

## CHAPTER 8

# Making a Living: Evidence for the Production of Consumer Goods

Discussions of the medieval rural economy have typically focussed on the organisation of agricultural production. The work of Carus-Wilson (1959) and Thirsk (1961), in particular, provides a context for examining the relationship between agricultural and industrial production. Key themes to have emerged are the extent to which craft specialists were reliant on agricultural activities, and variability in the levels of wealth and living standards of those engaging in ‘industrial’ activities (e.g. Birrell 1969; Blanchard 1972; Frost 1981; Penn and Dyer 1990; Zell 1994). These contributions are exceptional though, as the bulk of literature on the organisation of craft production is focussed on larger urban centres, particularly those with active craft guilds (e.g. Rosser 1997; Swanson 1988). Archaeological analyses have examined the evidence for industry in towns, but also for rural industry such as pottery production, particularly in the upland and forest areas which specialised in industrial activities (see Mellor 2018 for an overview). The gendered division of labour has been a key area of enquiry in medieval studies. Judith Bennett (1996; 1997) presents a picture of the marginalisation of female labour. It is clear that women were involved in agricultural production and that while work was gendered, there was a great deal of fluidity in roles, rather than clearly defined spatial or economic gendered spheres (Goldberg 2011; Phillips 2013; Whittle 2013b). Recent work by Whittle and Hailwood (2020) on the gendered division of labour at the end of our period in south-west England has once again drawn the economy of rural households into the spotlight. Their work provides a clear, quantitative demonstration of the importance of the household as an economic unit and the varied character of household economies also indicated by studies of the medieval economy.

While studies such as that by Whittle and Hailwood (2020) have focussed particularly on how work varied along gendered lines, with men being more

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prevalent in certain areas of production (stone, metal and wood working and milling) and women in others, particularly the ‘service economy’ (e.g. cleaning, laundering, childcare), our data is better suited to the analysis of household economy. Firstly, our unit of analysis is the household, and therefore we must talk in terms of household economy, rather than the activities of individual household members, other than where this is explicitly stated. Secondly, we can assess the extent to which ‘household’ organisation entailed the use of domestic spaces for manufacturing processes, particularly through the archaeological evidence. Finally, we can assess the extent to which households might have specialised in particular crafts or engaged in them as one component of a mixed domestic economy. This is particularly pertinent as the records often state the occupation of the felon, fugitive or outlaw, but their possessions suggest engagement in a different or multiple economic activities, reinforcing the concept of occupational diversity and flexibility proposed by Penn and Dyer (1990, 361–2). The aim of this chapter is to consider the role of rural and small-town households in the production of goods and, in turn, their contribution to driving changing patterns of consumption through our period. The escheators’ and coroners’ records provide an opportunity to consider not only the economic basis of medieval households, but also the capital investment associated with craft production, while archaeological evidence can provide valuable insights into the organisation of production and its relationship to agricultural activities. To achieve this, we focus on three industries – textiles, leather and metal – which provide the fullest evidence for an interdisciplinary contribution to these debates.

### **The production, marketing and working of textiles**

The period covered by the escheators’ records relates to well-established shifts in the textile industry, as cloth production came to dominate England’s economy. Oldland (2016, 233) argues that the demand for cloth, and therefore the scale of rural production, has been underestimated. He proposes that in the 1540s, around 15% of the adult workforce would have been engaged in cloth manufacture (Oldland 2016, 235). Although cloth production was the most important industry in terms of national income, in reality intensive cloth production was focussed in specific areas of the country: particularly Wiltshire, Somerset and Gloucestershire, the Stour valley in Suffolk and northern Essex and, to a lesser extent the Weald of Kent, west Yorkshire, the Thames Valley, Devon, Worcestershire and the north-west (see Lee 2018, 120–43; Oldland 2019, 290 and regional studies by Amor 2004; 2016; Britnell 2003; Hare 1999; Jackson 2008; Perry 1945; Swain 1997; Zell 1994). Within these regions, production activities became focussed in specific locales. In the 1460s in Suffolk, most cloth came from 15 parishes in the south-western corner of the county (Amor 2004, 418; Britnell 2003, 90), although both spinsters and weavers were

present in smaller numbers across the county (Amor 2016, 126, 135). A similar focus on a few parishes can be seen in Kent (Zell 1994, 155), western Wiltshire (Gaisford 2016, 210; Hare 1999) and parts of Gloucestershire (Perry 1945, 87). This regionality is one reason why cloth production is, perhaps surprisingly, underrepresented within both the escheators' and coroners' datasets. Objects associated with textile production (as opposed to references to textiles themselves) occur in less than 10% of the total lists examined. The coroners' records, while relating to a period of rural dominance in cloth production, suffer from similar effects of regionality. Where records relate to areas of cloth manufacture, we have clear evidence of engagement in cloth production. For example, at Cranbrook (Kent), the centre of the Wealden industry, Thomas Lupton possessed a *trendle* (a word which can refer to a vessel, but often relates to a spinning wheel in sixteenth-century probate inventories from the Kentish Weald; Zell 1994, 168), a pair of 'small cards', and a pair of stock-cards, suggesting engagement in the processing and spinning of wool. More explicit is the case of William Dune of Malmesbury (Wiltshire), identified as a 'clothier' in 1597.<sup>349</sup>

There are further reasons for the apparent absence of evidence for cloth production. While cloth production became increasingly rural in the fifteenth century, during the period to which the majority of the escheators' records relate (1380s–1420s) it was still primarily an urban enterprise (Britnell 2003, 87; Hare 1999, 5; Lee 2018, 11). Furthermore, the first two decades of the fifteenth century saw a period of suppressed cloth exports, meaning that production was both less profitable and less intensive (Hare 1999, 10; Oldland 2014, 30), although there was still extensive production for a growing domestic market (Oldland 2019, 205).

The study of English cloth production has been dominated by debates around the extent to which the industry can be characterised as proto-industrialist or capitalist, with the large clothiers such as the Springs of Lavenham (Suffolk) and William Stumpe of Malmesbury (Wiltshire) dominating the narrative (see Lee 2018, Chapter 6). A dichotomy has been drawn between mercantile capitalists, who acquired resources and utilised the putting out system to organise manufacture, and industrial capitalists, who sought directly to control elements of production (Jackson 2008, 146; Oldland 2018, 3). Regional studies demonstrate this dichotomy to be false. In Suffolk, while a small number of wealthy clothiers dominated production in financial terms, there were numerous smaller clothiers, who also worked in other parts of the cloth-making process, and sealed cloths, mixing direct control of weaving or dyeing with the putting out of activities such as spinning (Amor 2004, 417; 2016, 191–6), although the larger clothiers became increasingly important over time (Britnell 2003, 91–3). In some areas of the country, fulling mills were under the direct ownership and control of clothiers, while in others these functioned as independent enterprises (Lee 2018, 53–9; Amor 2016, 151–7). The industrial model can

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<sup>349</sup> C229; C433.

only be applied in the area around Newbury (Berkshire), where cloth making remained a distinctively urban industry (Jackson 2008; Yates 2007, 81–98). In other areas, production was undertaken at a much smaller scale. In Lancashire and Yorkshire, for example, fifteenth-century production was not controlled by clothiers, but households acquired resources themselves, undertaking various stages of the production process using pre-prepared materials, usually as a supplement to agricultural production (Swain 1997). Although evidence for textile production is limited in all three of our datasets, they do provide insights into engagement in the textile industry at the household scale, particularly away from the main cores of production. These principally relate to three areas: the relationship between wool and flax production and spinning; the development of infrastructure for the processing of cloth and linen; and the marketing of textiles.

### *The production of wool*

Although a detailed analysis of agricultural production falls outside the scope of this volume, it is necessary briefly to contextualise cloth production in relation to sheep husbandry. Campbell (2000, 151–65) highlights that sheep are likely to be under-recorded for the demesne sector, but nonetheless is able to demonstrate both regional and temporal variability in sheep husbandry regimes. In the period 1350–1449 it is on the chalklands of southern England – Salisbury Plain and the north and south Downs and the Cotswolds – that we see the most specialisation in sheep husbandry, with sheep accounting for around 90% of non-working demesne animals (Campbell pastoral type 4). The demesne sector in East Anglia and the east midlands was characterised by a more mixed pastoral regime with varying mixes of cattle and sheep (Campbell pastoral types 1 and 3), though the 1341 national wool tax suggests extensive sheep husbandry in the peasant sector in these regions (Campbell 2000, 163). In Norfolk, Campbell (2000, 160) detects a shift towards dominant large-scale flockmasters during the fifteenth century. The demesne sector in the north of England saw a decline in sheep husbandry due to a mix of environmental and economic factors. Sheep husbandry regimes relate to agrarian husbandry (e.g. the use of sheep for manuring) and terrain, resulting in regional variability in the types of sheep kept and therefore in the quality and weights of the wool yield (Campbell 2000, 164). The best wools came from the marcher counties and the Cotswolds, with those from the south-west and East Anglia generally being coarser and of lower value (Campbell 2000, 161; Munro 1978; Stephenson 1988).

The escheators' records have potential for detailed analysis of sheep husbandry regimes and values, but in the context of this volume we briefly present some general points. There is considerable variation in flock size. The mean sheep per list for those lists containing sheep is 42, but both the median (18) and mode (20) are considerably lower. The higher mean is due to a small

number of extremely large flocks in the dataset. The largest is that of Richard Gegge of Saham Toney, Norfolk who in 1457 had 670 sheep worth 6d each, and 130 ewes worth 4½d each.<sup>350</sup> Large flocks of over 100 sheep are rare, with one or two occurring in most escheatrics, with the exceptions of Devon/Cornwall, Northumberland and Kent/Middlesex. Across the escheators' records, 19% of lists include sheep. The counties with the highest proportions of lists featuring sheep are Rutland (40%), Suffolk (29%), Devon (26%) and Wiltshire (22%). In contrast, low proportions of lists from Worcestershire (10%), Hampshire (11%), Kent (16%) and Norfolk (17%) contain sheep. This data suggests contrasts between the peasant and demesne sectors in some areas. In Devon, for example, sheep husbandry appears more important to the peasant than the demesne sector, while in Hampshire and Kent the demesne sector appears dominant. Caution must be taken in interpreting these data, however. In Hampshire and Wiltshire, for example, many lists are from areas outside of the chalk downlands of the Winchester estate, while in East Anglia demesne sheep husbandry varied considerably in relation to the local environment. The escheators' lists do, however, show that across England there was considerable peasant interest in wool production at a range of scales. The coroners' records present a general picture of continuity in the regions associated with sheep husbandry. Writing from the perspective of clothiers, Lee (2018, 41) proposes a clear distinction between wool production and processing— while a few clothiers had large flocks, the majority sourced raw wool for spinning from farmers or middlemen. For example, the Gloucestershire merchant John Heritage bought up wool from local suppliers of varying scale, many of whom were demesne farmers and much of which was destined for the London market (Dyer 2012b; 100–03). However, the division of labour between farming households and spinning households is not as stark as this might suggest. Writing in 1533, describing the general duties of the wife, John Fitzherbert wrote in his *Book of Husbandry* that 'if she have not wool of her own, she may take wool to spin of cloth makers...'; clearly suggesting that wool producing households might engage in the spinning of wool from their own flocks (Skeat 1881, 97). The association between sheep husbandry and wool working is one area where the escheators' and coroners' records can prove informative.

Both the escheators' and coroners' records provide suggestions of wool-producing households processing at least some of their wool into yarn. Many households that owned sheep possessed quantities of wool and, in some cases, yarn, some of which was perhaps processed by the household (Tables 8.1 and 8.2), although lists may also capture the possession of raw wool which was yet to be sold. The earlier stages of wool preparation – picking, sorting, cleaning and carding – leave little material trace in either the archaeological record or the escheators' and coroners' lists, yet were time-consuming processes: over half of the total time taken to make a cloth is taken up by the conversion of wool to yarn (Oldland 2018, 7). Carding was a particularly important process as it

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<sup>350</sup> E297.

**Table 8.1:** Summary of households possessing wool in the escheators' records.

List No.	Year	Name	Occupation	Place	Object	Value (d)	No. Sheep	Equipment
210	1413	William Barrett	Parson	Worham, Suffolk	wool		0	
248	1389	Simon Marys	Parson	Glendon, Northamptonshire	wool (33 fleeces)		8	
256	1390	John Croos	–	Overstone, Northamptonshire	wool (3 stone)	96	40	
284	1413	Thomas Cretynden	–	Cranbrook, Kent	wool (14lb)	40	0	Trendle
297	1457	Richard Gege	–	Saham Toney, Norfolk	wool (100 stone)	1100	800	
310	1419	John Forster	–	Thrapston, Northamptonshire	wool (3 stone)	120	34	
312	1450	Edward Clayton	Clerk	Northamptonshire	wool (6 stone)	216	20	
315	1403	John Soutere	–	Imber, Wiltshire	wool (18lb)	45	33	
355	1418	John Sta	–	Mitton, Worcestershire	wool (2 stone)	80	3	
365	1420	Stephen Werkeman	–	Castlemorton, Worcestershire	wool (6 stone)	15	0	
484	1418	John Reynold	Yeoman	South Lynn, Norfolk	wool (10 stone)	160	0	
552	1420	John Cope	Husbandman	Urchfont, Wiltshire	wool	96	0	
547	1420	Robert Camell	Parson	Tidpit, Wiltshire	wool (20 stone)		15	
555	1420	Richard Godynche	Husbandman	Liddington, Wiltshire	wool (20lb)	48	20	

*(Continued)*

Table 8.1: Continued.

