

Book Reviews

Britain and Ireland

DAVID HARRISON, *The bridges of medieval England. Transport and society, 400–1800* (OUP, 2004). xx + 249 pp. 7 tables; 27 illus; 2 maps. £45.

David Harrison has produced a very useful book on a very important topic. As he argues, bridges provide a window for assessing the performance of economies over long periods of time, and he presents a very persuasive case for this in examining the English transport system, and especially its bridges, over the period 400–1800. Arguably, only markets and/or urban development could give an equally illuminating portal into the functioning of the English economy and society over such a long time span.

As a result, one must applaud from the start Harrison's courage in taking on an intimidatingly wide-ranging examination. Although I shall be outlining some of the flaws in his treatment below, these should not detract from the worthiness of the project or the book's importance in the historiography of the economy and society of the middle ages (and indeed for preceding and following periods). A particularly attractive feature of the book is that he lays out its main thesis so clearly. Put baldly, Harrison claims that the number of bridges, and the general bridge infrastructure, reached a level in 1300 that it would hold for the next four or five centuries. Certainly this dispels the popular view of a backward middle ages. Indeed, the development of the transport system as a whole to 1300 not only provided the template for the pre-industrial period but also carried on into the modern era. England's current road system, for example, still bears a medieval imprint. If for no other reason, this book will be remembered for this bold statement, which will undoubtedly spur a closer examination of the subject.

There is, however, danger in accepting Harrison's thesis too readily. There are three areas in particular that have given me pause. The first is that much of his argument, by his own admission, depends upon being able to provide close examination of the number of bridges existing in the period 400–1800 and certainly, given their prominent position in the English landscape, they seem

a natural object for the sort of counting exercises that have been so popular in medieval historiography since the Second World War. Yet there is surprisingly little of this sort of quantification in the book, and certainly those familiar with Harrison's influential 1992 *Economic History Review* article might have expected more in this direction. But, as in 1992, the numerical information he provides for the number of bridges in the medieval period only relates to the early sixteenth century and that arguably only for a small selection of river systems. Although this exercise of comparing the number of bridges in the early sixteenth century with that later in the eighteenth century is clearly worthwhile, it is of questionable value in trying to relate it to the number of bridges at earlier times. Indeed, Harrison's argument that the number of bridges c. 1300 was about the same as that in the early sixteenth century (pp. 21–3) is little more than supposition. The same applies to his contention that the building of bridges in stone stretched well back into the middle ages (pp. 110–14). None of these statements about the number and quality of bridges at various stages in the middle ages is inherently implausible, but the scattered, somewhat cherry-picked evidence he produces does *not* prove the case incontrovertibly. Finally, there is also a certain stinginess in presenting his evidence to the reader. For example, in an otherwise very interesting discussion of tolls and pontage grants for bridges, he refers to 'several hundred pontage grants [being] enrolled on the patent rolls' (p. 209). At the very least, it would have been very useful for the benefit of future researchers to have these cases recorded in an appendix; the handful of cases he provides in the text seems very inadequate.

My second major reservation is that there is a tendency to look at medieval economy and society too narrowly through the prism of bridges. Other aspects of the economy clearly impinged upon the development of the transport system, and indeed Harrison's speculation on the reasons why bridges were built at specific places seems decidedly thin. The issue of inland water transport, which had a certain complementarity to bridge building, is scarcely mentioned. Equally ignored are other important structures on rivers such as mills,

where bridges were often found, sometimes specifically erected to replace a ford washed out by the construction of a mill-weir or millpond (which Harrison only mentions briefly on p. 224). In short, bridges were only one element of a series of changes being enacted around rivers during the middle ages and, in a way, all have to be considered in order to arrive at a sufficiently textured view of the development of medieval transport. Harrison does some of this in considering, say, the establishment of fortified *burhs* in the Anglo-Saxon period and its impact upon bridge building, but his analysis to my mind is still incomplete in its consideration of all the possible variables.

The third problem with the book, and to my mind the most serious, is the tendency to overlook what can be done in future on medieval bridges. Harrison's work as a whole is based almost solely upon printed sources and overlooks the vast amount of material still available only in manuscript. One of these key sources are manorial accounts, which number in the tens of thousands for the medieval period, a relatively small fraction of which is currently in print. These accounts often mention bridge building, sometimes as a single line about repairs to a bridge or as a long section outlining the complete construction of a bridge. At the very least, this account material gives plenty of indication that landlord responsibility for bridge construction and repair was very prevalent throughout medieval England and might well modify Harrison's statement about the funding of most medieval bridges coming from donations (see especially pp. 193–5). A similarly vast amount of manorial and central government court material from the early thirteenth century onwards, again available for the most part only in manuscript, should throw more light on the legal position of bridges. In short, we have a lot more evidence to consider before the depth of understanding currently available for, say, medieval markets or mills can also be replicated for bridges at the time, but at least Harrison's book gives us a good start.

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RALPH EVANS (ed.), *Lordship and learning. Studies in memory of Trevor Aston* (Boydell Press, 2004). viii + 270 pp. 7 plates; 5 figs. £50.

Trevor Aston, editor of *Past and Present* from 1960 to 1985, had his own research interests, which are discussed in a memoir by the editor at the outset of this volume. Two of his favourite topics are represented here by hitherto unpublished papers from his own hand. The first examines tenures and military obligation before and after the Norman Conquest, arguing that though dependent tenure was widespread before 1066, especially

on ecclesiastical estates, it was not generally associated with military obligation, though Anglo-Saxon lords might be responsible for providing armed men if they were lords of hundreds. Aston's second paper, on the custody of muniments, displays a remarkable knowledge of medieval specifications of satisfactory muniment rooms, and the varying uses of chests, cupboards and chests of drawers for storing different types of record.

All the papers contributed to this collection are studies in social and cultural history of the medieval and early modern periods, and about half are studies in rural social history of direct relevance to readers of the *Agricultural History Review*. Rosamund Faith combines the evidence of a charter of 847 with that of Domesday Book to assess development in a district of south Devon in the intervening period, demonstrating the potential both for accumulating property and for establishing new family farms. Her comments contain cautionary observations on the Domesday evidence; the growth of sheep farming after 847 made the hidation of the area a misleading guide to wealth, and the Domesday commissioners' distinction between manors and other farms was a poor indicator of relative status. P. D. A. Harvey's paper on the manorial reeve in twelfth-century England examines the recorded occurrence of reeves, their relationship to township and lordship respectively, and the nature of their services. In the light of this evidence, and other recent research, he suggests that in the twelfth century a reeve, rather than a formal leaseholder, was commonly responsible for ensuring that tenants supplied their lord with the annual payments of produce or cash due from his manorial inland. Paul Brand examines the contribution of local lawyers to the early development of the English legal system and estate management, citing especially the career of Hugh Tyrel of Mannington in Norfolk, who flourished between 1286 and 1312. Though lacking formal credentials, and sometimes operating by force and fraud, such men built up considerable legal practices as advisors, attorneys, agents and senior estate officers. Peter Coss explains why he is reluctant to attribute gentry status to landowners from as early as the Anglo-Saxon period, arguing that this downplays important features of later development in codes of conduct and in legal and political institutions. He also warns that too great an emphasis on the continuity of gentry status through the middle ages risks contamination with essentialist notions of England's national peculiarities. N. E. Stacy's paper on the twelfth-century estates of Glastonbury Abbey returns to the battle against Sir Michael Postan's interpretation of the evidence. He suggests that leasehold was a satisfactory method of estate management and, as for twelfth-century 'recession', the most he will allow is that civil war under Stephen caused

a temporary weakening of the abbot's control and inflicted some damage to property. Ralph Evans uses the records of Merton College to illustrate both how the college used manor courts to exploit tenants, and also how tenants themselves were able to use the courts for their own purposes, sometimes in their own defence against seigniorial innovation. I. M. W. Harvey analyzes the different objectives and social origins of poachers in the late middle ages, and explores some connections and analogies between poaching and popular politics, particularly after 1390 when hunting was made illegal for householders with lands under the value of £2. She argues that the bold operations of some illegal hunters implied widespread connivance by their friends and neighbours.

The remaining papers in the volume, however excellent, have less to offer rural historians. T. M. Charles-Edwards suggests that the Anglo-Saxon concept of Englishness was not wholly of ecclesiastical origin, and that secular relationships of patronage, culture and conflict are needed to account for it, as well as for the separate national consciousness of the Britons, Scots and Irish. James Howard-Johnston describes and emphasizes discontinuities in the social institutions of the Byzantine empire under the pressure of invasion and depopulation during the seventh and eighth centuries. Eric John argues that the compiler of the annals of St Neots wrote in the late tenth or early eleventh centuries with ample access to information about events in continental Europe, and that his work is evidence against the idea that English culture was insular in this period. Margaret Aston examines the varied and changing justification for using paintings and sculptures to further education and devotion from the time of Gregory the Great to the Reformation, but also illustrates the misunderstandings that arose when independent teaching was absent or faulty. Jeremy Catto qualifies the view that colleges were competing against halls in later medieval Oxford, showing that some halls were taken over by colleges as units of undergraduate education, and that some larger establishments were achieved by the coming together of halls under a single principal, either by federation or by takeover. Malcolm Underwood complements Aston's paper on the custody of archives by an examination of practices at St. John's College, Cambridge, especially under the mastership of John Taylor (1538–47).

The volume has a detailed index.

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HEATHER FALVEY and STEVE HINDLE (eds), *'This little commonwealth': Layston parish memorandum book, 1607-c. 1650 & 1704-c. 1747* (Hertfordshire Record Publications 19, 2003). lxxiv + 296 pp. Illus. £24 incl. p&p from Mrs G. Grimwood, Honorary Treasurer, Hertfordshire Record Society, 190 Lonsdale Road, Stevenage, SG1 5EX.

