshire Times and Chesterfield Herald*, 30 Jan. 1886.

[50] *Inverness Courier*, 17 June 1835.

[51] E.g., among many newspaper sources, *The Gentlewoman*, 23 Mar. 1912; *Westminster Gazette*, 29 June 1910 (for London); *The Scotsman*, 10 July 1912 (for Edinburgh); *Dublin Daily Express*, 20 Sept. 1880 (for Dublin); Fleming, 'Soay sheep', p. 12; M. Harman, *An isle called Hirte: history and culture of the St Kildans to 1930* (1997), pp. 116–17.

Great landowners of Great Britain and Ireland. Many were national politicians. Some owned parks large enough to serve as open-air zoos, like today's 'safari parks'; the perimeter wall at Vaynol was about 12 km long.[52] There is little space here to elaborate. Thomas Kennedy and George Assheton Smith both had steam yachts as well as interests in coal mines and slate quarries respectively. One of the buyers of Thomas Staniforth's sheep in 1887 was Sir Hussey Cressigny Vivian (later Lord Swansea), whose seat was Singleton Park (later the campus of Swansea University). Vivian was the brother-in-law of Assheton Smith of Vaynol and had major interests in copper-smelting, railways and other industries in the Swansea area. He was an MP, like Thomas Kennedy and F. A. Milbank. These men had usually been educated at Eton (or Harrow) and Christ Church, Oxford (or Trinity College, Cambridge), and they tended to be members of the Carlton Club. Other St Kilda sheep owners included the Earl of Harewood, the Duke of Bedford (whose wife, with her natural history interests, cruised the north of Scotland in the family's steam yacht), the Earl of Pembroke and Leopold de Rothschild. Queen Victoria herself owned a few St Kilda sheep; shortly after her death, three were transferred from Windsor to Regent's Park Zoo. Daisy Greville, Countess of Warwick and one-time mistress of Edward VII, mentioned in 1930 that she had been keeping 'the four-horned black St Kilda sheep' at Easton Lodge (Essex) for 30 years; she toyed briefly with the idea of obtaining some of the sheep to be evacuated, and of employing a St Kildan to look after them.[53]

St Kilda sheep owners recall the aristocratic livestock fanciers described by Harriet Ritvo: they bred 'exemplary livestock…expensive to produce and to maintain', animals 'shaped for higher destinies than the knives of ordinary butchers and the palates of ordinary consumers'. These were 'wealthy and powerful magnates [whose] rhetoric of service reminded ordinary farmers that the men who could afford to raise prize animals were their natural leaders, at the same time that the opulence of the display underlined the exclusiveness of high stock breeding'. George III and Prince Albert participated; foreign aristocrats admired. 'For both animals and people a distinguished lineage divided those with hereditary claims to high status from arrivistes'. In 1865 a *Times* leader implied that 'auctioned [shorthorn] cattle had become works of art…intrinsically desirable objects of conspicuous consumption'.[54]

In the second half of the nineteenth century, another distinctive black sheep was available: the Black Welsh Mountain. It had been bred in the 1830s or earlier by Lieutenant-Colonel Sir Charles Morgan of Tredegar Park, near Newport (1760–1846), and was later promoted by his son and grandson (both known as Lord Tredegar); every December they held a local agricultural show, at which their Monmouthshire neighbour, Lady Augusta Llanover (1802–96), a redoubtable advocate of all things Welsh, usually gave a prize for Black Welsh sheep.[55] Welsh farmers didn't like them very much, referring to them scathingly as 'Lady Llanover's fancy'; apparently, they leapt hedges, didn't put on flesh readily, and their wool took a good deal of preparation for market.[56] Such sheep should have been an ideal choice for aristocrats! However,

[52] F. G. Aflalo, 'Some private zoos', *Pall Mall Magazine* 25 (1901), pp. 77–87.

[53] *Lakes Chronicle and Reporter*, 9 Sept. 1887; Kinsman, *Black sheep*, pp. 156–9; National Archives of Scotland AF 57/50, letter from Lady Warwick to Thomas Johnston, 18 June 1930; AF 57/26, letter from Tom Johnston to Lady Warwick 16 June 1930, letter from Lady Warwick to Tom Johnston 18 June 1930.

[54] Ritvo, *Animal estate*, ch. 1.

[55] E.g., *Hereford Journal*, 21 Dec. 1842; *Sporting Gazette*, 30 Nov. 1895.

[56] *South Wales Daily News*, 23 Nov. 1892.

if newspapers are any guide, the Black Welsh mostly remained in their original Cambrian homelands.[57] Somehow they never caught the imagination of the great and the good. It took the celebrated name of St Kilda to do that.

IX

St Kilda sheep, then, came south to Ayrshire in the mid-1830s, and to both Kilmory and Thorp Perrow in the mid- to late 1850s. The Windermere sheep may well have been in place by the mid-1860s, the Vaynol Park flock by the mid-1870s. The Kilmory flock endured into at least the Edwardian era, sheep being advertised for sale in 1872, 1882, and 1903. The Thorp Perrow sheep were apparently still there in the mid-1880s, surviving the death of Mark Milbank in 1883. The source for this statement, an Irish newspaper, stated erroneously that Milbank purchased them in North Uist.[58]

At this point the story becomes more complicated. At the show held by the Highland and Agricultural Society of Scotland (HASS) at the People's Park, Glasgow, in July 1888, Sir John Campbell Orde of Kilmory showed a St Kilda tup, ewe and lamb for which he was awarded a first ticket. However, at the same show Lady William Osborne Elphinstone of Tulliallan Castle (beside the head of the Firth of Forth), exhibited some 'the black Hebridean sheep' which, 'with their striking heads of horns', attracted 'considerable attention'.[59] Three years later she showed two pens of black four-horned Hebridean sheep at the HASS show at Stirling, as well as 'a web of tweed made from the wool of black Hebridean sheep', in 'a beautiful shade of dark brown', 'the natural colour of the wool of Hebridean four-horned sheep' which 'was manufactured by P. and J. Haggart, at the Breadalbane Mills, Aberfeldy, from St Hilda [*sic*] wool sent by Lady Osborne Elphinstone, who presented a piece of the same material to the Duchess of Edinburgh'.[60] Although there was evidently scope for journalists' confusion, it is clear that in the late 1880s and 1890s 'Hebridean' sheep were distinguished from 'St Kildas'; 'upwards of 80 black Hebridean 4-horned sheep' were for sale at Brodick Castle, Arran, in 1895, and 80 were for sale at Oban in 1897. In 1888, some bones and skulls 'including 'Hebridean sheep (all but extinct)' were dug up in a cave on Brassington Moor, Derbyshire.[61]

What was the origin of these 'Hebridean' sheep'? In 1904 Lady Gordon Cathcart, kept a flock of 'Hebridean' sheep, some sporting six horns, at Sunninghill, beside Windsor Great Park in Berkshire, and another at Cluny Castle in Aberdeenshire. Allegedly, their origins lay with the Spanish Armada.[62] Lady Cathcart owned Benbecula, South Uist, Barra and Vatersay: that is, all of the Western Isles south of Sir John Campbell Orde's North Uist. Lady Elphinstone's sheep could have been obtained from Lady Cathcart: both women belonged to the highest echelons of late Victorian society and would have known each other socially. According to Kinsman,

[57] They could however be encountered at Hemel Hempsted in 1904, Basingstoke in 1910, and Taunton in 1912 (*Luton Times and Advertiser*, 16 Sept. 1904; *The Field*, 11 June 1910; *West Somerset Free Press*, Sept. 1912).

[58] *Kilkenny Moderator*, 9 Mar. 1887.

[59] *North British Agriculturalist*, 25 July 1888.

[60] *North British Agriculturalist*, 29 July 1891; *Aberdeen Free Press*, 28 July 1891; *The Gentlewoman*, 8 Aug. 1891.

[61] *Ardrossan and Saltcoats Herald*, 9 Aug. 1895; *Glasgow Herald*, 27 Sept. 1897; *Derbyshire Advertiser and Journal*, 14 Sept. 1888.

[62] *The Tatler*, 21 Sept.1904.

the Uists 'could have provided the foundation stock for parklands until the late 1880s'; he cites no other plausible origin areas for the later nineteenth century.[63]

In the 1880s and 1890s, then, St Kildas and Hebrideans were regarded by the knowledgeable as separate races. However, in 1906 John Guille Millais wrote the following: '[four-horned varieties of the Hebridean sheep] are often called 'St Kilda' sheep but the title is an error. The sheep of the island of St Kilda are a deteriorated variety of the Hebridean sheep'. In 1912, Richard Lydekker wrote that 'the small black so-called St Kilda sheep kept in several English parks appear to be of uncertain and mixed origin in most cases, being more or less crossed with black Welsh or other primitive breeds'. In the same year, Elwes, in a section headed 'Hebridean Sheep', claimed that 'it is probable, indeed almost certain, that the breed known generally as St Kilda in English parks is a mongrel in which the Blackfaced Scotch has a considerable share'. He also noted that 'a race of small black sheep, of which the males have often – in some flocks usually – and the females more rarely, four horns, is kept in several English parks under the name of St Kilda sheep, but they are in most cases of uncertain origin, and more or less crossed with Black Welsh or other small breeds'.[64] In 1925 a St Kilda sheep owner in Hampshire was told by no less an 'authority' than the *laird* of St Kilda, the MacLeod of MacLeod, that the sheep's name was something of a mystery, 'because they never existed on that island'. In the late 1950s the naturalist Morton Boyd doubted their 'St Kildan credentials'.[65] The way was open for the formalization of the 'Hebridean' label in the late twentieth century (see above).

The loss of the 'St Kilda' label seems to have been initially due to a slip made by Millais, a distinguished naturalist and wildlife illustrator who was, after all, writing three volumes on *The mammals of Great Britain and Ireland*. Other factors may have contributed to his approach, however. In the last years of the nineteenth century, the exclusivity of St Kildas was becoming upstaged, at least among the *cognoscenti*. In the 1870s (or possibly the early 1880s), the origins of primitive sheep were evidently being discussed by the pioneering archaeologist General Pitt-Rivers, the naturalist Henry Nottidge Moseley, and the museum administrator Norman MacLeod (who lived in the same London street as Pitt-Rivers in the mid-1860s, and, after he purchased St Kilda in 1871, 'owned' the Soays on Soay). I have discussed these interactions in more detail elsewhere.[66] For men with palaeozoological interests, such as Pitt-Rivers, the Gloucestershire livestock breeder and naturalist Henry Elwes, and James Cossar Ewart, who bred sheep at Edinburgh University in the early twentieth century, the Soays, with their affinities with wild mouflons, were the most historically significant race of primitive sheep. Soays were even more 'niche' than St Kildas, since they were harder to acquire; they belonged to the laird rather than the islanders, and had to be brought off their steep-sided eponymous island in a tricky operation – if the state of the sea made it possible to tie up a boat there.

As Ritvo has noted 'for both animals and people a distinguished lineage divided those with hereditary claims to high status from arrivistes'. Those in the know began to cast aspersions

[63] Kinsman, *Black sheep*, p. 99.

[64] Ritvo, *Animal estate*, p. 61; Millais quoted in Kinsman, *Black sheep*, p. 190; R. Lydekker, *The sheep and its cousins* (1912), p. 60; Elwes, 'Notes', pp. 29, 32.

[65] *Hampshire Advertiser*, 1 May 1925; K. Williamson and J. M. Boyd, *St Kilda summer* (1961), p. 78.

[66] Fleming, 'Soay sheep'.

on the racial integrity of the St Kildas. St Kilda sheep became impure, mongrel 'Hebrideans' during an epoch when disdainful comments about *human* Hebrideans (including the islanders of St Kilda) were hardly unknown.[67] There is a certain irony here, in that the variegated-looking sheep which grazed Hirta in the eighteenth century must surely have looked quite like 'mongrels' to an observer; yet they came to be described as such only after they had been bred to an elegant black by the *crème de la crème* in the nineteenth century.

If their owners were disillusioned or disappointed by the eclipse of their sheep, they did not show it; at any rate they do not seem to have resisted the tide of expert opinion. The insouciant English gentleman has always cherished his amateur status – which means that in certain technical matters he must bow to the view of the professional.

X

In 1925 a St Kilda sheep owner in Hampshire declared that they did best when left to themselves. More recently, Lewis-Stempel has emphasized the resilience of 'Hebrideans' in terms of their catholic foraging habits, their tolerance of bad weather, and their relative freedom from disease.[68] On Hirta, the St Kildas seem to have been kept virtually as 'wild' as the Soays on Soay, or the Borerays on Boreray. It seems unlikely that the islanders were able to have much influence over the characteristics or genetic makeup of these sheep; in any case they probably welcomed diverse natural wool colours.

Natural selection would doubtless have increased the hardiness of any race of sheep living in St Kilda's testing climatic conditions, leading to a gradual reduction in size, and probably promoting differential mortality in rams (see below). Ewart noted that Soays seemed 'to be incapable of laying up a store of food to serve as a reserve during times of scarcity', and perhaps the same was true of the St Kildas.[69] The islanders may have unwittingly selected against more well-fleshed animals by picking them out for slaughter, although the nature of round-up operations described above throws into doubt how selective they were able to be. In the case of Soays, the absence of the estate factor for most of the year meant that the islanders could choose how many of the laird's sheep they declared as slaughtered (they were supposed to pay for every one). Only if they were intending to be scrupulously honest with the factor would it have been to their advantage to pick the fatter ones.

I have previously suggested that the capacity of 'Bronze Age' Soay rams to outfight 'Iron Age' St Kildas (as implied by Ryder) may have persuaded the islanders to restrict the senior race of sheep to Soay after the introduction of the St Kildas some two thousand years ago. However, accounts of rams fighting to the death in other parts of Britain, apparently of interest to newspaper readers in the early twentieth century, make it clear that in fights with St Kilda

[67] R. Buchanan, *The land of Lorne, or a poet's adventures in the Scottish Hebrides* (1871), p. 245. In T. Steel, *The life and death of St Kilda* (1965) the attitudes of the islanders, as recorded by scornful comments of late nineteenth century tourists, are taken to account in part for the later 'failure' of the community. See also A. Fleming, *St Kilda and the wider world: tales of an iconic island* (2005).

[68] *Hampshire Advertiser*, 1 May 1925; Lewis-Stempel, *Sheep's tale*, esp. pp. 51, 122–3, 145.

[69] J. C. Ewart, 'Domesticated sheep and their wild ancestors. II. Wild sheep of the argali type', *TransHASS*, Ser. 5, 26 (1914), p. 76.

sheep the superior weight of the Soays would not necessarily have been decisive. In 1927 it was reported that 'of the six rams which have recently met their death in combat with other rams on the Welsh border, five have been Ryeland rams, all of which have been worsted by Welsh rams half their size'. In 1926, in Denbighshire (north Wales) a Ryeland ram weighing about 2 cwt (about 100 kg) had his neck broken in a fight with a Welsh adversary half his weight, which had 'curved horns about 10 inches [25 cm.] in diameter.[70] In such fights, the neck-breaking or brain haemorrhage-inducing head-butt evidently constitutes the decisive fatal blow – so neither weight nor horn configuration are critical. Interestingly, the genetic signature of a few St Kilda rams reported to have been taken to Soay in the 1850s or 1860s has been picked up. Evidently the Soay rams were unable to keep them away from the ewes – as one might perhaps expect on such terrain. An extra complication is suggested by Lewis-Stempel's statement that 'given a choice of breeds to be brides, a ram will invariably choose his own breed over others. Sheep are intensely tribal'.[71] Perhaps it may be assumed that rams of both early St Kilda sheep races were quite feisty enough, and that, in the wide open spaces of Hirta, classical dominance-and-submission behaviour usually made fights to the death unnecessary. In this context, the impressiveness of his horns may have given the St Kilda ram a distinct advantage. Perhaps, however, the decision to confine Soays to the island of Soay was based not on the relative prowess of fighting rams but rather on an overall assessment of the qualities of Soays, and a desire to preserve them.

The islanders are known to have kept rams separately on Dun in the nineteenth century, and they would have been able to do this at any time after Dun became a small island, which, I have argued, probably occurred in the later Middle Ages.[72] In 1877, between 20 and 30 'of the native St Kilda breed', said to be 'of a light-brown colour' were being kept on Dun.[73] Perhaps the island had been pressed into service as a reserve for old-fashioned St Kilda sheep (unless a few of these had survived on Dun after it became an island). All in all, it seems very unlikely that much selection was possible, let alone achieved, in the traditional feralistic sheep economy. In 1842 David Low noted the lack of selection of rams in many flocks on Orkney and Shetland, the number of rams and ewes being equal. Kinsman's comment was that such management would provide 'a mechanism for the long term stability of the sheep type'.[74] If new sheep, perhaps especially new rams, were sometimes introduced, at St Kilda or elsewhere, the sheep's genetic inheritance would have become more complex. Nevertheless, all in all, it seems, genetic 'churn', rather than any clear direction of human selection, was probably dominant in the long term for both Soay and St Kilda sheep.

XI

Since the St Kildas became parkland animals they have been subjected to selective breeding. It has been suggested by Kinsman that about 30 per cent of the Hebridean genome is derived

[70] *Yorkshire Post and Leeds Intelligencer*, 27 May 1927; *Cornish Post and Mining News*, 1 Jan. 1927.

[71] P. Feulner *et al.*, 'Introgression and the fate of domesticated genes in a wild mammal population', *Molecular Ecology* 22 (2013), pp. 4210–21. Lewis-Stempel, *Sheep's tale*, p. 99.

[72] Fleming, *St Kilda and the wider world*, pp. 64–5.

[73] MacDiarmid, 'St Kilda', p. 245.

[74] Kinsman, *Black sheep*, p. 68.

from Jacob sheep.[75] Perhaps from the outset, breeders of St Kilda parkland sheep were selecting for black, an objective which would not have been difficult to achieve.[76] As we have seen, the original sheep purchased by Mark Milbank were variegated in colour. By 1867, however, the St Kildas at the HASS show in Glasgow could be described as 'wholly black', although another source describes the wool on their bodies as brown-black, turning to grey in the older animals. In 1872, St Kildas put on show in Glasgow and advertised for sale from Kilmory were described as black; those sold from Storrs Hall in 1887 were described as 'principally' black.[77]

Breeders of St Kilda sheep, and those who wrote about them, were interested in the fact that some of the rams were polyceratic, sometimes possessing four horns, and occasionally five or even six. Four horns were certainly a property of St Kilda sheep shown at Ayr in 1835, and at Glasgow in both 1867 and 1872.[78] It is not altogether clear how far breeders valued this property, or tried to select for it. According to Kinsman, in the 1870s 'only black fleeced individuals were selected and only multi-horned rams were selected'. But he also notes that 'over the past thirty years there has been a reverse and the breed is now predominantly two-horned 'with a major diminution in polled, scurred [hornless] and multi-horned stock'. The literature contains various assertions about where, when, and whether polyceratic sheep occurred; Donald Ferguson, ground officer on Hirta from the early 1890s, when he was in his fifties, said that there had been no four-horned sheep there in his time. Perhaps the most interesting remark is one attributed to the late Magnus Magnusson, who apparently claimed that four-horned tups were especially prized as fighting animals, the Vikings being known for their addiction to gambling on stallion and ram fights.[79] Such a scenario would have incentivized medieval attempts to select for this property. It seems that such selection would not have been too difficult. Around 1900 Andrew McElfrish at Lochmaddy apparently put several four-horned rams to a range of ewes and discovered that 'the four-horned lambs were exact replicas of the horns of the sires; so much so, that anyone could easily point out each ram's get'. The upper horns of a ram which received 'good grazing and a little hand-feeding in winter' measured 36 inches (91 cm); the lower ones impeded his grazing, although 'by grazing at the sides of slopes, banks and ditches, he was able to pick up a living'.[80] On Hirta, such a ram would not have starved.

[75] D. Kinsman, 'History of the Hebridean sheep', in Braithwaite, *Hebridean sheep*, p. 19.

[76] Josephine Pemberton (pers. comm.) writes: 'in Soays, the self allele at the agouti locus that causes the same colour all over is recessive, so will breed true (i.e. self x self gives self). The light/dark variation in Soays is caused by another locus called TYRP1 and here the dark allele is dominant so not quite so easy to breed true, but selection would quickly get you there given such simple genetics'. In 1908 it was claimed that Mendelian experiments had shown that 'cross sheep can produce absolutely pure types, and that when it is found necessary to rejuvenate a flock which may have deteriorated by sib-breeding, this true type can be reinstated within a couple of years in place of the five years usually taken by breeders' (*Dundee Courier*, 7 July 1908).

[77] *Newcastle Courant*, 2 Aug. 1867; *Evening Mail*, 5 Aug. 1867; *Paisley Herald and Renfrewshire Advertiser*, 14 Dec. 1872; *The Field*, 28 Dec. 1872; *Lakes Chronicle and Reporter*, 23 Sept. 1887.

[78] *Carlisle Journal*, 10 Oct. 1835; *Newcastle Courant*, 2 Aug. 1867; *Paisley Herald and Renfrewshire Advertiser*, 14 Dec. 1872.

[79] Kinsman, *Black sheep,* p. 19; Elwes, 'Notes', p. 26; J. M. Watson, 'Some thoughts on the origins of the Hebridean breed of sheep, in Braithwaite, *Hebridean sheep*, p. 21.

[80] Letter from McElfrish quoted in Elwes, 'Notes', pp. 30–1.

The St Kildas or Hebrideans have been in the hands of breeders for over 160 years. A recent writer states that 'it would appear that our Hebrideans today do not have quite as strong a claim to belong exclusively to the northern short-tailed group of sheep as other breeds and that flocks were put together not from pure Norse-derived stock alone, but also from later part-Linton animals, selected simply because they were black' ('Linton' was the old term for Blackface).[81] It would be interesting to know whether this author would have said the same thing had he known that the St Kildas did originally come from St Kilda, and even more interesting to hear comment from a geneticist. Does the genetic distance between the St Kildas (or 'Hebrideans') and the other 'cognate' breeds surveyed by Kinsman, such as the Manx Loughtan or the Shetland, need to be reconsidered or perhaps freshly investigated? Do such distances provide us with historical information? Would it be possible, desirable or useful to try to 'breed back' towards a variety of St Kilda sheep looking more like the originals, perhaps more like their 'Iron Age' ancestors? Such questions may be well worth considering in the light of the new historical understanding for which I have argued here.

XII

If we are concerned with former appearances, the 1884 photograph of Thomas Staniforth's redoubtable St Kildas, with their fuzzy 'top-knots', assumes considerable importance, as Kinsman appreciated.[82] The rediscovery of comparable early images would be of inestimable value. This photograph in particular is an important reminder that breeding towards black would have been done with varying degrees of knowledge, skill and perhaps enthusiasm, especially in the early days. Many of the early Hebridean flocks would have been 'works in progress', so to speak. To this day, of course, owners of 'rare breeds' still have choices to make, and outcomes to ponder; there is scope for discussion and argument about the breed's general direction of travel, and that of individual flocks. The animals exhibited at shows would have been carefully selected to reflect qualities desired or specified: in this case, blackness and polyceratism. Descriptions in newspapers, on which I have mostly relied here, would often have reflected such selective preferences, and also been affected by the quality of journalists' notes or recollections. In the parks, presumably sheep would often have looked more variegated than selected show animals. By turning variegated St Kildas into black parkland 'Hebrideans', sheep breeders have unwittingly increased the apparent distance between Soays and St Kildas, which now hide – at least in genetic terms – in plain sight. In terms of the appearance of 'prehistoric' sheep, a good guide may be the picture of the 'polycerate [multi-horned] breed of the Hebrides', painted by William Shiels in the late 1840s, and reproduced by Kinsman (Figure 3). Kinsman's comment is that these sheep are quite similar to modern Hebridean sheep, except for the range of fleece colours. He also cites Rosa Bonheur's 1857 painting entitled 'sheep of the Highlands',

[81] Watson, 'Some thoughts', p. 22.