List No.	Year	Name	Occupation	Place	Object	Value (d)	No. Sheep	Equipment
562	1422	Thomas Dale	Vicar	Westow, Yorkshire	wool (11 stone)	272	0	
632	1420	Thomas Chipet	-	Hampshire or Wiltshire	wool (3lb)	216	0	
636	1420	John Helyot	-	Wiltshire	woollen thread (11 skeins)	4	0	
					wool (6 lb)	6		
642	1382	Richard Vitokestre	Parson	Lyminge, Kent	wool (in a chest)		0	
657	1382	William Ponchon	-	Dartford, Kent	wool (white) (2lb, in a chest)		0	
677	1382	Robert Senyng	-	Linton, Kent	wool (2 quarter)	12	12	
712	1419	William Mavndevile	-	Colnbrook, Middlesex	wool (1 stone)		30	
747	1382	William Neweton	-	Oakham, Rutland	woollen thread (10lb)	24	0	Spinning wheel
768	1384	Thomas Isenden	-	Sutton Valence, Kent	wool (1/2 sack)	360	0	
1099	1456	John Burgh	-	Yealampton, Devon	wool (1 quarter)		0	
1142	1442	Walter Fitz Rery	-	Nettlecombe?, Hampshire	wool (1 sack)	1120	0	
1146	1442	John Wyndesore	Clerk	Welford, Northamptonshire	wool (10lb)	20	0	
1227	1396	Robert Prior	-	Mendlesham, Suffolk	wool	48	9	

(Continued)

Table 8.1: Continued.

List No.	Year	Name	Occupation	Place	Object	Value (d)	No. Sheep	Equipment
1270	1409	John Gore	–	Hampshire or Wiltshire	wool (8lb)	28	7	
1373	1399	Richard Godestre	–	Middlesex	woollen yarn	36	0	
1386	1399	John Cook	–	Flixton, Yorkshire	wool		0	
1431	1401	William Earde	–	Kent	wool and woollen yarn (20 quarters)	160	100	
1490	1430	Roge Cokeman	Weaver	Warminster, Wiltshire	wool, blue (1 tod)	120	0	Loom
					wool, white (20 lbs)	80		
					woollen thread (8 lbs)	40		
1525	1433	William Uynton	Husbandman	Welford, Northamptonshire	wool (20 stone)	880	200	
1539	1434	Richard Shirburn	Parson	Northfield, Worcestershire	tithe wool		0	
1573	1404	John Brode	–	Hampshire or Wiltshire	coarse wool (6 lbs)	18	14	
1577	1404	Walter Donne	–	Hampshire or Wiltshire	wool (20 lbs)	80	0	Loom
1582	1404	John Lynch	–	Hampshire or Wiltshire	sheepskins (with wool)	6	3	
1590	1404	John Clerk	–	Hampshire	coarse wool (3 cloves)	30	40	
1609	1425	Richard Walsh	–	Frankley, Worcestershire	wool, a 'toll?'	80	0	

**Table 8.2:** Summary of households possessing wool in the coroners' records.

List No.	Date	Name	Occupation	Place	Item	Value (d)	No. Sheep
191	1567	John Julyan	Miller	Empingham, Rutland	wool	20	15
269	1579	Thomas Trotter	Labourer	Dent, Yorkshire	wool (3 stone)	240	35
357	1590	John Cosen	-	Ashburton, Devon	37 fleeces	504	57
382	1577	John James	Clergyman	West Dean/Newton Tony, Wiltshire	wool (quantity unclear)	6552	223
					2 baskets of wool [locks]	160	
428	1597	Nicholas Cussyn	-	Calcott, Kent	wool (11b)	6	6
433	1597	William Dune	Clothier	Malmesbury, Wiltshire	wool (3 tods and 20 lbs)	840	0
447	1595	Henry Cooper	-	Cowlinge, Suffolk	wool (12 lb)		0
458	1598	John Feyrechilde	-	Loxgore, Devon	120 fleeces	1440	171
467	1600	Elisha Gregory	Husbandman	Brixton, Devon	wool (6 lbs)	80	15

allowed the combining of wools, but was a process typically undertaken within the household setting (Lee 2018, 46), often for piece rates and in many cases by women and children (Muldrew 2012, 502; Whittle and Hailwood 2020). The only evidence for carding wool in the escheators' dataset appears in the list of William Cole of Edgecote (Northamptonshire), who in 1390 had 40 sheep as well as a spinning wheel and a pair of cards. These suggest his household was engaged in spinning, although flax yarn was also present so the household may have spun both wool and flax yarn from the produce of its farm.<sup>351</sup> A similar example from the coroners' record is that of John Cosen of Ashburton (Devon). In 1590 his household had 57 sheep (£7 8s), as well as 37 fleeces (42s), a spinning wheel ('turn') and pair of cards (valued together at 13d).<sup>352</sup> Others, such as John Gunnyld of Tixover (Rutland) possessed 60 sheep (worth 12d each) and a spinning wheel (12d) in 1382, but his list does not provide any evidence of the processing of wool prior to spinning.<sup>353</sup> A final example is William Earde of Kent, who possessed 20 quarters of wool and woollen yarn (13s 4d), as well as 100 sheep (116s 8d) in 1401, implying that the yarn was spun from his wool.<sup>354</sup> These households all lived in areas away from the major centres of cloth production, but provide evidence, or a suggestion, of participation in spinning, rather than exclusively providing raw wool to the market. One exception might be the shepherd Richard Webbe of West Lavington (Wiltshire), at the fringe of the west Wiltshire area of production. In 1565 he possessed nine sheep (18s) and also had a spinning wheel ('turn', valued with a cask at 8d). He also had a 'little trentle' (4d), which may be a vessel or a spinning wheel. These objects suggest that his household was processing either the wool of his own flock or that of his employer, or was providing labour to Wiltshire clothiers.<sup>355</sup> At an altogether different scale, the wealthy clergyman John James of West Dean, Wiltshire, had a large flock of over 200 sheep, wool, a woolhouse and shears, suggesting a large-scale wool processing operation.<sup>356</sup> These examples, typically from areas associated with sheep husbandry and wool, but not cloth production, suggest that sheep farming households of all scales processed at least some of their wool into yarn.

### *The processing of hemp and flax*

The escheators' and coroners' lists provide tantalising evidence for the cultivation and processing of hemp and flax fibres, for the production of linen, hessian and rope. Archaeological evidence for the retting of hemp and flax has also

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<sup>351</sup> E257.

<sup>352</sup> C357.

<sup>353</sup> E742.

<sup>354</sup> E1431.

<sup>355</sup> C158.

<sup>356</sup> E382.

been identified at sites within our dataset. The most compelling evidence is the list of William Bachelor of Mereworth (Kent).<sup>357</sup> At the time of his suicide in 1541 he had a little bag of yarn, a pair of stock cards, a hemp break (for separating hemp stalks) and a linen wheel to produce yarn. Other cases, also from the Kent coroners' records, are Robert Crowne of North Elmham (Kent), who had linen yarn (3s 4d) and two trendles, and Reynold Carter, a chandler of Chiddingstone (Kent), who had hemp, linen yarn (20d) and two spinning wheels.<sup>358</sup> Within the escheators' records [?] Bassyngham (forename unknown) and Robert Haynes both possessed quantities of linen yarn; Bassyngham appears to have held eight 'bolls' which would translate to quite a substantial quantity.<sup>359</sup> Other households appear to have processed both wool and flax. In addition to the items mentioned previously, William Cole of Edgecote had flax yarn which may have been produced by his household.<sup>360</sup> Others were clearly cultivating these crops. Anthony Wright of West Winch (Norfolk), had a field of hemp and Thomas Stondy, a chaplain of Worcestershire, had six yards of hemp.<sup>361</sup> It is in the coroners' records where we see the strongest evidence. In 1544 Thomas Hylles of Shoreham (Kent), had 3lb of tow yarn (flax), Thomas Ramsden, a shoemaker of Oundle, Northamptonshire, had three stones of hemp (8s) in 1545, and Anne Turbutt, a spinster of Kinsham (Worcestershire), had 0.5lb of flax when she committed suicide in 1578.<sup>362</sup> In the escheators' records, John Child of Kent or Middlesex had a chest of hemp (valued with two tubs at 12d in 1404), John Moigne of Warmington (Northamptonshire) also held four sacks of hemp (4s), and the list of John [?]ham (surname partly illegible) of Kildale (Yorkshire) includes a reference to harvested flax.<sup>363</sup>

Campbell (2000, 213) argues that flax and hemp were largely peasant crops, as they do not form a substantial part of the output of demesne farms, although they were cultivated on monastic estates in the fourteenth century (Thirsk 1998, 6). Flax and hemp (along with apples) are the most commonly mentioned garden crops in tithing records due to their value (Dyer 1994, 119). In East Anglia the crops were typically grown in small enclosures of an acre or less, often by households engaged in dairying (Evans 1985, 16–19). As such, we know comparatively little about the cultivation of these crops in medieval England, as the majority of records relate to the seigniorial sector. The escheators' and coroners' records therefore provide a unique insight into the cultivation of these crops. Hemp is often written off as a weed and a crop associated with marginal agricultural areas; however, to thrive and produce high quality

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<sup>357</sup> C446.

<sup>358</sup> C194; C208.

<sup>359</sup> Assuming a 'boll' of six bushels. E314; E908.

<sup>360</sup> E257.

<sup>361</sup> C15 (1540); E1365 (1399; the term is 'virg', which could mean 'virgates', though this seems less likely).

<sup>362</sup> C45; C76; C267.

<sup>363</sup> E9; E45; E887.

fibres, prime, well-irrigated land is required (Clarke 2010a, 121). Furthermore, hemp is resource intensive, draining land of nutrients, although the process of field retting (leaving harvested crops to break down on the ground) can return some of this to the land (Clarke 2010a, 121). It is noticeable that the cultivation of hemp and flax is more apparent in the coroners' than escheators' records, perhaps corresponding with a decree of 1533 by Henry VIII, and further mandated by Elizabeth I, to increase hemp by setting a quota of  $\frac{1}{4}$  acre of hemp per 60 acres of arable land production to supply the navy with sails and ropes (Gibson 2006, 59–60), as well as clothing and nets. Pollen evidence provides particularly strong evidence for the increasing cultivation of hemp through our period, as well as for its processing, particularly in East Anglia (Bradshaw *et al.* 1981; Peglar *et al.* 1989; Peglar 1993; Cheng *et al.* 2007). This is located particularly around the Waveney valley and the fenlands, both areas associated with hemp cultivation and processing (Thirsk 1965, 48). Further pollen evidence shows the increasing cultivation and processing of hemp from the eleventh century in Yorkshire in both urban and rural contexts (Gearey *et al.* 2005, 318). Additional evidence for urban flax and hemp cultivation comes from ditches at Moorfields, London, where hemp and flax seeds likely represent cultivation at the edge of the city (Cubitt *et al.* 2019, 257). In Kent, pollen evidence for hemp retting has been recovered near Dungeness on Denge Marsh, to the south of the settlement at Lydd, and is assumed to have been related to the production of sails and ropes (Schofield and Waller 2005). Additional evidence is provided by toponymic evidence. In Cumbria and Lancashire, a number of field names from the sixteenth century, such as Hemskin Howe, Hempgarth Plantation and Lyndelands point to the cultivation of hemp or the processing of flax in linen production. Elsewhere in the north-west, flax pools are preserved as earthworks at Grindleton (Lancashire) on the River Ribble, and at Newton-in-Bowland (Lancashire), the latter taking the form of a complex network of ditches (Cox *et al.* 2000, 147; Higham 1989). Documentary evidence as well as the presence of pollen in local pollen cores has been used to interpret ponds at Little Langdale (Cumbria) as retting ponds (Evans 2017), while at Rathmell (Yorkshire), documentary, earthwork and toponymic data comes together to demonstrate the exploitation of water meadows on land belonging to the abbey of St Mary in Craven (Higham 1989, 49–50).