Parish books, vestry minutes and overseers' accounts, like the men whose activities they record, represent the bricks from which that rather roughcast edifice, the early modern state, was constructed. Part of their attraction to historians is that they are as diverse in form and content as they are common in county archives. It is impossible to predict what one will find in such sources, and sometimes they do contain historical gems. Layston, in Hertfordshire, which incorporated much of the small town of Buntingford within its boundaries, contains just such a gem in its parish memorandum book, namely the (rather unprepossessing) 'advice' drafted by the vicar, Alexander Strange, to his 'good neighbours & lovinge parishioners' on 15 February 1636.

In it, Strange sought a solution to the problem of the in-migration to Buntingford of numbers of poor families, attracted (he thought) by the town's accessible charities, and the efforts of its neighbours to unload their dependent poor onto the town. He suggested that his loving parishioners shun newcomers as tenants, club together to buy and demolish cottages 'like to receyve more' additional poor incomers, and negotiate with non-resident house owners to prevent the accommodation of further undesirable paupers in the future. He wanted to ensure that (the quite extensive) parish charities were restricted to 'your antient poore & such as have byne ... a good tyme dwellers among you'.

Strange's advice is notable for its breathtaking candour, so much at odds with the routine, laconic records of parish pensions and memoranda on charitable gifts that fill the first half of the volume. As Hindle remarks, 'the "advice" represents a full-blown exegesis of the micro-politics of settlement and belonging, touching almost every aspect of the social and economic life of the parish'. It also presents two historical problems. Firstly, apart from the occasional incautious statement in equity depositions, few other sources broach its frank, even brutal, remedies. Secondly, it is clearly a draft (albeit in a volume presumably open to the wider vestry), and we do not know how, or even whether, it was ever delivered. However, it is similar to the 'ratepaying' hostility to 'inmates', paupers and vagrants expressed throughout the country in the early seventeenth century, and encapsulates these feelings in stark terms.

After Strange's vehemence, the rest of the material in

this volume impresses more by its sheer heterogeneity than by its capacity to surprise – although his 1607 Assize sermon comes close. Agricultural historians foraging for tithing customs or commodity prices will have short commons here, and will have to content themselves with the perambulations of 1591 and 1708, and Thomas Heton's eighteenth-century notes on parish lands and income. However, the volume contains detailed records of disbursements to paupers during Strange's incumbency, a characteristic early seventeenth century 'scheme to set the poor on work', and shows the difficulty parishioners had in acclimatizing to the financial burdens of the Elizabethan poor law. Hertfordshire horologists will apparently be gratified to learn that Henry Kennex repaired the parish clock in 1621, while Heton's conjectures on the clockwork of the heavens as well as his antiquarian endeavours are symptomatic of clerical learning a century later.

While the memoranda tend to dissolve into a miscellany after Strange's death in 1650, both sections of the book benefit from detailed historical introductions by Hindle (on Strange) and Falvey (on Heton). These place both subjects, and the social history of the parish, in the appropriate historical and historiographical contexts. Similarly, the earlier ecclesiastical history of the parish is dealt with comprehensively in an additional introductory contribution by Philip Plumb, who explains the early medieval origins of the complicated parish structure of Buntingford. For those interested specifically in Layston, or in Hertfordshire more generally, this volume will be an essential resource. For those concerned with the wider social and economic history of the poor law and poverty, parochial government, and the byways of eighteenth-century intellectual endeavours, this volume provides a series of suggestive and apposite examples. While these memoranda are likely to raise the historical profile of the parish of Layston, they will definitely launch Alexander Strange into the fabric of early modern social history.

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SIMON TOWNLEY (ed.), *The Victoria history of the counties of England. A history of the county of Oxford*, XIV, *Witney and its townships, Bampton hundred part two* (Boydell and Brewer for the Institute of Historical Research, 2004). xiv + 287 pp. 76 figs. £90.

The history of Witney is in part the history of some remarkable continuities. Until the late nineteenth century the town and its rural hinterland formed a single parish, whose boundaries were those of an Anglo-Saxon estate granted by King Edgar to one of his thegns in 969. From 1044 until 1862, with only a seven-year break in the

1550s, the whole estate was in the hands of the bishops of Winchester, though it was leased out from the sixteenth century onwards. The basis of the town's prosperity was the manufacture of woollen cloth, especially, from the early seventeenth century, blankets. First evident in the late twelfth century, cloth manufacturing was finally abandoned only in 2002, by which time the rise of the duvet had brought about the irreversible decline of the blanket. For a period of more than eight hundred years there was almost certainly no single year in which cloth was not made in Witney, its makers drawing initially on Cotswold wool and latterly on supplies from as far afield as Australia and India. Even the outlying rural settlements at Hailey and Crawley were partly populated with weavers and spinners, fullers and tuckers. For much of the modern period this manufacturing emphasis made for dissenting churchmanship and liberal politics. Yet the local economy, and with it the springs of Witney's growth, was by no means monocultural. The town was situated on a boundary. Divided in two by the River Windrush, the estate's northern half was (and is) largely one of mixed agriculture on assarted land reclaimed piecemeal from Wychwood Forest; while to the south of the river lay both the town, a market centre for its region, and the great demesne of the bishops of Winchester. Champion country, with proportions of arable and pasture varying over the centuries, this remained largely farmland until the second half of the twentieth century, when it was cut through by the dual-carriageway Witney by-pass and eaten up by housing in a still continuing phase of rapid and relentless urban expansion. In the last fifty years the landscape south of the river has changed more than in the previous five hundred.

One parish, less than a single hundred, some 7000 acres: some might complain that to give a whole volume to Witney is to deal in particulars minute even by VCH standards. They would be wrong to do so, for this is microhistory at its best. The level of detail is probably unparalleled in other VCH volumes: for the rural areas, almost every farm seems to receive attention. But the borough of Witney naturally dominates the picture, and a full account is given of its descent, economic life, church history, schools and social institutions, following the usual VCH pattern. There is throughout, however, a very great deal to interest the historian of England as well as of Oxfordshire. The six double-columned pages given to the medieval exploitation of the bishop's demesne are in themselves a substantial contribution to the history of the Winchester estates and to agrarian history in general. Demographic historians will note the exceptionally high mortality brought by the Black Death, when as many as two-thirds of the population may have

died. Particularly valuable too are the descriptions of buildings, not one of the traditional strengths of the VCH. Fuller and more comprehensive than those in 'Pevsner', they are especially useful in a county unsurveyed by the RCHM. If the treatment at all points is predictably factual and prosaic, it supplies the material for the imaginative historian to work on. Witney itself, with its prosperous elite of master weavers and clothiers, many of them dissenters, its small professional class of lawyers and doctors, its civic pride finding expression through charitable giving and public institutions, its working men's clubs and benefit societies, and its contrasting slums, has something of the air of an Oxfordshire Middlemarch or Casterbridge. The maps and illustrations, here helpfully integrated with the text, are a notably strong feature of the volume. One could no doubt cavil. In a perfect world VCH history would be less self-contained, more comparative and more sensitive to the national picture; and even in an imperfect one it is strange to find that J. Z. Titov's famous article published in this *Review* in 1962, and contrasting the 'colonizing' Winchester manor of Witney with 'non-colonizing' Taunton, receives no mention. Nor – to move some centuries forward – does the name 'Waitrose' appear in the index, although for the population of west Oxfordshire Witney has for the past twenty years meant supermarket shopping. But in general this is a history of which, like the whole VCH enterprise, not just any county but any country should feel proud.

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JOHN and PAMELA MCCANN, *The dovecotes of historical Somerset* (Somerset Vernacular Building Research Group, 2003). 198 illus. No price given.

Dovecotes were introduced to Britain after the Norman conquest, along with other manifestations of manorial privilege such as fishponds, deer parks and rabbit warrens. During the middle ages they were restricted to the demesne holdings of manorial lords and to parsonages, but after 1619 freeholders acquired legal rights to build dovecotes on their own land, and numbers increased. Their economic viability was effectively terminated by the French revolutionary wars of 1793–1815, when wheat prices soared. Many Board of Agriculture county reports then condemned the keeping of pigeons, claiming that the value of the corn they consumed exceeded that of the meat and manure they yielded.

By the time that dovecotes began to attract the interest of antiquarians in the 1880s most of them had long been out of use, and practical knowledge of how they worked was almost entirely forgotten. Myths about their purpose and function became perpetuated, as

hypotheses formulated by early investigators were relayed uncritically by later writers.

John McCann has re-examined the evidence in several important publications since 1991, and has single-handedly demolished many of our inherited assumptions. The traditional idea that dovecotes produced fresh meat in winter when otherwise only salt meat was available is shown to be a double fallacy: fresh meat was, in fact, readily available throughout the year for those who could afford it, whereas squabs (birds up to four weeks old which were unable to fly) were not normally available between the end of November and the end of March. The picture of crops constantly being ravaged by flocks of manorial pigeons is hardly tenable in view of the inability of the pigeon to alight on standing corn. Although pigeons had to be deterred during sowing and would consume grain spilled during harvest, they were no more of a nuisance than many other birds. The view that circular dovecotes with revolving ladders represent the earliest type, while square or rectangular shapes came later, is debunked; indeed, there now seems no evidence for the use of potences before the eighteenth century.