[82] It is conceivable that this photograph features George Easton, Staniforth's farm manager, and also that the suit he is wearing was the suit of St Kilda tweed which he had had made (*Lakes Chronicle and Reporter*, 9 Sept. 1887).

[83] Kinsman, *Black sheep*, cover, figs 4.3, 3.13, p. 69 and plate 3b.



FIGURE 3. Hebridean sheep painted by William Shiels, 1844–50

Source: Wallace, *Farm Livestock of Great Britain*, 1907

FIGURE 4. 'Sheep of the Highlands', painted by Rosa Bonheur, 1857

Source: The Wallace Collection via Creative Commons, UK Art.





FIGURE 5. A group of Boreray sheep



FIGURE 6. A friendly Boreray ram

which also seems to convey a good impression of a comparable race of pre-modern sheep (Figure 4).[83]

In this context, it must be worth mentioning the sheep of the island of Boreray, which were also systematically exploited by the islanders of Hirta; poor weather conditions had prevented their evacuation in 1930 (Figures 5 and 6). Although there is a 'Soay and Boreray Sheep Society', Borerays are nowadays mostly left to their own devices on their infrequently visited island. They are described as a cross between early Blackfaces and 'the old Scottish shortwool sheep that still survive at North Ronaldsay in Orkney and in the Shetland Islands'; they have 'a largely creamy-brown coat coloration; about a quarter of them being grey-brown, a few blackish and the occasional one tan in colour'.[84] Face colours vary considerably. The Borerays do very well on their seabird-fertilized island, where numbers may reach six or seven hundred, a very high density of about 12 sheep per hectare. Lambing percentages are very high ('comparable to the carefully shepherded Border hirsels');

[84] Love, *Natural history*, pp. 235–7, following Ryder quoted in J. Bullock, 'Borerays, the other rare breed on St Kilda', *The Ark*, Aug. 1983), p. 19. For fuller information, see this article, and J. M. Boyd, 'The Boreray sheep of St Kilda, Outer Hebrides, Scotland: the natural history of a feral population', *Biological Conservation* 20 (1981), pp. 205–27.

experiments have demonstrated the speedy development of an effective maternal bond and of suckling behaviour, which probably reduces the mortality of newborns. There are about six ewes to one tup, suggesting that 'many tups simply do not have enough body reserves to last out the long St Kilda winter'.[85] Online images show the diversity of the Borerays' physical appearance; despite the Blackface admixture, they may well be one of the best currently available approximations to the appearance of late prehistoric sheep at St Kilda and elsewhere. Those seeking sheep for reconstructed 'Iron Age farms' might do well to look beyond the Soays – to Borerays, Manx Loaghtans, and comparable races of northern short-tails which have not been bred for black like the St Kildas.

XIII

From the mid-1850s, St Kilda sheep found favour with a coterie of rich and aristocratic landowners, who converted them into elegant black parkland sheep, whose popularity spread, especially in the twenty or thirty years leading up to the First World War, along with the vogue for St Kilda and its tweed. However, it is the qualities selected for during their long sojourn on St Kilda which make their descendants, the 'Hebrideans', more sustainable in some respects today than more 'advanced' breeds.[86] It was not until 30 years after the initial spread of the St Kildas that archaeologists and palaeozoologists came to recognize the greater antiquity of the Soay race of sheep, a finding which led influential authorities to downplay the purity and historical status of the St Kildas; denying that they came from St Kilda, they renamed them Hebrideans. It may now be time to re-evaluate the historical role and genetic inheritance of these sheep, and also that of the Borerays, the Cinderella race whose perceived historic status may also have been affected by focus on the Soays. It might well be more appropriate for Borerays, rather than the Soays, to accompany reconstructions and visualizations of Iron Age round-houses. Work on the genetics of these 'primitive' sheep does not so far seem to have clarified their history and relationships within north-west Europe. Perhaps now would be a good time to initiate such a project.

[85] Bullock, 'Borerays'

[86] Fleming, 'Soay sheep', p. 7, quoting information from Kinsman, *Black sheep* (2001); Lewis-Stempel, *Sheep's tale*.

The changing pattern of agricultural land ownership and occupancy in Great Britain in the late twentieth century: An analysis of the workings and findings of the Northfield Committee, 1977–1979

by Richard Munton and Terry Marsden

Abstract

The twentieth century witnessed periodic bouts of public and political concern over who owned and occupied agricultural land in Great Britain. Liberal and then Labour governments were at various times concerned with the domination of landed estates, questions of taxation, land nationalization and the appropriate balance between public and private rights. These issues came increasingly to the fore as the population of the country doubled, public demands for access increased, and, especially after World War II, the urgent need to safeguard and enhance agricultural production. In the 1970s, a new round of concern emerged stimulated by recent incursions into the agricultural land market by new buyers (from home and overseas) who saw land as a safe investment in a period of high inflation and economic instability. This led the government of the day to set up a Parliamentary inquiry under the chairmanship of the Rt Hon Lord Northfield. This inquiry proved unique not just in its remit and eventual depth of treatment but also as a rich source of information on the condition and complexity of land occupancy at that time. Its findings provide a key historical benchmark against which more recent, and much needed, studies of agricultural occupancy change can be judged and critically assessed. The paper provides an account of the ways in which the Northfield committee of inquiry conducted its work, how the debates surrounding its remit evolved and why its recommendations had little immediate impact on public policy at the time.

Access to land, preferably secure access, remains a requirement for most agricultural enterprises. Changing patterns of access, and the motives and expectations of those holding these rights, is thus a matter of considerable importance to our understanding of agricultural efficiency and productivity. A substantial literature exists on how rights to landed property become established and how their almost infinite divisibility can be manipulated.[1] As important are

[1] For example, D.W. Bromley, *Environment and economy: Property rights and public policy* (1991); M. L. Harrison, 'Property rights, philosophies and the justification of planning control', in M. L. Harrison and R. Mordey

the debates surrounding how the wider public interest can be ensured where systems of private property, and the law which sustains them, retain a controlling interest.[2] These matters assume an even greater significance where land is regarded as in short supply, land-use competition is intense and where land is viewed as a limited but precious national resource.[3]

Despite the efforts of Cahill and others, there is no easily accessible and comprehensive record of agricultural land ownership and occupancy patterns for England and Wales, especially in the area of private property which today makes more than 90 per cent of the total.[4] Public debate continues but with minimal legislative response in recent decades in England and Wales, except for the Countryside and Rights of Way Act (2000), although reform has been more actively pursued in Scotland following the passage of the 2003 Land Reform (Scotland) Act.

I

It is now more than 40 years since the Government last initiated a comprehensive review of agricultural land occupancy. In September 1977, the Minister of Agriculture, Fisheries and Food, the Rt Hon. John Silkin, appointed a Committee of Inquiry under the chairmanship of the Rt Hon. Lord Northfield, with the following terms of reference: 'to examine recent trends in agricultural land acquisition and occupancy as they affect the structure of the agricultural industry; and to report'.[5] The committee's remit did not include Northern Ireland because of the different land tenure system operating in the province, although members of the committee visited four west European countries, including Eire, to gather international experience on land tenure policy.

These broad terms of reference were underlain by a number of specific issues that had been widely discussed in the agricultural press and in Parliament during the previous year and to which the Minister was seeking authoritative answers. These included the reasons for the rising price of farmland and its implications for costs of production and access to the industry, the increasing purchase of agricultural land by financial institutions and overseas buyers, and

Note 1 *continued*
(eds), *Planning control: philosophies, prospects and practices* (1987), pp. 32–58; S. Whatmore, R. Munton and T. Marsden, 'The rural restructuring process: emerging divisions of agricultural property rights', *Regional Stud.* 4 (1990), pp. 235–45.

[2] I. Hodge and W. Adams, 'Property institutions for land use conservation: towards a post-neoliberal agenda', *J. Rur. Stud.* 36 (2014), pp. 453–62; G. Cox, P. Lowe and M. Winter, 'Private rights and public responsibilities: the prospects for agricultural and environmental controls', *J. Rur. Stud.* 4 (1988), pp. 323–37; G. Parker and N. Ravenscroft, 'Land, rights and the gift: the Countryside and Rights of Way Act 2000 and the negotiation of citizenship', *Sociologia Ruralis* 41 (2001), pp. 381–98.

[3] The Government Office for Science, *Land use futures: Making the most of land in the 21st century* (Foresight Land use Futures Project, 2010); J. Burchardt, J. Doak and G. Parker, *Review of key trends and issues in UK rural land use* (Living Landscapes Project, Final report to the Royal Society, 2020).

[4] A. Wightman, *Who owns Scotland* (1996); K. Cahill, *Who owns Britain* (2001); R. Munton, 'Rural land ownership in the United Kingdom: changing patterns and future possibilities for land use', *Land Use Policy* 26S (2009), pp. S54–S61; G. Shrubsole, *Who owns England* (2019); A. Butler and M. Winter, *Agricultural tenure in England and Wales, 2007* (Centre for Rural Policy Research, University of Exeter, 2008).

[5] Report of the Committee of Inquiry into the Acquisition and occupancy of agricultural land, Cmnd 7599 (1979), p. 1. The report is referred to in the remainder of the article as the Northfield Report.

the future of the statutory smallholdings estates.[6] This agenda is faithfully reproduced in the Note of the committee's first meeting. But almost as soon as it began its work the committee realized that any meaningful investigation of these specific issues would require a much broader analysis of trends in agricultural land tenure, including questions of land ownership as well as land occupancy, and how these sat within a rapidly evolving national economic and political context.

In section II we provide a brief analysis of this context. In section III we review the committee's membership, its approach to collecting evidence and why delivery of its report was so delayed. In section IV we assess some of the committee's findings, especially its concerns over the future of the let sector, and in section V we discuss some of the problems experienced by the committee in obtaining robust information on the increasingly complicated pattern of occupancy. Finally, we seek to explain why its report had little immediate impact on policy and make a short assessment of how aspects of land occupancy have evolved since 1979 in relation to the committee's expectations.

II

It was no accident that the terms occupancy and acquisition rather than ownership were used in the terms of reference. Land ownership was still associated in the public mind with wealth and power and an obstacle to the democratization of access to the countryside, making a general review of agricultural land tenure a politically sensitive matter. Moreover, the Labour government of the day had already passed legislation on capital taxation and security of tenure for agricultural tenants, both of which would impact more heavily on the agricultural landlord than either the tenant or owner occupier, and may have felt it had already acted enough in this arena. Under Part II of the Agriculture (Miscellaneous Provisions) Act 1976, those tenants holding full agricultural tenancies were granted security of tenure for up to three generations of successor, including the present occupier, provided each successor met eligibility and suitability criteria, potentially reducing the landlord's estate management options such as taking land in hand.[7] The introduction of Capital Transfer Tax (CTT) to replace Estate Duty, with effect from 1974 for lifetime transfers and from 1975 for transfers on death, discriminated against private landlords by, for example, denying landlords agricultural and business reliefs available to those farming their land. The absence of these reliefs made it very difficult to pass on tenanted estates intact whereas both tenants and owner-occupiers, with careful tax planning, could significantly minimize the impact of the tax.[8]

Beyond this, the more emotive issue of land nationalization was still part of Labour Party policy even if in the world of contemporary politics it was not a priority issue. In the event, the case for land nationalization was readily dismissed by the committee, even if some members thought an extension of public ownership or greater public regulation to meet

[6] Northfield Report [hereafter, North. Rept], pp. 3–4. The financial institutions are defined as insurance companies, pension funds, property unit trusts and property bonds.

[7] For a brief review see North. Rept, pp. 104–7.

[8] North. Rept, pp. 71–8; 216–20; Appendix VIII, pp. 354–9.

specific objectives, such as access to the industry by young farmers without a family farming background, was desirable.[9]

Equally important, the committee was appointed towards the end of a decade of unprecedented change in the political and economic context of the farming industry, including entry into the EEC in 1973, high rates of inflation and an unstable land market. Combined with the introduction of CTT and alterations to tenure legislation these circumstances created novel and increasingly complicated decision-making environments for owners and occupiers. What did not change, at least at this time, was the close cooperation between MAFF and the National Farmers' Union (NFU) in the formulation of agricultural policy and their ability to exclude other interest groups, such as consumers, environmentalists and part-time farmers, from a central role in policy making.[10] From the second half of the 1960s, policy focused upon agricultural expansion seeking to take advantage of new industrial technologies which especially advantaged larger producers. The primary goal was to raise national output at about two and a half per cent per annum with the aim of increasing self-sufficiency in food production.[11] Entry to the EEC with its higher support prices and expansionist policies under the CAP also provided the farming community with further confidence to invest where this was possible.[12]

The very high rates of inflation in the 1970s, peaking at 25 per cent in 1975 and averaging 13 per cent per annum over the decade, put a squeeze on farming income and made the use of nominal values to measure change problematic. For example, in 1970, UK aggregate farming income amounted to £575m rising to £1256m by 1977, an increase of 218 per cent.[13] When adjusted to real values over the same period using the Retail Prices Index, the increase is closer to 5 per cent. Nonetheless, this was a real increase, the gain being shared between fewer farming families, farm holdings declining by about one and a half per cent per annum after allowing for the elimination of very small holdings.[14] Overall, farming businesses, especially the larger ones, were becoming more profitable even if incomes declined right at the end of the decade.

Also, until the early 1960s, there was a close association between farming incomes, rents and agricultural land prices.[15] In the first half of the 1960s land prices rose significantly, whilst farming income did not do so until later in the decade, only for prices to rise sharply again in the 1970s.[16] In nominal terms, the average price for all sales of agricultural land in England

[9] North. Rept, pp. 235–9.

[10] M. J. Smith, *The politics of agricultural support in Britain* (1990); M. Winter, *Rural politics: policies for agriculture and the environment* (1996).

[11] MAFF, Food from our own resources, White Paper, Cmnd 6020 (1975); MAFF, Farming and the nation, White Paper, Cmnd 7458 (1979).

[12] B. Hill, *Farm incomes, wealth and agricultural policy* (1989); Winter, *Rural politics*.

[13] MAFF, Annual review of agriculture 1981, Cmnd 8132 (1981).

[14] MAFF, DAFS, DANI, *The changing structure of agriculture 1968–1975* (HMSO, 1977); Hill, *Farm incomes*. See also A. Harrison, *Farms and farm businesses in England* (Dept Agric. Econ. and Mgmt, University of Reading, Misc. Study 62, 1975) for an analysis of farming businesses in relation to farm holdings.

[15] G. H. Peters, 'Recent trends in farm real estate values in England and Wales', *Farm Economist* 11 (1966), pp. 45–60; K. Hyder and A. H. Maunder, 'The price of farms', *Oxford Agrarian Stud.* 4 (1974), pp. 3–14.

[16] R. J. C. Munton, 'An analysis of price trends in the agricultural land market of England and Wales', *Tijdschrift voor Econ. en Soc. Geographie* 67 (1976), pp. 202–12; North. Rept, pp. 91–102.

and Wales increased from £510 per hectare in 1970 to £1802 per hectare in 1977, farm rents responding similarly after 1974.[17] In real terms, indexing 1970 at 100, prices reached 236 in 1973, declined to 150 by 1977 but rose again to 191 by 1980.[18]

Explanations for the greater rise in land prices than farming incomes include roll-over capital gains concessions in the early part of the decade, capital taxation considerations, growing recognition of the investment potential of farmland and, linked to this, increasing land purchase by financial institutions from the later 1960s.[19] All these considerations, combined with a declining proportion of the farmed area being offered for sale, contributed to the rise in land prices. But these effects were often seen as less important than the purchasing activities of existing farmers encouraged by rising incomes which, in turn, could be attributed in part to high support prices under the CAP.[20] As reported by the Northfield committee, in 1978, single individuals (usually farmers) made up 86.6 per cent of all land purchasers in England and Wales and they were responsible for 71 per cent of the area transacted.[21] Just about all those who owned land were gaining from real rises in farming income and land prices in the period prior to the committee's establishment, even if many owners chose to see higher land prices as a difficulty rather than an opportunity.[22]

III

The members of the Northfield Committee and their occupations are listed in Table 1. Without question, all were highly respected, well-connected and practising members of their professions. Collectively, they were selected to provide a wide range of independent expertise within the land tenure field across all parts of Great Britain. Two external advisers were also appointed to support the committee in its work. They were Alister Sutherland (University of Cambridge) who advised on economic matters and Richard Munton (University College London) who advised on the activities of the financial institutions and the agricultural land market. They were invited to all the main committee meetings, to sub-committees where relevant, to public meetings and visits, and to discussions with those organizations central to the committee's remit. For example, Richard Munton took part in nearly 50 such meetings and discussions, had regular interchange with individual members of the committee and secretariat, and provided detailed commentary on drafts of parts of the final report.[23]

Collectively, the members were pragmatists and it is not surprising, perhaps, that a committee including many established farming and landowning interests started from a

[17] North. Rept, pp. 91–102.

[18] There are constant problems in comparing like with like land price series and so these figures should be seen as indicative rather than precise.

[19] R. J. C. Munton, 'Financial institutions: their ownership of agricultural land in Great Britain', *Area* 9 (1977), pp. 29–37; see also North. Rept, Appendix V, pp. 304–39.

[20] Hyder and Maunder, 'The price of farms'; B. Traill, 'The effect of price support policies on agricultural investment, employment, farm incomes and land values in the United Kingdom', *J. Agric. Econ.* 33 (1982), pp. 369–86.

[21] North. Rept, pp. 63–7.

[22] H. Newby, C. Bell, D. Rose and P. Saunders, *Property, paternalism and power: class and control in rural England* (1978), ch. 3, pp. 73–145.

[23] They were appointed in time to attend the Dec. 1977 committee meeting, missing the first two meetings of the main committee.

TABLE 1. Membership of the Northfield Committee

Name	*Occupation*
The Rt Hon Lord Northfield	Politician (Labour Life Peer)
Martin Argles	Chartered Surveyor
Denis Carter (later Lord Carter)	Farmer – England
Oscar Colburn	Farmer – England
Peter Giffard	Barrister/Landowner
Arthur Green	Financial Institutions Representative
Alexander Kenworthy	Agricultural Journalist
Alistair MacLeary	Academic (Scottish Land Law)
Watson Peat	Farmer – Scotland
Leonard Pike	Trade Union Official (NUAAW)
Ernest Richards	Farmer – Wales

Sources: Northfield Committee Report, p. (iii); personal knowledge.

position that its recommendations should not lead to radical change. Recommendations should seek, they asserted, to:

> preserve a spread of ownership types, occupancy and farm size; attempting to build upon what we already have; and avoiding changes that would lead to a rigid or uniform structure… and to enable British agriculture to retain as much diversity as possible in its structure so that it can continue to respond to changing circumstances.[24]

This perspective led some observers to suggest that the committee was always intent upon supporting the status quo.[25] Whilst this is probably largely true it is not clear that all the members set out with this intention when they were appointed. But as the inquiry developed most members thought the level of concern expressed by parliamentarians, the press and in much of the written evidence, was overstated.

The committee was especially concerned to facilitate two main objectives for policy and these acted as key tests later in the inquiry when recommendations for change were being debated. The first was to promote an efficient agriculture and the second to retain personal commitment and incentive for all those working in the industry. In this sense the committee endorsed the post-World War II consensus that agriculture should retain its primary productivist position over competing interests in the countryside and was, at least implicitly, supportive of the current expansionist policy. To achieve this, the current diversity of landholding was seen as essential. It did, however, also accept that a successful farming industry depended in part upon the retention of viable rural communities and the conservation and preservation of the countryside. Although not the dominant perspective, it led the committee to argue that a

[24] North. Rept, p. 8.
[25] For example, B. Keatley, 'Northfield – a muffled report', *Estates Gazette* 251 (1979), pp. 250–1.

holistic position should be adopted when evaluating potential future patterns of ownership and occupancy, adding a further dimension to debates among committee members.

The committee took nearly two years to publish its findings, the report being submitted in May 1979 to the then minister, the Rt Hon. Peter Walker, in Mrs Thatcher's first government. In government, it had been previously assumed informally that the report, focusing upon a small number of largely discrete topics, would be available in six months. The long delay reflected the lack of precise and reliable information in key areas, the large quantities of evidence submitted to the inquiry and the committee's efforts to draw extensively on the knowledge of the many professionals working on land tenure. But all these reasons were secondary to the broad approach adopted by the committee which went well beyond matters specifically identified by the Minister. As the report explains, these included 'the increasing impact of capital and revenue taxation, changes in security of tenure legislation, growth in farm size, loss of land from agriculture, increases in rents and land prices, the relative profitability of in-hand farming compared to letting, the effects of inflation and changes in the forms of occupancy', some of which were to prove more contentious and time consuming than the agenda highlighted by the Minister.[26]

The committee wrote to a wide range of bodies known to be interested and active in the subject matter and through a Press Notice invited anyone else who wished to do so to submit written evidence. The response was considerable. Many organizations wrote to the committee more than once, others were contacted several times and others conducted surveys of their members to collect up-to-date factual information and views.[27] For example, by the end of the inquiry, the Inland Revenue had made 12 separate submissions, MAFF and the NFU 11 submissions each, the Country Landowners' Association nine and the Royal Institution of Chartered Surveyors seven. The ALI/EVIDENCE series (see below) which identifies 174 written submissions includes supplementary evidence on a further 91 occasions from these same organizations.

The report makes clear that the written evidence was too extensive to justify its publication at the time. Instead, it says that most of the written evidence and some of the committee's background papers would be made available to public inspection at MAFF's main library in London, at the Welsh Office libraries in Cardiff and Aberystwyth and in the Department of Agriculture and Fisheries for Scotland's library in Edinburgh. But it was not until October 2018 that MAFF's set of papers was made available in The National Archives (TNA).[28] The information now available in TNA, termed here the 'Northfield Papers', have been used in the preparation of this account along with a second set of papers now held in Professor Marsden's private library, although the numbering system used here is based upon that developed by the committee secretariat rather than that at TNA.[29] The Northfield papers are extensive and

[26] North. Rept, pp. 5–6.

[27] Some key organizations had prepared reports just prior to the committee's establishment. See, for example, Royal Institution of Chartered Surveyors, *The future pattern of landownership and* occupation (1977); Country Landowners' Association, *The future of landownership: a discussion paper* (1976).

[28] Held in TNA folio MAF 763. Recent enquiries have led to no response from the other libraries.

[29] This set of 'Northfield Papers', more than 95% complete, can be consulted by contacting Professor Marsden at MarsdenTK@cf.ac.uk.

consist largely of notes on committee meetings and three main series of papers. One series is made up of the written evidence submitted to the committee (ALI/EVIDENCE/ 1-174), including the Secretary's summaries of their contents where appropriate. A second series consists of internal analyses prepared by members of the committee, its advisers and the secretariat, and drafts of the final report (ALI/ 1-115). The third series, produced largely by the secretariat (NS/ 1-167), contains a range of material including purely administrative matters, reports of sub-committee meetings and schedules for field visits.