These different strands of evidence demonstrate how natural or artificial bodies of water could be utilised for water retting, and that in the case of artificial retting ponds, substantial investment could be made in the erection and maintenance of this infrastructure. The absence of such infrastructure need not, however, indicate a lack of hemp or flax cultivation and processing. Field or dew retting, where stalks are left on the surface of fields to decompose, would leave no archaeological trace, and was traditionally used across England in more recent periods (Clarke 2010a, 132). Smaller-scale retting has been identified through archaeological excavation. At The Spinney, Sherburn-in-Elmet

(Yorkshire) a large pit, probably dating to the fourteenth century, contained de-seeded flax stems (Antoni 2004). Elsewhere in Yorkshire, at Bridge Lane House, Bawtry, a series of ponds were excavated. These were established prior to our study period but were re-cut in the fourteenth–sixteenth centuries, and small numbers of hemp seeds were recovered, leading to the interpretation of these features as retting ponds (Tuck 2018). A complex of intercutting, waterlogged pits to the south of Corpusty (Norfolk) close to the River Bure are interpreted as possible retting or tanning pits (although there is no archaeobotanical evidence for retting taking place) (Bates 2004). Elsewhere in Norfolk, similar waterlogged pits were excavated on the line of the Bacton-Yarmouth pipeline at Bastwich and these may relate to retting or the preparation of bark for dyeing (Bates 2004, 266). Finally, at South Wootton a stone-lined pit may have been for retting or tanning (Norfolk HER 19758).

Other stages of flax and hemp processing leave no archaeological trace. The drying of stems could be undertaken around domestic hearths or make use of ovens or grain driers, when the climate was not suitable for leaving stalks to dry in the fields (Clarke 2010a, 128). There is limited archaeological evidence for scutching and heckling, the process of extracting and separating the fibres. Within our sample, heckling comb fragments come from Wharram Percy (Yorkshire), Berwick-upon-Tweed (Northumberland), Aylsham (Norfolk) and Cricklade (Wiltshire).

This brief survey demonstrates the importance of an interdisciplinary approach to understanding the cultivation of processing of hemp and flax. While there are clear concentrations of evidence for retting in East Anglia, Yorkshire and the north-west, there is slight evidence for these processes in Kent, Wiltshire, Northumberland, Worcestershire and Northamptonshire within our datasets. The south-west was not excluded, with Bridport (Dorset) being a major centre of rope production from the middle ages (Gibson 2006, 58–9; Williams 2006). Within the escheators' sample there are two ropers. Both clearly practised agriculture alongside their craft. John Roper of Evenley (Northamptonshire) had five bullocks (26s), four cows (24s) and two calves (16d), in addition to 'instruments of his art of ropery': a bolt, three iron hooks, and '11 hoops for sieves'. James Bouelond of Hope (Kent), described as a roper, had two cows (13s 4d), three mares (15s), 13 foals (40s), 40 sheep (40s) and sown crops of wheat, beans and peas (20s).<sup>364</sup> No craft equipment appears in Bouelond's list, and neither list gives a full overview of the household's domestic goods. As with the production of woollen cloth, we can suggest that while there were concentrations of linen and hemp production, the cultivation and processing of these crops was widespread in our period, and probably increased through it, being practised by households alongside other activities.

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<sup>364</sup> E616; E722.

### *Spinning*

Spinning must have been undertaken at a massive scale in our period. It has been estimated that in the sixteenth century, around eight spinners and carders were required to produce wool for every weaver (Muldrew 2016, 80), a figure which does not take into account the spinning of other fibres. Zell (1994, 166) estimated that it would have taken 3,000 full-time spinners, working 300 days a year, to produce the yarn required for Kent's cloth output in the 1560s. It is commonly understood that spinning was organised at the domestic scale, largely by women, to generate supplementary household income. Quantitative support for the association between women and spinning at the end of our period is provided by Whittle and Hailwood's (2020) analysis of court records, where 95% of references to spinning relate to women. Eleanor Standley's (2015) analysis of medieval spinning synthesises pictorial and literary evidence associating women and this task. Further evidence for the association between women and spinning is provided by the evocation of the Marian cult, in the form of Ave Maria inscriptions, on some lead spindle-whorls (Standley 2015, 283). Together this evidence suggests that although not an exclusively female activity, spinning had close associations with elements of female identity including sociality and devotion.

The link between women and spinning is often used to substantiate the idea that female labour was supplementary to the main economic activities of the household (e.g. Bennett 1997; Standley 2015). However, a close association of women and spinning must inevitably force us to consider the importance of women to the productive economy of medieval England, given the importance of cloth to England's fortunes. Indeed, Oldland (2016, 249) stresses the need to think about the textile industry as a household industry, in which men, women and children participated for wages. While the association between women and spinning would suggest that spinning and carding took place at the domestic level, to write this off as mere 'by-work' is to undermine the importance of this labour to commercial development (see Jervis 2022a). The capital investment for engaging in spinning was slight, but the 'value added' by spinning might be quite low. The list of the Wiltshire weaver Roger Cokeman, dated 1430, is instructive in this regard.<sup>365</sup> He had 20lbs of white wool valued at 6s 8d (4d per lb) and 8lbs of woollen thread valued at 3s 4d (5d per lb). He also had a tod (28lb) of blue (dyed) wool valued at 10s (4.3d per lb). Similarly, in 1420 John Helyot of Wiltshire had 11 skeins (probably equal to 7oz) of woollen thread valued at 4d (1.2d per lb) and 6lb of wool valued at 6d (1d per lb).<sup>366</sup> Both examples show that for the labour expended in spinning the return was low, and it is perhaps this which ultimately is the reason for the marginal nature of spinning in medieval society. This is supported by the piecework rates paid

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<sup>365</sup> E1490.

<sup>366</sup> E636.

for spinning, which Oldland (2016, 243) estimates at 2d per day in the 1540s. Even so, Muldrew (2012, 504–11; 2016, 87) highlights the substantial earnings that households could make from engaging in spinning as piecework, and the resulting contribution that these labouring households might have made to economic development.

The quantities of wool listed in the escheators' and coroners' records allow us to differentiate between those who were probably dealing in wool and those who had smaller quantities and were perhaps engaging in spinning (Tables 8.1 and 8.2). Those with larger quantities of wool typically had flocks of sheep. John Croos of Overstone (Northamptonshire), for example, had three stone of wool, worth 96d, and a flock of 40 sheep and Richard Gegge of Soham Toney had 100 stones of wool and a flock of 800 sheep, the largest in the escheators' sample.<sup>367</sup> Examples of those who perhaps bought up stocks of wool might be the Norfolk yeoman John Reynold, who had 10 stones of wool, but no sheep; Thomas Isenden of Sutton Valence (Kent), who possessed a range of finished textiles (see below), plus half a sack of wool worth 30s; and Walter Fitz Rery of Nettlecombe (Isle of Wight), who had a sack of wool as well as four dozen medley cloths and four pieces of kersey, suggesting that he was dealing in textiles.<sup>368</sup> Some lists are more ambiguous. In 1420 Stephen Werkeman of Castlemorton (Worcestershire) had 6 stones of wool, but otherwise his possessions were limited to a brass pot, hay and bedding.<sup>369</sup> Putting out was rare in Worcestershire (Lee 2018, 143) and this more substantial quantity of wool may have been acquired through the market for processing into yarn by Werkeman and his household. A similar case, also from Worcestershire, may be the husbandman Richard Walsh of Frankley.<sup>370</sup> In contrast, the 11 skeins of woollen thread (4d) and 6lb (6d) of wool belonging to John Helyot in 1420 suggest that his household was engaged in spinning.<sup>371</sup>

Given the scale of cloth production, the evidence within our dataset is scarce. Judging by the valued examples in our datasets, spinning wheels, which became more widely used with the shift from worsted to woollen cloth in the fifteenth century (Oldland 2016, 231), were relatively cheap and affordable pieces of household equipment (Table 8.3). This could account for their general absence from the escheators' and coroners' lists; if they were cheap and commonplace, they are less likely to have been individually appraised. The valuations given in the lists are corroborated by references to spinning wheels in late medieval wills, for example stated values in fifteenth-century Nottingham wills vary from 2d to 12d (including a pair of cards) (Stevenson 1882, 23). In 1382 William Neweton of Oakham (Rutland) had a spinning wheel (12d) and 10lb of

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<sup>367</sup> E256; E297.

<sup>368</sup> E484; E768; E1142.

<sup>369</sup> E365.

<sup>370</sup> E1609.

<sup>371</sup> E636.

**Table 8.3:** Occurrence of spinning wheels in the escheators' and coroners' records. 'Trendles' are included where it is possible that they refer to spinning wheels.

Escheators'						
List No.	Year	Name	Place	Object	Value (d)	
257	1390	William Cole	Edgecote, Northamptonshire	Spinning wheel		
284	1413	Thomas Cretynden	Cranbrook, Kent	Trendle (possibly a vessel)	6	
585	1417	William Clerk	Elvington, Yorkshire	Spinning(?) wheel (rota)		
742	1382	John Gunnlyd	Tixover, Rutland	Spinning wheel	12	
747	1382	William Neweton	Oakham, Rutland	Spinning wheel	12	
1432	1401	John Nichol	Malmesbury, Wiltshire	Spinning wheels (2)	6	
Coroners'						
158	1565	Richard Webbe	West Lavingston, Wiltshire	Turn		4
194	1567	Robert Crowne	North Elham, Kent	Trendle (possibly a vessel)		
208	1570	Reynold Carter	Chiddingstone, Kent	Trendle (2; possibly vessels)		
229	1577	Thomas Lupton	Cranbrook, Kent	Spinning wheels (2)		
274	1580	William Harvye	Hartlip, Kent	Trendle (probably a spinning wheel)		
428	1597	Nicholas Cussyn	Calcott, Kent	Spinning wheel		
446	1541	William Bachelor	Mereworth, Kent	'Woollen wheel'	12	
				Linen wheel		

woollen thread (2s), presumably spun on it.<sup>372</sup> The suggestion that spinning was by-work for these households is supported by the other items listed; for example William Clerk of Elvington (Yorkshire) was a fairly wealthy arable agriculturalist who also possessed a spinning wheel.<sup>373</sup> In 1413 Thomas Cretynden of Cranbrook (Kent) had a trendle (16d) and two cloves (14lb) of wool.<sup>374</sup> Given that this list relates to a household in the Kent Weald, it is conceivable that this refers to a spinning wheel; however, the possibility must remain that this is a vessel. Muldrew (2012, 505) suggests that a spinner could have carded and spun this amount in a week if working full time. However, Cretynden was a small-scale agriculturalist whose household also undertook spinning most likely on a part-time basis, a mode of employment which would become common in the Kent Weald in the fifteenth and sixteenth centuries (Zell 1994, 174). The majority of lists which suggest engagement in spinning are situated away from major cloth producing centres; an exception is John Nichol of Malmesbury (Wiltshire), who possessed two spinning wheels (6d) and was presumably undertaking spinning in support of the emerging industry – the absence of wool from this list perhaps implying that materials were ‘put out’, any wool and yarn being the possession of the commissioning clothier, but the spinning wheels being Nichol’s own.<sup>375</sup> Other households that possessed spinning wheels, such as those of Robert Crowne of North Elham (Kent) and Reynold Carter of Chiddingstone were likely spinning flax rather than wool.<sup>376</sup>

Evidence for spinning is also provided archaeologically in the form of spindle-whorls used in drop spinning. Spindle-whorls are surprisingly scarce within our archaeological dataset. Most examples are from Northumberland; 12 from West Whelpington (11 stone and one lead example), two lead examples from Lucker Hall and one in stone from Rowhope Burn. As demonstrated in Table 8.4, the majority are from sites in Yorkshire, with examples also coming from Suffolk, Worcestershire and Devon. In most cases the spindle-whorls have been recovered from deposits within houses, suggesting that they were lost and trodden into the floor, or were discarded when the building was abandoned. A large number of lead alloy spindle-whorls have been recovered by metal detectorists and reported to the Portable Antiquities Scheme. These whorls have been examined in relation to their gendered and religious symbolism by Eleanor Standley (2015); however, their potential for understanding the organisation of spinning has not been explored. The distribution of these whorls mirrors that of those within our excavated sample, with the distribution being biased towards the north-east, particularly north Lincolnshire and eastern Yorkshire (Figure 8.1). It is particularly striking that numbers are scarce in the major cloth-producing areas in south-west and south-east England, although there

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<sup>372</sup> E747.

<sup>373</sup> E585.