The McCanns also recognize the significance of features overlooked by earlier writers. The blocking-up of the lower courses of nestholes is linked with the appearance of the brown rat in the later eighteenth century. Unlike the black rat, an earlier invader, which mainly consumed grain and fruit, brown rats ate eggs and attacked squabs, and, moreover, were able to enter dovecotes by burrowing and by gnawing through the edge of doors. However, they were unable to climb smooth vertical surfaces, and could be foiled by eliminating all nestholes less than a couple of feet from internal ground level. Further changes in practice were a consequence of the high wheat prices in 1793–1815, and of a change in the law in 1827 which gave any farmer the right to shoot pigeons damaging his crops. Attempts to reduce the size of pigeon flocks resulted in the blocking of even more nestholes, the lower stage of dovecotes often being converted to other uses, while open nestholes were retained only above an inserted floor. The need to keep pigeons from foraging over neighbouring fields during sowing and harvest times occasionally resulted in the installation of new internal feeding platforms.

This survey provides exemplary descriptions of all 49 dovecotes and pigeon-lofts still standing within the historic county of Somerset, plus notes on demolished examples, and on other structures which resemble dovecotes but which actually had some other purpose. Plans and elevations of ten examples are included, along with numerous excellent photographs. There is also a brief review of documentary and archaeological evidence. The

gazetteer is arranged in approximate chronological order, an odd decision, given the imprecise dating of so many examples. The consequent difficulty in locating entries for individual sites is exacerbated by the lack of an index, the only significant flaw in the book.

The Somerset Vernacular Building Research Group continues to add to its impressive list of publications. This beautifully-produced volume is another valuable contribution, not just of local significance, but of relevance to anyone with an interest in manorial and agricultural buildings.

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CHRISTINE VIALLS and KAY COLLINS (eds), *A Georgian country parson. The Rev. John Mastin of Naseby (with a note on the Battle of Naseby by Glenn Foard)* (Northamptonshire Record Society, 2004). xiv + 193 pp. £9.50 to non-members.

This volume represents a continuation of the tradition of scholarly publishing long-established by the Northamptonshire Record Society and stands as the first of a series commemorating the life and work of the distinguished local historian Victor Hatley. It comprises the third-person memoirs of the Rev. John Mastin (1747–1829), printed from a manuscript recently deposited in the Northamptonshire Record Office, along with a republication of the first edition of Mastin's well-known *History of Naseby* which first saw the light of day in 1792. The editors have contributed a brief introduction and intelligent footnotes, while Glenn Foard offers an assessment of the value of Mastin's *History* to our current understanding of the pivotal Battle of Naseby.

Unlike most eighteenth-century clerical memorialists, Mastin was the non-graduate son of a grazier who entered the priesthood at the age of 30 after working in various counties as a secretary/servant, valuer, land-agent and farmer. Nevertheless, he learned his letters well and was reckoned 'a good scholar' at 13 despite (or perhaps on account of) regular thrashings with the birch while suspended from a bacon hook in his father's house, this being the standard punishment for playing truant! Meanwhile he read widely, wrote music, hunted, shot, fell in and out of love and discovered the pleasures of the alehouse, 'which he afterwards regretted'. By his early twenties Mastin was a land agent in Hertfordshire in vigorous pursuit of a wife. Having played the field with some gusto he eventually settled on a young heiress of 16 and, in the face of bitter opposition from her parents, eloped with her to Gretna Green, for good measure taking along his father as a witness to the wedding. Once his wife came of age, Mastin was able to get hold of her money and to speculate in the land market, concurrently

studying Latin, Greek and Hebrew in preparation for holy orders. Meanwhile he lost little time in perpetuating the Mastins and his wife (stoically, no doubt) had borne him seven children before her twenty-fifth birthday. Ordained in 1777, Mastin became vicar of Naseby in 1783, held a number of other curacies and continued to enjoy income both from his own small landholdings and as agent for others. Although he writes sparingly of spiritual matters, limiting himself to commenting upon where and when he conducted divine services, he was probably a pretty rotten parish priest. What with field sports, *fêtes-champêtres* with the gentry, visiting friends, taking the waters at Buxton, attending the Lord Mayor's Feast at the Guildhall in 1820 (in what capacity?), recovering from broken bones sustained on the hunting field, writing essays for the Board of Agriculture, and farming his glebe, there could have been little time left for pastoral duties.

The tone of Mastin's memoirs are characteristic of their time in the sense that he rarely gives way to any sort of emotion. Typically, when he lost both his wife and his brother on the same day in 1811 he calmly reflected that 'these were events hard to be borne by those not perfectly resigned to the will of God'. The litany of family deaths was probably of less concern to Mastin than the repeated visitations of gout which he suffered as the years wore on. On Easter Sunday, 1814 he collapsed with gout and had to be carried from Naseby church only to recover to take part in the 'fêtes and great rejoicing' celebrating the overthrow of Bonaparte the following month. It is perhaps typical of a man too stingy to stump up two guineas annually following his election to the Society of Antiquaries that he should note sniffily after the village party that 'surely never was money spent more imprudently than such large sums were in Pomp, Show and extravagant vanity'.

Read alongside the *History of Naseby* with its evocation of the local landscape, agricultural practices and customs, Mastin's memoirs represent a useful addition to the corpus of contemporary descriptions of eighteenth-century rural England. The memoirs, occasionally amusing and always informative, embrace both local and national politics, the contemporary land market and its financing, farming, racing, turnpiking, and, in particular, the complexities of ecclesiastical pluralism. The *History*, if by now of peripheral value to students of the Civil Wars, is replete with detailed descriptions of the landscape over which the Battle of Naseby itself was fought. It also offers comments on the state of the rural economy in Mastin's time, notably the problems of inflation and the advance in poor rates arising from the decline in cottage-based weaving. Although a sturdy promoter of enclosure against the opposition of locals

'blind to their own interests', Mastin makes the interesting observation that poor rates in the 1820s were increasing both in parishes in the process of enclosure and those remaining in open field. Rarely judgmental and always to the point, Mastin's writings are characterized by the sort of common sense and eye for detail which only a sound practical grounding in matters of the land allows. He has been well-served by his editors who have resisted any temptation to modernize the text of the *History* and have confined their editing of the *Memoirs* to the addition of paragraph breaks and sub-headings along with apposite and well-constructed footnotes. If this is a taster for the Hatley Memorial series there is every reason to look forward to future volumes.

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CHARLES F. FOSTER, *Capital and innovation – how Britain became the first industrial nation. A study of the Warrington, Knutsford, Northwich and Frodsham area, 1500–1780* (Northwich: Arley Hall Press, 2004). xviii + 373 pp. 49 plates; 12 figs; 9 maps. £16.95.

This is the fourth and final volume in the Arley Archive Series, and deals with the same area of northern Cheshire as the three books that preceded it. Whilst they were mainly concerned with the processes of agrarian change and the everyday lives of farming families, this time commercial and industrial activities are placed centre stage. As the title suggests, the book has ambitious aims, seeking to shed some light on the emergence of a 'business culture' in north-west England during the seventeenth and eighteenth centuries. As Foster acknowledges, this is not an attempt to analyze the origins of the industrial revolution, but merely to study the emergence of 'a new type of society in a small area of the Mersey basin', through detailing the lives of a large number of families living in this area between 1500 and 1780. From these collective biographies he argues convincingly the importance of two factors, namely the emergence of large numbers of small rural capital owners, and the development of a business culture amongst this group as they increasingly diversified into non-agrarian activities. It is suggested that these two processes set pastoral north-west England apart from the arable areas to the south and east, and most of continental Europe, where an inequitable distribution of wealth and hierarchical gentry culture stunted economic development. Although the distinctions drawn here between arable and pastoral areas are a little overstated, the argument for a closer exploration of capital formation and entrepreneurship amongst small rural property owners is certainly persuasive and provides the book with an organizing theme.

The book is set out in three parts. The first focuses on changes to property rights and rising land values during the period 1530 to 1670, seen as prompting the redistribution of wealth and diversification of the social structure, thus creating the conditions necessary for the emergence of a business community. Here Foster, drawing partly on the evidence from the three earlier volumes, follows the changing fortunes of numerous tenants living and working on the Arley and Tabley estates. In the second part we move forward to 1660, tracking the development of key industries in the Mersey basin through a selection of detailed business biographies. Foster takes us on a tour of the salt works of Northwich and its neighbourhood, visits the sailcloth manufacturers of Warrington, and describes the extensive business network of a leading Quaker family in the town, before concluding with a brief sketch of the social structure of Warrington society in 1771 on the eve of the industrial revolution. The rather brief third section attempts to place the study area within the wider context of the business society of the north-west, and to compare experiences here with other parts of England, Europe and the rest of the world.

This is unashamedly a work of local history with all the attendant strengths and weaknesses of that genre. Foster shows a keen sense of place, an admirable attention to detail, and clear awareness of the local historical and social context within which his study families lived. However, much of the discussion in the book fails to engage with recent debates in rural history or to consider the extensive recent literature on regional industrialization, social networks and entrepreneurship. Given the wealth of evidence presented, this represents a missed opportunity to critique current understandings of early industrial development. For instance, by comparing taxation and probate records with detailed tenurial histories Foster, presents evidence that many families had accumulated levels of wealth beyond those attainable from their known landholding and thus must have been engaged in some other economic activity. This challenges existing assumptions about the diversity of occupational structure in the countryside during the late sixteenth and early seventeenth centuries, yet the implications of these findings appear not to be fully appreciated. Indeed, the thread of the argument is sometimes lost in the detail of the discussion, particularly in Part Two, where the detailed biographies of particular business families are presented. The various chapters in this part of the book are certainly less clearly related, and hence the argument more fragmented. The contextualization of evidence in Chapter 11 also seems rather detached and would have been more powerful if woven into the body of the text.

That said, there is much to be taken from this book by the agricultural historian. Part One, in particular, covers many key aspects of agrarian change including property rights and the land market; rural capital accumulation; social mobility; household and family structure; occupational diversification, and the role of dissenters in industrial and agrarian change. Throughout the book's pages, Foster clearly demonstrates the agrarian roots of industrial development in north-west England, charting the paths by which many business families emerged from amongst the small freeholders and three-life leaseholders of the mid-sixteenth century. This book then contains some important findings, and a wealth of evidence both within the text and extensive appendices that many readers of the *Review* will find useful for their own research. Certainly its significance extends beyond the realms of local history, and it deserves to be read widely by historians of the period.