The committee decided not to take formal oral evidence. Instead, it embarked on a series of meetings with major organizations which had submitted written evidence. The meetings varied widely in content and purpose. Some were with government bodies, including the Inland Revenue, MAFF, the Association of County Councils and the Highland Islands Development Board; others with major organizations, such as the NFU, the Country Landowners' Association and major firms of land agents; with institutional owners, such as the Crown Estate Commissioners and the Church Commissioners; and with members of umbrella bodies in the finance sector including the British Insurance Association and Committee of Property Unit Trusts. To ensure that non-metropolitan views were not overlooked, the committee undertook a series of regional visits where farmers, landowners and land agents were met and questioned, followed by public meetings which were open to anyone to attend.[30] Most of the time at these meetings was spent in very lively question and answer sessions reflecting different local agendas.

Together, these decisions undermined any possibility that the committee could conclude its work in six months. After two months, the initial time given to organizations to respond with their evidence, only 50 per cent had done so. Many requested an extension so that the fruits of their own inquiries could be included. Virtually every organization invited to prepare written evidence did so, whilst almost every academic known to be working in the field also contributed.[31] Their evidence was invaluable because the Committee did not have the means to conduct its own investigations. Only in one area, the amount of agricultural land owned by traditional institutions and public sector bodies, did the committee secretariat work closely with an outside organization, in this case the Centre for Agricultural Strategy at the University of Reading, to produce a definitive set of figures.[32] As it turned out, their separate inquiries led to a similar overall figure of ownership of approximately 1.5 million hectares or 8.5 per cent of agricultural land in Great Britain.

These circumstances placed the Chairman in a difficult position between his political masters and the committee. The Note of the November 1977 committee meeting reads 'In discussion of the future programme of the work and timing [of the report], the Chairman emphasized that he was anxious to meet the Minister's timetable. It was important to produce a report which gave major pointers on the important topics rather than a lengthy survey of the whole situation. After discussion, it was agreed that the absolute deadline for completion

[30] North. Rept, pp. 2–3.

[31] Only two organizations, including the Conservative Party, declined to give evidence.

[32] A. Harrison, R. B. Tranter and R. S. Gibbs, *Landownership by public and semi-public institutions in the UK* (Centre for Agricultural Strategy, Paper 3, University of Reading, 1977).

of the report should be June 1978'.[33] The committee would, in due course, neither accept this interpretation of its remit nor even the revised timetable. Concerns over the financial institutions, overseas buyers of land and the Smallholdings Estates, central to the Minister's agenda, were viewed as a necessary part of the whole but by no means a sufficient account of current occupancy circumstances.

Illustrative of the consequences of broadening the agenda, particularly regarding the private landlord and the prospects for the let sector, is the treatment of two early draft papers submitted by the committee's advisers. At its sixth meeting in early March 1978, the draft report on the activities of the financial institutions (ALI/21), one of the most contentious issues before the committee began its work, was reviewed and largely agreed with final revisions to be made in the next couple of months. By contrast, at the fifth meeting in February, a draft paper entitled 'Notes on capital taxation and farm structure' (ALI/15) not only revealed the huge complexities of the topic but also major differences of view among committee members. In an effort to make progress, the draft paper was sent for comment to officials in MAFF and then to the Inland Revenue and HM Treasury. Their replies also took different positions both between themselves and with the author, initiating a fractious debate that continued up to the writing of the final report a year later. The notion of a linear process of evidence collection, analysis, debate and conclusion was proving inadequate leading to a more reflective and cyclical process of deliberation. Furthermore, each time the committee held a 'brainstorming' meeting, as in June 1978, to allow a more considered discussion than was possible in committee meetings, the outcome was more often a further set of questions to address rather than newly agreed positions on the existing agenda. It is no surprise that the outcome was a report that contained a long list of conclusions and recommendations, 127 in all, of which only 18 had unanimous support. Many of the remaining 109 were often arrived at after considerable discussion and compromise.

All this material fed into the committee's internal reports and analyses (ALI/ 1-121). They offer interesting insights into the work of the committee and its advisers. Collectively, they lend as much 'explanation' to the final text as does the externally generated written evidence. There are 121 reports and a further 20 addenda largely prepared by the Secretary or a member of his team. The advisers also contributed to, or sole authored, nearly 30 papers and members of the committee at least another 23. Most of the latter were written in the summer and autumn of 1978 when debates over what the report should recommend were at their most intense. Several of the reports reveal the committee's developing agenda (ALI/ 4;15;21;48;65;80) and even the frustration of the advisers as they sought to get the committee to think more clearly and precisely about its objectives and how they were to be achieved (ALI/ 83;85).

IV

The final report of over 350 pages is, in places, dense and technical. It is divided into two main parts. In the first, the committee describes its approach and what was known about patterns of ownership and occupancy in the 1970s. In the second, the matters raised by the Minister are addressed chapter by chapter but with an additional long section on the private landlord

[33] North. Comm., Minute of committee meeting, Nov. 1977.

and the let sector. Two members of the committee, Oscar Colburn and Watson Peat, at the last moment wrote an 'alternative view' which is published after the main report.[34] In particular, they adopt a less charitable position towards the new buyers in the land market than the rest of the committee and were more concerned about the future prospects for private landlords, the let sector and family farming. It was agreed, however, that their account should not be treated as a minority report and they signed the final report.

Space limits in this paper do not allow us to review all the evidence. The report itself does this very thoroughly. Instead, a brief summary is provided here of the evidence and conclusions reached on new buyers in the land market and then more space is given to the debate around the future of the let sector. Critical views were expressed by most respondents on the potential impact of capital taxes, especially CTT, on the future of private landlordism, the vibrancy of the let sector, and the future efficiency of the farming industry. Most respondents also found little, if anything, positive to say about the foreign ownership of land, even if those best placed to know, the chartered surveying profession, thought this to be largely a non-issue given the limited impact of foreign buyers on the land market, especially in England and Wales. Getting accurate information proved impossible with the best guess being that overseas purchasers held between 200,000 and 300,000 hectares mainly concentrated in upland estates in Scotland. Their purchasing, and selling, of these estates have a long history but had increased in recent years. Perhaps one-third of this area had been acquired during the 1970s. The committee concluded that, with the possible exception of highland Scotland, limits on such acquisitions were not justified even if buying could be expected to continue whilst land prices in Great Britain remained lower than in most of the EEC.[35]

Most respondents were also opposed to the financial institutions, viewing them as absentee landlords disconnected from their properties and blaming them, without much supporting evidence, of causing the general rise in land prices and farm rents since the mid-1960s. The committee disputed this latter claim even if it accepted that their purchasing might have contributed to rising land prices on high quality let land in lowland, eastern England where most of the acquisition had occurred.[36] By 1978, the financial institutions were thought to own about 215,000 hectares, or 1.2 per cent of the agricultural area, contributing to perhaps 3 per cent of total agricultural output because of the quality of land they had purchased. Attempting to predict the scale of future acquisitions was especially difficult because it meant assessing the future nature of the national economy as much as changing opportunities in the agricultural land market, never mind the effects of recent tenure legislation and tax changes on the actions of private landlords. After extensive debate, the committee decided simply to project forward net purchase at between 24,000 and 40,000 hectares per annum based on recent experience. By 2020, these projections would have given an overall figure of between 1.22 and 1.90 million hectares or between 6.9 per cent and 10.7 per cent of the 1978 agricultural area. The committee thought the lower figure the more likely primarily because of a falling supply of good quality farmland to purchase, the increasing maturity of pension funds and an expected decline in the rate of inflation.[37]

[34] North. Rept, pp. 258–86.
[35] North. Rept, pp. 168–71.
[36] North. Rept, pp. 59–60.
[37] North. Rept, pp. 133–6.

The committee and respondents were especially concerned about the future of the let sector and private landlordism, a subject that was not among the priorities identified by the Minister. The committee was aware that the let sector had been in decline throughout the twentieth century from about 90 per cent of the farmed area in 1908 to about 45 per cent in the mid-1970s, a process of change that contributed to the rise of mixed tenure on many farms.[38] Moreover, the latter proportion was almost certainly an overestimate. Some of this land was not being rented at 'arms length' as the occupier also had an interest in the ownership of the land through, for example, a family farming company or various forms of partnership, often established for taxation reasons. Harrison had investigated this emerging situation in an earlier study of farm business forms and his conclusions were confirmed by a range of empirical studies conducted around the time the committee was sitting.[39] From these, the committee judged that only 35–40 per cent of all farmland was being rented at 'arms length', and this proportion would fall further, exacerbated by the small number of new farms available to rent. The real question was by how much.

The committee attempted to estimate the future size of the let sector up to 2020. This proved very difficult to do not least because of the wide and varying range of pressures operating on landlords of different kinds. For example, the traditional institutions and public sector owners let almost all their land as they had no interest in farming it, and they were expected to continue doing so. As it has turned out, since the 1970s some public sector landowners have been privatized and local authorities have been squeezed financially leading them to sell some of their landed assets.[40] Even more importantly, estimating the future behaviour of private landlords, who in the 1970s owned more than 70 per cent of tenanted land, was especially problematic because recent capital taxation legislation was expected to undermine their resolve to continue letting land often taking it in hand when the opportunity arose. Alternatively, whilst the increased security afforded tenants under the 1976 Act might maintain the area of let land for a period it could also have the opposite effect of encouraging landlords to sell the vacant possession to sitting tenants. The committee concluded that the 'arms length' tenanted sector would constitute no more that 20–25 per cent of the farmed area by 2020 with the private landlord contributing only about half of this.

Such an outcome would represent a major structural shift in agricultural land tenure but why was the committee so concerned about this change? In the first place, the great majority of those submitting written evidence emphasized the virtues, even national sanctity, of the landlord-tenant system. It was argued that the system provided opportunities for aspiring farmers without substantial assets to enter the industry – keeping the farming ladder alive – by avoiding the mortgage costs of land purchase in an era of high land prices; it allowed the sharing of capital and expertise between landlord and tenant; and together these

[38] B. Hill, 'The rise of the mixed tenure farm: an examination of official statistics', *J. Agric. Econ.* 25 (1974), pp. 177–82.

[39] Harrison, *Farmers and farm businesses*; MAFF, *Wyre Forest Survey* (1977); D. Rose, H. Newby, P. Saunders and C. Bell, 'Land tenure and official statistics', *J. Agric. Econ.*, 28 (1977), pp. 69–75; J. M. Abecassis, 'A survey of private agricultural land ownership in England 1977–8' (Unpubl. Paper, Agric. Econ. Soc. Conference 1978); Agriculture EDC, *The ownership of land by agricultural landlords in England and Wales* (1977).

[40] Shrubsole, *Who owns England*, ch. 6, pp. 137–82.

advantages would improve the tenant's chances of survival in periods of economic difficulty. The committee accepted these arguments but it received mixed evidence on whether tenants were economically more efficient than owner-occupiers, a key criterion in its assessment of the worth of alternative occupancy forms. As a result it merely concluded that 'there is a good case for retaining a healthy and reasonably substantial let sector' without ever defining the phrase 'reasonably substantial'.[41] Subsequent research by Hill and Gasson indicates that mixed-tenure farms performed better than either those that were wholly owner-occupied or rented.[42]

The report goes on to say that landlordism requires a range of particular skills and therefore the 'owner, whether an individual or an institution, should be capable of properly performing the functions of ownership. We therefore believe it does matter who owns the land, although we do not wish to imply that any one type of owner is necessarily best'.[43] This conclusion neither afforded private landlords a privileged position among owners nor did it stop the debate over whether, in current circumstances, extra reliefs should be given to the private landlord. These possibilities are extensively reviewed in the report but the majority of the committee was unprepared to go further than offering a few concessions, and even then, many of its recommendations were prefaced by statements such as 'a majority of us' or 'some of us'.[44] For example, in the light of limited information, the committee urged the government to set in hand further studies of the effects of CTT on let estates, and although it would not concede that rents should be treated as earned income, private landlords should be able to submit a management charge for work done against income tax. Again, whilst it did not propose repeal of the 1976 legislation on tenant succession, it did suggest a tightening of the rules surrounding the eligibility and suitability of successors which would act in favour of the landlord.[45] Throughout, a majority on the committee sought to ensure that private agricultural landlords were not treated as even more exceptional cases than they already were in society's taxation system.[46]

Finally, the level of attention given by the committee to the tenanted sector and the role of the private landlord was unfortunate in the sense that it makes the committee seem more concerned about protecting a past and declining structure of agricultural land tenure than investigating the opportunities provided both by owner-occupied and mixed-tenure farms in their increasing range of forms. It is fair to say that the committee received much more evidence on the fortunes of the tenanted sector despite the fact it constituted less than half the area occupied. The impression is left that the committee assumed that the growing number of family-based owner occupiers and mixed-tenure farmers could look after themselves, especially in this period of relative productive prosperity for the farming industry. It even debated whether large farms should be restricted in their total size and the area of in-hand farming on let estates should be capped, although it quickly concluded that no such restrictions should be imposed.[47]

[41] North. Rept, p. 209.

[42] B. Hill and R. Gasson, 'Farm tenure and farming practice', *J. Agric. Econ.* 36 (1985), pp. 171–85.

[43] North. Rept, p. 210.

[44] North. Rept, p. 215.

[45] North. Rept, pp. 226–7.

[46] North. Rept, pp. 216–20.

[47] North. Rept, pp. 232–3; 249–50.

It can also be argued that the committee took a complacent view of the potential debt consequences of the rise in owner occupation at a time of high land prices. In its evidence (ALI/EVIDENCE 34), the Agricultural Mortgage Corporation noted an upsurge in the 1970s in the purchase of freeholds by sitting tenants and the acquisition of extra land by all kinds of occupier, mainly to fuel farm size enlargement tied to family succession goals. Mortgage interest as a percentage of farming income rose from about 10 per cent in the 1970s to more than 20 per cent by the early 1980s.[48] In a context of low gearing, owner-occupiers' land rights were seen by lending institutions as a primary source of collateral. Variably, of course, these rights could be constrained by the lender as interest payments rose. This financial squeeze could only be offset by falling interest rates and by rising land prices in real terms, which did not occur in the 1980s, in a period when net farming income was also declining. As land was increasingly being seen as an investment as well as a means of production, the committee should perhaps have investigated further the prospect of this indirect financialization of the industry alongside the direct land purchases by financial institutions.

V

In hindsight, whilst the timing of the inquiry was not accidental, in some respects it was unfortunate in that significant changes to occupancy and acquisition which had begun to emerge in the late 1960s were only just being recognized as potential signifiers of a different future. The recency of these events made acquiring hard evidence of the consequences of change difficult to come by. It was clear that these forces were leading to more complex divisions of property rights but would they prove deleterious to agricultural production in the long run? The committee decided that much of the written evidence had over-emphasized the adverse consequences for the farming industry and this in turn reinforced members' natural caution in making proposals for legislative change. It also strengthened the committee's view, made at several points in the report, that new sources of information on land ownership and occupation were required if bold recommendations were to be made with confidence. The committee concluded that the information held by HM Land Registry for England and Wales was not only incomplete and difficult to access but also often only recorded legal title rather than disclose who held the beneficial rights of ownership.[49] Despite the difficulties in doing so, the committee concluded that 'in the long term, a full system of land registration with land use identified and beneficial interests visible' was desirable.[50] This proposal was linked to the committee's final recommendation that the government should establish 'a source of permanent, independent advice on agricultural land acquisition and occupancy', something that has not been put in place.[51]

[48] S. Whatmore, 'Landownership relations and the development of modern British agriculture', in G. Cox, P. Lowe and M. Winter (eds), *Agriculture: people and policies* (1986), pp. 105–25; see also A. Burrell, B. Hill and J. Medland, *A statistical handbook of UK agriculture* (1985).

[49] North. Rept, p. 112.

[50] North. Rept, pp. 115. With reference to Scotland and the Register of Sasines, see Environmental Resources Management, *Ownership of land holdings in rural Scotland* (2001), Scottish Executive Central Research Unit.

[51] North. Rept, p. 258.

The committee's caution is well illustrated by its treatment of the findings of the Agriculture EDC, Abecassis and Wyre Forest surveys of the different ways private land was held by individuals either solely, in partnership, or in family companies and trusts.[52] These surveys revealed the range and complexity of landholding forms in existence, the pattern of which varied between large let estates at one extreme to the predominance of individual ownerships in the Wyre Forest, an area dominated by small family farms, at the other. The three surveys had different objectives but all recorded rapid change during the 1970's partly stimulated by the introduction of CTT. Abecasiss examined 79 ownerships in excess of 400 hectares on which two-thirds of the land was held in various forms of trust. The Agriculture EDC conducted a much larger survey of 1685 estates, predominantly tenanted land, where less land was held in trust (34 per cent) and more in individual or joint ownership (38 per cent). The Wyre Forest survey carried out by MAFF established the existence of 323 different ownerships over an area of less than 9,000 hectares. Here, more than half the land was still held in individual ownership with a further 20 per cent in joint ownership or partnership arrangements. But because each of these studies included only a small sample of landowners, less so in the case of the Agriculture EDC, and could not claim to be wholly representative of occupancy patterns more generally, the committee was inclined to downplay their significance as a source of reliable information about an emerging future.

The Wyre Forest survey had proved difficult and time-consuming to conduct but in revealing the growing complexity of property rights on even small farms it also provided clues as to how any independent body on agricultural land occupancy should go about its monitoring work. The committee was inclined to support the idea of adding extra questions to the Annual Agricultural (June) Census because of the Census' existence and its general acceptance by the farming community. But it is very doubtful that a few extra questions on the census form would successfully monitor the increasing complexity of property rights in a situation where some occupiers claimed they were not always sure whether to return their land as either tenanted or owner occupied on the existing census form. To establish trends it would be much more helpful to select a sample of ownerships in different parts of the country which would then be revisited periodically in person to record detailed changes. Surprisingly, the committee did not debate whether the Farm Business Survey could be used to track occupancy changes on a sample of farms.

VI

The inquiry's report failed to receive much policy attention despite its comprehensive and detailed analysis. With hindsight, it is reasonable to speculate that its lack of impact arose from both the way the committee conducted the inquiry and the pending external political and parliamentary changes beyond its control. The professional land community had responded at length to the committee's requests for information and opinion. For some, the extensive process of evidence collection raised expectations of radical recommendations but for many it had done its job in reinforcing the status quo whilst assuaging the political fears of overseas

[52] See note 39.

and financial investors. It could also be seen as providing political closure, at least for the time being, on greater landowner taxation or even land nationalization.

The report is an excellent source of information but, although well written, it is often difficult to get a clear policy steer from the text because the committee failed to reach unanimous agreement on most of the issues. Moreover, the failure to make the written evidence available to public scrutiny just after publication did not help. The length of time taken to prepare the report also meant that following the general election in May 1979 it was submitted to an incoming Conservative government which had not initiated the inquiry. The new government was not under the same obligation to respond to it and having received the report just after it came into power it was more concerned with its own manifesto commitments.

Even more pertinently, why should it respond to a report that had concluded there was no major land occupancy crisis? The key reasons for the inquiry were, in the committee's view, neither fully substantiated nor seen as necessarily long-term features of the industry. Rising land prices were viewed primarily as a product of current economic circumstances to which existing occupiers contributed by being the majority purchasers of land for sale. Those members of the committee most concerned about recent occupancy changes were also least inclined to increase state regulation of the land market. Change was to be achieved through adjusting, usually reducing, tax burdens, and this at a time when state regulation was still a normal part of political culture. Others, in the light of the evidence, were not inclined to intervene much at all. Effectively, a committee of inquiry set up under a Labour government adopted a posture more in tune with the thinking of subsequent Conservative administrations.

As we look back more than 40 years since the publication of the report, the main difficulty we now face is the lack of an equivalent evidence base. This would allow a more informed position to be taken on the prospects for landholding and farming businesses following Brexit and a series of trade deals that could affect domestic production in a situation where the government is no longer making a commitment to a given level of national food self-sufficiency.

There has been no public inquiry since 1979. Instead, we have several pieces of academic research based largely on sample farm surveys, reliable information on net farming income over the whole period and on the land market in England and Wales up to the year 2000. In brief, this latter source of information allows us to say that during the rest of the twentieth century after Northfield, agricultural land prices continued to rise in nominal but not in real terms, only increasing in real terms during this century, especially since the financial crisis of 2008. These land price trends are set against a background of a significant fall in net farming income in both current and real terms in the 1980s, with only a small rise in current terms in recent years, helping to explain the continuing search by farming families for new on-farm and off-farm sources of income to ensure the survival of the farm business. Once again, as in the 1970s, land prices have risen faster than net farming income. To today's occupiers, the 1970s not only seemed, but was, a decade of relative prosperity.

The information we have on the land market from the annual returns of DEFRA and the Valuation Office Agency up until year 2000 also record a continuing and significant decline in the amount of land sold, in England falling by about one-third between the early 1980s and the end of the century. Farmers consistently dominated this declining market being responsible for more than 80 per cent of all transactions. In 1978, financial institutions were net purchasers

and involved in about 10 per cent of market transactions, but by 1987–88 they were significant net sellers, and by the year 2000 had almost completely left the market. Their withdrawal, despite the committee's positive projections of future purchases, not only reflects the decline in inflation and a more secure national economy in the late twentieth century but also the substantial decline in net farming income which the committee did not anticipate.

There has been empirically and theoretically well-grounded research into agricultural land occupancy following Northfield. The largest such study, which collected detailed evidence on occupancy change on more than 400 farms in five different parts of England between 1970 and the mid-1980s, confirmed in detail much of the thinking of the committee. For example, the findings revealed growth in owner-occupation, more complex divisions and greater flexibility of property rights, increased farm size and substantial land mobility when gross rather than net change figures are uncovered. More importantly, whilst these trends were occurring in all parts of the country they were happening at different rates.[53] A later national study revealed a significant growth of unconventional forms of insecure, short term tenancies outside the 1976 legislation, mainly to the advantage of established farm businesses, as occupiers traded off insecurity against access to additional land.[54] Partly in response to this important piece of research, and in an attempt to regularize the situation, the Agricultural Tenancies Act (1995) was passed allowing for the introduction of more flexible farm business tenancies. A follow up study in 2007 indicated that despite growth in farm business tenancies this change had not reduced the number of informal agreements. If anything, they had increased.[55]

These changes to the forms of tenancies, especially the growth of farm business tenancies largely at the expense of full agricultural tenancies, and the increasing use of informal agreements, make comparisons with the predictions for 2020 put forward by the Northfield committee hazardous at best. The only regular source of contemporary information, based on the June Agricultural Census returns and just for England, does not allow for tenants' ownership interests in the land they 'rent'.[56] Without further research, the best we can suggest is that the introduction of farm business tenancies has seemed to slow the growth of owner-occupation during this century. The returns for 2020 indicate that owner-occupation accounts for about 60 per cent of the farmed area in England (probably too low a figure) with full agricultural tenancies making up a mere 13 per cent and farm business tenancies a further 12 per cent, most of the remaining 'tenanted' area being farmed under a variety of short-term arrangements.