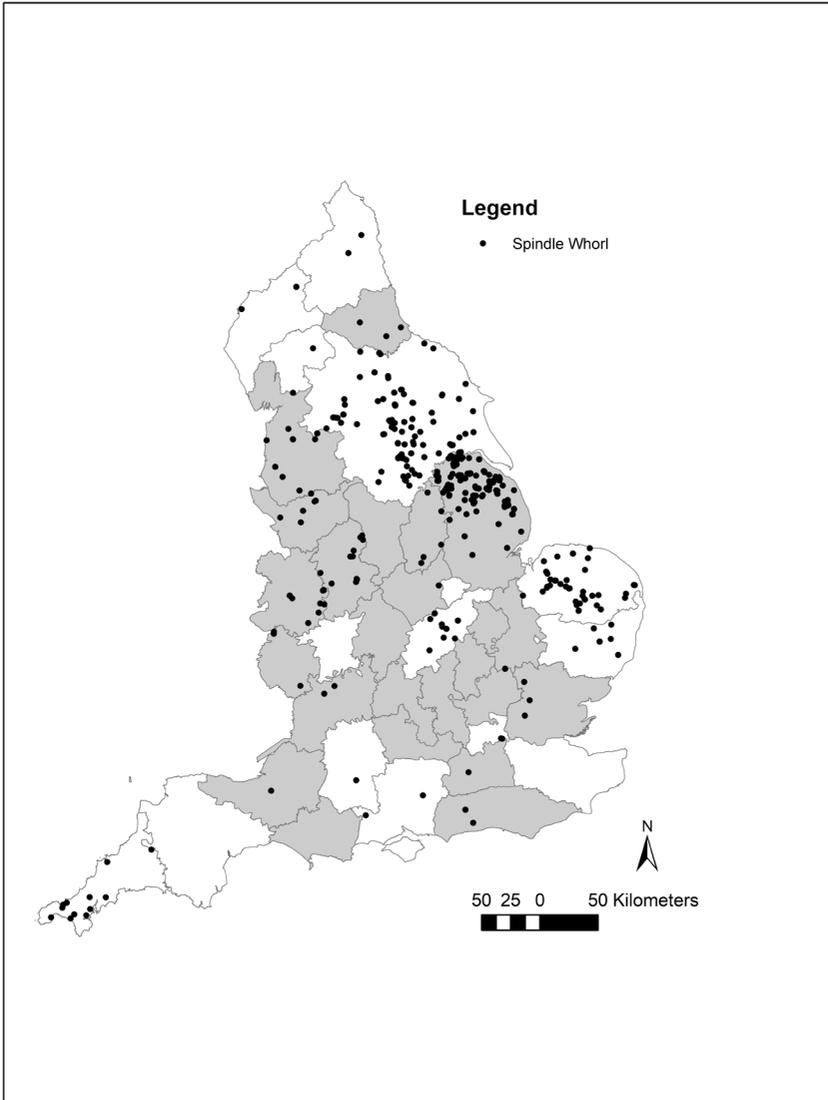
<sup>374</sup> E284.

<sup>375</sup> E1432.

<sup>376</sup> C194; C208.

Table 8.4: Occurrence of spindle-whorls in the archaeological dataset.

County	Site	Ceramic	Lead alloy	Chalk	Dolerite	Limestone	Mudstone	Sandstone	Unid. Stone	Not Stated
Devon	Beere, North Tawton								1	
	Pigs Paradise, Lundy	2								
Kent	Stubb's Cross, Ashford		1							
	Rowhope Burn								1	
Northumberland	Lucker Hall		2							
	West Whelpington		1		4	1	3	2	1	
Suffolk	Castle Street, Eye									1
	Cedars Park, Stowmarket		1			2				
Yorkshire	Low Fisher Gate, Doncaster	2	1							
	Old London Road, Towton								1	
Worcestershire	Wharram Percy			3						
	Upton, Blockley					3		1	1	
<b>Total</b>		<b>4</b>	<b>6</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>1</b>



**Figure 8.1:** Distribution of spindle-whorls in the PAS dataset.

are a number from East Anglia, where they could conceivably be related to linen production, given the use of drop spinning in the linen industry (Clarke 2010b, 233; Evans 1985).

It is noticeable that the spindle-whorls in the PAS dataset cluster in areas such as Yorkshire and Lancashire, where cloth production was generally a small-scale enterprise. Lee (2018, 132) argues that ‘the typical figure in the West Riding industry ... was the small independent clothier’, and that households

typically practised a mixed household economy of farming and cloth production. Similarly, in Lancashire producers were generally poor, and the industry was characterised by small-scale spinners and weavers (Swain 1997; Lee 2018, 138–40). We can contrast this with production in areas such as the Stour Valley, the West Country and Kent, where production was more intensive and organised more strongly around dominant clothiers who exercised control over the various parts of the production process. An anomaly in this regard might be Norfolk where even into the early modern period, the yarns for the finest worsteds had to be hand-spun (Muldrew 2012, 504).

We suggest therefore that the distribution of spindle-whorls relates both to the organisation of spinning in different areas of the country and, potentially, the types of wool and cloth produced in these areas. In areas of intensive production, where putting out was the dominant means of organisation, spinning wheels would appear to have dominated, allowing the rapid production of large quantities of yarn. It is in these areas (Kent, Wiltshire) that we have references in the escheators' and coroners' records to spinning wheels, although it should be noted that lists in these areas are typically more detailed than in other counties. In areas where cloth production was less intensive, and where households engaged in small-scale production, hand spinning appears to have persisted for longer, presumably alongside the use of the wheel and perhaps indicating more solidly that spinning was considered a part-time and supplementary contribution to household economy. Furthermore, drop spinning seemingly persisted in areas where households were engaged most intensively in sheep husbandry and were converting some or all of their wool stock into yarn, and in those areas where flax and hemp were most important to the regional economy. We would therefore argue that the model of spinning being a supplementary form of income holds only for certain areas of the country, and is likely to be untenable for areas of intensive cloth production, where it was to the benefit of households to maximise income through the rapid and efficient production of yarn.

### *Investing in textile production: dyeing and weaving*

Archaeological evidence provides clear insights into household investment in textile production. This is best demonstrated at The Swan Hotel, Lavenham, where the rear range of High Street plots were modified in the fifteenth century in association with the development of 10 dyeing furnaces over at least two phases of industrial activity (Brooks 2014a; Figure 8.2). A common theme in productive processes, be it dyeing, tanning or retting, is the need to give over large spaces to the activity concerned. Therefore, this evidence represents investment in urban property development. The dating of the earliest furnaces is unclear, and they could potentially be as early as the fourteenth century, predating Lavenham's boom period and perhaps representing speculative investment in cloth manufacture. Similar evidence for dyeing, associated with a building interpreted as a wealthy burgess household, was found at Callow Lane,



**Figure 8.2:** Dyeing furnaces at The Swan Hotel, Lavenham, Suffolk. Image reproduced by kind permission of Cotswold Archaeology.

Kidderminster (Worcestershire; Hemingway 1990). At Drury Lane, Wakefield (Yorkshire) barrel lined pits are interpreted as evidence of dyeing or, perhaps fulling (Krawiek and Edgeworth 2006). More tentative evidence is provided by seeds of dyer's rocket, used to produce yellow dye, from a gully at Castle Street, Evesham (Worcestershire), interpreted as a part of an industrial complex (Whitworth, Jones and Pearson 2001). The archaeological evidence therefore provides clear indications of the investment in infrastructure for dyeing and, perhaps, fulling within small towns, either by clothiers or independent dyers, with this infrastructure showing similarities with the larger dyehouses excavated in major towns such as Norwich and Beverley (Atkin and Evans 2002, 119–21; Evans 2006).

Evidence from the escheators' lists provides one example of the probable establishment of a cloth working workshop by an independent household in the early fifteenth century. Dating to 1430, the list of Roger Cokeman of Warminster (Wiltshire), described as a weaver, is suggestive of a household involved in all stages of the cloth making process.<sup>377</sup> As noted already, he possessed wool and woollen thread valued at 20s, suggesting the processing of wool. A quarter of a pipe of oil, worth the significant sum of 20s, may also have been associated with wool processing. His tod of blue wool, as well as a bale of woad, a woad-vat, and 20lb of alum (used in the fixing of dyes), indicate that the dyeing of unprocessed wool was taking place. This method was employed by clothiers in the Weald of Kent, who dyed wool prior to spinning, and this may be one possible interpretation for the organisation of Cokeman's workshop. This

<sup>377</sup> E1490.

shows considerable investment: the woad was valued at 13s 4d, the woad-vat at 6s 8d, and the alum at 20d. He also had a loom (10s). If this was a wide loom, we might assume that he employed a servant or apprentice to assist him given the need for two people to work such a loom (Lee 2018, 50). Cokeman's list demonstrates the substantial investment which had to be made in materials and tools to set up as an independent cloth producer. It is probable that spinning was put out, meaning that further investment had to be made in piece rates. Even so, Cokeman appears to have been comparatively wealthy: he had six silver spoons, six pewter plates, and a valuable (5s) basin and ewer, and seems to have operated full time as a textile producer, his only other economic goods being three piglets.

Looms are not frequent occurrences among the goods seized by the escheator and coroner, perhaps because weavers either rented looms or practised their trade in the workshop of a clothier (Lee 2018, 52). Indeed, the fifteenth century saw the decline of independent weavers as they increasingly became linked to clothiers (Oldland 2018, 9). Like the evidence for spinning, occasional references remind us that textile production was widespread and took place outside of the core zones of cloth production. In 1451 William Horne, identified as a weaver of Faversham (Kent; where 24 cloths were sealed in 1476–77; Lee 2018, 286), had two pairs of looms, valued at 20s.<sup>378</sup> If these looms were wide looms and in operation at the same time, this would suggest the engagement of eight people in weaving. The list of William Ponchon of Dartford (Kent), dated to 1382 and relating to his involvement in the 1381 Rising, contains two tuns of bark for dyeing (36d) and 2lb of white wool, as well as 'shearman's shears' (*forpicula pro scherman*).<sup>379</sup> These items are suggestive of involvement in dyeing and shearing, although there is no evidence to suggest engagement in weaving or other elements of the textile manufacturing process. Cloth had been produced in Dartford since at least the 1220s, and 17 cloths were sealed there in 1476–7, with a fulling mill being established in the late fifteenth century (Lee 2018, 286). This evidence demonstrates how although major cloth producing regions dominated the market, lower intensity cloth production took place in other centres, and was the subject of sometimes substantial investment by households. A final weaver within the escheators' sample is outlaw Walter Donne, of an unidentified Hampshire or Wiltshire location, whose possessions are limited to a loom (40d) and 20lbs of wool (6s 8d).<sup>380</sup> The coroners' records include an individual identified as a clothier, William Dune of Malmesbury; however, the only listed possessions relating to his occupation are three tods and 20 lbs of wool (104 lbs altogether).<sup>381</sup>

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<sup>378</sup> E483.

<sup>379</sup> E657.

<sup>380</sup> E1577.

<sup>381</sup> C433.

Other stages of the finishing process are not well represented in either dataset. Fulling mills were typically in the hands of landowners (Lee 2018, 53–61) or capitalist clothiers who were able to exploit the commercial benefits of controlling the finishing of cloth (Gaisford 2016, 203). While some wooden vats may have been used in various stages of the processing of cloth, none are stated as having been for this specific purpose. The 1382 list of John Tonkyn of Kent mentions ‘10 staves of fuller’s teasels’ (*x baculi teseles pro fullatore*), valued at 5s.<sup>382</sup> This entry likely relates to the teasel *Dipsacus Sacitus*, used for raising the nap of the cloth. The high value of Tonkyn’s teasels suggests a crop; in the early modern period teasels were cultivated in Essex and the west country, often in rotation with medicinal herbs (Ryder 1969, 118). Teasels were grown at Spitalfields on the periphery of the city of London in the sixteenth century, and these have been recovered from ditches at nearby Moorfields, an area within the city limits associated with cloth processing (Cubitt *et al.* 2019, 257).

Taken together, the evidence from archaeological excavation and the escheators’ and coroners’ records provides a balance to studies of cloth production which are focussed on large-scale producers, who are best served by wills and probate inventories. As Amor (2004; 2016) demonstrates for Suffolk, although these producers dominated in financial terms, small quantities of cloth could be sealed by a wide range of producers, and it is these smaller operators who are potentially brought into focus by these records.

### *Textile finishing and working, and the sale of cloth*

Archaeological evidence provides an insight into an activity entirely missing from the escheators’ and coroners’ records, sewing (Table 8.5). Pins and needles, typically of copper alloy, are common archaeological finds, with a total of 774 being recovered from 43 sites. Although it can be difficult to differentiate between pins used for sewing and those used as clothing fasteners (see Chapter 6), large collections, seemingly not associated with pin manufacture, may provide evidence of tailoring. The best evidence for cloth working comes from the excavations Market Street, Alton (Hampshire). Here a collection of 138 pins was recovered from the features associated with 50–2 High Street. This site was adjacent to a plot which a rental of 1398 suggests was a drapers’ shop, the plot itself being a mercers’ shop in the sixteenth century (Millet 1983, 82). Here both the archaeological and historical evidence attests to a strong association with the marketing of cloth at what was a centrally located tenement within the town. A possible parallel can be found in the archaeological finds from excavations at Spital Street, Dartford (Kent). Here the metalwork assemblage includes an unusually high number of items associated with dress; 13 pins, eight lace tags and an eyelet of possible sixteenth-century date (TVAS

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<sup>382</sup> E683.