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ALAN R. H. BAKER and MARK BILLINGE (eds), *Geographies of England. The North-South divide, imagined and material* (CUP, 2004). xi + 216 pp. 16 tables, 18 figs. £45.

Recent years have seen a growing interest amongst historians in regions and regionalism. Part of this has been the continued chewing over of the old chestnut of a North-South divide splitting England into economically, socially and culturally separate spheres. This edited collection of six essays offers a stimulating approach to this topic by exploring the development and idea of a divide over the last thousand years. It thus illustrates the way in which such distinctions are temporally as well as spatially informed. By beginning with the present and working back through time, the book forms a refreshing departure from the usual notion that a narrative must be told from the start (in the past) to its conclusion (in the present). However, this approach brings with it the danger that we project onto the past those concepts and geographies which are seen as important today, but which had little resonance with people in earlier ages. This seems especially true of the notion of a North-South divide: whilst differences between the two regions are apparent whenever we look for them, the idea that this amounted to a significant spatial or psychological divide becomes less certain as we move back in time. In attempting to discover something of the roots of perceptions of place, self and other, this book highlights the constructed and relational nature of North and South: it is impossible to have one without the other. And yet it is clear that this kind of approach is problematical in its application to earlier times, especially the early modern

and medieval periods. Assembling data which might be used to reveal 'real' divisions is one thing, reconstructing the thoughts and imaginations of people who lived a thousand years ago is quite another, especially when the vast majority of them left no written record.

The early chapters are thus generally strong on both the materiality and imagination of a North-South divide. In discussing the late twentieth century, Ron Martin outlines the stark contrasts between the two halves of the country, but devotes most attention to the underlying causes of this division, arguing that its re-emergence in the last thirty years is linked to a shift in Britain from an industrial to a post-industrial society. In the second chapter, Danny Dorling argues strongly that the middle decades of the twentieth century were the period when the division between North and South ran deepest in material terms without becoming apparent to the people at the time. There is a problem here, however, in that he largely ignores a wide range of literature which set out to explore what was clearly recognized as a deep and, at least in part, socially-constructed divide. Chapter Three focuses on the period 1830–1918. Here, Philip Howell maintains that, even during an age when northern industrialism was at its height, economic and political power never shifted from the South and especially London. Moreover, he argues, southern culture was also in the ascendancy and southern notions of Englishness increasingly came to dominate the national psyche. In contrast, Mark Billinge sees the period of the classic industrial revolution as being marked by a pronounced shift in the balance of power towards the industrializing North. Yet what emerges most strongly from his analysis is the complexity of English regionalism and identity. The problems of identifying a coherent and strongly differentiated North and South appear to become more severe as we move back in time. John Langton's survey of early-modern England is equivocal on the existence of a 'real' divide, whilst imagined geographies placed more emphasis on the nation than the region. Following from this, Bruce Campbell argues that many apparent manifestations of a North-South divide in medieval England were, ironically, the result of attempts to construct – both in reality and in the collective consciousness – an English nation; rather that North-South distinctions were blurred by those of upland-lowland, London-provinces and core-periphery.

Individually, then, each chapter offers a fascinating account of English economy and culture, regionalism and identity. In order to explore the extent of and reasons behind the changing realities and imaginings of North and South, however, we need to be able to trace themes and concepts from one chapter to the next. Here, the diverse approaches and standpoints of the

contributors can make comparisons through time problematical. What emerges clearly enough is that, whilst differences between North and South were a feature of England from the Norman conquest onwards, the perception of division hardened through time, especially during and after the industrial revolution. Martin, Durling and Howell are clear about the existence and strength of a North-South divide, whereas Langton and Campbell seem far less certain that this is what they have found. In emphasizing the over-riding importance of the medieval and early modern project of nation-building, they imply that internal spatial divisions can only emerge once there is a strong national identity. In this light, the North-South divide can be seen as a political project, embarked upon once national borders and identities were secure, which had the intent of (re)establishing the superiority and dominance of power in the core. Whether this is how we choose to read and understand North and South, this exploration of the changing realities and imaginings of this most contentious of socio-spatial divisions serves to challenge what we think we know about England's past and present.

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MARK COOPER and JOHN DAVIS, *The Irish fertiliser industry. A history* (Irish Academic Press, 2004). 408 pp. 60 tables; 25 illus; 32 figs. £49.50.

By the beginning of the twentieth century, the Irish chemical industry was relatively insignificant in a United Kingdom context, except for the Irish fertilizer sector which accounted for about 9.5 per cent of UK fertilizer output and about 10 per cent of employment in the UK fertilizer industry (at a time when Ireland had about 10 per cent of UK population). This study of the fertilizer sector casts much new light on one of the many Irish industries we know relatively little about from an historical perspective and it is therefore a welcome addition to the historiography. It again demonstrates that despite the fact that Ireland was the least industrially developed region in the United Kingdom during the industrial revolution, it had some significant industries and companies in particular niches. Indeed, by the end of the nineteenth century the Irish fertilizer company, W. & H. M. Goulding, had become the largest fertilizer company in these islands.

This study illustrates the importance of agriculture for the Irish industrial sector: agricultural demand provides the background to the growth of the fertilizer sector historically. The authors trace efforts to raise Irish soil fertility prior to the production of artificial manures, when sea sand, lime and marl, dung, seaweed, excrement, offal, and powdered bones amongst other organic

materials were used to good effect. This section is the most speculative part of the book. For example the authors imply that arable farming (and thus it is assumed manuring also) featured little in Gaelic agriculture in the centuries leading up to the plantations. However, the archaeological evidence suggests that Irish milling technology in the early medieval period was quite advanced by European standards and the number of sites were relatively numerous, which implies that there was more arable farming in the Gaelic economy than has generally been assumed (see C. Rynne in A. Bielenberg ed., *Irish flour milling: a history 600–2000* (Dublin, 2003)). Moreover, in many parts of the country newcomers/planters turned land over to pasture and away from arable farming. Essentially the historical jury is still out on whether other aspects of the Gaelic agrarian economy (such as the use of manure) were also somewhat more advanced than suggested by sixteenth- and seventeenth-century colonial commentators, who are cited here uncritically by the authors.

In a chapter on science and the emergence of the industry, our attention is drawn to the important contribution of an Irishman, Dr John Murray (1787–1871) to the discovery of superphosphates. Murray retained an abiding interest in agriculture and chemically-prepared manures despite his medical career. The authors have carefully pieced together the genesis of the Irish industry largely from qualitative sources. The lack of full official trade statistics (including trade with Great Britain, which accounts for the bulk of Irish trade) between 1822 and 1904 has reduced any inferences the authors could make about important imported materials during a critical period in the development of the Irish industry, but they use this import material to good effect after 1904 when full trade returns were again available. The import data published annually by the Belfast and Cork Harbour Commissioners during the second half of the nineteenth century could have been used to good effect to ascertain changes in raw material inputs, and the scale of competition from British companies. The Irish foreign trade data in the British Parliamentary Papers might also have provided additional evidence on imports of raw materials. Moreover, given Goulding's importance in both an Irish and United Kingdom context, more attention and space could have been given to the development of this company prior to 1921.

The strongest section of the book deals with the history of the industry from the 1920s onwards, when the statistical evidence improves both north and south of the border. The modern period accounts for the lion's share (196 pages) of the written text (306 pages). The working experience of one of the authors within the industry for over forty years no doubt contributed to

an informed knowledge of the more recent period. The industry experienced limited structural change in the interwar years, its salient feature being Goulding's rising share of the market both north and south of the border. Irish farmers at this point consumed relatively low levels of fertilizers by European standards (the greater emphasis on livestock farming seems to have been the main factor here, as fertilizer was less commonly used in connection with pasture until after the Second World War). The contrast between the north, where consumption rose during the Second World War, and the south, where it declined dramatically is a striking indication of the divergence of the two economies in this period.

From the 1950s, fertilizer consumption among farmers in Ireland rose steadily across the island as fertilizer usage became a common feature of grassland management, even more so in the decades after 1973 when Ireland became part of the EEC and grassland farming expanded further. The authors have produced an excellent account of the response of the Irish industry to these new and improved conditions. Curiously, while the Irish chemical industry has grown dramatically in the last decades (driven largely by multinational investment) and now makes an important contribution to Irish GDP, Cooper and Davis have forensically charted and illuminated the demise of the Irish fertilizer sector in the same period. It seems that the lack of foresight, consultation and planning within the sector and the failure to form a public/private partnership, using available knowledge and fixed assets as well as much needed new investment, resulted ultimately in the collapse of an important industry in which Ireland had traditionally been able to compete.

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CAROL TWITCH, *Tithe war, 1918–1939. The countryside in revolt* (Norwich: Media Associates, 2001). 303 pp. Illus. £14.95.

Between the late 1920s and the outbreak of the second world war a curious rural revolt shook parts of the English and Welsh countryside. The cause was the tithe, anciently, according to the Church of England, the first tenth of the produce of the land paid to maintain God's work on earth. The 'war' of the 1920s and 1930s was not the first time tithes had caused problems. Secular ownership of many tithes after the reformation was a source of anger and grievance throughout the sixteenth and seventeenth centuries, rioting marked the introduction of a new potato tithe on the Isle of Man in 1825, while many small farmers in the south and east of England used the tithe as a reason to support Captain Swing. Eric

Evans' admirable study *The contentious tithe* of 1976 took the story up to the Tithe Commutation Act of 1836, which converted a physical 'tenth' into an annual money payment known as the tithe rent charge based on the previous seven years' grain prices.