[53] See, for example, Whatmore *et al.*, 'Rural restructuring process'; T. K. Marsden, 'Capitalist farming and the family farm: a case study', *Sociology* 18 (1984), pp. 205–24; R. J. C. Munton and T. K. Marsden, 'Dualism or diversity in family farming? Patterns of occupancy change in British agriculture', *Geoforum* 22 (1991), pp. 105–17.

[54] M. Winter, C. Richardson, C. Short and C. Watkins, *Agricultural land tenure in England and Wales* (Royal Institution of Chartered Surveyors, 1990).

[55] Butler and Winter, *Agricultural tenure;* see also R. Burton and N. Walford, 'Multiple succession and land division on family farms in the South East of England: a counterbalance to agricultural concentration?', *J. Rur. Stud.* 21 (2005), pp. 335–47; B. Ilbery, D. Maye, D. Watts and L. Holloway, 'Property matters: agricultural restructuring and changing landlord-tenant relationships in England', *Geoforum* 41 (2010), pp. 423–34.

[56] DEFRA, *Farming statistics – land use, livestock populations and agricultural workforce: land owned or rented on agricultural holdings, England* (2021).

All these studies, whilst important in their own terms, are no substitute for a comprehensive study of today's circumstances. This would provide consistent information on land occupancy and the full distribution of property rights on farms, alongside a better understanding of whether today's occupiers are able and willing to respond positively to the major policy changes currently being expected of them. We are reminded of the Northfield Committee's second objective for policy – the need to retain personal commitment and incentive among occupiers – in a world where the growing competition for rural land from a larger and more affluent population has challenged the post-war presumption that farming should be viewed as having the highest priority in determining rural land use. The farming community is increasingly exposed to the requirements of residential, recreational and environmental interests, even if it often treats these interests as the sources of new non-farming income streams essential to their survival. In retrospect, the agricultural land occupancy and ownership changes of the 1970s, the circumstances of which the Northfield Committee struggled to understand, now seem to constitute a particularly atypical decade.

Book Reviews

UK and Ireland

DAVID HINTON, D. P. S. PEACOCK, and CHRISTOPHER DYER, *Impinging on the past: A rescue excavation at Fladbury, Worcestershire, 1967* (The Highfield Press, 2020). 96 pp. £20.

British archaeology is riddled with tantalizing discoveries which lie unpublished for decades, despite their national importance. Such was the case with David Peacock's 1967 rescue excavations at Fladbury, whose publication has until now been restricted to two brief reports printed in *Current Archaeology* and *Medieval Archaeology* shortly after the excavations. The late Professor Peacock's friend and colleague David Hinton has now brought the Fladbury findings to full publication in this compact but thorough monograph, arranged in four parts.

Part 1 presents the original draft excavation report which Peacock prepared (but, for unclear reasons, never published), augmented by new observations from Professor Hinton. It is a classic and well-illustrated descriptive report, placing the site in its topographical context in the Vale of Evesham then detailing the archaeological sequence including a prehistoric ditch and pits, 11 burials (not closely dated but thought to be most probably late Roman), and – the site's dominant feature, though incompletely excavated – a sunken timber-and-daub oven, with three phases of use or construction. It is this oven, believed on the basis of its cereal contents to have been used for parching grain prior to milling, which makes the site so significant for scholars of early medieval farming.

Part 2 contains the specialist reports on human, environmental and artefactual remains, some produced as part of the original post-excavation programme in 1967–68, others presenting wholly new research using methods unavailable in the 1960s. Among the latter, the osteological and isotopic study of the (challenging) skeletal archive by Ellie Brown stands out, suggesting a degree of migration and the possibility of a post-Roman date for the burials. With regards to the oven, the newly precise radiocarbon dating report by Alex Bayliss places the last firing of the oven most likely somewhere between the late eighth and late ninth centuries: a result which fits remarkably well with that of the pioneering original analysis by F. W. Shotton. This date is critical to the interpretation of both the oven and the charred plant remains discovered therein, which are analysed in a new report by Rob Scaife. Although these plant remains are not especially rich, and are typical of the period (dominated by grains of hulled barley and free-threshing wheat), they provide a valuable addition in a region which is relatively poor in Anglo-Saxon archaeobotanical data. The authors seem unaware, however, that another archaeobotanical analysis of material from the oven was undertaken by Mick Monk for his (unpublished) 1977 Masters' dissertation. This was a much richer assemblage, with some different species identified, so it is a shame that Monk's work is absent here; presumably his data never found their way into Professor Peacock's archive.

Christopher Dyer's vital historical review (part 3) – updated from his 1960s original – situates pre-Conquest Fladbury within the ecclesiastical estates of Worcester. Between the seventh and ninth centuries it was at least 'nominally the site of a monastery', and certainly at the heart of a substantial and productive minster estate. The documentary record is thus found to be entirely consistent with the discovery of both small finds suggestive of an establishment 'with some social pretensions', and a large grain dryer suitable for providing for the periodic needs of a large royal or episcopal household. Whether or not the presence of this single oven warrants the designation 'drying complex' is more debatable, especially given that there are other sites of this period with more than one such oven (such as the recently discovered brewing complex at Sedgeford, Norfolk, with three or four ovens). Nonetheless, Hinton's concluding discussion (part 4) highlights how this grain dryer – an unprecedented discovery in 1967 – now fits well within a small corpus of large ovens excavated at high-status settlements of this period. The estimated dimensions of the oven chamber (2

metres by 2 metres) are very similar to those of a malting kiln excavated at Higham Ferrers (Northamptonshire), for example, which has been associated with a royal tribute collection centre. Hinton's extended discussion, incorporating comparisons such as this, not only provides an excellent context for the Fladbury oven, but also makes an important, original contribution to the wider study of grain ovens in Anglo-Saxon archaeology.

As such, this modest volume bears witness to the great significance of both Peacock's original project and Hinton's admirable 'impingement' to bring this important site finally into the spotlight. It is essential reading for anyone interested in the agricultural activities of this corner of Anglo-Saxon England, and a perfect example of how decades-old excavations can be revisited with valuable results.

MARK MCKERRACHER
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ANDREW MARGETTS, *The wandering herd. The medieval cattle economy of south-east England c.450–1450* (Windgather, 2021). 272 pp. 122 illus. £34.99.

Compared with the farming of sheep (along with the wool and cloth trades), and to a lesser extent that of pigs (principally swine pannage), relatively little has been written about cattle management in medieval England. Margett's contention – surely correctly – is that this was important and has left a narrative which can be explored not just through the documentary record (of which more anon) but also through the visible landscape and below-ground archaeology. Based on a thesis and arguably less concise than it might have been, the book is nicely produced, with a large number of relevant figures including a gathering in colour and a lengthy bibliography. But the lack of an index greatly diminishes its usefulness.

Margetts opens strikingly, asking us to travel back 1,200 years ago to follow herds of cattle passing along the wide unmetalled droveways of south-east England leading from the coast and downland to well-watered summer pastures in the Weald. 'Local woods would have echoed to the lowing of herds feeding on browse as contentedly as they had done on the grass of Romney Marsh or the chalkland hill' (p. 1). That said, Margetts believes direct documentary evidence for the use of wood-pasture in this part of the country for cattle is slight, other than in parks and forests. Even here, the references gathered by Margetts are little more than glimpses. One of the few substantive references is one from the late thirteenth century when 2,000–3,000 beasts were agisted in Ashdown Forest (Kent), apparently at a time when sheep were excluded from it, and specialized vaccaries were being developed on its fringes. And from this stems one substantive criticism of the study, which is the generally limited use made of historical sources, and especially manorial and other accounts, which are detailed and quantifiable from across south-east England. It is refreshing that this is a multi-disciplinary study, but one which foregrounded the written evidence would surely have been on surer ground and less speculative.

Self-evidently, cattle were important components of the agrarian economy, with plough oxen essential for both lords and peasants wherever there was arable cultivation, here notably on the Sussex coastal Plain. Based on limited evidence it is suggested that in Sussex dairying based on cattle was not widely found on the eastern downs, whereas on the western downs the Clay-with-Flints gave a wetter and more wooded environment, more akin to the North Downs of Kent which are associated with medieval cattle dairying. The evidence presented for beef consumption, whether from clapped-out oxen or from bullocks, is also scattered, and no clear conclusions emerge. While little evidence for how and where beasts were housed is presented, one good example is cited – although Margetts gives no date – from Milton Regis (Kent), where part of the '*Cowhous*' called the '*Somerhous*' where cheese, butter and dairy products were made was 18 feet wide and 48 feet long (p. 43). Chapter 8 presents the evidence of bones from excavations, but despite the precise percentages given in tabulations the general picture only reflects what we already know (as is often the case with archaeological bone reports).

Less speculative are the chapters where Margetts presents the results of two excavations on the Weald, both suggested to be the product of tenth-/eleventh-century colonization of land previously exploited as seasonal pasture. One was at Wickhurst Green, west of Horsham, West Sussex, where, by the late Saxon period, there were enclosures associated with droveways. The other was at Hayworth, in Cuckfield, West Sussex, where a park-scale oval enclosure thought to have late-Saxon origins was found, one of the many in the region suggested to be associated with cattle herding and seasonal transhumance. Here, within ditched enclosures, stood a long (34m), apparently open-fronted shelter. On the balance of probabilities, it is suggested that cattle ranching and dairying were carried on here, in other words it was probably a vaccary. This is a site which (like Chris Dyer's complementary work on sheepcotes on the Cotswolds) will be cited in future studies of the medieval agrarian economy, and it is worth flagging that Margetts published a slightly fuller account of the site, with

excellent colour illustrations, in *Medieval Archaeology* 61 (2017), pp. 117–48.

PAUL STAMPER
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NIGEL SMITH, *The medieval park of Erringden* Occasional Paper No. 10 (Hebden Bridge: Hebden Bridge Local History Society), x + 140 pp. 49 illus. £11.99.

This volume is a rewriting and re-analysis of three previous articles by the author on the subject of Erringden, in the light of further research he carried out for his PhD examining upland environments. It is a detailed study focusing on one particular medieval park, collating documentary and cartographic sources along with landscape analysis to paint a clear and thorough picture of the rise and fall of Erringden Park through time. It does this against a backdrop of comparative examples from other English parks.

First setting the scene with a review of the geography of the area, Smith then discusses the reasons behind the creation of the park and the steps taken to develop, structure, and manage it. He also examines the deer themselves, including the various species, the potential carrying capacity of the land, and the likelihood of additional fodder being supplied in the winter. Smith notes that there is little evidence for actual hunting taking place at Erringden, but that it is large enough both for the usual parkland bow-and-stable hunting as well as the more vigorous *par-force* hunting normally enjoyed in an unenclosed landscape.

Smith then introduces a wider range of potential uses for Erringden. Given its upland location, isolated from the main manors of the de Warennes, he argues that it may have been used primarily as a place in which to increase and maintain deer stocks by breeding, and by driving wild deer in from the surrounding, unenclosed lands. These animals could then have been used to resupply lowland parks, which were more conveniently placed to be used for elite hunting. Smith also notes that the park incorporated two pre-existing vaccaries, or cattle farms, with a possible horse stud-farm located immediately outside its bounds. These are discussed along with the potential for agistment (leasing out of land for pasture), timber extraction and ironworking, all of which would have provided a supplementary income for the manor. Such a range of uses are also known from other parks, and the large size and relatively isolated location of Erringden made them very suitable adjuncts to the primary aim of rearing and keeping deer.

In the closing sections of the book Smith turns his attention to the demise of the park, examining the reasons for disparkment, as well as the division of the land between a number of tenants, and then the subsequent sub-division of these tenancies. He carefully constructs a detailed analysis of the landholdings based on topographical features, before finishing the study with a review of the ownership structure.

This is an attractively presented book, with full-colour images throughout. The text is straightforward and clear, explaining technical and obscure terms for the reader, and incorporating a useful glossary of these. One slightly strange layout issue was that the sources of images and graphed data were not given in the captions, or as footnotes, but only in an appendix at the end of the volume. As a result, it was sometimes it was unclear whether these were the work of the author. The documentary evidence was treated very thoroughly, with extensive footnotes and a substantial bibliography of primary and secondary sources. Another aspect that could have been improved was the linkage between the supplied maps and the text. The author displayed a detailed knowledge of the locality and assumed that readers were also familiar with the various landscape features. This would not be an issue for the local audience, but for readers based further afield, more comprehensive maps would have been useful, showing the location of the minor place names mentioned in the text. In particular, an overview based on an early edition of the Ordnance Survey map would have been very useful to locate the described features in the modern landscape. Similarly, a national map showing the locations of other parks mentioned in the text would have been helpful. Nevertheless, these are minor quibbles in an excellent study.

The volume was published by the Hebden Bridge Local History Society, and it will certainly appeal to readers from the region, who will be treated to a detailed local perspective. More widely, for those interested in medieval hunting, or in landscape development and use, this in-depth work adds a useful case study to the corpus of knowledge. At a wallet-friendly price, prospective purchasers can be confident that they will more than get their money's worth, and so this volume can most definitely be recommended as a useful addition to the bookshelves of readers of the *Review*.

FIONA BEGLANE
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MARGARET WILLES, *The domestic herbal: Plants for the home in the seventeenth century* (Bodleian Library, 2020). 256 pp. 60 illus. £25.

Margaret Willes' *The domestic herbal: Plants for the home in the seventeenth century* is beautiful to behold. The book charts the use of plants in domestic contexts in the early modern period, elegantly illustrated by

rich and varied botanical drawings, portraits, woodcuts from conduct manuals and photographs of vases and other artefacts. The book is intended to be structured as a 'tour' of the seventeenth-century home (p. 55), but chapters take activities of household management rather than spaces as their focus. Willes tells us about feeding, brewing, making oneself beautiful and healthy, clothing family members, and furnishing bedrooms.

The domestic herbal is primarily interested in England although island colonies in the Americas and West Indies and some parts of Europe are included too. Willes' main evidence is printed herbals (alphabetical lists of plants and their culinary and medicinal properties) and household management manuals, both of which boomed in this period. *The domestic herbal* has its own 'domestic herbal' spliced between the chapters on brewing beer and health and beauty, listing 50 herbs that were used by 'seventeenth-century housewives' (p. 112). Despite the slightly jarring placement in the middle of the book rather than as an appendix at the end, it is this herbal which one imagines readers will most enjoy. By guiding one through one's own reading of contemporary texts of the period, Willes helps to defamiliarize herbs that are now commonplace like rosemary, marjoram and thyme, and familiarize those that are not, like tormentil, used to cure colic in calves and children.

Willes convincingly makes the case for the garden and gardening being at the centre of life in the seventeenth century in England and elsewhere, perhaps best encapsulated by John Worlidge's description of the pleasure, culinary, medicinal and ornamental gardens of England's nobility, shopkeepers and cottagers (p. 1). Plants decorated, flavoured food; brewed and distilled; scented rooms; made and washed linen; dyed cloth; warded off pests; were used to celebrate births, deaths and marriages; and cured major illnesses and discomforts. Gardening for the purpose of food and medicine was an activity that the loftiest aristocrats and the poorest villagers both engaged in. Perhaps the biggest innovation of the book is in its treatment of the use of plants to furnish and environ the home. Clean air was central to early modern understandings of getting and staying healthy. As a result, we learn that the floor of homes was often strewn with fragrant herbs, rushes and sedge. A delightful quote from the popular conduct writer Hannah Woolley's *The queene-like closet or rich cabinet* (1675) about how to decorate fireplaces during summer with live moss, festooned with snails, wild mushrooms and flowers is truly transfixing. 'The flowers you must renew each week, the moss will last all summer till it will be time to make a fire' (p. 200).

The theme of labour runs right through the book implicitly. Willes tells us that St Thomas' Hospital in London hired herb women to tend to medicinal gardens. Whilst an apothecary was paid £60 per year in 1629, a surgeon received £35, a doctor £30 and the herb women that provided all of the raw materials for medicines and ointments only received £4 (p. 51). The book points to the stratification of knowledge systems along traditional gendered lines with housewives doing much of the work to transform plants into materials to feed, clothe and care for family members. And yet, I felt that yet more could have been done to explore the frictions between gendered ways of knowing about and doing things with plants. Herb women were valuable enough to be employed right across the City of London in the seventeenth century, and yet few make it into the works of John Gerard or Gervase Markham, the latter of whom positioned themselves as practical and intellectual experts. For many women lower down the social scale, the seventeenth century fashions in interior decorating and new luxurious drinks like julep, coffee, tea and chocolate, all from plants and colonial expansion, had little practical impact on their herbal knowledge and the way they employed it in their work.

Willes has constructed an engaging and aesthetically beautiful account of homes and plants in early modern England, and parts of Europe, that will be enjoyed by many readers. Given the emphasis on art and material culture, it would have been beneficial to engage more critically with these aspects. The scanty referencing, obviously advantageous in ease of reading for a non-expert, trade audience, also made it difficult to contextualize and understand the beautiful woodcuts from herbals. Given that the book is a 'tour', I wondered whether including the plans landowners created of their domains might have helped to tie space to practice more firmly. Given Willes' expertise in the history of botany and gardening, I wondered what the overarching argument was, not as essential in trade publications as in purely academic, but nonetheless welcome. The book concludes by noting that much of the evidence about plants and botany comes from 'the more affluent members of society', and yet Willes has done considerable work to point out that herbal knowledge was central to all levels of society (p. 205). Perhaps more of a critical engagement with the material culture gestured to in the book and embodied practices of gardening, picking and processing plants would have gone some way to remedy this overreliance on elite accounts. Nevertheless, this book is an enjoyable and welcome introduction to the history of botany and domestic cultures in early modern England.

LEAH ASTBURY
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FRANCES E. DOLAN, *Digging the past: How and why to imagine seventeenth-century agriculture* (University of Pennsylvania Press, 2020). 238 pp. 11 illus. $59.95

Frances Dolan's *Digging the past* explores agricultural literature and agriculture in literature in the seventeenth century, placing both in dialogue with contemporary discussions of farming that hark back to a supposed pre-industrial golden age. The book is then an attempt to both understand ideas and images in seventeenth-century literature, and to see how they measure up against the way the period is presented by non-historian agricultural practitioners and writers today. In drawing together the practical manuals of Hugh Plat, Thomas Tusser *et al.*, and reading them alongside Shakespeare and the marketing spiel of Californian winemakers, Dolan is doing something unusual and interesting. In the opening pages, it is arresting to see the intellectual agenda being set by the claims made on vineyards' websites, but this provides a new way of thinking not only about the seventeenth century, but also about its legacies, resonances and imaginaries today. Drawing on this broad conception of what constitutes writing about agriculture Dolan explores four themes in contemporary organic, environmentally-conscious and artisanal agriculture that also preoccupied writers in the seventeenth century: composting, eating local, natural wine and hedges. Within these themes, Dolan pursues 'persistent metaphors, their inherent contradictions, and the unpredictable cultural work they continue to do' (p. 11).

The associations, resonances and connections Dolan makes between texts and contexts daisy chain together in four creative and thought-provoking chapters. Chapter 1 uses the compost heap as an extended metaphor for and justification of Dolan's eclectic and chronologically wide-ranging source material. Here composting is portrayed as a creative process in which the past feeds the present, demonstrating the value of digging around in the muckheap of history to understand where values espoused in contemporary progressive agriculture emanate from. In chapter 2, Dolan explores a variety of forms of local and dislocated eating, in part spurred by contemporary calls to incorporate cover crops into our diet, and a desire to analyse what eating locally meant in English colonies in the early seventeenth century. Chapter 3 focuses on wine and its various adulterations, historical and contemporary, arguing that contemporary calls to make wine in simple or traditional ways belie the ways wine was a product of mixture and migration long before our present. Chapter 4 contrasts contemporary celebrations of the mature hedgerow as a biodiverse habitat with the classic image of the hedge as early modern 'organic barbed wire' (in Nicholas Blomley's phrase) and failed attempts to 'rebrand' the hedge as a kind of forageable commons. Rather than offering a set of conclusions, Dolan leaves us with an epilogue that explores how the history of agriculture is presented and forgotten at the 'Historic Jamestowne' settlement, an archaeological site and museum complex covering the first English colony in Virginia.

Digging the past draws on some key surveys of early modern agriculture by Joan Thirsk and Mark Overton, but beyond this there is no systematic engagement with agricultural or environmental history. This can be frustrating. Neither the *Review* nor its American counterpart make an appearance in the references, and we read of 'Arnold' Crosby's Columbian Exchange thesis, for example. But perhaps an environmental historian would always want a book with 'digging' in its title to be a little more 'grounded' in the history of agriculture, and to be fair to Dolan the book makes no claim to be a work of agricultural history. This is predominantly a work of ecocriticism, written with the wit, incisiveness and élan that characterizes the best of that genre. For a historian, there are places where some more context would have been helpful. Several key authors are drawn on throughout: Walter Blith, Gervase Markham, Gabriel Plattes, and Hugh Plat. But while we are told that reading and doing were two parts of the same agricultural endeavour in the seventeenth century, we learn much more about what was read than who was writing it or what was being done with it. Given the focus on key writers, G. E. Fussell's *Old English Farming Books* is a surprising omission, and would have provided some detail, in particular on Markham, who looms large in *Digging the past* but is never adequately introduced, despite his colourful and varied life as a playwright, tenant farmer, and liberal recycler of others' agricultural writing.

Due to its interpretive approach and literary source material, *Digging the past* will be of greatest interest to literature scholars, but there remains interest for historians here too. Historians of the periods either side of the early modern period are keenly aware of how their areas of specialism are presented and manipulated in a variety of contemporary settings: medievalists have the study of 'medievalisms' and nineteenth-century historians the study of 'Neo-Victorianism'. Early modern historians have been less inclined to reflect on what our subjects look like in contemporary discourse (though there are notable exceptions, such as Stefan Hanss' work on the memory of the 1571 Battle of Lepanto). As Dolan's book shows us, environmental and agricultural history offer fertile ground for early modern historians to

engage with contemporary images of our period. Early modernity looms large in the background of contemporary environmental and agricultural debates – think of the misuse of the Little Ice Age by climate change deniers, the unspecific pasts invoked in 're-wilding', or the effective census year of 1500 used by the UK's Joint Nature Conservation Committee to determine the nativity or otherwise of species. Dolan's book points the way to future critical engagement with these 'persistent metaphors', tropes and baselines.

JOHN EMRYS MORGAN
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ERIN DREW, *The usufructuary ethos: Power, politics, and environment in the long eighteenth century* (University of Virginia Press, 2021). 234 pp. $39.50.

In the 1990s and early 2000s the environmental humanities were mostly either indifferent or actively hostile to the pre-Romantic eighteenth century. The period was characterized by the supposedly pernicious, anthropocentric, and instrumentalizing discourse of 'improvement' associated with the Agricultural Revolution. In the last decade, however, historians and ecocritics have sought to recover a greater diversity of eighteenth-century thought about the relationship between humans and nonhuman nature. One early call for re-evaluation was the 2011 *Literature Compass* article 'Ecocriticism and Eighteenth-Century Studies' by Erin Drew and John Sitter. Now Drew, in her first book, identifies an alternative, parallel discourse to that of improvement, which she argues was culturally influential and pervasive: the usufructuary ethos.