Table 8.5: Summary of evidence for textile working in the archaeological dataset.

Site	Bone			Copper alloy			Iron		Stone	Textile
	Bobbin	Bodkin	Needle	Bodkin	Needle	Thimble	Needle	Scissors	Linen Smoother	Linen within thimble
Pilton, Devon									1	
10 Market Street, Alton, Hampshire			2							
Site 5, Bishops Waltham, Hampshire	1									
Greyhound Hotel, Fordingbridge, Hampshire			1							
Oyster Street, Portsmouth, Hampshire			1				1			
Wherwell Priory, Hampshire					1					
Creedy's Yard, Greenwich, Kent					1					
51–53 City Road, Islington, Middlesex						1				
50 Finsbury Square, Islington, Middlesex						1				
County Sports, Staines, Middlesex					1					

(Continued)

Table 8.5: Continued.

Site	Bone			Copper alloy			Iron		Stone Linen Smoother	Textile Linen within thimble
	Bobbin	Bodkin	Needle	Bodkin	Needle	Thimble	Needle	Scissors		
St Michael's Hospital, Aylsham, Norfolk						2				
Blakeney Freshes, Blakeney, Norfolk					1					
Dereham, Norfolk						1				2
High Street, Dereham, Norfolk						1				
Church Close, Shipdam, Norfolk						2				
White Hart Street, Thetford, Norfolk			1							
Tweedale Press, Walkergate, Berwick-upon-Tweed, Northumberland			1		1					
Berwick-upon-Tweed, Northumberland					1					
West Whelpington, Northumberland						1				

(Continued)

Table 8.5: Continued.

Site	Bone			Copper alloy			Iron		Stone	Textile
	Bobbin	Bodkin	Needle	Bodkin	Needle	Thimble	Needle	Scissors		
Lydiard Park, Swindon, Wiltshire								1		Linen within thimble
Goldicote, Worcestershire				1						
Upton, Worcestershire							1			
Askews Printshop, Church Walk, Doncaster, Yorkshire						1				
Low Fisher Gate, Doncaster, Yorkshire							1			
East Road, Northallerton, Yorkshire					1					
Sherburn, Yorkshire					1					
Wharram Percy, Yorkshire					1	2	1			
Yarm School, Yarm, Yorkshire					1					
<b>Total</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>10</b>	<b>16</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>2</b>

2014). The zooarchaeological evidence from the site provides evidence of the processing of feathers due to the unusual quantity of butchered corvid remains, probably for decorative purposes (Holmes 2014). Many of these items occur in later contexts and are interpreted as residual but provide an unusual concentration of items which may indicate the manufacture of clothing on site. Evidence of domestic needlework can be found in an assemblage from the former Greyhound Hotel, Fordingbridge (Hampshire). A group of objects from a burnt layer is interpreted as a sewing kit: it included 60 pins, a thimble, several (probably four) sewing rings as well as some possible points (Harding and Light 2003, 166). Similar domestic sewing kits have been recovered from excavations in Norwich and Colchester (Crummy 1988; Margeson 1993).

The archaeological evidence also provides some hints at sewing within rural households. At Wharram Percy, a large collection of pins was excavated from a sixteenth-century demolition layer (Harding, Marlow-Mann and Wrathmell 2010). A similar group was recovered from Denge West Quarry, Lydd (Kent). This comprised 48 pins of various sizes, eight lace ends and three clothes fastenings from a sixteenth-century deposit which is probably associated with a building, possibly suggestive of domestic tailoring at this rural site (see Barber and Priestly-Bell 2008, 189); this is certainly an unusual concentration of such objects from a rural farmstead. Needles are scarcer finds than pins. They are present in a range of materials: copper alloy, iron and bone. Other items associated with sewing are thimbles, recovered from Wharram Percy, as well as from West Whelpington and several sites in Norfolk (Table 8.5). A stone linen smoother from Pilton (Devon; Miles and Miles 1975), can also be taken as evidence for the working of cloth in a rural home. Among the coroners' records, evidence for working with wool is represented by the knitting needle belonging to the Suffolk widow Jane Vause, perhaps indicative of the increasing association between women and knitting in the sixteenth century (Whittle and Hailwood 2020, 19).<sup>383</sup>

Shears were used for cutting cloth. A total of 15 sets of shears appear in the archaeological dataset but interpreting these as cloth shears is difficult. Cloth shears are typically large; modern examples may be up to 1m in length. They typically have broad, flattened blades (Goodall 2011, 61). Goodall (2011, 111–12) suggests that excavated shears for cutting cloth are likely to be larger bladed examples. The complete examples within the archaeological dataset are typically 100–200mm in length, and therefore unlikely to have functioned as cloth shears. The escheators' records list two pairs of shears. One of these, described as a 'great pair of shears for a shearman', belonged to Thomas Isenden of Sutton Valence (Kent). These were presumably used for cutting up the cloth Thomas had for sale, discussed further below.<sup>384</sup>

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<sup>383</sup> C146.

<sup>384</sup> E768.

Turning now to the sale of cloth, we revisit the attempt made in Chapter 6 to distinguish between cloth for consumption, cloth resulting from production and cloth for sale. Table 8.6 displays information on cloth in escheators' lists which can be categorized as material for sale, or arising from the household's own production (and itself presumably also awaiting sale). In fact, all except one of the lists in Table 8.6 are treated here as containing cloth for sale. The only exception is John Sta, an agriculturalist whose list includes sheep and wool, but also cloths which may have been produced in his household.<sup>385</sup> As noted in Chapter 6, categorising the different occurrences of cloth is not always straightforward. In compiling Table 8.6, we have again focussed mainly on stated occupation, and on other indicators such as details concerning civil outlawry, where that was the grounds for forfeiture. Sometimes the fact that we are looking at stock is made explicit in the relevant document. For instance, cloth 'for sale' belonging to Robert Assheford, who drowned himself in the River Tamar, is clearly distinguished from textiles associated with his household.<sup>386</sup>

What many of the lists summarized in Table 8.6 reveal is a world of comparatively small-scale cloth merchants, many of them situated in the lesser towns of the case-study counties. As noted in Chapter 2, some of these men lay at very upper end of the 'non-elite' social group as defined in this study. The individuals provide some indication of the likely sources of supply of cloth for many rural and small-town households.

Two unusually detailed lists, those of Thomas Isenden and John Hawkyn, provide a special insight into the textiles sold by such merchants. These lists include reference to a range of specific types of cloth. The recording of the quantity of cloth in ells and yards allows some consideration of the relative value of different types (Table 8.7). In Isenden's case, references to colour of his cloth are quite prominent. Isenden stocked in his shop cloth in red (20d per *ell*), russet (16d per *ell*), green (21d per *ell*), and multicoloured cloths of 'bluemedley' (19d per *ell*), and cloth 'de ray' (16d per *ell*). Other specific types of cloth in his list but not in the table, because not valued by the yard or ell, are plunket (blue), and cloth referred to as 'Candlewick Street', associated with production in the Cannon Street area of London (not valued individually). It is possible that these cloths came from a variety of different centres: Salisbury specialised in the production of rays, and red cloths were a specialty of the area around Stroud, Gloucestershire (Lee 2018, 11). Overall, a comparison of the prices of Isenden's stock with those of the cloths for consumption discussed in Chapter 6 (Table 6.2) suggests that Isenden was generally dealing in coloured cloths of relatively good quality, perhaps aimed at the more well-to-do customer. As Chapter 6 showed, although not unknown, coloured cloths worth 1s per yard were relatively rare in peasant and artisan households captured in our data.

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<sup>385</sup> E355.

<sup>386</sup> E1229.

Table 8.6: Lists containing cloth identified as arising from domestic production or for sale in the escheators' records.

List No.	Year	Name	Residence	Occupation	Cloth 1	Cloth 2
56	1427	Nicholas Harry	Topsham, Devon	Mariner	1 dozen white strait cloths	
58	1427	William Smyth	Dartmouth, Devon	Draper	12 yards of cloth	
122	1446	John Maister	Havant, Hampshire	Merchant	40 ells of good cloth, 6d per ell	
308	1418	John Chapman	Coton (Hardingstone pa.), Northamptonshire	Chapman, 'who was a clerk'	140 linen [cloths], 5s	4 yards of motley, 6s
355	1418	John Sta	Mitton, Worcestershire	-	1 dozen white woollen cloths, 13s 4d	
518	1422	John Hawkyn	Barnstaple, Devon	Merchant	see Table 8.7	
768	1384	Thomas Isenden	Sutton Valence, Kent	-	see Table 8.7	
820	1426	Thomas Tylthe	Cranbrook, Kent	-	10 twills, 2s each	
944	1436	William atte Hill	Carleton Rode, Norfolk	-	20 yards woollen cloth, 10s	
1142	1442	Walter Fitz Reri	Combe, Isle of Wight, Hampshire	-	4 dozen medley cloths, 40s per dozen	4 pieces kersey, 13s 4d each
1204	1440	John Grey	Evesham, Worcestershire	Mercer	99 ells 16 crests of linen cloth at various prices, £2 14s 5 3/4d	42 ells 5 crests woollen cloth at various prices, £1 10s 1d
1229	1397	Robert Assheford	Tavistock, Devon	-	grey and white cloth for sale (panno venali), £8	

Whereas the cloth in Isenden's list is principally defined by its colour, that in the list of John Hawkyn is mostly differentiated by type.<sup>387</sup> Hawkyn held a wide variety of textiles in small quantities, many of them cheaper varieties than those in Isenden's list (only those of Hawkyn's textiles recorded in yards appear in Table 8.7). His stock included twill, two pieces of worsted (a light cloth with a glossy finish, typically associated with Norfolk) valued at 18s; fustian (a cloth of flax and wool) (4d per yard); two 'remnants' of buckram (a fine cotton cloth) worth 7d; cotton (not valued individually); carde (linen used for curtains and linings, 2d per yard); 'Norfolk' cloth (8½d per 'foleton'); oil cloth (3d per yard); and a small quantity of broad cloth (4d per yard), as well as white cloth, and russet.

**Table 8.7:** Price in pence (d) per yard of cloth by type in the lists of Thomas Isenden (E768) and John Hawkyn (E518). Assumes 1 ell is equal to 45 inches and 1 yard to 37 inches (after Manchester University Lexis of Cloth and Clothing).

	Ell	Yards	Value (d)	d per yard
<b>Thomas Isenden (1384)</b>				
Red	3.5	4.3	70	16
Blanket	5	6.0	51	9
Russet	10	12.2	160	13
Bluemedley	5.5	6.7	106	16
De' ray	10	12.2	160	13
Green	6.5	7.9	136	17
Red	14	17.0	240	14
<b>John Hawkyn (1422)</b>				
Cloth, type illegible		3	48	16
Bunting		10	20	2
Fustian		2	8	4
Spynal		2	6	3
Carde		4	8	2
Broad Alexander		0.5	2	4
Oilcloth		3	9	3
Canvas		125	60	1

<sup>387</sup> E518.

The coroners' records are comparatively silent on the finishing, working and sale of cloth. Shears occur in four lists, including that of William Purches who in 1587 had a pressing iron in his hall in Devizes (Wiltshire), presumably for pressing cloth.<sup>388</sup> Purches also possessed a quantity of tewke, a kind of canvas. The only individual listed as a tailor and holding cloth is John Combe of Acton Beauchamp, Worcestershire.<sup>389</sup>

Cloth seals, attached to cloth on the payment of aulnage, offer a further insight into the domestic marketing of cloth. All four examples within the archaeological dataset come from sites in Norfolk, the two examples from Carbrooke being from Yorkshire and Essex (Hutcheson and Noble 2006).

Overall, the archaeological evidence supports a picture of the domestic working of textile items, although cloth could also be passed to a tailor to manufacture garments. Documentary evidence for the finishing and working of cloth is limited, but the escheators' records provide a glimpse into the range of cloths traded by lesser merchants and others involved in sale, and their relative values. The evidence provides hints, at best, about the kinds of cloth which found their way into non-elite domestic contexts, either as clothing or items of soft furnishing. While specific references to cloth by type or colour are primarily associated with those involved in the textile trade, the evidence in Chapter 6 showed that small quantities of cloth were possessed by a range of households, presumably for the manufacture of clothing, napery or other household textiles either domestically or by a professional.

### *Textile manufacture: summary*

Our evidence demonstrates that households were involved in textile production in various ways. Analysis of the occurrence of wool in the escheators' list suggests different scales of processing, with some households controlling stocks and others working only small quantities. Away from areas of intensive cloth production, spinning formed a part of the economy of many households, and at least some of the wool from a household's sheep was likely to be converted into yarn. The higher levels of capital investment required to set up workshops for weaving and dyeing meant that these were more likely to be full-time occupations. Finds of spindle-whorls, and the presence of treadles and spinning wheels within lists of household goods, suggest that spinning typically took place within the home, while the evidence from Lavenham and other small towns demonstrates how other activities required specialised spaces, requiring investment. The most striking conclusion from the evidence presented here is the way that the cloth and, to a lesser extent, the linen industry permeated the economy of rural households across England, with the evidence pointing

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<sup>388</sup> C317.