Commutation was, according to Evans, largely successful with 'little cause for complaint' either by farmers or the Church. Even the depression in wheat prices after 1879–80 seems to have left the system remarkably untouched with the rent charge remaining stable in relation to the original 1836 settlement until 1885. However problems remained. The tithe was abolished in Ireland after Irish disestablishment and a bitter campaign. In Wales, the young David Lloyd George cut his political teeth in the anti-tithe agitation of the mid-1880s and even in England the great royal commissions on agriculture of the 1880s and 1890s contain more than a hint that along with tenant right, the tithe was still a grievance for some farmers, especially as cereal prices remained low.

In 1891, a new act dealt with some of these problems but it was after the Great War that the problem of the tithe became acute. There were two reasons for this. Tithe was a charge on land and hence the responsibility of the landowner. The sale of something like a quarter of agricultural land to its tenants in the years 1918 to 1922 enormously increased the number of tithe payers. Moreover, these were often 'small men' heavily burdened with mortgage debts. Second, the collapse of cereal prices, first in the early 1920s and then again in the late 1920s and early 1930s pressed hard on the livings of these new farmers. On the other side, the income of the Church had been falling across the board since the 1900s. As a result the demands of a new and less wealthy clergy meant the Anglican communion and especially Queen Anne's Bounty, the body responsible for collecting and administering the tithe, needed to maximize income.

It is this point the Carol Twitch's book really begins. Although she presents a usually clear account of a complex and, to me at least, mysterious system of taxation, it is with the 'war' that her account comes to life. Drawing on the diaries and letters of A. G. Mobbs, a key figure in the East Anglian and then the national anti-tithe campaign, as well as his considerable archive, she gives a detailed and passionate account of the 'tithe war'. Some of the material is well enough known to specialists, while some of the more spectacular events, like the auctions and distraint of goods in East Anglia and elsewhere have been the subject of two television programmes. However, as the first full length account of the movement, the book has huge value: I only wish I had had it to hand when writing my own recent book on the period. The story of Mobbs in particular, who was still fighting the tithe in the 1970s, restores to the historian of popular

movements an unlikely hero. The careful use of his papers and other sources provides the academic as well as the interested general reader with a real sense of the anger of those involved as well as the intransigence of a Church which insisted that tithes were simply a species of private property and equated an attack on what was, after all, a tax on farming, with the end of civilization.

The centrality of A. G. Mobbs and the other key East Anglian figure, the novelist and farmer Doreen Wallace, does mean that the book is strongly centred on Norfolk and Suffolk. This does lead to a slight tendency to marginalize Kent, the other major centre of the English anti-tithe movement. What it does not do, though, is marginalize the first president of the National Tithepayers Association, the Rev. Roderick Kedward. If Mobbs represented the rather conservative face of East Anglia driven to revolt by the trials of agriculture, Kedward stood for another rural England, that of radical non-conformity. For Kedward and men and women like him, the tithe was an attack on the rights of the freeborn Englishman which nonconformists had defended since the seventeenth century.

There are complex and sometimes uncomfortable bits to the story, which this book is less firm on. Throughout Europe in the inter-war period there were close links between the extreme right and agrarian movements and this was the case with the anti-tithe campaign, which was courted by the British Union of Fascists. Although few of those involved among the tithe payers were fascists, it is clear that Mosely did find support among farmers and that figures like Viscount Lymington shared an active commitment to both far-right politics and the anti-tithe movement. The relationship between the farm worker and the anti-tithe movement is better dealt with although the difficulties many farm workers, especially of the older generation, found in supporting a farmers' movement are not always understood. At its most simple, it was difficult to have sympathy for farmers (and the NFU), who, whilst they were complaining bitterly about tithes, were also cutting wages.

In 1936 the government abolished the tithe. The Church was compensated by a payment of some £70m, which was to be recouped by a tax on individual farmers farming titheable land and to be paid over a sixty-year period. In fact these payments ended in 1976 when the government decided that sufficient funds were available in the tithe account to enable full redemption of tithe annuities to take place.

Despite any criticisms, this is an excellent book. Its huge number of photographs and its detailed work especially on East Anglia provide historians with a starting point for a wider study. In the meantime it can be strongly recommended to all those interested in a widely

remembered but little studied part of the history of rural England.

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E. J. T. COLLINS (ed.), *Crafts in the English countryside: towards a future* (The Countryside Agency, 2004). 324 pp. Illus. £20.

Between 2001 and 2004 the Countryside Agency, supported by several rural charities, commissioned Ted Collins and his team of specialists to carry out a survey of traditional rural crafts in England, and this is the result of their efforts. They cover a wide range of activities: the horse industry, meaning not only breeders, riding and racing stables and so on, but also the supporting trades, principally saddlery and farriery; wheelwrights; the various kinds of blacksmiths, such as artists and engineers as well as farrier-blacksmiths; the greenwood crafts, producing fencing materials, garden ware, furniture, charcoal, and thatching spars; pole-lathe turners; basketry; historic gardens; wind- and water-milling; and a variety of historic building crafts, from thatching and tiling to timber framing, earth walling, flintworking, glazing, and plastering. They examine the current state and function of these trades, paying particular attention to the state of the labour force and its skills, and the training and education needed to maintain them. There is also an associated website, www.craftsintheenglishcountryside.org.uk, that contains further statistical data and other appendices.

This is not a work of history, but it contains much history, and history is integral to its purpose. There have been other examples of historians contributing to policy debates (Hoskins, for example, wrote part of a Royal Commission report on Common Land), but this goes further. History is, in a sense, part of the product or service that many of the rural crafts produce. It is no longer necessary to possess a willow basket to carry one's shopping or washing; a plastic product will do the job, although it may not do it so well or be as pleasing to look at. Thus the traditional crafts now produce luxuries rather than necessities. Their products are now free to appeal to niche market consumers who buy them for what they are as much as for what they do. In 1927 *The Times* carried a perceptive review of *The rural industries of England and Wales* volume 1, by Helen FitzRandolph and Doriel Hay, predicting this outcome: 'The old trades may yet be renewed by a demand, defying the lure of cheapness, for soundness and simplicity, for the traditional forms whose adaptation to use makes their inherent beauty – qualities which were once to be had in the village shop, and now seem likely to be the perquisites of the great'. Hence the need for the

historical sections in most of the chapters of this report, and consequently its value for rural historians.

In comparison with farming, rural crafts and trades have been relatively neglected by both policymakers and historians over the last fifty years. After FitzRandolph and Hay's very detailed 1926–7 survey, there were a few more works in the 1950s and '60s, mostly describing the decline of individual crafts, but since then there has been very little. A comparison with the earlier surveys is interesting. There is nothing here on weaving, dyeing, spinning or lacemaking, on tanning, or making clogs or coracles, but there is hard evidence of buoyant demand for coppice products, a revival in traditional milling, and a demand for skilled labour in many crafts, to pick just a few of the report's conclusions. Although it may not have been its primary purpose, this book is therefore the nearest thing we have to a history of these activities in the late twentieth century, which we can now see was a crucial period in which, for some crafts at least, decline was replaced by survival or revival.

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Elsewhere and General

GOVIND P. SREENIVASAN, *The peasants of Ottobeuren, 1487–1726. A rural society in early modern Europe* (CUP, 2004). xix + 386 pp. 35 tables; 52 figs; 2 maps. £55.

This work joins a rich tradition of anglophone studies of early modern south-western Germany that utilize the dense and high quality stock of sources from the region's varied and numerous political entities. Ottobeuren was one such entity, a micro-state with a population never exceeding 10,000 in this period, ruled by the monastery of the same name, in the Allgäu region in the far south-west of modern Bavaria. The detailed archive- and record-keeping of the monastery has allowed Sreenivasan to piece together an exceptionally wide-ranging study of social and economic life in this rural, largely agricultural region over two centuries. The volume is organized chronologically, but the greatest weight is laid on the period c. 1560–c. 1630.

The book's primary thrust is to describe a major transition from what Sreenivasan calls a 'discrete society' of subsistence agriculture, in-kind orientated exchange and largely local social and economic relationships, to a commercialized, monetized and increasingly outward-looking and specializing economy. It is argued that this is 'Smithian' growth, economic progress founded on market integration and the benefits of specialization. This is an important thesis, in part because it is unusual for a monograph to engage directly with this very

current macro-economic debate about the nature of European economic development, but also because it discovers the traits associated with the more progressive economies of north-west Europe in, relatively-speaking, a remote, clerically-governed backwater. Sreenivasan dates the beginning of this transition to around 1580, and it was largely complete by 1620. By the second half of the seventeenth century, commerce was an essential part of peasant life, sustained by textile production and distilling in the post-war agricultural depression. He argues that a significant (though not the sole motor of this change) was a shift in inheritance and 'householding' practice; a shift from partible inheritance of farms to the maintenance of large holdings, alongside the paying-off of siblings and retirement contracts that often involved the buying-out of previous owners by heirs. These practices necessitated a much greater degree of liquidity in the economy, and access to and utilization of credit, and hence enforced commercialization. The process itself seems to have been kick-started by increasing demographic and ecological pressures by the mid-sixteenth century. But this world was not subject to a Malthusian trap according to Sreenivasan. Although (in common with many, but not all, parts of central Europe) population ceased to grow after the mid-1560s, agricultural output rose in response to these changes, persistent harvest shortfalls were avoided, and demographic stability was maintained by out-migration.