Usufruct is a concept in ancient Roman law, referring to the temporary right to hold and use someone else's property, with the condition that the property must not be damaged or altered. The term entered English law in the seventeenth century and theologians used it to theorize the relationship between God, humans, and the nonhuman world: God owned his creation in perpetuity, and humans held only temporary rights over the earth, with a responsibility to steward the land, plants, and animals in their usufructuary possession. While humans were superior to and empowered to use the natural world, due to their higher position in the hierarchy of being, the usufructuary principle meant that that power was ethically limited. The wider 'usufructuary ethos' that Drew argues developed in England from this theory included various 'moral conclusions' (p. 16). Drew claims that thinkers and writers (if not actual landowners or farmers) used usufruct to conceptualize moral obligations towards both nonhuman creatures and the future generations of humans who would inherit that usufruct.

The first chapter outlines how seventeenth-century jurists, theologians, and philosophers, including Matthew Hale, Richard Allestree, and John Locke, developed theories of humans' usufruct of the earth. Drew seeks to show that the ethic of care which grew from the usufructuary ethos was both interspecies and intergenerational, involving all creatures, past, present, and future, in a network of reciprocal obligation. This reading might at first appear too optimistic. A responsibility *for* the world does not automatically equate to a responsibility *towards* the world, and for some writers on usufruct, care of the earth was the fulfilment of an obligation to God alone, not to the other humans or nonhumans who might incidentally benefit from that care. However, as Drew brings in more examples of the usufructuary ethos shaping different areas of thought, a picture does emerge of writers using usufruct to think about the rights of both humans and nonhumans, present and future. The 'Trust and Stewardship' of creatures that God has invested in humans, Hale wrote in 1676, creates a 'Justice that is due from Men to them' (p. 40).

The 'moral conclusions' of the usufructuary ethos shape the eighteenth-century literary texts that Drew examines in the following chapters. Chapter 2 focuses on literature about trees by John Evelyn, Anne Finch, and John Philips. These authors (all royalist Tories) portray the ideal usufructuary landlord as a gentleman-farmer whose paternalistic care of his human dependents and descendants is practically and ethically continuous with his care for the trees on his estate. In their capacity to provide food and shelter for multiple beings beyond the lifespan of a human, trees are significant in these texts as 'organisms whose unique biological traits create both symbolic and ecologically literal connections among other beings and across generations – *if* landlords protect and steward them properly' (p. 65). The combination of the symbolic and the literal here is an important corrective to the twentieth-century tendency to read eighteenth-century representations of nature as always and only symbols of culture (e.g., an oak tree as a symbol of the Stuart line). Drew demonstrates that nonhumans could be simultaneously figurative and material in eighteenth-century thought.

Chapter 3 addresses Alexander Pope and the critiques in his poetry of the improper pursuit and use of riches for purposes other than 'benefit to public and posterity' (p. 103). When Drew reads Pope's poetry about land use in the context of the usufructuary ethos, seemingly simple condemnations of greed, luxury, and vanity become part of a larger, georgic-inflected argument that 'value is [not] human beings' to *bestow*

on nature through their use', but rather 'an inherent quality that they honor *through* proper use' (p. 118). Any use the landlord makes of his riches (either money or natural resources) must be an investment in and for a multispecies and multigenerational community.

Drew makes clear throughout that part of the reason writers were so eager to promote the usufructuary ethos was their recognition that landowners and farmers were increasingly 'understand[ing] the environment as wealth generating, rather than sustaining' (p. 139). Chapter 4 examines what Drew calls the 'midcentury mercantile monoculture georgics' (p. 18), John Dyer's poem on the wool trade, *The Fleece* (1757), and James Grainger's colonial plantation georgic *The sugar-cane* (1764). Chapter 1's analysis of Philips' *Cyder* (1708), the first English formal georgic, revealed this Virgilian genre to be particularly adaptable to the usufructuary ethos, and Drew thereby contributes to the ongoing critical construction of what David Fairer has called 'eco-georgic'. But Drew shows in Chapter 4 how Dyer and Grainger were able to manipulate a classical genre and traditional usufructuary rhetoric to endorse new and often catastrophic social, economic, and environmental practices, including slavery.

The usufructuary ethos is an important contribution to eighteenth-century studies, revealing a significant strand of social and environmental thought in the period. It reminds us that a varied range of attitudes to the nonhuman world, some destructive and some proto-conservationist, were held and articulated in the eighteenth century (and that different attitudes could be held by one person or expressed in one text). In her conclusion, Drew makes some tentative suggestions for how the cultural history of the usufructuary ethos might be relevant to environmental concerns in the twenty-first century. She suggests that the most pertinent, and most disturbing, lesson from this history might be that the cultural prominence of conservationist arguments was, and is, no protection against the onrush of the Anthropocene.

TESS SOMERVELL
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THOMAS ALMEROTH-WILLIAMS, *City of beasts: How animals shaped Georgian London* (Manchester University Press, 2019). 328 pp. £14.

From the brewery draught horse, to flocks of sheep driven down London's streets, Thomas Almeroth-Williams provides an account of the central role animals played in the Georgian capital. *City of beasts* asserts the primary role of animals in daily and industrial life in the Georgian capital. Cattle, sheep, pigs, dogs, and most prominently horses, are all shown to be highly visible and valued presences in London. The agency and power of these beasts is convincingly demonstrated, manifest in their underpinning of 'physical, social, economic and cultural development in diverse and fundamental ways' (p. 5). In asserting that, 'despite obvious inequalities in power relations, horses, livestock and dogs were capable of influencing human behaviour', (p. 9) Almeroth-Williams also challenges an assumption that industrializing cities isolated its dwellers from livestock and animals.

A rich use of original 'bottom-up' sources provides individual accounts and micro-histories to illustrate how Londoners engaged with, thought about, and used animals. Engravings, letters, court and criminal records, diaries, and trade cards evidence Londoners' day-to-day and working engagement with their non-human counterparts. The utilization of digitized archives – namely newspapers, *London lives,* and *The Old Bailey proceedings online* – combine the more traditional histories with the burgeoning field of digital humanities. In a further step, a nuanced interdisciplinary approach draws upon sociology, animal psychology and science. The archives used take precedence over theoretical sources such as philosophical, religious, and romantic works. Almeroth-Williams's engagement with existing scholarship on human and animal relations is woven throughout the book, demonstrating the dominant presence of theoretical perspectives, which tell of a detachment from lived engagement with animals. Sixty pages of references sit the book well in the academic scholarship, an animal-centric contribution alongside Keith Thomas and Samuel Hays. The work successfully disproves the assumption found in Thomas and subsequent works, that urban populations were removed from the agricultural process, and that only a narrow section of urban society was directly involved in working with animals (p. 86). With insights across a number of subjects including the history of urbanization, industrial and consumer cultures, and the relationship between the country and the city, and 34 plates of illustrations, the text is aimed at the specialist and lay reader alike. From Lewis Mumford to William Cronon, the book is well situated in scholarship which spans decades and discipline, the omission of this secondary literature from the bibliography however, is an unfortunate choice by the publishers.

The book's original perspectives provide colour, presenting animals at the front and centre of Georgian London life. The implication and discussion of these wider historical themes, though fascinating, is somewhat difficult to trace across chapters and the book's animal-centric structure. The blurring of the

'traditional boundaries of "town" versus "country", and 'urban versus "rural"' (p. 4) is demonstrated through Londoners and animals engaging with activities usually regarded as divided from urban life. Similarly, whether in relation to the horses they rode or cared for, the dogs they kept, the animals they reared, or the streets which served as highways for cattle on their way to slaughter, animals influenced and were influenced by the complex human class structures in the Georgian metropolis.

England's dark satanic steam-driven mills were not the sole, nor even first drivers of industrial change in the UK. Water and wind power are now recognized as significant in the development of industrial Britain (p. 16). Almeroth-Williams places equine labour as an equally important source of motive power in London's early industrial revolution: mill horses outnumbered steam engines in 1805, and at least 50 horse-powered mills operated across 12 trades between 1740 and 1815 (pp. 39, 20). The more visible presence of draught horses is observed through their role delivering beer from London's booming brewing trade – breweries in London being then 'in size and capital…Britain's biggest industrial operations' (p. 35). Bred in Leicestershire, draught horses began a six-year journey to London, sold first to the south Midlands or West Country for agricultural labour, before reaching maturity and an adult life of work in London (p. 42).

That Londoners came face-to-face and lived alongside the livestock they consumed, in many cases as literal back-yard industries shows the sometimes literal 'intimacy' (p. 69) between the lives of humans and animals in the Capital. The third and fourth chapters, examining animal husbandry and meat consumption, offer a glimpse of this reality and some of its varied examples. Returning again to horses, chapters 5 and 6 affording them a leading role in the 'consumer revolution', as owners sought ever more elaborate care, tack, stabling and staff. Almeroth-Williams identifies London as a city of walkers – including the wealthy, to an extent which astonished visitors from the continent (p. 41) – despite this, a 'distinctive equestrian culture' emerged (p. 158). It becomes evident that this culture was centred around leisure: either promenading on horseback in Hyde Park, or riding out to the country for sport and exercise, again blurring the traditional urban-rural divide. The final chapter considers the role of watchdogs, enquiring into the relationship between not only dog and master, but also between dogs, criminals, and the developing systems of securing private property against theft.

The London Almeroth-Williams reveals is a Georgian 'agropolis' (p. 128): a rapidly industrializing city, which retained distinctly 'rural' characteristics through its animal-centric life, open spaces, pastures, and droving paths. What *City of Beasts* reveals is that what could be considered hallmarks of the Medieval City endured in Georgian London, which became adapted and co-opted to fit the demands of the industrial era.

OLIVER MUMFORD
London

CATHERINE RICE, *Cottage gardens and gardeners in the east of Scotland, 1750–1914* (The Boydell Press, 2021). 286 pp. 32 illus. 3 tables. £75.

This book, 'a first attempt at a history of cottage gardens in Scotland' investigates the lives of the rural poor and their endeavours to survive via their cottage gardens. Cottagers and their struggles to feed themselves, their diet and how this changed over time, their abodes, their hard lives and attempts at moral improvement of their lives by landowners and writers are all examined. If the book is a sketch, as the author claims, then it is a detailed one rather than a mere outline. Rice's stated intention to answer four questions is admirably fulfilled: what did having a garden mean for the standard of living of rural workers? Did their gardens have other meanings for them apart from the supply of food? What were the expectations of landowners and employers with regard to the gardens/gardeners? What conditions had to be met to produce a well-tended plot? This is done with very few manuscript sources – not surprisingly, 'barely any evidence remains' – and Rice relies heavily on printed and official records to uncover the story she tells. She puts to good use worker-writers such as Alexander Somerville's *Autobiography of a working man* (1848) and the anonymous verse *Clodpole* (1858), perhaps bringing such writers to a wider audience.

While cultivated cottage gardens provided sustenance for a family living a knife-edge existence, lack of work, crop failure, insecurity of tenure and the common practice of flitting (especially for farm servants) all meant real hunger was a constant companion to their lives. The cottage garden was a buffer. However, farm servants rarely had the inclination to tend a garden. After a day of 12–16 hours that only changed with the 10-hour legislation in the mid-nineteenth century (though even that did not take into account grooming and suppering time), who would have had the energy to have tended a garden plot large enough to feed a family, and especially if the plot was on unproductive, thin soil? Interestingly, the gardens of weavers and miners *were* tended, partly as a way of relief from being cooped up for hours in their respective employments. Nevertheless, whatever the occupation of the cottage dweller, their generally conservative outlook, lack of

skill and equipment, all conspired to unproductive gardens. Encouragement to garden, not least as a way to moral improvement (it kept the labourer away from the public house), came from writers (though the first handbook for Scottish gardeners did not appear until 1851 when Robert Adamson's *The cottage gardener* was published), and landowners. The latter were keen to staunch the rural exodus of labour and established competitions and shows as a paternalistic encouragement to stay. From the middle of the nineteenth century onwards, competitions with prizes for the best kept cottage and garden, often supervised and judged by the landowner's gardener, became increasingly popular: Rice mentions the Fife show in 1880 which was attended by 12,000. However, for those still neglectful of their gardens there was always the threat of eviction: it would be interesting to find any cases of actual eviction.

The variety of vegetables grown expanded as cottage gardens became places of competition, as did the growing of flowers, which were only rarely seen in the early part of the period covered by the book, at which time cottagers usually only cultivated a few of the same vegetables, particularly kale and the hugely important potato, which certainly helped to feed the family. From the beginning of the nineteenth century, particularly in rich soil areas, crops such as carrots, onions, savoys, and turnips were grown, as in Forgandenny, in Perthshire, where this was done from the 1790s. Gardeners producing such crops ensured a good diet for their family, giving Scottish labourers a reputation for being well fed, when compared with their English equivalent. Flowers adorning the front of the cottage, rather than the useful but noisome midden of the period up to *c.*1850, were also encouraged after the mid-nineteenth century, following the Victorian mania for floral display.

There is only slight mention of poaching. This could have been given more space, since it was a widespread activity which provided a precarious source of meat for many of the rural poor, and rather than the landowner turning a blind eye as stated in the book, his gamekeeper was a constant potential threat. Rice also does not discuss outright how close labourers were to starvation, especially if they had no time or aptitude for gardening, or their gardens were too small to produce enough to feed the family adequately.

Rice points out that garden size was critical: too small and cultivation was not worth the output, too large and landowners feared gardeners would become independent by selling surplus produce. Thus, ideally 'The garden needed to be a safety net, no more'. Gardens become smaller towards the end of nineteenth century, a half-acre in *c.*1800 became an eighth of an acre in the 1890s. This reduction reflected changing food supply as well as a drop in the cost of living: food was becoming more available via grocery wagons (though not necessarily better quality, for instance cheap sugar, white bread and treacle were available in this manner).

The history of cottage gardens in Scotland, a 'largely undiscovered territory', has been given impetus by this book. Rice points out that there is no example of a reconstructed worker's cottage garden in Scotland which would, 'open a gate into the world of the kailyard and the cottager's garden'. Probably the most important aspect to the book is to lift the latch on that gate. It is a seminal work, and hopefully, it will stimulate many years of fruitful research.

JOHN DAVIES
Independent scholar

SHAUN EVANS, TONY MCCARTHY and ANNIE TINDLEY (eds), *Land reform in the British and Irish isles since 1800* (Edinburgh University Press, 2022). xiii + 347 pp. £90.

This book is a useful collection of essays on land reform in England, Scotland, Wales and Ireland since 1800. It emphasizes the key differences between the four nations, arguing that there has been 'an imbalance of intensity between Scotland, Ireland and Wales, where land reform centred on the nature and conditions of tenure, protections and land distribution, and England, where it has been more diffuse, feeding into a multitude of debates, including enclosure, commons, game, housing and conservation'. The book is made up of 14 'original case studies', written by a range of contributors, mainly historians but also including lawyers and estate managers, offering expertise and life experiences outside the traditional domain of academic historians.

The book is organized into four areas of interest: (1) tenants, landowners and estate management, (2) agitation and agendas for reform, (3) legislation and its impact and (4) landowner responses, illustrating a multiplicity of relationships and connections between high politics and local experiences. As is the case for many essay collections, the book had its origins in a conference, here organized by the Centre for the Study of Historic Irish Houses and Estates (Maynooth University), the Centre for Scotland's Land Futures (University of Dundee), and the Institute for the Study of Welsh Estates (Bangor University). The conference held in 2018 identified 'that there were gaps in our knowledge of landed histories and that such voids impeded a better understanding of our respective historical narratives'. Like many studies of the Land

Question, it focuses on the late nineteenth and early twentieth centuries, 'but with considerations of earlier contexts and later legacies, sometimes extending into the present day', noting that in Scotland, and to a lesser extent in England and Wales, it is still very much a live political issue.

An essay by Professor Terence Dooley from Maynooth University, shows how the dramatic transfer of land ownership in Ireland from landlord to tenant between 1870 and 1909 (the creation of a 'peasant proprietorship') was quite different from the rest of the UK, highlighting the influence of nationalism and anti-English landlord sentiments on the nature of the Land Question in one of the four nations. This clearly differentiated Ireland from England for example, where such influences were largely absent. Another case study by Tony McCarthy, a graduate of Maynooth University and an accountant and stockbroker, on the wealth management practices of Irish Landlords, 1903–1930, describes the way 70 per cent of agricultural land of Ireland had been sold to their former tenants by the 1930s. In contrast to the situation in the Free State, another essay on the Northern Ireland Land Act of 1925 by Olwen Purdie, Professor of History at Queen's University Belfast, shows how Westminster protected the interests of the landed class ensuring that they remained in possession of their untenanted land.

The book identifies a range of different traditions of land reform in Scotland and Wales. In Scotland, where the long-term historical influence of the highland clearances played a key role, legislation placed the concept of community at its core in for example the Crofter's Holding Act 1886, the Land Reform Acts of 2003 and 2016, and the Community Empowerment Act of 2015. This in turn influenced legislation in Ireland, India and non-imperial territories such as Tsarist Russia. An essay by Micky Gibbard, who has worked on heritage projects and completed a thesis on the planned village movement in eighteenth-century Scotland, argues that the collective memory and history of the Highlands and Islands 'was a vital inducement for forcing through land legislation between 1886 and 1931 and again from 1955 to the present day.' In Wales other local influences were at play not directly linked to the politics of the Land Question. Shaun Evans, the Director of the Institute for the Study of Welsh Estates, argues in an essay on the North Wales Property Defence Association (1886–1896), that it was changes in local government, heavy taxation and loss of income, that led to the sale and break up of Welsh Estates on a massive scale, 'allowing thousands of former tenants to become freehold farmers in their own right across the early decades of the twentieth century.' A similar process of took place in England after 1918, although many farmers were bought out by larger landowners later on.

In the introduction, the editors note the lack of studies tackling legislative land reform programmes from an English perspective, citing Cragoe and Readman's, *The Land Question in Britain, 1750–1950* (Basingstoke, 2010) as the only main source. My own studies of the Land Question in England after 1914 – *The failure of land reform in England in the twentieth century: The triumph of private property* (Abingdon, 2019: see the *Review*, 67.1) and *The history of opposition to blood sports in twentieth century England* (Abingdon, 2017) – trace the way concerns over land control and ownership were reflected in a wide range of political debates throughout the twentieth century suggesting that the Land Question in England was far from moribund or no longer relevant in an industrial and urban country divorced from the countryside, unlike Ireland, Scotland and to a lesser extent Wales. These debates covered the controversial issues of town and country planning and development control, taxation (the policy of betterment replacing Henry George's Single Tax, eventually developing into Section 106 agreements seeking to claw back the profits of land speculation), 'the unearned increment' for the community, agricultural reform and the role of smallholdings, public access to the countryside, moorlands and mountains (still highly controversial), opposition to hunting based partly on the misuse of land for sport rather than for more useful productive purposes, the role of charitable landowners such as the National Trust (which many Labour politicians after 1945 saw as an alternative to land nationalization), and not least the on-going housing crisis, based as it is primarily on remarkable and inflationary increases in land values.

MICHAEL TICHELAR
University of the West of England

SÉBASTIEN RIOUX, *The social cost of cheap food: Labour and the political economy of food distribution in Britain, 1830–1914* (McGill-Queen's University Press, 2020). 256 pp. 11 tables. $34.95 CAD.

Anyone attempting to understand the dynamics of social change under capitalism could do worse than to start their studies with analyses of the British food distribution system. If we have E. P. Thompson's famous study of the 'moral economy' to thank for exposing the complex interplay between capital and consumers, regraters and retailers, and magistrates and markets, the study of the mechanics of food distribution are far older. Indeed, N. S. B. Gras' *The evolution of the English corn market* and other pivotal studies

such as F. J. Fisher's analysis of the development of the London food market arguably acted to figure the very emergence of economic history as a distinctive field of study. Collectively, such works teach us that beyond the fields and the farms, the making of food as a commodity exposes consumers to the effects of all the contradictory logics of capitalism: competition acting to lower prices and seek efficient routes to meet consumer demand yet profit-maximization leading to manipulation (of foodstuffs and markets alike) and other forms of market-based malfeasance. Sébastien Rioux's study, then, is the latest expression of a set of well-established positions. In one sense the reader might be forgiven for thinking that Rioux's study is too careful, too mannered, and too respectful of the vast historiography on which it stands. The four thematic chapters at the heart of the book – focusing on public markets, street sellers, small-scale shopkeeping, and the emergence of multi-retailers – are based in equal part on existing studies and Rioux's careful reading of Parliamentary Papers. All tell well-rehearsed tales: the refiguring of medieval markets as modern wholesale centres geared to mass distribution; the role of the costermonger as vital in meeting the needs of the urban poor for cheap food; the phenomenal rise of the small shop a response to the changing socio-spatial basis of the population; and the emergence of cooperative retail and multi-retailers central to standardization, mass consumption, and forcing prices lower. This is all artfully done; each chapter a blend of synthesis and original observation, Rioux having an admirable ability to combine broad-brush analysis with pithy exemplifying vignettes.

The novelty of Rioux's approach lays in his emphasis on the, as he puts it, 'social costs' of these shifts. In this, Rioux is concerned not with the 'costs' on consumers – the argument here is these shifts in distribution helped to force food prices down – or on producers – the book entirely silent as to the effects of the mass importation of foodstuffs that fed distributive change on those who laboured in the fields and gardens – but on those employed in distribution. And here a further point of qualification. Whilst Rioux offers a definition of distribution in the introduction, there is no explicit statement as to precisely this sprawling system fully entailed. As such, the account we have here does not consider rural retailing, this arguably a major gap considering that until the 1870s the balance of the population of England and Wales remained rooted in the rural. Nor does it consider the various individuals and occupations that made distribution possible: dealers, importers, warehouse operators, merchants, shipping companies and so on. Rather, it is those who worked in direct retail, either as employees or the self-employed small shopkeepers and street sellers. The lived reality for this huge occupational growth was that cheap food acted to cheapen their labour, the cost of an integrated and efficient distribution system the living and working standards of those so engaged. Of course, as Rioux carefully shows, costermongers were invariably already poor, often turning temporarily to the trade in response to un- and under-employment. Yet the returns were small and the effort high, the result not being a route out of poverty but rather a stay from absolute destitution, the last step before entering the workhouse. Shopworkers too were, in many cases, forced to endure horrendous working hours, miserable conditions, wages paid partly in truck and in-kind through squalid accommodation and the most meagre of meals. Rioux notes that some improvements were made in the early years of the twentieth century, not least as regards the diminished exploitation of child labour, but he steadfastly refuses to be drawn into offering a Whiggish account of progress.

One of the most striking themes that emerges from the study is that retail remained stubbornly resistant to the efforts of parliamentary investigations and legislative interventions to improve the lot of shopworkers. It is surprising that Rioux does not make more of this, but, to his credit, this is a book that not only wears its considerable scholarship lightly but also remains generous to others and is refreshingly cautious in drawing conclusions. Likewise, Rioux's approach is unusually modest in not making stronger claims to novelty regarding the reading offered of migrant labour in retail, and especially more organized forms of street vending. The recruiting of children from the Calabrian countryside to sell ice-creams on the streets of London represented a defacto form of modern slavery, the parallels with the reliance on forced labour in parts of the UK's food system today painfully apparent. Another aspect of Rioux's study that deserves praise is his unfussy and direct prose. This is written with great clarity and certainty, something deeply impressive for a first monograph. What are the flaws? As detailed above, there are some significant gaps, but these are flaws only by virtue of the fact that the exclusive focus on retail as opposed to other aspects of distribution (the role of the railway a notable exception) is asserted rather justified. I would have liked, and this perhaps betraying my own intellectual biases, more in the way of the voices and individual experience of actual workers, the account often detailed but curiously devoid of actual human lives. None of this is take away from what is a fine achievement. This is a timely, thoughtful, and powerful account that acts both as a welcome synthesis

of existing work and as a genuinely novel take on the hitherto hidden costs borne by those who brought cheap food to market.