<sup>389</sup> C41.

to clear regional variability which relates to a complex range of factors including sheep husbandry and arable regimes, patterns of landholding and regional economic specialisation. The evidence for the movement of cloths also shows the dynamism of the market. Although the export trade is rightly often cited as a major driver of industrial change, our evidence also shows that domestic consumers clearly had the opportunity to acquire a range of different cloths from other parts of England. This is an element of the cloth market often implied by surveys of the trade but difficult to trace in sources which principally inform on the export market (see Lee 2018, 78–98). In summary, despite the limited presence of relevant objects, our data is perhaps most instructive in relation to spinning and the processing of wool into yarn, demonstrating possible regional differences, highlighting the low investment required to gain a foothold in this craft but also the low returns which arose from it, which presumably contribute to the perception of this task as marginal ‘by-work’. Even so, this analysis suggests that spinning, an area of medieval life which is commonly generalised, was a sophisticated process, in which tools varied in accordance with the materials being worked and the mode of production.

### The leather industry

The production of leather goods, arguably the second most important industry in later medieval England after cloth production, is comparatively under-researched. Our understanding of leather production is biased towards larger towns, for which we have good historical evidence for the presence of tanners and excavated archaeological evidence for tanning. This takes the form of tanning pits and waste products from the processing of hides, typically horn cores (the bone element of horn) and hoof bones. Recent reviews of zooarchaeological evidence from the midlands (Albarella 2019) and southern England (Holmes 2017) have documented the presence of hide processing in Northampton, Leicester, Norwich, Colchester, Hereford, Buckingham, Winchester, Oxford and Kingston-upon-Thames. It is noticeable that in most cases it is sheep/goat hides which appear to have been worked, rather than those of cattle. Clarkson (1960, 245) identified areas of the midlands, the Weald and the Forest of Dean as key areas of leather production, although London dominated the market.

Although urban centres dominate our understanding, Clarkson (1960; 1966) demonstrated that, particularly in areas of the west midlands and East Anglia, tanning could be a rural industry undertaken by households engaged in pastoral agriculture. In her analysis of rural tanners at Wrotham (Kent), Semple (2006) has identified several families of tanners operating across rural parts of the manor, mostly supplying goods to the local market and taking advantage of the local supply of cattle hides and bark. Like those discussed by Clarkson, these tanners were also agriculturalists, with holdings ranging from 5 to 47 acres, many being of what Semple identifies as ‘yeoman’ status; these artisans

were able to accumulate wealth and invest this in land and domestic buildings. Analysis of the Wakefield (Yorkshire) court rolls by Lewis (2020) shows that while the industry was focussed on Wakefield itself, it also took place in surrounding rural communities, with the number of rural tanners increasing through the sixteenth century. Regional specialisation in tanning can be associated with access to the key raw materials required: the hides themselves, bark for soaking the hides, and lime, used in the removal of hair. Lewis's analysis suggests that tanners could purchase bark collectively from distances of up to 30km away, showing how tanning was closely integrated with other areas of the rural economy, including woodland management and the burning of fuel for ironworking. As early as 1938, Sargent argued that it was access to these key resources which led to the focussing of the leather industries around Northampton and Leicester, but also highlighted that areas such as Middlesex, which had such resources, do not seem to have developed substantial tanning industries due to other variables.

Cattle hides and those of sheep and goat were processed. The west midlands, in particular, were strongly associated with the processing of the hides of sheep and goat, producing light leather for use in clothing such as gloves and footwear, and becoming increasingly important as the fashion for more tightly fitted clothing developed in our period (Clarkson 1966, 28). The Leather Act of 1563 prohibited the practising of light and heavy leather working by the same craftsmen, implying that these two industries were practised together in some instances; indeed, excavations at The Green, Northampton have provided evidence for the processing of both cattle and sheep hides in the same or adjacent workshops (Shaw 2011, 121).

It is the heavy leather industry which is most strongly associated with larger urban centres. This is for several reasons. Firstly, there was a ready supply of hides from the butchers supplying the urban food market. Secondly, tanning hides is a time-consuming process (see Thomson 1981; Mould 2011 for detailed descriptions of the process). Hides must first be trimmed and washed before being soaked in a solution of lime or urine to loosen the hair which was then scraped away. Hides were then often re-soaked and scraped again to remove any remaining fat and hair roots (this process was outlawed in 1563). Hides were then soaked in an acid (typically bark or old tanning liquor) or alkaline (typically dung) overnight before again being washed or scraped, ready for tanning. Hides were soaked in the tanning solution of bark and water for a period of anything from six months to two years, before being removed and dried. Because of the time that the tanning process took there was a clear advantage to being able to process large numbers of hides, and to have hides at different stages of processing.

Tanning sites are characterised by the presence of clusters, typically alignments, of lined pits. Within our sample the most comprehensive evidence for a tannery comes from the Church Walk, Doncaster (Yorkshire; Chadwick 2008). Here, a total of 27 excavated pits relate to tanning. They are principally aligned

in two rows and the fills are stained from the urine, lime and bark which was used in the tanning process. Several of the pits appear to have been lined with stone, clay or wood. Tanning was established on the site at some time in the twelfth or thirteenth century, with some pits dating as late as the sixteenth century. The absence of large quantities of horn cores from the site suggests that hides may have been provided with the horns and hooves removed. By the sixteenth century, large quantities of hides were imported into Yorkshire from London through Hull and down river to Bawtry to the south of the town (Clarkson 1966, 32). This may be one explanation for the absence of evidence for the initial preparation of hides at Church Walk, Doncaster. However, hides were also obtained and processed locally. At Tickhill to the south of Doncaster, the faunal assemblage from a site associated with tanning is dominated by horn cores (Burgess and Andrews 2017). Here there is evidence for the initial processing of hides in the form of a lime kiln associated with an alignment of seven tanning pits which were probably lined with wood and in use during the fourteenth–fifteenth centuries. The site at Tickhill is important because it provides evidence of heavy leather processing outside of a large urban centre.

Elsewhere the evidence for tanning within the archaeological dataset is more limited. At Castle Street (Whitworth, Jones and Pearson 2001) and Cowl Street, Evesham (Vaughan 2007) (Worcestershire) faunal remains are suggestive of tanning. Post-medieval tanneries are known from excavated sites at High Street, Pershore (Worcestershire; Hughes and Pontin 1993) and the former Greyhound Hotel, Fordingbridge (Harding and Light 2003). At the latter site, barrel-lined pits with tanning waste in the form of lime and faunal remains are dated to the seventeenth century, but a rental suggests that tanners were present there from at least the later sixteenth century, while at Pershore the date of excavated pits probably relating to tanning is unclear and may pre-date the documented tannery on the site. Finally, possible evidence for tanning is provided by a wood-lined pit containing a large quantity of horn cores from Wolborough Street, Newton Abbot (Devon), where a rental shows a nearby tenement was occupied by a tanner in the last decade of the sixteenth century (Hughes 2015).

The archaeological evidence for heavy leather production is overwhelmingly urban. The remains identified at Doncaster, Fordingbridge, Thetford (NAU 1997), Evesham and Pershore are fairly limited in scale when compared to the large tannery complexes excavated in places such as Northampton (Shaw 2011) and Birmingham (Ratkai 2011). Evidence from the escheators' and coroners' records for this industry is slight (Table 8.8). In 1413 the currier Henry Coriour of Evesham had two cow hides worth 6s, his other goods being a horse (10s) and 'small chattels' (4s).<sup>390</sup> As he was a currier, engaged in the finishing of leather, these may already have been tanned and this evidence sits well with the archaeological evidence for tanning in the town. Other tanners seem to have

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<sup>390</sup> E490.

**Table 8.8:** Occurrence of goods associated with tanning in the escheators' and coroners' records.

List No.	Year	Name	Place	Occupation	Object	Value (d)	Quantity
<b>Escheators'</b>							
249	1390	William Cook	Yarm, Yorkshire	-	Bark	480	60 qtrs
490	1413	Henry Coriour	Evesham, Worcestershire	Currier	Cow hide	72	2
560	1422	Stephen Fleschewer	Welton, Yorkshire	-	Cow hide	24	2
648	1381	John Prentys	Newenden, Kent	-	Lamb skin	16	30
686	1381	Thoas Wynchendenn	Marden, Kent	-	Cobbler's knife	12	3
736	1422	Thomas Knyth	Great Torrington, Devon	Tanner	Skins (goat, bullock, cow, calf)	2880	33 keeves (vats)
744	1382	Thomas Yol	Clipston, Northamptonshire	-	Sheepskin	60	30
752	1383	John Mogerhangre	Little Stratford, Northamptonshire	Barker	Bark	60	portion
1239	1397	John Solterous (?)	Long Stratton, Norfolk	-	Sheepskin		14
1384	1399	William Brynnand	Sherrif Hutton, Yorkshire	-	Leather		
1455	1410	John Atkynson	Wakefield, Yorkshire	-	Leather from oxen and cows		
<b>Coroners'</b>							
9	1543	Thomas Aston	Wadsworth, Yorkshire	Barker	Hide	720	4 bags
76	1545	Thomas Ramsden	Oundle, Northamptonshire	Shoemaker	Hide (of leather)	108	12

(Continued)

Table 8.8: Continued.

List No.	Year	Name	Place	Occupation	Object	Value (d)	Quantity
126	1551	Thomas Thomas	Longbridge Deverill, Wiltshire	Tanner?	Cow and bullock hide	2160	45
					Calf hide	240	90
					Calf hide	48	30
					Cow and bullock skin	960	28
212	1574	John Sharpe	Wing, Rutland	-	Horse skin	24	1
					Sheepskin	24	31
					Sheepskin	6	6
					Fleshing knife		3
214	1575	Simon Winter	Kings Meaburn, Westmoreland	Labourer	Paring knife		4
					Sheepskin	16	4
308	1586	Edward Purkheme	Denbury, Devon	-	Yearling (sheep) skin	6	2
317	1587	William Purches	Devizes, Wiltshire	-	Leather		1 piece
421	1597	Thomas Throwarde	Shorne, Kent	Tanner	Shoeing horn		1
					calfskin	192	25
					Tan (bark)	312	1.5 cartloads

undertaken both heavy and light leather working. Thomas Knyth of Great Torrington (Devon) had skins of goat, bullock, cow and calf in keeves (vats) 'to be tannyd', valued at £12.<sup>391</sup> Other craftsmen living in small towns also had goods associated with tanning. In 1390 William Cook of Yarm (Yorkshire) possessed 60 quarters of bark worth 8d per quarter, which may have been intended for use in the tanning process. In contrast, the coroner's records provide clearer evidence for rural tanning, apparently on a large scale. As well as possessing a total of 229 hides of cow, bullock, calf, sheep and horse worth over £14, Thomas Thomas of Longbridge Deverell (Wiltshire) also possessed eight tan vats (valued with two 'great' wooden troughs at 10s), and seven knives (valued together at 5s).<sup>392</sup> In 1597 Thomas Throwarde, a tanner from Shorne (Kent) had a bucking tub (valued with his bedstead at 12d) as well as 25 calf skins worth 16s 8d and 1.5 cartloads of tan (i.e. bark) worth 26s.<sup>393</sup>

These lists all demonstrate quite clearly that rural and small-town tanners such as Thomas Thomas and Thomas Knyth undertook both heavy and light leather working. Others evidently engaged in light leather processing include John Prentys of Newenden (Kent), who had 30 lamb skins worth 16d in 1382.<sup>394</sup> Rural tanners had a mixed household economy. Thomas Knyth had three acres of wheat, William Cook had 40 acres of grain and Thomas Thomas appears to have cultivated wheat, barley, maslin and vetch. It is perhaps surprising that these tanners had such extensive arable holdings, as Clarkson (1966) links tanning specifically with pastoral areas, with animal husbandry creating greater capacity for the development of a trade. It is likely the mixed household economy, as well as the smaller markets served by these craftsmen, that led to the dual specialisation in heavy and light leather working. While heavy leather working was typically undertaken to supply a local market with leather or leather goods, light leather production was more typically undertaken to supply wider markets. This was a simpler process, requiring hides to be smoked, oiled, dried and reheated with salt, flour and egg yolks (Clarkson 1960, 247). It is light leather working which appears more prevalent in rural areas, both from archaeological and historical evidence. At Bardwell (Suffolk), two large pits are interpreted as relating to an industrial process, but the complex does not appear extensive enough to support economical heavy leather production (Muldowney 2012). Light leather production is suggested by the faunal remains from the site, which contain sheep horn cores. Further evidence for leather working at this site is provided by the presence of a slicker blade, used in the finishing of leather. Excavations at 59–61 High Street, Havant (Hampshire) have also revealed evidence for light leather working in the form of sheep horn cores and foot bones from pits of Tudor date (Shaffrey 2015, 6).