It is a provocative thesis, vividly set out. Agricultural historians will be most engaged with the claim of the successful expansion of grain output (though not productivity per cultivated hectare) towards the end of the long sixteenth-century, in what was apparently a very traditional three-field system. Sreenivasan's evidence for this is not however overwhelming; the breakdown of tithe receipts (p. 124) does not suggest an invariant traditional three-field system across the region. Unfortunately, the author has not provided sufficient methodological information to allow proper checking of the steps taken to produce his estimates of harvest size and yield. It would be surprising indeed if oat yields (pp. 146–8) in the 1620s and 1660s in this alpine sub-region were really as high as those obtained in most of north-west Europe only by the middle of the eighteenth century. I wondered if inappropriate conversions of local volume measures might have generated these results, but, lacking sufficient information or referencing in the section on weights and measures, could do no more than surmise. The trickiness always associated with such quantifying work might mean that the lack of an exhaustive statement of the methodologies applied is venial, but in this case accuracy is certainly essential for a whole series of claims about the expansion of output,

the vulnerability of the region to Malthusian mortality crises (which do not, it is clear, appear to have occurred), and the size of subsistence holdings. Other related and potentially significant questions are not touched upon, such as was none of the cereal crop used as fodder for livestock, as appears to be implied? And what would happen to his results if he took his own higher, rather than lower, estimate for population growth between 1560 and 1620? If holding sizes, intra-village social differentiation and yields remained as consistent over time as Sreenivasan appears to suggest, who was eating the surplus produced by larger holdings before commercialization developed? Why did the grain output in the larger settlements drop between the 1560s and 1615–24, but rise in small hamlets? Sreenivasan's argument is thus suggestive, but neither definitive nor conclusive. Indeed, despite the self-consciously comparative stance that introduces the book, it is a shame that many of the observations are not put in a wider context. The author appears unaware, for example, that Christian Pfister published extensive tithe series showing similar trends for nearby regions of Switzerland in his seminal work in the mid-eighties. Similarly, there is little sense of the demand side of increased commercialization, possibly driven by the development of Swiss proto-industry, or the fact that other regions of the German south-west do not appear to show the developments outlined here, though Sreenivasan is careful to state that his model may not be more widely applicable. English readers in particular might miss reference to recent debates on inheritances practices, holding size, and commercialization, debates that Sreenivasan has previously engaged in himself.

Nevertheless, there is a wealth of valuable material, and rich pickings for those interested in the development of the devolution of property, kin-group relations, the apparently limited ability of institutions to withstand pressures for commercialization, market integration, credit and the role of money in the rural economy, the guild system and textile production, and the potential for development in supposedly 'marginal' regions of Europe. This is quite a list. Sreenivasan has an eye for the detail, contingency, and increasing flexibility of kin and property relations, though the detail provided in numerous case-histories may be burdensome to the reader less engaged with the particularities of the region. He is to be applauded for producing an agrarian history that achieves the rare feat of spanning the period from the late fifteenth to the early eighteenth century. The book is likely to be influential, but the claims relating to agriculture in particular should not be taken as gospel.

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NADINE VIVIER (ed.), *Ruralité française et britannique (XIIIe-XXe siècles). Approches comparées. Colloque franco-britannique du Mans, 12–14 septembre 2002* (Presses Universitaires de Rennes, 2005). 254 pp. €20. In September 2002 members of the British Agricultural History Society and the Association d'Histoire et Sociétés Rurales met at the Université du Maine (Le Mans) to take stock of rural history on both sides of the Channel. In so doing they followed the example of rural geographers whose fifth *colloque* will take place in Clermont-Ferrand in 2006. The date was well chosen since the BAHS celebrated its fiftieth anniversary during that academic session and the AHSR celebrated its tenth year. The topic was appropriate since questions about English agricultural history have appeared in the *concours d'agrégation* (national competitive examination for intending teachers of history in *lycées*). A selection of the communications delivered at Le Mans appear in *Ruralité* which contains thirteen major essays – all in French – by five British and nine French scholars. Five shorter pieces offer introductory and concluding statements.

Varying emphases, approaches, scales of investigation and source materials in the two countries are highlighted by Professor Nadine Vivier (Le Mans) and Jean-Pierre Jessenne (Lille). The sheer size of France (four times the land surface of England) and the recency of its industrial and urban transformations make any attempt at comparison with England a major challenge. Until recently, the requirements of doctoral work differed on the two sides of the Channel, with the PhD being a smaller work than the vast *doctorat d'état* that required many years and would typically be undertaken part-time by university lecturers or *lycée* teachers who thoroughly exploited their local *archives départementales*. (Now, a *doctorat nouveau régime* is quite similar to a PhD). For whatever reason, almost all rural historians in France and England have ploughed their furrows at home; few have undertaken genuinely comparative work or have acquired archival knowledge of conditions across the Channel. Nonetheless, Jean-Pierre Poussou (Sorbonne) has contributed a masterly review essay, entitled 'L'histoire agraire de l'Angleterre à l'époque moderne, vue de France', for the present volume.

As with all proceedings from symposia, *Ruralité* is a compromise between the desirable and the possible, reflecting which scholars were invited to attend and to present papers, the topics analyzed, whether they concentrated on the details of their latest research or provided reviews for a non-domestic audience, and whether they finally delivered publishable copy. Three major themes structure the greater part of the book: women's work on farms (fifteenth to twentieth centuries); village societies and landholding (sixteenth to eighteenth

centuries); and trends in agricultural production as revealed by wills and probate inventories (thirteenth to eighteenth centuries).

Gender issues have attracted less attention among rural historians in France than in England but Scarlett Beauvalet (Amiens) and Jacqueline Sainclivier (Rennes) sketch what has been accomplished on French rural women from the sixteenth to the eighteenth centuries and on female farm workers during the nineteenth and twentieth centuries. Roland Hubscher (Paris) sheds light on the harsh lives of Italian and Polish women who migrated to work on French farms between the two world wars. Jane Whittle (Exeter) and Nicola Verdon (Reading) provide English contributions on the gender division of labour in the countryside. Landholding and rural society in France are examined by Annie Antoine (Rennes), who covers the vast theme of the changing relationship between ownership and tenancy from the late middle ages to the Revolution, and by Gérard Béaur (Paris), who focuses on rural landholding both before and after 1789. Richard Hoyle (Reading) provides detailed case studies of changes in family farming in Yorkshire and Staffordshire in the eighteenth and nineteenth centuries. The final theme is dominated by two contributions from English scholars, with evidence from wills being examined for medieval times by Philip Schofield (Aberystwyth) and for the span from 1550 to 1750 by Mark Overton (Exeter). Dominique Rosselle (Lille) gives a view of the importance of wills in pre-Revolutionary France.

As with many collections, the title of this book implies rather more cohesion than is achieved by the sum of its parts. Whether the juxtaposition of a set of single-country essays plus brief linking sections really represents *approches comparées* is debatable. The fact that all the papers are in French will certainly enlighten French students but may do little – or nothing – to inform their increasingly monolingual counterparts across the Channel. That remark is not intended to belittle the sterling work of Béatrice and Nadine Vivier (vice-présidente of the AHSR) in translating the English papers but is simply a statement of harsh reality. Will the publication of *Ruralité* (interestingly in the singular) stimulate rural historians from one side of the Channel to undertake fundamental research in the other? I would like to think that the answer might be positive but my own experience of ‘systems’ and academic expectations in both France and England leads me to think that this will be unlikely.

Tables and diagrams in *Ruralité* are few, as are typographical errors; however the map on page 7 showing ‘Huntshire’ made me smile. Staff of the Presses Universitaires de Rennes, who also handle book projects from

other universities in north-western France, are to be congratulated for producing a scholarly book for only 20 Euros. Would that British publishers could do likewise!

HUGH CLOUT

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BAS J. P. VAN BAVEL and PETER HOPPENBROUWERS (eds), *Landholding and land transfer in the North Sea area (late middle ages – nineteenth century)* (Turnhout: Brepols. CORN Publication Series 5, 2004). 292 pp. 29 tables; 30 figs. €63.

This volume is the fifth in the series of collaborative publications resulting from the regular CORN (Comparative Rural History of the North Sea Area) conferences. It explores the themes of land ownership, tenancy arrangements and relationships, the extent of land transfer and the operation of land markets, and their economic and social consequences in northern France, Belgium, the North Sea coast extending from the Netherlands to Denmark, and in England. This is a subject that will be familiar to many from the Brenner debate of the 1980s, but the approach taken in this collection is the antithesis of those adopted by the combatants on that occasion. Here, essays provide a series of geographically-restricted and closely-defined agrarian case studies, which explain themselves in their own terms, without launching into dramatic spatial or temporal generalizations. This collection of thematically and geographically contiguous studies stimulates comparative interpretation of the causes and trends in land markets and holdings, without ignoring the influence of regional legal codes, seigneurial regimes or governmental activity.

These essays highlight several important common themes. The first is the long-term impact of different legal and customary systems of land tenure. In many western and central regions within the Netherlands, and the Friesian coast ‘feudal’ tenures disappeared in the population expansion and land reclamation of the twelfth and thirteenth centuries. In the Paris basin, the development of land markets was retarded by the absence of clear legal title, and the persistence of rights to rent-charges (*fiefes*) levied on lands. In Denmark and coastal Germany, absolute property rights were established in law only in the late eighteenth century, yet markets existed in shorter-term lease-rights. In each case, the structures of law and custom seem to account for these significant variations.