CARL J. GRIFFIN
University of Sussex

JONATHAN SPAIN, *Fruit farming in the Cam Valley: an horticultural, social and economic history set in the regional and national context* (Shepreth, RiverRhee Publishing, 2021). 482 pp. 16 plates. £25.00

The primary focus of this book is the impact on agricultural practices of fruit growing in the Cam Valley, located in the south of the county of Cambridgeshire. Having briefly set out the intended themes and perspectives as well as the historical sources used, Spain opens with a description of the development and demise of the Cambridge Gage – a variety of greengage. From its origins in France, he charts its progression from the private gardens of the gentry and aristocracy into full commercial production up until the 1970s. Thereafter, the demand for the Cambridge Gage (along with other greengages) declined rapidly, returning it once more to private gardens, yet with a rejuvenated low-level demand as a heritage fruit.

Chapter 2 looks at plum cultivation in the Cam Valley. For each variety of plum grown at Wimpole and Madingley, he relates the comments made on these varieties by a number of authors from the eighteenth, nineteenth, and twentieth centuries. He concludes that the nurserymen of the district displayed ingenuity in using a range of varieties to reduce the risk of crop failure through either weather or disease.

A similar approach is adopted to his analysis of the varieties of apples in the next chapter, noting that apples were of much older origin than plums or gages. Attention is given to both culinary and dessert varieties of apple before concluding that modern apples are 'standardised snack food for the mass market' (p. 84). The last chapter of part 1 examines the cultivation of cherries, pears and soft fruit, in particular, gooseberries.

Part 2 opens with a survey of the main fruit growing villages in the Cam Valley, eleven in all, with a useful hand-drawn map provided: however, a key explaining the shaded areas would have been helpful. Spain then examines the history of each village in terms of orchards attached to private dwellings and the development of larger commercial orchards: further hand-drawn maps are supplied for each village to enable an understanding of the placement of the orchards. From the mid-nineteenth century, fruit growing developed apace, being fully established in the area by the 1920s and 1930s and the next chapter goes on to present the impact of fruit farming on village life in the area.

The third and final part of the book comprises six chapters which provide a chronological development of fruit growing from *c.*1740 to the present day, along with its impact on the economic history of the Cam Valley, set within a regional and national context. This part of the book confirms the intent to focus on the East of England with its primary markets in London, supplied by East Anglian counties and Kent. Jonathan Spain describes the development of the railway and its effect on commercial fruit production: the inclusion of a map would have aided the reader's understanding of the major rail routes in and out of the area.

In chapter 8, he notes the existence of strong local individualism amongst the Cambridgeshire fruit growers which conspired against the success of co-operative fruit grading and packing, despite such schemes running successfully elsewhere in the country. The following chapter continues to examine fruit farming between 1918 and 1939, building on the scientific and technical developments described in the previous chapter, to consider their impact on economic trends in this period. In addition to local newspaper reports, the author relies heavily on one trade journal source, *The Fruit Grower*: on pages 278–9, there are 15 consecutive footnotes, all drawn from this single source. It would have been interesting to see how original archive material supported his analysis.

Fruit growing in the district during the Second World War is examined in chapter 10, again with heavy reliance on *The Fruit Grower,* leading the reader to reflect on whether such a source presents an unbiased view of the situation: in particular, the emphasis given in the text to the alleged greater governmental support for agriculture, as opposed to horticulture at this time. One aspect which Spain attempts to address is the complexity of fruit price controls which he notes historians of food policy have neglected: whilst presenting the evidence for price control, he does not reach any overall conclusions. The final two chapters examine the post-war development of fruit growing in the district and the start of its decline by 1960, leading to the end of much commercial fruit growing in the area today.

In terms of presentation, the text occupies 454 pages of closely typed text on A4-sized pages, followed by a 'select bibliography' making up the remaining 28 pages. There are 16 quarter-page plates of fruit, excellently presented on glossy paper in chapter 4: these and the 12 hand-drawn maps provide the only breaks in the textual presentation. The book would be much improved in a number of ways: the use of the search function to eliminate obvious commonly occurring errors such as 'desert' rather than 'dessert' apples, and 'spaying' rather

than 'spraying'; the use of tables and graphs to present many of the statistics, in particular, the informative data extracted from the 1910 Land Valuation survey; and the inclusion of related photographs (historic and present-day) to illustrate points being made and to break up the text. Further, there are too many minor errors to enumerate, all of which could have been removed during a thorough proof-reading: the 'Isle of White' (p. 63) is but one example.

Overall, the reader gains the impression that fruit-growing was a gamble, with good and bad years, being the outcome of variable weather conditions and the prevalence of disease – no different to any other fruit-growing area of England. The regional and national contexts are primarily confined to the east of England and Kent, with little reference to other fruit-growing counties, such as Herefordshire and Worcestershire. This is a text densely-packed with information on a specialist subject, yet at times, the reader is left to wade through the content when they should have been assisted to digest the 'fruits' of the author's labours.

ALAN M. WADSWORTH
Evesham, Worcestershire

WILL ABBERLEY, CHRISTINA ALT, DAVID HIGGINS, GRAHAM HUGGAN and PIPPA MARLAND, *Modern British nature writing, 1789–2020: Land Lines* (Cambridge University Press, 2022). 300 pp. £75.

By a strange coincidence this book arrived for review at the same time as George Monbiot's new book *Regenesis: Feeding the World without devouring the planet* (Allen Lane, 2022). Monbiot's case is that, 'Farming is the world's greatest cause of habitat destruction, the greatest cause of the global loss of wildlife, and the greatest cause of the global extinction crisis' (*Regenesis*, p. 90). British farming is the elephant in the room in the book under review. On the one hand there are references to 'the deracinated agricultural landscapes that now compose much of Britain' (p. 75), whilst on the other hand there is this early statement: 'British nature writing has sometimes unhelpfully framed farming and farmers as the enemy, although there are signs that this is changing with the emergence of authors such as James Rebanks and Isabella Tree' (p. 22). Some writers would argue that it was not DEFRA, in its earlier incarnations, that actually grubbed up all those miles of ancient hedgerows and the later uses of the term 'enclosure' here seems to include the post-1947 'hollow victory of mega-farms' (p. 184). It is strange that there is no reference to the prolific nature writer Mark Cocker's 2018 book *Our place: can we save Britain's wildlife before it is too late?* in which he explores the paradox of a nation of wildlife lovers having 'allowed' the post-war agricultural policies that decimated habitats and wildlife. This is odd because the theme of this book is very much about the paradoxes, tensions and uncertainties of British nature writing which it explores with often neglected examples and intellectual rigour that unsettles common assumptions, 'debunks lazy clichés' (p. 24) and challenges established commentators.

Modern British nature writing, a book wholly written by all five authors, declares that it is not a survey of (mostly) non-fiction prose nature writing. It takes a historical approach, but uses selected examples that 'perform *both* an aesthetic and a political function' (p. 24). As one might expect, the book starts with Gilbert White, but it ends with 'Shades of White' in which the book's discussions of cultural diversity are extended to contemporary questions of inclusion and access. The Romantic period focuses on Dorothy Wordsworth, Charlotte Smith and John Clare, with new work on Thomas Bewick and James Hogg as representing both traditional observations with 'emerging new understandings of the changeability of landscapes and species' (p. 25). The Victorian chapter proposes 'conservative idealism' as a key to understanding the tensions between pastoral and georgic, aristocratic and bourgeois values, the empirical and the spiritual, 'inchoate ecological consciousness' (p. 26) and anthropocentrism. From John Ruskin to Richard Jefferies, and from stonemason Hugh Miller to mountaineer Leslie Stephen, nature writing is discussed as having an uneasy self-consciousness about its being a literary construct of a moral, or even mystical imagination, 'valuing the natural world as a moral-spiritual aid' (p. 26).

It is in the chapter on the Short Twentieth Century (1914–91) that a crucial transformation in place-based nature writing is seen to give it a 'sense of a genre beginning to coalesce' (p. 167). 'The changes were particularly marked in attitudes towards farming, which in the early part of the century was almost synonymous with nature, but which, in the wake of the intensification of agriculture after the Second World War and the deployment of pesticides such as DDT, came to be regarded as one of the greatest threats to it' (p. 167). The popularity of rural writing that followed the First World War has largely been discussed in its fictional form. Here notions of a fragile national consciousness invested in landscapes, under threat from modernity and its mechanizations, are explored first in the writings of Edward Thomas, then in the Modernist georgics of John Stewart Collis's *The*

worm forgives the plough (1973, but combining two books originally published in 1946/7) before turning to 'two innovative female nature writers' (p. 185), Nan Shepherd and Margiad Evans. Both wrote in the 1940s and fell out of print in their lifetimes, but Evans has yet to achieve the rediscovery from which Shepherd's work has benefited. Evans' *Autobiography* (1943) appears to be one of the resurrections of reputation achieved, here under the heading of 'Earth Writing', by *Modern British nature writing*. This chapter is concluded by a 'Coda: Richard Mabey's post-pastoral' which discusses *The unofficial countryside* (1973), a reversal of Thomas's fleeing the suburbs in search of nature. Mabey, always searching for positive engagements with an ever-adaptable nature, nevertheless fears for its future: 'It will always fight back, but it cannot survive outright eradication', he writes (p. 196).

So we come to 'Nature writing after Nature' in the contemporary period and the book's most theoretically original contribution to current debates about the renewals and failures of so-called 'new nature writing'. The focus here is on Robert Macfarlane's *The wild places* (2007), Jay Griffiths' *Wild* (2006), George Monbiot's *Feral* (2013), Paul Farley and Michael Symmons Roberts' *Edgelands* (2012) before comparing contemporary with earlier books about hawks and then about otters. Taking Edward Said's notion of 'late style', the claim is made for the writers of new nature writing as being 'late Modern, expressing deep-seated anxieties about themselves, their writing and their positions in a rapidly diminishing natural world' (p. 29). Indeed, it appears that nature writing flourishes most during periods of such anxieties, not the least of which is represented by Tim Ingold's notion of 'weather-worlds' in which human and non-human forces act upon each other, as discussed here in work by Richard Mabey and Melissa Harrison. But if 'even the most self-reflexive forms of nature writing are likely to have limited environmental impact' (p. 223), this book brilliantly and provocatively makes the case for nature writing and its discussion as exploring both what 'environment' is and the nature of human 'impact' and interaction. All further discussions of nature writing will need to engage with this book.

TERRY GIFFORD
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RICHARD A. GAUNT (ed.), *Church, land and people. Essays presented to John Beckett* (Thoroton Society Record Series 50, 2020). 274 pp. £32.

The appearance of a festschrift for one of the leading practitioners of our discipline and a prominent member of our Society is a noteworthy occasion. John Beckett's contribution to Nottinghamshire history is celebrated in a volume published by the Thoroton Society, whose chairman he was from 1992 to 2020, in itself perhaps a record.

The book is a collection of essays on the county's history, all decent and contributing something fresh to its history. Every reader will have their favourites and there is not room here to discuss them all or even list all thirteen. To mention a few, David Crook shows how Nottingham traded on its reputation as the home town of Robin Hood in the mid-seventeenth century. Stanley Chapman discusses 'Newark as a coaching centre, *c.*1600–1850' although much of the essay is actually concerned with roads, and Dorothy Johnston the development of Welbeck Park by the third Duke of Portland. Ken Brand discusses the way in which enclosure allowed the development of a new suburb in Nottingham and discusses the architectural forms it took.

For the two of much greater than county interest, I nominate Adrian Henstock who discusses Ashbourne and Bingham and shows how these small towns were reformed and polished, particularly in the second quarter of the nineteenth century – I suspect a common enough experience but curiously under researched. And in what may be the most important essay in the book, Philip Riden uses correspondence at Chatsworth to rescue postal history from the postal historians, and show how the developing postal network in the late seventeenth century allowed for the freer and faster circulation of information – and, one might say, instructions. There is a bibliography of Beckett's publications.

The volume calls for some reflections on the contribution that universities make (or ought to make) to the local community through their sponsorship of local history. The appearance is that Nottingham never set out to have a figure so active in the history of the county but by appointing a man brought up in Nottingham they planted the seed. I suspect – no, I know – that no History department would do it today. Of course, given university special funding or a bequest, they would do so: but a straight choice between a local historian (or a historian with local interests) and someone who could teach what would today be regarded as core syllabus – Polish history say, or Catholic missionaries in the early modern Philippines and Japan – there is no contest. The MA Beckett ran in Local and Regional History died in 2005 on his secondment to London, and yet the book offers testimony to its success in drawing people into the discipline and offering them training. It will be interesting to see what Beckett's legacy in the university turns out to be.

There is much on Beckett the man, and yet curiously little. In a long biographical essay, we learn that he made a sledge in the winter of 1962–63 (with 'metal runners and countersunk screws' – important details) and that he married: and that is all it says about his family life. Given the energy he displayed, perhaps he was never at home. A section headed 'private life' is about his enthusiasm for cricket and football and it appears here that he is, or was, a church organist and one time choirmaster. There are vignettes of the old university – snooker with Michael Jones in the staff club after lunch on a Thursday. The book ends with a gallery of pictures of Beckett at public events which proves he is both photogenic and much photographed. This surely sets a record for the number of pictures of the honorand in a book of this sort.

And yet whilst the book gives thanks for Beckett and his contribution to Nottinghamshire history, it also serves to diminish the man. The younger Beckett in particular had ambitions to work on a much wider field, as is seen in his early books and the mid-career work with Michael Turner and Bethanie Afton. And see too his contribution to the *Agrarian History of England and Wales*. More recently he has looked at the processes by which towns achieved city status. All is detailed in the bibliography the book provides and yet, except for a contribution by Michael Turner, it has no resonance in the volume.

Neither were his ambitions limited to Nottingham: he was interviewed alongside me for the Directorship of the Rural History Centre at Reading in 2000. He had a secondment to run the Victoria County History in 2005 to 2010 and I always supposed that he wished it to turn into something permanent. Of course, with its Nottinghamshire focus, the book says nothing about how he presided over VCH in what was surely its Indian summer.

So whilst the book is a worthy and affectionate gift from his Nottinghamshire friends to their colleague, there could have been a different one which would have said much more about his contribution to economic history and agricultural and rural history: even to local history as a discipline. Perhaps we await it?

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GERRY BARNES and TOM WILLIAMSON, *The orchards of Eastern England: History, ecology and place* (University of Hertfordshire Press, 2021). xiii + 258 pp. £16.99.

This book presents research from the 'Orchards East' project (2017–20), funded by the National Lottery Heritage Fund, which explores the history and ecology of orchards in Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Huntingdonshire, Norfolk and Suffolk. The authors, Tom Williamson and Gerry Barnes, examine the historical, ecological and commercial background, the impact of industrialization and the subsequent destruction of orchards and their potential future in an unsentimental, constructive way, evidencing extensive archival research and practical exercises.

Orchards have a rich and diverse history and a regional and national significance which has rarely been the subject of academic study. More readily associated with the western and south-western counties, an enduring image of the quintessential English orchard is one of ancient trees, with delightful blossom in spring and later in the season heavy with fruit, bathed in the golden light of an autumn afternoon, a symbol of enduring abundance. While orchards do reflect the changing seasons and cycle of life in the natural world, the popular, nostalgic image belongs to a Merrie England which never existed, a mythical paradise lost. And rather than being ancient trees, the maximum lifespan of an apple tree is approximately 120 years, a cherry tree 80 years and a plum tree only 60 years, and 'old' fruit varieties do not date back to time immemorial. These and other myths are gently but steadily debunked throughout the book, the authors acknowledging that this may be unwelcome to some.

Once common features of the English landscape, orchards have not been studied as distinctive and significant wooded areas. The point is made that 'orchards, while sometimes described as "semi-natural habitats", inhabit the world of culture more than that of nature'. Farmhouse and country-house orchards, commercial enterprises, orchards attached to institutions such as colleges and hospitals, the recent heritage and community orchards, all owe their existence to human agency, in planting and maintaining them in order to flourish and produce high yields and removing and replacing trees when diseased or too old to be usefully productive. The human factor is also instrumental in the destruction of orchards, both in the physical act of destruction and in the identification of orchards as no longer being useful or necessary features of a particular area.

Nine chapters take us through the results of the multifarious investigations undertaken by the project. They explore the history, surveying, and mapping of orchards in the eastern counties, the demise of the once-ubiquitous farmhouse orchard, changing methods of farming and patterns of land ownership and use, and the development of the nursery trade. Orchards as features of designed landscapes are considered, from

country house estates to those planted in the grounds of institutions such as those of hospitals and colleges. The development of fruit-related industries such as canning, jam, and cider production is discussed as are the cultural and commercial factors that influenced the pre- and post-industrial centuries.

The commercial orchard, such an important feature of the region, was in its infancy prior to the 'orchard century', *c.*1850–1960, the subject of chapter 3, in which we journey through the heyday and subsequent decline and fall of the orchard industry. There was significant growth in the period up to the First World War and, in the interwar years, expansion of the commercial orchard was bolstered by large-scale industrialization and urban development, the products being more easily transported thanks to improved rail and road communications. It is shown that expansion continued after the end of the Second World War, peaking in the 1950s and '60s, and outlines the reasons for the loss of vast numbers of commercial orchards over the course of the past half century, in some measure due to EEC membership and the rise of foreign imports but also to changes in shopping habits and food consumption and the demise of many small farms. The range of varieties being grown today nationwide is minimal compared to the range of known native varieties, many of which are now known by name only.

The penultimate chapter makes a strong case made for the importance and significance of orchards as landscape features, areas of fruit production, wildlife and wildflower habitats, and as public amenities. If orchards are a part of our heritage to be valued and to form part of future landscapes, how should this be brought about? Although historically part of the landscape they are not in themselves timeless and, going forward, should contribute productively to future landscapes in terms of biodiversity of ecology and habitat, edible produce, and uplifting places of peace and beauty. 'Biodiversity' and 'rewilding' are hot topics today but how appropriate are they when applied to orchards, given their 'semi-natural' character and the level of human input?

The book features a good number of maps, plans, photographs and other illustrations: could more have been included? But this is only a minor niggle. It must have been a Herculean task to select from the vast amount of data generated by the project and even more so to assign material to the various chapters. There is so much information here for local and landscape historians, social and economic historians, horticulturists, ecologists and anyone with any degree of interest in orchards. The curious can plunder the bibliography in search of further reading, for whether read straight through from start to finish or dipped into to peruse selected chapters, this book is a wellspring of information to bolster the current resurgence of interest in orchards and fruit varieties. It sets the bar dauntingly high for future regional orchard studies.

SUSAN WILKIN
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PATRICK GRATTON, *Oasts and hop kilns: A history* (Historic England / Liverpool University Press, 2021). x + 182 pp. £40.

This book on the buildings of the hop-growing industry is based on a study which the author carried out in 1960. By the beginning of the twenty-first century, Patrick Grattan realized that much of what he had recorded then had largely disappeared as a result of a steady decline in the growing of hops in England, resulting in the related traditional buildings becoming disused across the country. In writing the book, Grattan has given due recognition to the differences in terminology between the hop-growing regions of England, with oasts (or oast houses) and hop gardens in Kent and Sussex, and hop kilns and hop yards in Hampshire and Surrey, and in Herefordshire and Worcestershire. Whilst the latter two counties were not included in his original research, he has drawn on the work of well-respected experts on vernacular farm buildings in these areas, to present a fully rounded account of his subject.

In his introduction, he outlines the development of hop cultivation in England and the use of hops in the brewing of beer, as opposed to the customary ale consumed in medieval times, with peak production occurring in the 1870s. The picking of hops is briefly examined in chapter 2 before the associated processes of drying (chapter 3) and bagging ready for despatch (chapter 4) are described, these being the activities which take place in the hop kilns and oasts. Regarding the use of sulphur in the drying process, the author notes that its use was more widespread in Kent than Hampshire, but he is silent about Herefordshire or Worcestershire in this regard. The topics of hop picking, and hops and brewing are summarized in brief appendices.

Having presented a typology of oasts and hop kilns in chapter 5, enabling their placement within one of five types, the next five chapters examine the existence of each type and the development from one to the next, albeit that multiple types could, and can still, be found adjacent to each other on the same site. With the buildings classified by type, the characteristic features of oasts and hop kilns as vernacular buildings in each of the three main hop-growing areas are then presented.

In chapter 13, the zenith of English hop production is considered, taking account of the impact of the development of the railway network in the 1800s, as well as the improvements made in ventilation and heating systems for the drying of hops. The development of hop buildings on a grand scale on various landed estates are also described. The implications of taxes including tithes, markets, the profits to be made (or not depending on the weather) and the politics behind hop production are all assessed in chapter 14, before a wider view is briefly taken of hop drying and the associated built environment in Europe and the United States.

In the final chapter, Grattan presents the current position as influenced by the impact of both changing demands for hops and international competition, along with the introduction of mechanized picking, fan-assisted blown-air heating and drying and the integration of the hop-drying and -processing operations within industrial units of modern construction. The outcome of the latter has meant that many of the traditional buildings have been subject to either decay or adaptive re-use as domestic or other accommodation. His final image is of the building which won the 2018 RIBA House of the Year award, its design inspired by the tall hop kilns of the Kent countryside where it is located, with a view of traditional oasts in the background.

This book is superbly illustrated with a plethora of colour photographs, sketches of the author's research in 1960 and a number of drawings and cross-sections to illustrate both production processes and building. There are very few typographical errors, and the only omission occurs at the end of chapter 1, where the weights and measures used in the hop industry are described, in which there is no mention of hop acres as used in the western counties. One hop acre is the ground covered by 1,000 hop plants, and in the 1890s there were 1,500 to 1,600 plants to the statute acre. Many growers kept records using hop acres, necessitating the Ministry of Agriculture to instruct growers to use statute acres, not hop acres, in their annual agricultural returns.

Overall, this book presents an excellent historical analysis of the traditional buildings associated with the hop industry, set within the background of the cultivation, processing and marketing of English hops.

ALAN M. WADSWORTH
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DAVID JOHNSON, *Brickmaking: History and heritage* (Amberley Publishing, 2021). 96 pp. 100 illus. £15.99.

In the introduction to his book, David Johnson considers questions such as: What is a brick? Where in Britain were bricks made? At what rate did brickworks decline? Indeed, the whole book is written against the background of the demise of brickworks in Britain from a peak of 1,739 works in 1873 to only 50 by the year 2010. Johnson then examines the geology of the areas where brickworks have been constructed, along with the different sources of clay used for brickmaking. In chapter 3, an overview of the history of the brick in Britain is presented: starting with the use of brick by the Romans, there was limited brick usage after 410 A.D. except in high-status buildings, but then a rapid increase in their use was observed from the late eighteenth century onwards, the latter arising from improving kiln technology and the increased demand for housing as the population of the country expanded. Likewise, there was a demand for brick for the construction of farm and other industrial buildings at this time, especially in areas where stone was not available. Brickmaking also provided by-employment for those involved in agriculture as illustrated in this book with the example of the Scots farmer, John Ainslie, who patented various designs for brick technology (p. 55). Johnson also explains the construction and use of early clamp kilns which were temporary and/or movable structures.