Although limited in quantity, the evidence for leather working points to differences in production between larger towns, smaller towns and the countryside.

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<sup>391</sup> E736. Legibility of the key document (TNA, E 153/659, m.2) is poor.

<sup>392</sup> C126.

<sup>393</sup> C421.

<sup>394</sup> E648.

Evidence from larger towns provides clearer evidence of specialisation in heavy leather or light leather production (Clarkson 1960; 1966), while in smaller towns, such as Great Torrington, our evidence suggests a more mixed economy, with lighter leather production being better suited to rural households. Even so, by the sixteenth century, the case of Thomas Thomas demonstrates that fairly large-scale tanning enterprises could develop in the countryside; notably in this case in a region more associated with the production of cloth than leather.

Following tanning, a hide went to a currier for finishing, although in the case of small-scale producers the tanner may have performed this role. Henry Coriour is the only currier described as such in the escheators' and coroners' records, yet paring knives possessed by Thomas Thomas may suggest he was finishing, as well as tanning, hides. Archaeologically it is possible to distinguish between the evidence of leather finishing (typically characterised by thin scrapings from the flesh side of the leather) and offcuts in the form of trimmings from the production of pattern pieces or the repair of leather goods (Mould 2011, 33). Archaeologically, leather survives in waterlogged conditions, meaning that it is found inconsistently; the majority of finds are from urban sites, where such conditions are most prevalent. Therefore, the extent to which the finishing of leather and the production of leather goods was a largely urban process is unclear. Evidence for the trimming of hides is fairly limited within the archaeological sample. At Selby (Yorkshire), evidence of both primary trimming (hide edges, belly skin and udders), secondary trimming and currying were recovered, providing evidence for currying, shoemaking and cobbling (Clarke 1999). At Forster Square, Bradford (Yorkshire), leather waste was associated with tanning pits and this would suggest that here the hides were trimmed by the tanners (WYAS 2006). In contrast, at 27–30 Finsbury Square, Islington (Middlesex), excavations recovered two pieces of primary leather working waste including an offcut of cow udder, mixed with offcuts from the production of leather objects (MOLAS 2000b, 73). This area at the periphery of the city of London is known to have been associated with tanning and leather working, with excavations at Moorfields recovering tools, offcuts, faunal evidence of the processing of cattle, sheep/goat, fallow deer, horse and cat skins and an abundance of *Trox scaber* hide beetles, an indicator of hide processing (Cubitt *et al.* 2019, 254–5).

A similar mix of primary and secondary waste was recovered at High Street, Barnstaple (Devon), where two of the 49 offcuts were primary waste, with the majority being offcuts from shoe production (Lovatt 1990). A large collection of leather offcuts from Highweek Street, Newton Abbot (may be an indication of primary hide trimming (Markuson and Thomas 1980), the site being some distance from the possible tanning site identified at Wolborough Street. Finds from the castle ditch at Oakham (Rutland) include a currier's knife as well as scraps seemingly associated with shoe making, perhaps implying that the finishing of leather and the production of leather products took place on the same premises, or in close proximity. Currying also took place at Low Fisher Gate,

Doncaster, where a carrier's knife was recovered from a fourteenth-century deposit (McComish *et al.* 2010). The three honestones associated with this building could relate, in part, to the sharpening of tools for this craft. In the fifteenth–sixteenth centuries, the site was occupied by leatherworkers who, to judge by the evidence of over 800 pieces of leather waste, specialised in the production and repair of shoes, working with both heavy and light leather. The waste suggests that in the sixteenth century at least, the main activity undertaken was the repair of shoes, rather than manufacturing (McComish *et al.* 2010, 84–5). Similar evidence for the production or repair of shoes comes from Marygate, Berwick-upon-Tweed (Heawood and Howard-Davis 2004), Cockermouth (Cumbria; Leech and Gregory 2004) and Prescott Street, Tower Hamlets (Middlesex; Pre-Construct Archaeology 1999). At Carlisle (Cumbria), a deposit of leather including a scabbard stripped of its metal fittings has been interpreted as a workshop specialising in the repair of leather products (Newman 2011). Mould (2011) notes that it is generally assumed that trimming was undertaken by tanners, however it was to their advantage to sell untrimmed hides if they sold their leather by weight, while carriers may have preferred to trim hides themselves to be sure of the quality of the leather. Our evidence provides clear, if limited, evidence of this practice from several sites and would suggest it was common for the finishing of hides to be undertaken away from the tannery itself.

Taken together, our evidence suggests that the heavy leather industries were primarily urban, being a component of the economies of small, as well as larger, towns. Light leather production might more commonly take place in the countryside, being better suited than tanning to being undertaken as a part of a mixed household economy. Both rural and small-town tanners undertook the craft around other economic activities, including arable as well as pastoral agriculture, meaning that tanning was one contributor to a mixed household economy, typically undertaken away from domestic spaces. We can also see that households specialised in different parts of the process, with the trimming and finishing of hides typically taking place away from the tannery. As such, leather working provides a valuable insight into the divergences between the household economies of urban and rural households, and the differences in the organisation of hide processing and leather production between the smaller towns captured in our dataset, where there is evidence of households engaging in both light and heavy leather manufacture, and larger towns, which form the basis of much of our knowledge, and where there is greater evidence for specialisation.

## Metalworking

Metalworking is the industry best represented in the archaeological dataset and the goods of several smiths appear within the escheators' and coroners'

materials. The discussion below forms two parts. The first concerns the abundant evidence for ferrous metalworking within our dataset, both for the primary production of iron through smelting, and for secondary smithing to produce iron objects. Secondly, there is more limited evidence for the working of non-ferrous metals including copper, lead and gold.

### *Ferrous metalworking*

The evidence for ferrous metalworking is derived from both the historical and archaeological datasets; however, the archaeological evidence is much stronger (Tables 8.9 and 8.10), and the escheators' and coroners' records do not provide any information on the initial stages of iron smelting.

### *Iron smelting*

Up until the sixteenth century, England was highly reliant on imported iron, particularly from Spain, with the quantity imported trebling in the late fifteenth century, pointing to rising demand for high quality iron (Childs 1981, 30–33). Domestic production must have been many times larger; however, the transitory and ephemeral nature of bloomeries in England means that domestic output is impossible to judge. Records from north-east England suggest output rose as the cost of imported iron increased, incentivising investment in domestic production (Blanchard 1973, 78–9; Childs 1981, 46). The smelting of iron is a resource intensive process, requiring large quantities of charcoal (approximately 12lb for every 1lb of iron produced), which could account for up to half the cost of production; for example, at Tudeley, Kent, it accounted for 40% of the expenditure associated with ironworks in 1329–34 and 1350–4 (Hodgkinson and Whittick 1998, 14; Sapoznik 2016). It is logical therefore that evidence for smelting is commonly identified in areas with outcrops of iron ore and dense woodland.

Sapoznik (2016; see also Crossley 1981, 29) highlights the increasing demand for iron through the middle ages and also relates the growth of the iron industry to the expansion of settlement to agriculturally marginal, but resource-rich, areas. In Northamptonshire, for example, iron production sites in Rockingham Forest were situated close to woodlands and outcrops of ore, typically in the fields around woodland villages (Foard 2001), with a similar relationship between iron production sites and woodland identified in Yorkshire (Waites 1964). Iron is found across England, but the highest quality ores come from the Weald of Kent and Sussex, the Forest of Dean and along the Jurassic Ridge, with lower quality bog iron coming from the northern moorlands. The mining and processing of iron ore is a task well suited to a mixed household economy, involving engagement in agriculture (particularly pastoral) alongside iron production.

**Table 8.9:** Summary of evidence for ferrous metalworking in the archaeological dataset.

County	Site	Roasting	Smelting	Smithing	Casting	Unspecified
Cornwall	Tresmorn			X		
	Shaw's Wiend, Appleby-in-Westmorland			X		X
	Shaw's Wiend and Boroughgate, Appleby-in-Westmorland			X		
	Buckbottom Farm Field System, Burgh-by-Sands					X
	Caldewgate, Carlisle					X
	Carlisle City Wall, NE Side			X		
	Castle Street, Carlisle			X		
	104–112 Stricklandgate, Kendal			X		
	130–136 Stricklandgate, Kendal			X		
	Elephant Yard, Kendal			X		X
Devon	Land at Hackthorpe, Lowther			X		
	Land at James House, Chudleigh		X			
	Field Drainage, Land at Hayne Lane, Gittisham		X			
	South of Wolborough Street, Newton Abbot					X
	North of Wolborough Street, Newton Abbot			X		
	Ditches off Back Lane, North Molton		X			
	Pit at Lower Poole Barns, North Molton		X	X		
	Beere, North Tawton		X	X		
	Dinna Clerks					X
	West of Barton Close, Winkleigh					X

(Continued)

Table 8.9: Continued.

County	Site	Roasting	Smelting	Smithing	Casting	Unspecified
Hampshire	18 to 20 High Street, Alton					X
	Mill Lane, Brockenhurst			X		
	Manor Farm House, Kings Somborne			X		
	14–16 Milkingpen Lane, Old Basing					X
	The Millworks, Brastead					X
	Bromley Hospital					X
	Highstead Farm Quarry, Chislet					X
	Betteshanger S.W.S, Deal					X
	7–9 High St, Eastry			X		
	Land to the north of the Presbytery Catholic Church of St Lawrence, High Street, Edenbridge				X	
Kent	Edenbridge Western Relief Road			X		
	Friars School, Great Chart			X		
	A21 Lamberhurst by-pass		?			
	A21 Lamberhurst bypass at Spray Hill	X	X	X		
	East Lenham Farm, Lenham		X			
	Lydd Quarry			X		
	Lawn Cottage, East Northdown Farm, Margate					X
	The Rectory, Penshurst			?		
	182 High Street, Tonbridge			X		

(Continued)

Table 8.9: Continued.

County	Site	Roasting	Smelting	Smithing	Casting	Unspecified
	Lyons, East Street, Tonbridge				X	X
	Tonbridge Stock and Cattle Market, Bank Street, Tonbridge		X	X		X
	Whitfield Churchyard, Whitfield					X
	Taylor's Garage, Bridge Street, Wye					X
	The Old Hall, Belton	X				
Rutland	3 to 8 Main Street, Great Casterton					X
	Gunthorpe Hall			X		
	Limes Farm, Lyndon Road, Hambleton					X
	Martinthorpe	X				
	High Road (Nos 1263-75), Whetstone					X
Middlesex	High Street, Harmondsworth					X
	7-9 Islington Green			X		
	County Sports, Staines			X		
	MacKay Securities, Staines			X		
	8-12 Red Lion Street, Aylsham		X			X
	Creake Road, Burnham Market					X
	St Peter and St Paul VC Primary School, Carbooke			X		X
	Land to the Rear of the Ostrich Inn, Castle Acre					X

(Continued)

Table 8.9: Continued.

County	Site	Roasting	Smelting	Smithing	Casting	Unspecified
Norfolk	Red Lion public house, Caston		X			
	Fairswell Manor, Funcham			X		
	United Reformed Church, Garnham Road, Gorleston			X		
	Beechwood House, The Street, Halvergate					X
	Mere Farm, Itteringham		X			
	Bacton to King's Lynn Transco pipeline, Lexham			X		
	1 High Street, Loddon					X
	Heydon, part of the Sheringham Shoal Offshore windfarm project		X			
	Pound Green Lane, Shipdham			X		
	Grange Farm, Snetterton					X
	Wymers Lane, Pilson Green, South Walsham					X
	Nursery Lane, South Wootton					X
	St Nicholas St and Minstergate, Thetford			X		X
	Queensway Middle School, Queensway, Thetford					X
	Walpole Electricity Substation					X
Wimbotsham				X		
Northamptonshire	Land adjacent to Blueberry Close and west of A508, Maitwell			X		
	Southwick		X			

(Continued)

Table 8.9: Continued.

County	Site	Roasting	Smelting	Smithing	Casting	Unspecified
Northumberland	104-106 Marygate, Berwick-upon-Tweed					X
	26-30 Tweed Street, Berwick-upon-Tweed					X
	77 Marygate, Berwick-upon-Tweed					X
	Castle Terrace, Berwick-upon-Tweed		?			X
	Former Tweeddale Press, Walkergate, Berwick-upon-Tweed			X		
	4-8 Woolmarket, Berwick-upon-Tweed					X
	Main Street, Cornhill-on-Tweed					X
	West Whelpington					X
	Shotton			X		
	Cedars Park, Stowmarket			X		
Suffolk	Mill Bank, Hinton Parva					X
	The Grange, Blunsdon St Andrew			X		
	Church Field, St James Church, Bratton		X			
	Brockenborough					X
	Land at the Rear of Church Street, Calne			X		X
	Wood Lane, Chippenham					X
	Barbury Castle Farm, Chiseldon					X

(Continued)

Table 8.9: Continued.