A second theme is related to this, and echoes Brenner – the power relations that accompanied property rights. In England, Hoyle demonstrates that while customary tenures were relatively secure, they continued to be burdened by intrusive seigneurial rights and levies at least

until the seventeenth century. Knottnerus, meanwhile, sketches out a Brenner-like distinction in the coastal regions from Groningen to Friesland, between regions in which the political authorities sought popular support by bolstering the rights of the freeholders and long leaseholders against the local nobility, and areas where local landlords and political authorities worked together. However, he deviates from Brenner in suggesting that security of tenure, market conditions, ecology and economies of scale fostered the creation of 'capitalist farmer-entrepreneurs', rather than financial exactions by landlords. Hybel sketches the process of refeudalization of the Danish peasantry, a process that cost them much of their legal identity and land ownership, but never resulted in the imposition of labour-services of the kind found east of the Elbe. Beckett and Turner emphasize that despite the extensive development of 'capitalist' farming in England in the eighteenth century, it took place alongside the persistence of customary tenures, and long-term leases for lives, rather than occurring as a result of their extinction, as Marx suggested.

These studies also offer other qualifications to existing hypotheses. They tend to support the broad outline of Brenner's thesis about the importance of landlords. Where landlords were strong, and bolstered by the state, leaseholds emerged, and farm sizes grew. By contrast, in areas where small proprietors were sanctioned by local or central authorities, subdivision occurred. In the latter case, as is suggested by Vanhaute's study of Flanders, tenancy and market-oriented agriculture might also emerge, but also with exploitative rents and highly labour-intensive cultivation. However, all these studies differ from Brenner in emphasizing the importance of regional and sub-regional variation, particularly in the Low Countries. Here, areas of big estates, large tenant farms, and a non-landed labour force could exist next to areas thickly populated by owner-occupying smallholders. Both could be attuned to their respective forms of market opportunity, ecology and agronomy.

These variations emphasize the significance of a further theme implicit within this research. In common with other studies of landholding, these essays emphasize the significance, and perhaps the increasing significance, of sub-tenancy and land leasing. The contributions of Thoen, Vanhaute, van Bavel, Knottnerus, Whittle, and Beckett and Turner all touch on this practice. In some respects, sub-tenancy may have to be included alongside market development, systems of tenure, or monetary exaction by landlords and the state, as one of the mechanisms that amplified agrarian capitalism. It is difficult to study, because such arrangements were either not recorded in existing records of tenure, or (often) expressly forbidden by them. Even so, the fact

that a leasehold land market can be seen emerging in a number of disparate regions through this period suggests that this phenomenon may be worthy of its own CORN volume in the future.

If these essays generally skirt around the potential impediment of the Brenner debate, they also steer clear of another problematic hypothesis of the 1970s and '80s, 'proto-industrialization'. This is of greatest relevance to the studies of Flanders and the Netherlands, where there is a clear implication that the persistence and sub-division of small holdings was due, in part, to the support from industrial by-employments, the impact of urban, manufacturing capital, and the food demands from urban populations. Obviously, the debate about the effects of 'proto-industry' has been well rehearsed, particularly in Flanders, but these studies provide hints of intriguing divergences. In Flanders, Thoen suggests that the effect of townspeople buying land in the late middle ages was to split estates and entrench small leaseholds, while in southern Holland, van Bavel suggests that urban capital was used to amalgamate smallholdings and buy out the peasantry. Once again, the comparisons offered by these contiguous studies hint at the inadequacy of existing interpretations and generalizations.

These essays are thought provoking, because they illustrate how such divergent patterns of agrarian development could occur between states and regions, and even within regions. While in general their authors and the editors are content simply to emphasize this diversity, rather than to formulate elaborate new hypotheses, these essays stimulate the reader to think comparatively about the patterns of agrarian development in northern Europe. They provide a series of important examples that will enrich national debates, and hopefully form the basis of new research into landholding in under-studied parts of coastal Germany and Denmark. If the comparative dimension of these essays is illuminating, so are the recurrent themes, notably the continuing importance of 'feudal' tenures across the region, and the significance of sub-tenures in oiling the wheels of many tenurial and transfer mechanisms. In these respects, if this collection is more likely to begin debates rather than to finish them, in doing so it continues admirably to fulfil the original objectives of the CORN network.

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BRIAN DONAHUE, *The great meadow. Farmers and the land in colonial Concord* (Yale UP, 2003). xx + 311 pp. 13 plates; 25 figs. £25.

Explorers and settlers usually overestimate the capacity of an unfamiliar country to support intensive agriculture,

as did Eric the Red when he coined the name Greenland, the creators of the Oklahoma dust bowl, and those Englishmen who during the late 1960s imported 'improved' farming methods to the apparently underutilized savanna landscapes of Alentejo, Portugal (see O. Balabanian, *Problemas agrícolas e reformas agrárias no Alto Alentejo e na Estremadura Espanhola* (Lisbon, 1984)).

Is southern New England another example? The story goes that the pilgrim fathers and their successors tried to make it an English-style countryside. Like giants, they dug up forests and rolled boulders into walls; they wrested a meagre living from a glaciated granite landscape; but ultimately it was in vain. They fled to better land beyond the mountains, and the forest won back their field-walls and cellar-holes.

This book tells a rather different story. It deals with Concord, Massachusetts, from 1650 to 1770. It opens with the settlement established and ends before its final boom and bust. The author contends that the landscape was complex and parts of it were quite good farmland. The settlers quickly learned what to do with each part; they adapted their farming, eating American maize instead of wheat and drinking rough cider. New England accommodated population growth – up to a point – and provided a comfortable and sustainable life-style.

However, winters were colder than in Old England and soils less fertile. Farmers needed more firewood and more hay for their cattle. They had plenty of forest, and got just enough hay by converting swamps to meadow. More hay generated more manure. But these practices were labour-intensive, a point not sufficiently made in the book, and labour was short. With two acres of wood to cut, chop, and cart each year, thirty-odd acres of hay to mow, and dung from animals that had eaten all that hay to spread on the fields, and using oxen instead of faster horses or mules, how could a New England farmer have time to enjoy his comforts? Were his prolific children a substitute for slaves?

This fascinating story deals only summarily with earlier and later periods. Why did Kentish clothiers and Buckinghamshire tailors abandon good jobs in 1635 to turn peasant in a lonely, hostile land? How did they find time and skill to make fields as well as till them, to frame houses, to fence pastures? What did they eat while doing it? What happened when a scythe broke or they ran out of nails? How did they find out what was cultivable? What mistakes did they make?

The original land-grant of Concord was an exact six-mile square, but American obsession with geometry went no further. Inside the square, in fifteen years, there was a land-map as complex and irregular as any that had taken 1500 years to evolve at home. While open-field

strip cultivation was declining in England it was introduced into the colonies, including Concord. The next town was called Sudbury; but Sudbury (Suffolk) had already abolished its open fields. Dr Donahue, alas, does not say how many settlers came from open-field English parishes.

I commend this book, the authoritative fruit of twenty years' research by an author who is himself a New England farmer. But it can be confused and verbose. Details of climate emerge on page 95, and the perfunctory index does not find them. The computer-drawn maps have crude outlines and inconsistent scales and keys. I lost an intricate argument about water-courses because the map confuses them with roads. Much of the book traces every field that successive generations bought and sold, in long paragraphs that I found incomprehensible, having no map locating Elm Brook Hill, Shawshine Corner, etc. etc. Was unrelieved text the best way to convey this detail? Illustrations include photographs taken long after the events described, but no facsimiles of historic maps or other archives.

The notes are excellent. Why, Yale University Press, were they exiled to the end of the book? Your computer produces admirable footnotes; why not use it? And why did your editor not insist on a frontispiece map, with contours, identifying every place in the text?

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VIRGINIA DEJOHN ANDERSON, *Creatures of Empire.*

How domestic animals transformed early America (OUP, 2004). xiii + 322 pp. £22.99.

Title and subtitle describe its topic but do not convey the richness of this book's argument, moving between the Chesapeake and New England, white settlers and native Americans, ideas and action, land and people across the seventeenth century. Anderson uses two insights to study the importance of livestock in the American colonies from the early days of settlement to the 1680s: Alfred Crosby's, in *Ecological imperialism*, that European colonies succeeded by establishing familiar agricultural ecosystems, and William Cronon's, in *Changes in the land*, that the European settlers and indigenous inhabitants of New England held very different ideas about property. Her accounts of livestock management and livestock law will interest agricultural historians but they should pay more attention to her discussions of ideas about animals and property in the different cultures of the colonies.

She presents her case in three sections. Two chapters on 'Thinking about animals' describe the views native Americans brought to their encounters with cows, pigs,

and sheep and the settlers to their sightings of moose, deer, and skunk, and puts them in the larger context of concepts of animals, people, property, and the world. Three more on 'Settling with animals' tell how the Europeans imagined they would manage their stock and how they actually did it in Chesapeake and the New England colonies. A final two, 'Contending with animals', deal with the clashes livestock caused between Europeans and native peoples, with emphasis on the later years when white settlers enlisted livestock to dispossess their neighbours.

In outline Anderson tells a familiar story in the history of European settler colonies: dreams founded on ignorance, destroyed by the realities of the land and the indigenous peoples, followed by settler adaptation, usually without admitting things went wrong and almost always at the expense of the indigenous peoples. The details, though, carry readers into new territory, and the book's strength lies in a close study of the interaction between ideas and action by examining incidents, laws, and processes. She probes court cases of Algonquin encounters with cows, pigs in native American corn-fields, and disputes over fence laws, among other things, to see what livestock meant to different people and how experience changed their ideas. She shows, for instance, how much the settlers saw livestock management not only as a sign of civilization but a civilizing influence. They urged their neighbours to raise cows, on the theory that this would raise their culture, and when they refused, or adopted stockraising to their culture rather than their culture to stockraising, decided the native Americans indeed had little civilization. They were dismayed when conditions in the Chesapeake and New England brought a decline from stewardship of closely-managed animals to asserting legal title over loosely-ranging stock and from raising cattle to depending on less prestigious pigs. In explaining this last she not only gives full weight to differences in climate and settlement patterns between the areas and the common shortage of labour but compares the social value of the various kinds of stock – cattle, horses, sheep, goats, and pigs. Describing trespassing stock she notes not only that pigs caused the most problems (Cronon mentioned that) but that native American women, who were in charge of their families' fields, suffered the most from these depredations.