Chapter 4 looks at the various stages in the preparation of the raw materials needed to make 'green bricks' ready for drying to be followed by firing. Subsequent chapters then present the chronological development of fixed permanent brick kilns. From the updraught and downdraught technologies, chapter 6 moves on to examine the progressive development of continuous kilns, culminating in the Hoffman kiln and its derivatives which are considered in chapter 7. In the following chapter, tunnel and shuttle kilns are examined where either cartloads of brick are slowly drawn through the kiln, or where the bricks are placed in the kiln (*set*), fired and then removed from the kiln (*drawn*). Finally, chapter 9 identifies where preserved (and not so well preserved) brickworks can be found, in their role as heritage assets, demonstrating the differing types of kilns.

It would have been helpful to have had further diagrams, similar to that on p. 73, explaining the operation of the various kiln designs in order to assist the reader's understanding of their functionality and their differences. A short glossary for the lay reader would also have been useful. In the early pages of the book, there are cases of numerical slips: for example, on p. 7, Johnson states, 'By 1858, across Britain over 1,400 brickworks were in existence, a number that had shrunk to 1,739 by 1873'; two further examples occur on p. 10. Apart from two minor typographical errors and the misspelling of Ashby de la Zouch ('Ashby de

la Zouche' on p. 9), this book is produced to a high standard and is well illustrated with both historic images and modern-day scenes of operational and non-operational brickworks. Whilst there is not a single reference in the whole book – indeed, the book has no pretentions to be an academic volume – a three-page bibliography is provided, along with an index of sites.

The author clearly knows his subject and, on the whole, he puts over the history of the development of brick kilns in a clear and concise manner, although more operational detail would have helped the understanding of the overall process of brickmaking, as suggested by the book's main title.

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Europe and Elsewhere

BEN MARSH, *Unravelled dreams: silk and the Atlantic World, 1500–1840* (Cambridge University Press, 2020). 500 pp. £29.99.

In *Unravelled dreams* Ben Marsh explores the history of the encounter with silk production and consumption in the Atlantic world in the period 1500 to 1840. He points out that silkworms were 'at the cutting edge of Atlantic imperialism' in this period not because of any commercial success in silk production but precisely for the reverse. He shows that silk production enjoyed wide ranging encouragement from colonial powers, yet did not succeed. In this way the book differs from other commodity histories in that it portrays the history of commodity that failed. Marsh argues that 'the history of failure is a something of an in-built blind spot for historians' and as such stands in the way of deeper understanding of the contributions that 'failures' or rather 'commercial failures' had on the wider social and economic development. In the case of silk, he cites the numerous contributions that silk made and argues that despite the failure of this commercial venture, silk paid 'testament to the experimental spirit, profound adaptability, and indomitable conviction of early American communities'. Moreover, as he shows Atlantic silk's history has always been bound with the more global history of the silk industry and consumption on the world market. In this way the history of failed projects can assist in studying the global and the global history needs to be taken into account when explaining the local failure. Since the book compares silk production in the French, English, Spanish and early American contexts the comparative element further aids to reveal the global and regional paths silk production took in the Americas.

The book is divided into three parts – Part I, Emergence, Part II, Persistence, and Part III, Convergence – and each part is then divided into chapters according to the region that they explore. Part I, Emergence, sets the progress of silk culture into the context of the spread of silk production and consumption around the globe and into the framework of early colonization efforts. Chapter 2 focuses on sericulture (the process of mulberry cultivation and silkworm rearing) and the ensuing silk production in Spain and the process of the transfer to New Spain. This process, as Marsh shows, started with the first voyages across the Atlantic. Marsh shows that this project was successful in the sixteenth and early seventeenth centuries thanks to three factors that occurred simultaneously – something that did not happen in Atlantic regions. These were availability of Old-World silk experts, committed colonial authorities, and a labour force with experience in textile production and insect harvesting. Chapter 3 explores a significantly less successful project and that is the transfer of silk from England to Virginia. The chapter shows the great interest that the colonial centre, particularly King James I, put on silk production. Yet, the English did not have a great experience in silk production themselves and had to rely on importation of silkworms and mulberries from Continental Europe as well as on French silk experts for the knowledge transmission. Moreover, in the early seventeenth century the silk industry was affected by the plight of colonists in Virginia and their lack of expertise. Once tobacco dominated the economy, silk lost out to the already-present commercial success of tobacco planting, despite the continued interest it commanded in the political circles. Chapter 4 explores the French tradition of silk production and the experimental transfers of silk to New France in the seventeenth and eighteenth centuries. Marsh argues that the French never achieved such success as the Spanish with silk production in the Atlantic because they were not so pressured to get supplies for their domestic silk industry from their colonies and because the lack of settler population in the French America did not allow for a large-scale silk production.

Part II, Persistence, sets the efforts of the colonial powers at expanding silk production in the Atlantic in the context of colonial competition and the quest for new supplies of raw silk for the growing silk weaving industries in Europe. In chapter 5 Marsh maps out the attempts at expanding sericulture in Europe itself. Chapter 6 focuses on the attempts to transplant sericulture to South Carolina and Georgia in the late seventeenth and early eighteenth centuries. Chapter 7

studies the efforts to establish silk cultivation in New England in the eighteenth century. Both chapters show the challenges that a lack of expertise, the need to get silk specialists from Europe, the configuration of labour, and competition with other ventures posed to silk production in the British Atlantic colonies. These challenges were not easy to overcome despite a political economy encouraging silk production.

Part III, Convergence, explores how silk production in the British Atlantic colonies fared in the eighteenth century at the backdrop of the revolution and independence. Chapter 8 studies the eighteenth-century silk consumption and taste in the framework of colonial boycotts and perceptions of British goods. Chapter 9 studies the pursuit of silk production in Pennsylvania, which aimed at solving the dichotomy between the perception of silks as 'symptom of Old World decadence' and the perceived virtues of the fibre itself. Chapter 10 looks at the renewed efforts at silk production in the newly independent United States. Both chapters show that although interest in silk production was not missing the pre-existing challenges did not disappear and US remained far from becoming one of the main world silk producing regions.

The monograph presents a unique study of commercial failure in a very long timeframe and in this way breaks ground as commodity histories almost exclusively focus on successes. Moreover, the book views the history of silk in the Atlantic through the lens of global connections and encounters and in this way presents a much more holistic portrayal of the transfer of silk production and its successes (and predominately failures) in this new environment and market. The story of silk in the Atlantic is very well weaved into the framework of political and cultural history of the area and thus forms an intricate history of a commodity in a specific geographical setting but also pays minute attention to the global events that shaped this regional history. The monograph relied on a very wide range of both primary and secondary literature and makes a great contribution to the history of silk as a global commodity. *Unravelled dreams* presents a wealth of information on silk in the context of culture, society, and economy and would be of great interest to cultural and global historians, scholars focusing on material culture as well as historians focusing on the Americas. Having more contributions to the history of failures such as Marsh presents in his *Unravelled dreams* would undoubtedly help to expand our understanding of the factors that facilitate commercial successes and failures.

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VIJAYA RAMADAS MANDALA, *Shooting a tiger: Big-game hunting and conservation in colonial India* (Oxford University Press, 2018). 452 pp. 21 illus. £55.

Shooting a tiger is a compelling account of the intrinsic links between big-game hunting, conservation, and the colonial governance of India. Building on his previous publications on the Raj, and his PhD thesis, Mandala draws on extensive sources compiled in India and the UK, over a seven-year period. His materials stretch from memoirs, published documents and images. He charts critical course through the ever-changing role of shikar (hunting) in India. *Shooting a tiger* offers new perspectives on the essential roles of big-game hunting and conservation, wow hunting moulds political power, colonial administration, and assertions of masculine oppression in an imperial world.

Shooting a tiger is illuminating and accessible with exhaustive examples. It has a comprehensive introduction grounding the book in wider literature. Mandala is meticulous at critiquing and building on work in this field. Reading as a geographer, I found this useful in providing context to Mandala's research. The foreword, written by John MacKenzie, is likewise useful for this purpose.

In chapter 1, Mandala plots the multiple roles of big-game hunting in empire building, providing historical context before exploring the specific allegory of shikar in India. His first detailed discussion focuses on the Mughal Empire where he outlines the practical and symbolic uses of shikar as extravagant shows of political, military, and masculine dominance by the Mughal elite. These were complex discourses encoded in the Indian imagination that were later shared and manipulated during British colonization. Diverging from previous literature, Mandala argues that shikar straddles a dichotomy; being both a flamboyant showcase, with rulers riding bejewelled elephants, and the much smaller mundane acts of soldiers and imperial men. The more mundane but vital acts of administration and societal interaction were indispensable cogs in the Empire's machine. The traditional, hierarchical hunting culture developed comradeship, forged alliances, and allowed intelligence surveillance to aid territorial expansion.

Chapter 2 analyses the impacts of physical geography on big-game hunting, and how exploring new topographical frontiers influenced hunting practicalities and inspired the British colonial imaginations. Comparing the Nilgiri Hills and the Himalayan hill stations to the Indian plains, Mandala interprets the adaption of hunting to the mountains as part of a new aesthetic adopted by the upper classes. Mandala proposes that masculine and racial codes dictated new

metaphors connecting Indian hill hunts with health, authenticity, and European superiority. Identifying the mountain as a befitting environment for Europeans where increased challenges taxed the imperial man's elevated skills. This led to the establishment of clubs like the Ootacamund Hunt, building of military sanatoria, and the coveting of racially exclusive property in the hills. Mandala offers fresh perspectives on the complexities of masculinities and moralities that were constructed in the hills of India.

Chapter 3 argues that emerging codes of sportsmanship in shikar, use of hero sportsman narratives and developing gun-technology had resonances with authority, masculinities, and sought to exclude the 'other'. Mandala interprets sporting memoirs to provide examples of how imperial hunters gained privilege and masculine superiority through hunting man-eaters and saving native villages. Mandala infers that forest legislation and arms licensing exposes colonial perceptions of indigenous hunters. The poor hunted for food, and this was considered a barbaric and a lower-class attitude to the sport of hunting. Mandala argues that ideologies of scientific racism, social Darwinism and fears of rebellion fuelled by gun-ownership redefined shikar throughout the nineteenth century. He concludes that codes of sportsmanship reaffirmed the controlling societal structures in imperial India.

Chapter 4 discusses the collusive roles of Indians, specifically Indian princes, in constructing the powerful image of the Raj and reaffirming hierarchies. By examining paintings and media articles, Mandala observes how the extravagant shikars, such as tiger hunts hosted by Indian royalty, gave credence to colonial rule. Mandala argues that Indian princes were neither pliant nor idle, and that shared hunting opened opportunities for the Indian elite to negotiate beneficial relationships and assert their own political dominance. This chapter makes a convincing case that without the collaboration of Indian royalty, and the act of hunting on their reserves, the Raj's image of authority would have been limited and Indian princely powers diminished.

In the final two chapters, Mandala intertwines the paradoxical ideologies of big-game hunting and conservation. Mandala gives examples of acts of conservation that were not philanthropic but selective, safeguarding hunting stocks, reinforcing imperial narratives, and consolidating British ownership. He provides a convincing case of how imperial imaginations determined animal hierarchies. The anthropomorphic tendencies of the British painted the elephant as noble and the tiger as villainous vermin. This influenced conservation policy throughout India until the early twentieth century. Mandala argues that the British supported an inherently contradictory in policy, eradicating tigers on the premise of protecting indigenous people while protecting elephants who were far more destructive. Further convincing connections are made through a critical analysis of the lives of Jim Corbett and Colonel Richard Burton. Both men spent most of their lives hunting 'man-eaters' while also promoting conservation and study of Indian wildlife. Accounts of these men show how they inhabited paradoxical spaces aligning their hunting practices with acts of preservation, using altruism to justify their behaviour while also reinforcing discrimination and imperial codes. This section explores how their experiences show unique relationships and contradictory colonial attitudes to wildlife, hunting and indigenous peoples.

Mandala, in writing *Shooting a tiger*, has succeeded in creating a well-illustrated and thoroughly researched set of accounts of big-game hunting and conservation in colonial India. Within each section, sophisticated interpretations and substantiated connections are crafted with appropriate links made to wider literature. Mandala's focus on the mundane experiences and administrative accounts add to engaging literature of imperial hunting and environmental studies.

JESSICA HOWELL-DAVIS
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TOMASZ OPALIŃSKI, *Stan chłopski w Księstwie Warszawskim w świetle akt sądowych* (DiG, 2021). 196 pp. 42.00 zł.

The history of the peasantry has never been a first-priority topic for Polish historians. This is true despite the fact that rural communities made up the vast majority of the inhabitants of the Polish lands. While there are many factors contributing to what amounts to an astonishing hole in our knowledge (some would point to the relative scarcity of sources, while others would blame the post-war narrow-minded socialist ideology imposed on Polish historians, which made the history of the peasants seem uninteresting for some) it is without doubt that any mature attempt to improve such a problematic state of affairs should be greeted with attention. Tomasz Opaliński's book *Stan chłopski w Księstwie Warszawskim w świetle akt sądowych* (*The peasantry in the Duchy of Warsaw in light of juridical documents*) is surely one of them.

The publication's scope may seem narrow at first glance. Opaliński has chosen juridical sources to explore the situation of villagers in the period of the Duchy of Warsaw (1807–15). However, they prove to be

such an information-rich source that it would be worth devoting a separate book-sized study to them.

The first chapter provides a broad background for the functioning of the judiciary system and legal reforms in the Napoleonic era. Opaliński vividly sketches the problems faced by Polish society, and especially its peasants, on the eve of the Duchy's existence. The literature review is broad, addressing scholarship from the nineteenth to the twenty-first century. He also succinctly defines the key terms for the book, such as *chłop* (peasant) or *stan* (estate). Thanks to this, the chapter not only offers a comprehensive introduction to the following parts of the study, but has an introductory value on its own – not only for those interested in the history of peasants or the law, but generally for all those interested in early nineteenth-century Polish society and statehood.

The second chapter addresses the primary sources the book is based on. They are described diligently, depicting the scale of the sources preserved. Many of the courts' documents have gone missing, with relatively few surviving until today. However, the material consulted by Opaliński enables interesting, yet geographically limited (mostly to the Wielkopolska region, around the towns of Śrem and Konin), conclusions. On several occasions, Opaliński proves to be capable of practically applying source criticism to his work, e.g., when he maturely refrains from putting forward far-reaching conclusions on social phenomena which may have been distorted in the available primary sources (p. 102).

The third chapter offers an analysis of the sources. Here, the material is organized around various social phenomena, such as crime, honour, family bonds and (il)literacy. One of the most interesting parts of this chapter is a suggestion that despite the high level of illiteracy amongst the peasantry, their numerical skills were very good, as shown in a few occasions described in the courts' documents.

The fourth chapter continues the analysis of the sources, now concentrating on the relationships between the members of different estates and between the peasants themselves. While some of the conclusions provided in this part are rather unsurprising, such as the suggestion that many of the acts of violence between the noblemen and the peasants stemmed from tense relations between landowners and serfs, others are more innovative. Opaliński suggests that the peasants and the noblemen were the most violent members of society, with their levels of aggressive behaviour being noticeably higher than among other groups, such as Jews and townsmen. However, this hypothesis seems to require further argumentation.

The concluding chapter offers a brief summary of the previous parts and puts forward proposals for further research on other estates and historical periods. The main conclusion of the book, which appears clear from the sources consulted here, is that reforms introduced in the Polish lands during the Napoleonic period, especially those abolishing the judiciary system in which the peasants were by definition in a position of severe subordination to the noblemen, were by and large a success.

Nevertheless, the book has a few downsides. For instance, some of the conclusions could have been improved by comparing the primary sources with the secondary ones (such as reflections on the national identity on p. 115, which could be further developed in the light of Elwira Wilczyńska's research on the relations between the peasants and Germans in the nineteenth century). But these remarks should not detract from the fact that this is a highly informative history of the Polish peasantry in the early nineteenth century.

Stan chłopski w Księstwie Warszawskim w świetle akt sądowych is a book worth reading, with its informative review of literature, careful source analysis and interesting conclusions. It also gives a good example of how historians can address the methodologically tricky topic of Polish peasants' history. One may only hope that the author will continue his research and others will follow his pattern.

ŁUKASZ KOŻUCHOWSKI
University of Warsaw

GIACOMO BONAN, *The State in the Forest. Contested commons in the nineteenth century Venetian Alps* (White Horse Press, 2019). xi + 229 pp. £60.

This relatively slim, well-written volume contains a rich and compelling case study of contestation over the forest commons of the Cadore region of Italy, part of the Venetian Republic from late medieval times before its absorption into the Napoleonic empire and subsequently Austrian rule. Situated on the upper reaches of the Piave, an extensive trade was conducted downriver into the lowlands – indeed one that brought larger returns and commanded more capital than the more renowned woollen industry of the early modern Venetian state. The book amply demonstrates, along with many other cases now documented, the lack of empirical foundation for the persistent view that struggles over the enclosure of commons generally pitted a traditional subsistence-orientated economy against a commercializing capitalist world underpinned by the central state. Rather, it shows how legal and administrative reforms

between 1806 and 1848 helped demarcate new lines of tension and conflict in a long-commercialized world over questions of equity, authority and opportunity. One can doubt that this rich history would have been captured by an approach of hypothesis-testing of any particular institutional or economic theory. It is exemplary agrarian history.

Chapter 1 provides scene-setting of the institutional and economic history of regions to 1811, and the second chapter addresses political, demographic and economic changes in the first half of the nineteenth century. The next two chapters provide a narrative and analysis of the consequences of an institutional revolution. Prior to 1806–07, commons (*vicini*) were largely governed by assemblies (*regoles)* of heads of long-standing families, whether in the form of direct (and taxable) ownership as *beni comuni*; or alternatively as *beni comunali* which were effectively state property but largely with the usufruct granted to local communities and notables. From this decade, two major transformations occurred. State property was increasingly managed under the auspices of a modern forestry to generate revenue for the state, although local residents continued to provide the labour force. Secondly, enduring French reforms swept away the old assemblies of ancient households to replace them with municipalities, increasingly run by less inclusive councils, whilst a long process of mapping and valuation of the entire land began. By this time Cadore was a highly commercialized region with extensive seasonal labour migration, increasingly dependent on the potato, with local specialization in manufactures and rapid population growth. Around a third of the region was wooded. The timber trade remained very large, with numerous sawmills and one seventeenth of the wider province of Belluno's population employed directly in the trade.

New forestry supervision brought conflict over cutting practices (between clear-cutting and more traditional selection felling) and a lessening of the powers of allocation once enjoyed by municipalities, which had also largely used timber sales to cover their own liabilities and feather the nest of leading officers. Conflict also arose, as was seen across Europe, with attempts to create a clear delineation and separation of areas for grazing – a notable contribution to these debates being the Lombard official Giuseppe Gautieri's 300-page work on the pasture of goats! Bonan notes perceptively that despite the expression of generic fears about wood shortage and flood risk, foresters were largely concerned not with deforestation but with the sustainable delivery of forest resources to the market and the state.

More serious violence came however with a law enabling privatization of the commons in 1839, leading to unrest which also found an echo in the revolution of 1848. Bonan deftly shows that these struggles were not a question of being for or against such enclosure, but over who would benefit from the change. The 'customary' idea, swept away in the creation of municipalities, that forest resources belonged ancient families, saw a resurgence against fears that rights over the commons would be auctioned off to the highest bidder by municipalities, or that sales would largely benefit municipal officers themselves. This could lead to demands *for* privatization, but on a principle of division favouring ancient households: simultaneously a reversion to ancient practice and a demand for a radically new system of land ownership over the old commons, a circumstance created unintentionally by the legislation of the central state. Subsequently, widespread unrest in 1848 was not the result of customary resistance to privatization or commerce but was born of the consequences of the unequitable result of those sales of municipal lands, and against the new distribution of power that came with rise of the municipality and in the context of the longstanding high commercial value of timber. This is a moral economy of a kind, clearly influenced by the subtleties of E. P. Thompson's thinking rather than some of those who have latterly employed the phrase. The book ends noting a continued history of transgression, that ironically came to be interpreted more as a general right of the rural population to access the woods against the strictures of property holders and foresters.

This is a very welcome addition to the history of forests, commons and the rural world, not least as an Italian case study available to an anglophone readership.

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SAMIPARNA SAMANTA, *Meat, mercy, and morality: Animals and humanitarianism in colonial Bengal, 1850–1920* (Oxford University Press, 2021). 288 pp. £56.

In the summer of 1822, an Act of Parliament came into force in the United Kingdom to prevent the 'cruel and improper Treatment of Cattle'. It made it an offence to beat, abuse or ill-treat 'any Horse, Mare, Gelding, Mule, Ass, Ox, Cow, Heifer, Steer, Sheep, or other Cattle'. Martin's Act – named after Richard Martin, the Irish MP who drafted it – was the world's first national animal welfare law.

A couple of years later, in 1824, at a meeting held in the unlikely location of Slaughters' Coffee House, London, Martin and others formed the Society for the

Prevention of Cruelty to Animals (later given 'Royal' status and known today as the RSPCA) to ensure implementation of the Act. They blazed a nineteenth-century institutional and legislative trail that was to be followed, at least to some degree, in several parts of Europe, as well as in Canada, the US and Russia. Colonial Bengal was no exception. In 1861, a British artist named Colesworthy Grant, who had long been resident in India, founded the Calcutta Society for the Prevention of Cruelty to Animals (CSPCA); Lord Elgin, Viceroy of India, became its patron and laws were introduced to punish the ill-treatment of animals.

However, this book says that there were added dimensions to the movement in Bengal that went beyond a simple desire to prevent suffering – and that the wielding of sanctions there was frequently motivated as much by politics as protection. It makes the case, in short, that in India: 'Animal cruelty and protection was… more about legitimizing colonialism than about addressing the suffering of non-humans in the colony' (p. 5) and uses contemporary debates on humanitarianism as a lens to understand the nature of British colonialism in Bengal.

Samiparna Samanta begins by outlining the tensions that have been provoked in today's India by the Hindu nationalist government's clampdown on beef eating and cattle slaughter, and reminding us that, paradoxically, 'the country where almost 80 per cent of the population revere cows and refrain from eating beef, is also the world's second-largest beef exporter' (p. 3). The origins of this paradox and these often-violent clashes can, she suggests, be traced back to the colonial era – a time when British concerns about animal welfare, as well as notions of health and hygiene, coincided with rapid urbanization and an increase in the number of Calcutta's slaughterhouses, as well as religious and class-based Bengali deliberations about vegetarianism. Sitting, as Samanta says, at the 'intersection of three sets of scholarships: history of science/medicine, environmental history, and urban history' (p. 11) it is less a book about the animal welfare movement, and more one about the animal as an agent for the complexities and legacies of Empire.

Samanta structures the book around three main stories, looking at animals as diseased, eaten and over-worked. Chapter 1, which provides an historical context to the humanitarian movement in colonial India, outlines the complexities of attitudes to animals in pre-colonial times and into the nineteenth century, and then discusses the formation of the CSPCA, which was 'a conglomeration of several influential Hindu landlords, well-to-do Muslims and Christians' (p. 44) divided in their attitudes to animals: some were 'more concerned with disciplining the lower orders' whilst others 'were vocal about *caring* for the animals' (p.47). Although the Society might have seemed to be an extension of the RSPCA, Samanta argues that closer scrutiny reveals colonial humanitarianism with an 'Orientalist tinge'.