Anderson steers between micro-history and the broad overview, recounting incidents without losing sight of the large picture, and she manages the difficult feat of writing an entire book on livestock as creatures of empire without making them its sole agents. This is a rich account, developing an important facet of agricultural history. It will be of particular interest to historians

of European settler colonies as an example of how to attack some interesting questions and as data for a comparative study – which someone ought to do.

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DAVID R. FOSTER and JOHN D. ABER (eds), *Forests in time. The environmental consequences of 1000 years of change in New England* (Yale UP, 2004). xiv + 475 pp. £35.

Years ago, the eminent historical geographer H. C. Darby reflected upon the difficulties of dealing with space and time together, a challenge that he regarded as central to his discipline. Decades on, the various solutions he proposed seem curiously limited: among other things he advocated the analysis of relict features in the landscape and the use, singly or together, of vertical themes (broadly historical narratives) and geographical cross-sections in constructing accounts of changing places. Cross-sections – narrow slices through the column of time – were embraced because they allowed students of the past to describe the geography (landscape patterns and differences from place to place) of former epochs. Moreover, suggested Darby, a series of such cross-sections, drawn at different times could capture something of the dynamics of change. To illustrate this point, he turned to the dioramas depicting the area encompassed by the Harvard Forest at several periods since c. 1700. Although they were unusual, by virtue of their construction in three dimensions rather than in words, these six scale-models of the Petersham, Massachusetts area at intervals representing 'The pre-settlement Forest', 'Initial clearing of the land, AD 1740', 'The height of agriculture, AD 1830', 'Farm abandonment and white pine establishment, AD 1850,' and so on were taken, individually, to exemplify the geographer's essential interest in regions, areas or landscapes and, collectively, to embrace time, or history.

Today, few geographers pay much regard to these and other similar contortions intended to create room for the study of the past in a discipline that was then resolutely focused on contemporary spatial patterns. The world has moved on. But the intellectual anxieties that led Darby into such musings are worth remark, because they have shaped the discipline of geography into the present. Efforts to construct the subject as the study of space (or areal differentiation) with systematic and synthetic (or regional) emphases served to marginalize work in the human-environment tradition that sought to integrate and understand the complex intersections of nature and culture that shape life on earth. Thus, it might be argued, geographers substantially abandoned forms and fields of inquiry that have since proved

fertile ground for the work of ecologists, environmental historians and others.

These thoughts are provoked by my reading of *Forests in time*, a work centred on the Harvard Forest that includes illustrations of the dioramas that captured Darby's attention – and much more. Let there be no mistake. This is a remarkable book. The product of close collaborations among fifty scholars devoted to integrating 'biology and environmental science with an understanding of the complexities of landscape history in order to forge meaningful interpretations of the present' (p. xi), it offers a wonderfully full, thoughtful and accessible account of the physiology of ecosystems and the interactions of humans, plants and animals in north-eastern America over the last millennium. It is also, in a way, a reminder of what a certain kind of geography might have been and a powerful argument for the reopening of conversations and collaborations across the lines that all too often divide that discipline into distinct, systematic, enclaves.

Established in 1907, through the efforts (in part at least) of Nathaniel Shaler, an important figure in early American geography, the Harvard Forest has long been the focus of historical as well as scientific work, and these emphases were sharpened and invigorated in 1988 when scholars from several disciplines, universities and research institutes came together under the auspices of the Harvard Forest Long Term Ecological Research program. Combining ecological history, experimental field manipulations and long term measurements in cross-disciplinary studies attentive to a variety of scales from site and the landscape to sub-regional and regional levels, the LTER initiative has yielded, in this book, an altogether fascinating account of the changing forest ecosystems and landscapes of New England.

The book is divided into five parts. The first sets the scene. The second, three times as long and probably the section of the volume of most general interest to agricultural and environmental historians, explores regional history and landscape dynamics. Chapter Four, the first in this section of the book, offers a superb encapsulation of 'The environmental and human history of New England', and others explore the forest's responses to land use and climate changes and consider wildlife dynamics. Part Three assesses the legacies of historical change in the modern forest landscape. Here specialists explore such matters as the influence of land-use patterns on soil properties, and exchanges between the forest and the atmosphere. Part Four, the longest, reports on a series of long-term experiments that compare 'ecosystem responses to historical disturbances with those initiated by novel' contemporary stresses (p. 232); hurricane blow-downs, gap dynamics and soil warming are among

the topics investigated in these pages. Finally, a relatively brief fifth section contemplates 'Lessons from the Forest and its history.'

Fittingly, the final words of this impressive volume are structured by a series of reflections upon the works of Hugh Raup, a former director of the Harvard Forest. These point, among other things, to the fact that ecology has become a genuinely historical science since Raup wrote in the 1960s that an historical perspective can aid understanding of 'what appears unexplainable in the present' (p. 396), and that people as well as biogeochemical processes will shape the landscape of New England in the future as in the past. All in all, this volume is a model of its kind. It offers a coherent, interdisciplinary synthesis of historical and scientific research and a compelling account of changes driven by human actions and natural processes over hundreds of years. Whether one thinks of it (as Michael Williams has in *Science*, 306, 26 November 2004) as a biography of the Harvard Forest or (as Timothy Fahey does on the dust-jacket) as 'a guide to understanding ecological changes on our human-dominated planet' one comes away from this work with a heightened awareness of the value of paying close attention to particular localities in efforts to understand the ramifications of human-environment interactions through time, and convinced, with Thoreau, that the forests of New England are cultural as well as natural places.

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G. J. LEIGH, *The world's greatest fix. A history of nitrogen and agriculture* (OUP, 2004). xi + 242 pp. 3 tables; 88 figs. £20.

In the 1960s Professor Leigh, then at the beginning of his career, was appointed to the new ARC Unit of Nitrogen Fixation at the University of Sussex. The unit was finally closed in the 1990s, and this book is in effect a discursive account of the historical background to its work.

After an opening chapter that sketches the main themes of the book, there follows a chapter on the development of farming across the world, including native American, Mayan, and Chinese agriculture, and a discussion of what Roman agricultural writers said about manure. Leigh concludes from this that the supply of fixed nitrogen has determined the supply of food and thus the size of the human population throughout history. He then goes on to examine the history of English agriculture, and especially the role of guano and Chilean nitrate in the nineteenth century. The following chapter describes the rise of agricultural chemistry, and in particular the contributions of Davy, Boussingault, Liebig, and Lawes and Gilbert to explaining how

inorganic fertilizers worked, and of Hellriegel and Wilfarth in demonstrating that the presence of nitrifying bacteria on their roots enabled legumes to fix their own nitrogen. At the end of the nineteenth century, Leigh argues, it was clear that the increasing agricultural production needed to feed the expanding world population would eventually be threatened by diminishing stocks of existing nitrogenous fertilizers. This led to a search for some means of fixing nitrogen from the air so that it could be used by non-leguminous plants. The result was the Birkeland–Eyde process, which relied on enormous quantities of cheap hydro-electricity and so was only ever adopted in Norway, the cyanamide process, which was also energy-intensive, and the one that eventually came to dominate the nitrogen fertilizer industry, the Haber–Bosch process.

The remainder of the story of inorganic fertilizers is about their increased adoption by farmers and the growth of the business on an international scale, but Leigh has little to say about this. His attention turns instead to the problem of biological nitrogen fixation, with which most of his career was concerned. If the nitrifying bacteria that fix nitrogen for legumes could be transferred on to non-leguminous plants, the need for fertilizer, and thus the cost of food production, would be correspondingly reduced. There might also be an additional environmental benefit, in that the nitrogen would be produced as the plant needed it, and so would be less likely to escape into groundwater and produce eutrophication problems. From the 1960s the chemistry and biochemistry of the process received much scientific attention, summarized clearly in Chapter Six. Over thirty years much was learned, but not enough: ‘the ultimate secret of biological nitrogen fixation’, Leigh tells us, ‘still eludes all attempts to uncover it’ (p. 186). We are left with fertilizers as our principal source of nitrogen. For those who see this as a problem, Leigh

devotes his final chapter to an evaluation of the role of fertilizer nitrogen in eutrophication, human health, and global warming. He is more optimistic than other writers have been. ‘The overall balance of the effects of nitrogen and its compounds on humankind is not absolutely clear’, he concludes, ‘but currently it seems overwhelmingly positive’ (p. 219). There are risks of eutrophication, ‘but these should be manageable’ (p. 217). Leigh sees this as ‘an epic tale of human endeavour ... the problem of feeding the human race is really solved’ (p. 219). There are villains – the motives of politicians and commercial companies are ‘not to be trusted’ (p. 217) – but there are also heroes, in the form of science and the scientists ‘whose inquisitiveness, imagination, and application have placed the ultimate solution to the age-old problem of feeding the population of the world in our hands’ (p. 220).

This claims to be a book written for that mythical beast, the general reader. It is not for the scientific specialist, for Leigh has already edited a summary of the research (*Nitrogen fixation at the millennium* (Elsevier, 2002)). Neither is it for historians of science and technology, for they will find its approach out of sympathy with their current methodologies. Nor is it for specialist agricultural historians, for it contains much that is already available elsewhere, notably in V. Smil, *Enriching the earth* (MIT Press, 2001), and only one chapter of new material – on the activities of the Nitrogen Fixation Unit – that they will find fresh and interesting. Given the author’s admitted regret at no longer having ‘the immense privilege of studying a challenging problem with a minimum of bureaucratic interference’ (p. viii), it may perhaps be aimed most directly at those who withdrew the funding from the Unit, to show them where the basic research that it did fit into the wider picture.

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