Chapter 2 is likely to be of most interest to agricultural historians as it discusses colonial responses to outbreaks of rinderpest (often known as cattle plaque) in Bengal. The disease, which caused much consternation to the colonial government, did not only devastate cattle populations but also created (or exacerbated) complex fractures in society; there were differences of veterinary opinion for instance, not only amongst British vets but also between British and Bengali vets. Although local knowledge of cattle diseases was sought, it was also often downplayed and native remedies treated with suspicion in favour of a modern, 'scientific' understanding. The chapter also examines further dimensions to the politics of care, discussing growing unease amongst Bengali elites about the ways local *go-dagas* or cow doctors treated animals. The politics of diagnosis, Samanta argues, was 'often more about controlling human populations than animals' (p. 131).

The rinderpest epidemic had consequences that were far-reaching, not least in the way it created new anxieties about diseased animals entering the human food chain and about meat-eating itself. Chapter 3 looks at this issue in detail, revealing how slaughterhouses became foci of attention and tensions for competing groups in debates encompassing issues ranging from cruelty to public health and vegetarianism.

The last story, that of the burdened or over-worked animal, is the subject of chapter four. It discusses the introduction of legislation to protect draft animals from practices such as twisting exhausted bullocks' tails to urge them on, or yoking animals to heavy loads even if their necks were sore and wounded, and examines the ways that prosecutions tended to focus on the economically disadvantaged carters, rather than the middlemen or merchants who encouraged overloading.

The editing of this book has been careless, and there are frequent typographical slips ('This feat is prompted not much by profit motive than his love for animal' (p.58) for instance, as well as at least two factual errors: it refers (p. 34) to a British Cruelty Act of 1867 (it was 1876) and states that it 'categorically forbade experiments on dogs and cats' (it didn't). However, by focusing on discourses around animals in imperial India, this book exposes some of the complex and multi-layered tensions that existed within the societies of both the colonizer and the colonized. It also adds

to our understanding of the intricate politics that can surround outbreaks of disease in livestock.

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BEN BRADLEY and JODEY NURSE (eds), *Agriculture, food, and fuel markets in Canada, 1860s–1990s* (Special Issue of *Histoire sociale / Social History* vol. 54, no. 111, September 2021). 210 pp.

In their introduction to a special rural history edition of the Canadian periodical *Histoire sociale / Social History*, guest editors Jodey Nurse and Ben Bradley relate how food supply issues have become a major topic of public discussion during the Covid-19 pandemic. Empty or understocked grocery shelves, long line ups of transport trucks at borders, and even closed borders have created food access anxieties unfamiliar to most Canadians. This unease will likely increase in the months ahead as the Russian invasion of Ukraine has effectively cut off two major grain producing countries from western markets. Most Canadians produce little of what they consume and are reliant upon the agribusiness system to provide them with fresh and affordable food. Nurse and Bradley argue that we should question this system, and call attention to the harm it causes to the environment, its treatment of agricultural workers, the consolation of food distribution into the hands of multinational conglomerates, and the growing divide between rural producers and urban consumers. To bolster their case, they have marshalled an impressive collection of essays to examine the historical roots of Canadian agribusiness. The essays presented examine Canada's post-Confederation rural industries, including farming, logging, and fishing, from economic perspectives, but also from social angles, illustrating the varied influence of rural life in Canada's past, and how it was in turn affected by broader trends. This collection is a welcome contribution to scholarship that will be of interest to rural historians around the world.

Much of post-1945 rural scholarship in Canada has focused on agricultural markets and rural modernization. Several essays here build on this foundation, and further our understanding of rural modernity and its links to industrialization. James Murton provides a long overdue re-examination of Nova Scotia's thriving early twentieth century apple export market to Great Britain. Often hailed as an early success of industrialized farming, Murton details how the sector was still rooted in family subsistence, with orchard cultivation being only one strategy farm families pursued to remain solvent. Joshua MacFadyen similarly traces the persistence of an older forms of the rural economy, fire wood harvesting, into the modern age. While the rise of industrialization is usually linked to burning coal, MacFadyen meticulously details how wood remained a vital fuel source for homes, and even locomotives, in Ontario's burgeoning cities. Considerable infrastructure, including railways, was designed for the shipment of wood from rural hinterlands, and its urban storage. Hayley Goodchild's contribution looks at the rise of cheese manufacturing in the Ontarian cities. While the processing a farm product, cheesemaking was essentially industrial labour, and was affected by the same class conflicts, but here it was between cheese factory managers, their workers and dairy farmers, with the former perpetually squabbling with the latter two over wages and prices.

While several essays examine rural modernization, others highlight how rural modernity often failed to live up to its promises and was met with resistance from producers. The centralized marketing of agricultural produce through state mandated marketing boards was hailed as a great triumph of the post-war agricultural order. Where once produce scarcity and variability were common for consumers, and unreliable returns standard for producers, the new order yielded a steady supply of quality produce for shoppers, and steady and reasonable returns for farmers. But many farmers nonetheless chaffed against the marketing restriction imposed upon them, and the system often fell short of its promise of delivering quality produce to market. Bradley and Jan Hadlaw's co-authored contribution examines the practice of 'fruit legging' in post-war British Columbia. Many fruit producers revolted against the authority of the BC Fruit Board to dictate where and for how much they could sell their produce by selling directly to consumers via illicit roadside fruit stands at prices they determined themselves.

Their actions are indicative of wider shifts in that accompanied growing discontent with the post-war Keynesian consensus and the rise of neo-liberalism. Nurse explores a similar phenomenon in her article detailing the 'rotten egg scandal' that rocked the federal Canadian Egg Marketing Agency (CEMA) in 1974 when their egg storage system was so botched that many eggs went bad before reaching market. This triggered a fierce political row that eroded public faith in organized marketing during an era of recession and inflation. A research note by Caroline Durand expands on this growing divide between producers and consumers over the course of the twentieth century. This culminated in the 1970s when the Food Prices Review Board (FPRB), a federal consumer advocacy agency, became increasingly critical of

producers whom they believed were disadvantaging consumers with high costs. By century's end many farmers were opposed to state-controlled marketing, as Laura Larsen details in her exploration of the final years of the Canadian Wheat Board (CWB). Formed in the early 1940s, at the behest of western grain producers, the CWB was the crown jewel of organized marketing in Canada, but by the 1990s it found itself at the mercy of changing ideologies. Whereas many mid-century grain farmers were populist progressives, by century's end many were now ardent free market neo-liberals, who viewed the CWB as an obstacle to their economic freedom. This sparked a fierce debate between the CWB's defenders and detractors, with the latter framing the argument as a moral one between freedom and tyranny. Such positions eventually won out, and lead the government of Stephen Harper to dissolve the CWB in 2011.

Rural gender relations loom large in several essays. Nurse's examination of the 'rotten egg scandal' shows that it was bound up with the contemporary 'battle of the sexes', as CEMA's chief opponent was a woman, Beryl Plumtree, the head of the FPRB. Plumtree believed CEMA's policies penalized consumers, primarily suburban housewives, with high prices and dodgy quality. This gave a gendered slant to the issue, as did the fact that CEMA's chief defender, federal Agricultural Minister Eustace Whelan, was a man, and framed his pro-CEMA stance as standing up for the livelihood of the primarily male egg farmers. Rural gender tensions were not limited to the late twentieth century. Goodchild's essay discusses how cheese-making went from domestic production undertaken by farm wives to an industrial activity conducted by men. In the process it became viewed as scientific and professional, making it more appealing to the masculine mind. William Knight's essay further discusses how production was viewed as masculine, but consumption as a feminine. These attitudes affected federal efforts to entice women to purchase more fish for their families. Using government produced fish cookbooks and exhibition displays on fish cooking, the state sought to make women 'rational consumers' that could both strengthen Canada's economy and improve the health of their families by purchasing and preparing quality fish products. Racism and classism also affected this campaign, as the state wanted white, middle-class housewives to avoid serving the old staple of salted fish, now associated with the poor and marginalized racial groups, and even popular dishes like fish and chips, which they linked to the working classes.

This review only scratches the surface of this issues raised in this collection. The authors of these essays remind us that no picture of Canada's past is complete unless rural history is given proper attention. Rural history is not peripheral to the Canadian story, it is at the heart of it. The thoroughly urban country that exists today grew out of the development of rural industries and exploitation of rural resources. Modern Canadians are still reliant upon rural producers, and how the agribusiness system that emerged over the last century affects rural producers should be at the forefront of public discussion. These essays represent a fine contribution to such a discussion, and will give scholars, students, and the general public much to contemplate.

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JONATHAN E. ROBINS, *Oil palm: A global history* (UNC Press, 2021). 432 pp. 20 illus. 3 maps. $32.95.

Indonesia and Malaysia are currently the first and second-largest producers of palm oil in the world, respectively. Hence, you may be forgiven for assuming that much of the history of oil palm, or at least its meaningful commercial history, lies in the south-east Asian region. My own writings reflect this: in my book on palm oil and transboundary haze (*The haze problem in southeast Asia: Palm oil and patronage* [Routledge, 2015]), I only make brief mention of the how the four oil palms that gave birth to the Southeast Asian palm oil industry were brought over to Buitenzorg (now Bogor) Botanical Gardens in the Dutch East Indies (now Indonesia) from West Africa in 1848.

Oil palm: A global history begins in West Africa as well, but dedicates six entire chapters to the oil palm's journey across Africa and across the globe (through Europe and the Americas), before even beginning its south-east Asian story. It is divided into three sections, Part 1, Africa and the Atlantic World, Part II, Oil Palms and Empire, and Part III, Expanding the Oil Palm Frontier.

Through Jonathan E. Robins's excellent storytelling and supplementary materials, we learn about oil palm's role in almost all major events in modern world history, including colonial mercantilism and decolonization, anti-slavery and women's rights movements, the deterioration of the whaling and tallow sectors, the modernization of the food processing and packaging industries, and the world wars. Seen through the author's eyes, palm oil is not a 'mere' commodity subject to the whims of the international market; it shaped the world as we know it today.

However, Robins refrains from overly romanticizing palm oil, and instead consciously takes the time to walk the reader through the logic of some of his most interesting conclusions. A particularly fascinating piece

of academic detective work involved debunking the rumour that palm oil was found buried in Egyptian pyramids. He explains how, with the term 'palm' being used as an identifier of such a broad array of plants, this has often resulted in the conflation of any mention of palm oil throughout time and space to mean oil from *Elaeis guineensis*. In ancient Egypt, what was used was more likely oil from date palms.

There is plenty in this book to discover, even for someone who may consider themselves a scholar of the commodity. For example, did you know there was such a thing as palm wine? Well, neither did I. I learned that one of the big hurdles to the commercialization of oil palm in the early days was the locals' taste for the sweetly intoxicating palm wine, which was obtained by cutting the entire palm down and 'milking' it. This was, of course, counter-productive in supporting a consistent supply of palm oil – an oil palm needs to mature for several years before regularly bearing fruit.

Nowadays, the world is seemingly divided into clearly drawn camps either for or against palm oil. Intentionally or not, Robins echoes this current reality in his historical analysis, painting a picture of a complicated commodity, one that is often loved and hated at the same time. For example, as an ingredient in food, he picks up excerpts from cookbooks and colonial records to show how one person may sing praises to an oil that 'smells of violets' while another expresses disgust at the reddish sheen that it leaves on fried foods. Robins also gives his take on how oil palm went from being marketed as an exotic cure-all to being labeled as a serious health hazard. However, as a good historical book should, the author refrains from adopting a judgmental voice, one way or another.

One striking observation I took away from this book was that a lot of the challenges related to the commodification of palm oil in the past are similar to those experienced today. In chapter 7, a sentence describing the situation in pre-independence Malaya jumped out: '[P]lanters could solve or abate nearly any problem with more land, more labour, more chemicals, and machines'. I would say that, today, we are still trying to do the same thing, rightly or not. Planters past and present are still trying to figure out the best ways to effectively mechanize the farming and processing of palm oil. Commercial plantations worldwide are still tweaking community- and labour-relations systems in attempts to find the perfect arrangement to decrease conflict and increase productivity. Palm oil also continues to fight a battle of perception: in the past, its African origins made people turn their noses up at palm oil, while today, environmental concerns give it a bad reputation.

Part III of this book brings us back to present times and alludes to future directions. Here, Southeast Asia unsurprisingly takes centre stage and the author flexes his ability not only to talk history, but also to handle contemporary matters. Several chapters are dedicated to the complicated and continuously developing land use processes that have shaped the sector in Indonesia and Malaysia. Robins also takes us full circle as he explores how current market trends point towards a revival of sorts of palm oil commercialization in places visited earlier in this book: West Africa and Latin America.

This book will appeal equally to scholars of palm oil and to those with a casual interest in the crop. It is an eye-opener for anyone who thinks south-east Asia 'made' palm oil into the world's most important vegetable oil. It also soberingly highlights the struggle, still ongoing today, of 'taming' the mighty oil palm to benefit humans. Robins shows us why it should really be no surprise that palm oil is such a divisive commodity today: even after centuries of trying, it has always been difficult to do palm oil 'right'.

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ANNELIESE ABBOTT, *Malabar Farm: Louis Bromfield, Friends of the Land, and the rise of sustainable agriculture* (Kent State University Press, 2021). xi + 251 pp. $29.95.

The American novelist and farmer, Louis Bromfield (1896–1956), is currently proving a subject of interest to historians, on account of his agricultural endeavours rather than his literary successes. Close on the heels of Stephen Heyman's *The planter of modern life: Louis Bromfield and the seeds of a food revolution* (2020: see the *Review*, 68.2) comes Anneliese Abbott's *Malabar Farm*, which carries an endorsement from Heyman on its back cover. As the book's title and sub-title indicate, Abbott concentrates on the history of Bromfield's farm and the environmentalist projects with which it has been associated. Bromfield and his legacy dominate the story, but *Malabar Farm* is not primarily a biography of him. Unlike Heyman's book it describes in detail the estate's history since Bromfield's death.

Anneliese Abbott deals succinctly with Bromfield's life up to 1939, the year he purchased the land in Ohio which he named Malabar Farm. He was brought up on a farm in Ohio, served with the Red Cross during the First World War; became a successful novelist, lived in northern France and created a much-admired garden, and returned to America as the threat of another war increased. His memories of his family's farm inspired in him the thought that agriculture could provide an island of security in a world of turmoil. It was

winter when Bromfield first saw the land he decided to buy; only when the snow cleared did he realize the scale of the challenge he was taking on. Ohio in the late 1930s was suffering from serious soil erosion: in Richland County, where Malabar was located, most of the land had lost 25 to 75 per cent of its topsoil. Abbott describes the destructiveness of the North American pioneers' farming methods, pointing out that this had been a cause for concern since the time of Jefferson. George Perkins Marsh had warned in 1864 of the impoverished productiveness which must follow if farmers continued to exploit the soil; scientists such as Franklin King (1848–1911) and L. H. Bailey (1858–1954) emphasized that the soil was the greatest of all natural resources.

Abbott shows, however, that officialdom, in the person of the Bureau of Soils chief, Milton Whitney (1860–1927), considered soil fertility inexhaustible; this despite the warnings of one of his surveyors, H. H. Bennett (1881–1960). Bennett's fears were amply justified by the disaster of the Dust Bowl, and he became a leading figure in Friends of the Land (FoL), founded in 1940. FoL held its annual meeting the following year in Ohio, and Bromfield, who had already enjoyed success in restoring the denuded soil at Malabar, spoke at the gathering and invited the Friends to inspect his methods and their results. Bromfield also entered into an agreement for Malabar to become an official demonstration farm for the Soil Conservation Service.

Abbott traces, with a wealth of archival photographs, how Bromfield and his managers had by 1944 turned Malabar into a national showpiece and a centre for a variety of environmental projects. The pace of regeneration was remarkable, and in his autobiographical best-seller, *Pleasant Valley* (1945), Bromfield presented himself as a new kind of pioneer, dedicated to restoring the nation's farmland. This was the golden age of FoL, of Soil Conservation Special trains and 'farm facelift' days, as the possibility of post-war food shortages lent urgency to the drive for fertile soil.

But it was short-lived. By 1953 FoL membership had declined substantially and most of its earlier, charismatic leaders had retired. Bromfield had subsidized his projects from his personal wealth, but his later novels were less successful than his earlier ones and Malabar Farm struggled financially. The second half of Abbott's book tells the story of Malabar's history since Bromfield's death: how in 1957 the oil-based Noble Foundation enabled FoL to preserve the farm; how FoL's ambitious plans for dairy farming brought further financial problems, and how FoL itself was swallowed up by a conservation group called the Izaak Walton League. Even the growth of the environmental movement, in response to Rachel Carson's *Silent Spring* (1962), had little effect on the Louis Bromfield Malabar Farm Foundation, which struggled on as a tourist museum and dairy farm during the 1960s. In 1972, Malabar's deeds were transferred to the State of Ohio for use as 'a site for ecological research and the development of sound conservation practices in agriculture' (p. 156).

Malabar's fortunes rose again following the 1970s energy crisis, which highlighted the vulnerability of an agriculture dependent on fossil fuels. Under the management of Jim Berry, the farm attracted increasing numbers of visitors as a State Park which demonstrated the success of Bromfield's conservation tillage methods. By 1990, the number of annual visitors was ten times what it had been during Bromfield's lifetime, and his 'ideas about working with nature to develop a permanent agricultural system were being seriously considered once again – under the new name of "sustainable agriculture"' (p. 173). 'Sustainable', not 'organic'. Although strongly influenced by Sir Albert Howard's ideas, and sharing the organic movement's mistrust of chemical sprays, and its interest in the connection between the state of the soil and human health, Bromfield was not averse to the tactical use of chemical fertilizers, regarding Jerome Rodale and his acolytes as 'organic absolutis[ts]' (p. 105). Balance, above all, was what mattered.

Anneliese Abbott's book is a tribute to the importance of historical studies. She describes how, as a student in Sustainable Plant Systems at Ohio State University, she discovered that the institution offered no classes on agricultural history. She also came to realize that agricultural history books published during the Cold War ignored the soil conservation movement. Thanks to a helpful librarian she discovered the Louis Bromfield Collection, which made her realize that methods she thought new had been practised and (for a while) influential, 70 years earlier. Bromfield's work has been rediscovered, and recognized as being of practical value to a world seriously in need of food production methods which increase soil fertility and encourage the abundance of nature's ecology.

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JACQUELINE A. IGNATOVA, *Contesting Africa's New Green Revolution: Biotechnology and philanthrocapitalist development in Ghana* (Bloomsbury, 2021). 216 pp. £85.

In 2006, two major American philanthropic institutions, the Rockefeller Foundation and the Bill and Melinda Gates Foundation, launched a multi-mil-

lion-dollar investment project to improve agriculture in Africa. The project, named Alliance for a Green Revolution in Africa, attracted various other donors over the years and is ongoing today. The initiative has received much criticism, for not reaching its set goals and for promoting forms of production that expose African farmers to volatile markets and stringent credit suppliers.

The book by Jacqueline Ignatova provides a well-argued explanation of how foreign donor investments for a Green Revolution in African agriculture can lead to such effects. The book is not restricted to the initiative of the Rockefeller and Gates foundations. Ignatova's analysis covers a variety of projects supported by foreign donors and national governments. The chosen focus and the way Ignatova elaborates this in the various chapters works well overall. The book's central aim is to contest the notion that recent donor initiatives are 'new, green, a revolution or pro-poor, the latter implied by its designation that it is for Africa'.

In the introduction Ignatova explains that Green Revolution initiatives operate through a set of three mechanisms. By reducing complex agricultural problems to a restricted set of technical and managerial issues, the knowledge of external experts who perceive 'farming as a business' is given prominence over local forms of knowledge that approach 'farming as a way of life'. Secondly, a combination of 'philanthrocapital and biocapital' investments result in a preference for commercialized seed distribution. A third mechanism, implied by the former two, is that agricultural improvements overly rely on foreign, primarily US- and Europe-based, actors and disregard African people's expertise and autonomy in deciding their agricultural futures. These arguments will sound familiar to readers conversant with the literature on the Green Revolution in Asia. In the six chapters that follow, Ignatova elaborates what makes the recent initiatives in Africa distinctive.

Although the Green Revolution in Asia in the 1960s and '70s also focused on commercial inputs (mostly seeds and mineral fertilizers) much of the implementation and additional support to farmers was arranged by governments. Structural economic reforms in the 1980s and 1990s stripped the protective layer of government support to farmers and turned governments into initiators of more market-based arrangements. This, Ignatova explains in chapter 1, created an 'enabling environment' for private-sector initiatives that, as she argues in chapter 2, opened the door for 'philanthrocapitalism, a defining feature of the new Green Revolution'. Philanthropic agencies not only provide the money to cover the costs of agricultural inputs but also set the terms of how agriculture must change towards more market-oriented production.

The commercialization of African agriculture, Ignatova explains in chapters 3 and 4, is particularly focused on the development of genetically modified (GM) seeds. For Ghana the examples are GM varieties of cowpea and rice. The reader is well informed about the new research cooperation and changes in the legislation of plant breeding that were set up in Ghana to develop these GM varieties, both still waiting for official release. Ignatova uses these examples to show how the patenting system turns GM seeds into 'biocapital' and that the organizations involved create a 'hype' around future benefits of GM seeds.

In chapters 5 and 6 the effects on the research system are elaborated. A substantial part of the donor money is spent on scholarships to train African scientists, mostly at US universities, who then become employed in the various Green Revolution initiatives. Ignatova provides an example of a training workshop in which Ghanaian experts prepare farmers for commercial Mango production, showing how such workshops typically attract young male farmers, unrepresentative for the larger, often female, farming population. These skewed effects and other shortcomings of the new Green Revolution are not unnoticed in Ghana and Ignatova provides a very interesting account, in chapter 6, of the criticism on these initiatives among Ghanaian researchers, policymakers and activists.

As mentioned, the overall argument of the book is developed effectively and for that reason the book is recommendable for a broad audience of students and scholars. The choice of examples and cases is not always convincing and sometimes confusing. The philanthrocapitalism argument in chapter 2, for example, is illustrated with the promotion of soybean production, a crop hardly grown in Ghana before the 1960s. The promotion was mainly supported, Ignatova explains, by USAID and UNICEF, organizations one would not immediately think of as philanthropic.

Moreover, the material collected in Ghana is interesting and adequately used but sparse. Most of the text is devoted to the overall argument, occasionally repetitive and using a wide variety of sources. Again, it is well done but readers interested in recent changes in agriculture in Ghana will have a hard time developing a picture. Ghanaian farmers appear in the book very sporadically. There is an interesting interlude, between chapters 5 and 6, where Ignatova presents an argument about 'mixing' the benefits of donor-supported innovations and traditional practices. In the conclusion she refers to mixing as 'critical for those activists and

development planners alike that, for different reasons, tend to downplay the independence and pragmatism of African farmers'. Unfortunately, this important point is not sustained by empirical accounts of Ghanaian farmers' practices. That in itself does not reduce the strength of the book, convincingly arguing that recent Green Revolution initiatives for Africa serve purposes outside of Africa.

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