County	Site	Roasting	Smelting	Smithing	Casting	Unspecified
Wiltshire	Huish			X		
	Bowden Park Farm, Lacock		X			
	Bewley Court, Lacock		X			
	Cricklade to Broad Blunsdon Gas Pipeline, Latton			X		
	18–26 High Street, Ludgershall					X
	Clackers Brook, Snarilton Lane, Melksham		X	X		X
	Woodrow Road, Melksham		X			
	Former Pewsey Motors Site, Pewsey					X
	Chapel Meadow, Membury					X
	Southwick					X
	Land Opposite Manor Farm, West Ashton				X	
	35 West Street, Wilton				X	
	8–16 Worcester Road, Bromsgrove		X			
	The Saltway, Droitwich			X	X	
45 to 47 Swan Lane, Evesham			X			
Church Lane, Hallow						X
Medieval Site on M5 Widening, Whittington				X		
Barnburgh Hall				X		

(Continued)

Table 8.9: Continued.

County	Site	Roasting	Smelting	Smithing	Casting	Unspecified
Worcestershire	Bridge Lane House, Bawtry			X		X
	The Crown Hotel, Boroughbridge			X		
	Low Fisher Gate, Doncaster			X		
	Bay Hall, Huddersfield					X
	Land off Venn Street, Kirkgate, Huddersfield		X	X		
	Rectory Farm, Laughton-en-le-Morthen			X		
	45 High Street and Land to the Rear on Quaker Lane, Northallerton					X
	Wakeman's House, High Skellgate, Ripon			X		
	Land to west of Market Place, Ripon			X		
	The Spinney, Low Street, Sherburn-in-Elmet					X
	Swillington Brick Works			X		
	The Bungalow, Old London Road, Towton		X			
	101 High Street, Yarm		X	X		X
4 Westgate, Yarm			X			
Land adjacent to 2 Mill Wynd, Yarm						X

Table 8.10: Summary of evidence for metalworking in the escheators' dataset.

List No.	Year	Name	Occupation	Location	Metal Working Items	Agriculturalist?	Other Crafts?
<b>Iron Smiths</b>							
131	1448	William Smyth	Smith (felony counterfeiting)	Bromsgrove, Worcestershire	Clamp	No	No (tools could have been used for carpentry?)
					Files		
					Vice		
317	1403	Robert Sprakelyng	Smith	Codford, Wiltshire	Iron anvil (240d)	Yes	Brewing
					Iron hammers		
					Iron tongs		
687	1381	Richard de Stazendenn	–	Marden, Kent	Smith's tools	Yes	No
					Smiths bellows(?)		
					Slipstone		
765	1385	John Scot	Smith	Kent	Slipstone	Yes	No
					Slipstone		
913	1395	John Eurdon	Smith	Welton, Northamptonshire	Anvil	Yes	Wooden vessels may suggest food processing
					Pair bellows		
					Fore-hammers		
					Pincers		
					Broken iron		
					Smythecoles (charcoal?)		
Tongs							

(Continued)

Table 8.10: Continued.

List No.	Year	Name	Occupation	Location	Metal Working Items	Agriculturalist?	Other Crafts?
<b>Iron Smiths</b>							
1281	1408	Robert Smyth	–	Sutton, Wiltshire	Anvil with other 'necessaries' in forge (160d)	Yes	No
1294	1411	Thomas Smyth	–	Chippenham, Wiltshire	Anvil (320d) Pincers Bellows	No	No
1326	1407	Robert Carre	Smith	Rotherham, Yorkshire	Anvil Hammers	Yes	No
1548	1445	Isaak Greene	Clerk	Great Walsingham, Norfolk	5 small hammers (5d) Small iron anvil (4d)	No	Clerk
<b>Goldsmiths</b>							
339	1418	Patrik Goldsmyth	–	Evesham, Worcestershire	Silver band and boss for cup/mazer Goldsmith's anvil (4d) Tools of goldsmithery (18d)	No	No
517	1422	Richard Swalwa	Goldsmith	Great Torrington, Devon	Goldsmithing tools (40d)	Yes	

Iron extraction could be organised at a variety of scales. In northern England in particular, monastic estates controlled woodland and iron resources, with institutions such as Rievaulx Abbey and Durham Cathedral Priory being a major presence (Threlfall-Holmes 1999; Waites 1964). At Tudeley near Tonbridge (Kent), iron works on the lands of Elizabeth de Burgh, the granddaughter of Edward I, were leased out in the fourteenth century (Hodgkinson and Whittick 1998, 12). Not only were such landlords able to source iron for the maintenance of their buildings and estate, but they were also able to market this commodity. The industry was scattered however, and lay landowners of varying levels of wealth were also able to engage in iron production, although the water-powered bloomery mills, like those used for fulling, were likely to be in the hands of major landowners (Foard 2001, 80). Like textile production, iron production was dominated by a small number of areas producing high volumes of iron but supplemented by a background spread of lower-level production.

The production of iron is a multistage process (see Crossley 1981 for a summary). Firstly, the ironstone is mined, typically from large pits. While much ore was processed locally, there is evidence for trade in ore to be smelted elsewhere, particularly around the Severn estuary, where this may relate to the production of iron on monastic estates (Allen 1996). Unprocessed ore could provide ballast, while in managed woodlands the lower cost of fuel could offset the additional costs of acquiring finished iron. Iron could then be roasted and sorted to remove impurities before smelting. Until the introduction of the blast furnace in the sixteenth century, the bloomery method was used for smelting. Furnaces, typically of clay, were used to reduce the ore to the iron bloom, producing slag as a waste product. Following this process, the bloom was smithed to remove further impurities and to shape iron bars for transportation. Slag could be allowed to pool in the base of the furnace to form a 'slag cake' or be tapped out. From the thirteenth century, waterpower was used. Documentary references to 'mills' are common, although the blast furnace, where waterpower was used to drive bellows and hammers, did not come to England until the end of the fifteenth century, so the uses that waterpower was put to prior to this remain unclear.

The purpose of this analysis is not to reflect in detail on technology, but to understand the organisation of the industry, particularly in relation to household economies. We have limited evidence for the roasting of ore, but this could seemingly take place within settlements. At Martinsthorpe (Rutland), a pit had remains of a hearth at its base and contained partially smelted iron ore (petrologically sourced to the Northamptonshire sandstones), suggesting that smelting was taking place in the vicinity (Wacher 1960). Small quantities of slag provide only indirect evidence of smelting, with the material providing a useful source of hardcore for building up yard or floor surfaces. An example is 8–12 Red Lion Street, Aylsham, where a small quantity of smithing slag (as well as fragments of a crucible relating to non-ferrous metalworking) were recovered from a sequence of occupation deposits including make-up layers on a

tenement close to the marketplace (Bates and Shelley 2004). A striking feature of the archaeological dataset is the evidence for smelting in small towns. The clearest comes from Yarm (Yorkshire), where excavations at 101 High Street recovered a quantity of smelting slag as well as the remains of a furnace and tapping trench (for the removal of slag) (Evans and Heslop 1985). The site also had evidence for smithing in the form of a possible smithing hearth base and hammerscale, providing evidence of a metalworking workshop in the core of this small town, the site being situated between the widening in the High Street which would have been occupied by the market, and the riverfront wharves. The furnace is situated in the backland to the rear of a High Street frontage, likely therefore to be associated with a residential property, the area previously having been gardens; however, the only other finds from the excavation were a buckle and weight. The largest quantity of smelting evidence comes from excavations in Tonbridge (Kent). A site on Bank Street, close to the castle and therefore within the core of the medieval town, provided extensive evidence of smelting and smithing. The assemblage from the site is dominated by tap slag, from a variety of deposits, but remains of six smithing hearths and small quantities of hammerscale were also recovered (Keys 2005). While the tap slag is redeposited, the quantity is highly suggestive of smelting in the immediate vicinity. Further evidence of smelting comes from East Street, also within the core of the town, where slag has been tentatively interpreted as smelting waste (Keys 2002, 51). As with the excavations at Yarm, these remains were recovered from the rear of tenements and no further evidence relating to the status or economy of the households was obtained. Redeposited tap slag from a fifteenth/sixteenth-century dump deposit at 8–16 Worcester Road, Bromsgrove (Worcestershire) may provide similar, if less concrete, evidence of smelting in the backlands of urban tenements (Rudge 2002). Similar redeposited slag was recovered from a more peripheral location in Droitwich (Worcestershire), within an area associated with a variety of industrial activities (Williams *et al.* 2002). A final example from Worcestershire is the small amount of tap slag from an excavation at Swan Lane, Evesham, dating to the later fourteenth century, a period when this part of the town was in decay and Swan Lane ceased to be a routeway, perhaps opening up land for industrial activities (Martin 2003).

Evidence of iron working at the periphery of a small-town comes from the borough of North Molton (Devon). Ironworkers are listed within the manor at Domesday and iron was mined in the seventeenth century. At Back Lane, a pit containing tap slag may be the remains of a furnace or tapping trench with further tap slag, as well as a smithing hearth base, coming from excavations at Lower Poole Barns (Webb and Morris 2015; 2016). A small quantity of tap slag comes from the similarly peripheral location of the small borough of Chudleigh (Devon; Caine and Passmore 2015). At Melksham (Wiltshire), an iron smelting site has been identified in an area of forest around the town. The site is remarkable because, unlike other rural smelting sites in our dataset, it appears associated with domestic activity; postholes are interpreted as a small

two-cell building associated with a concentration of pottery and food remains. The site lacks clear evidence of a furnace, but pits are likely to have been dug for the extraction of clay and the slag is largely concentrated in an area to the east of the possible dwelling. The evidence suggests that this site comprises an isolated homestead occupied between the twelfth and fourteenth centuries, where smelting was taking place, perhaps alongside agricultural production (as suggested by traces of ridge and furrow around the site) or other crafts; a bone object may be associated with weaving (Hardy and Dungworth 2014). These instances would appear to follow the more usual rural model whereby smelting took place in fields around the settlement. The largest groups of smelting slag from rural locations come from Kent and Norfolk. Excavations at Lamberhurst in the Kent Weald provided evidence of the entire iron production process of roasting, smelting and smithing, associated with a demarcated plot, but no evidence of a dwelling was recovered (Turner 2004). Other than the metallurgical waste, the only finds from the site comprise pottery and a whetstone. It is unclear therefore whether this relates to an isolated site within an agricultural landscape, or a smelting and smithing site associated with a rural tenement. The site was abandoned around 1350. At Heydon Park and Mere Farm (both Norfolk), redeposited smelting evidence was recovered from features which appear to be at the periphery of rural settlement abandoned in the fourteenth century (Hickling 2010). At Southwick (Northamptonshire) dense concentrations of bloomery slag, dating from the early medieval period to at least the fourteenth century, have been identified around the village, including within a field named ‘Bloom Furlong Field’ on a seventeenth-century estate map, further demonstrating the undertaking of smelting around the periphery of settlements (Johnston, Bellamy and Foster 2001, 132–3).

Assessing the relationship between smelting and household economy is difficult for two related reasons. Firstly, smelting, particularly in the countryside, appears to have taken place away from the core of settlements. Secondly, where smelting waste is recovered there is typically little accompanying material culture. We can, however, make some general comments. Firstly, in the countryside, the evidence suggests a degree of integration between industrial and agricultural economies. At Heydon Park, Mere Farm and Lamberhurst, remains were recovered from features which appear to be agricultural boundaries. The urban evidence suggests smelting could be organised in a variety of ways. In some places, as at Melksham, North Molton and Chudleigh, the evidence mirrors that of the rural sites and demonstrates how even within putatively urban settlements, agricultural and industrial economies were interwoven. It is noticeable that smithing as well as smelting waste was identified in some of these peripheral locations, suggesting either the primary working of the bloom close to the smelting site, or the presence of ephemeral smithies. Other tasks could be more closely linked to settlement spaces, such as the slight evidence for roasting ore at Martinthorpe. The most surprising feature of the data is the quantity of evidence for smelting within the cores of small towns such as Yarm,

Aylesford, Tonbridge and Bromsgrove. The mixture of smelting and smithing waste at Tonbridge and Yarm, as well as at peripheral sites at North Molton and Melksham, perhaps suggests that urban smiths were engaged in the production as well as the working of iron, in common with the evidence for hide and textile working whereby small-town producers appear less specialised in their economic activities than those in larger towns, perhaps due to the smaller market and therefore lower economies of scale.

### *Iron smithing*

Discussions of the mixed rural economy in our period highlight the fact that metalsmiths, like those engaged in iron production, commonly pursued both agriculture and craft production (Birrell 1969; Frost 1981; Thirsk 1961; Zell 1994). Typically, this was pastoral agriculture; in Staffordshire for example, Frost (1981) demonstrates a link between metalsmiths and the ownership of cattle. Smiths, like tanners, operated in a variety of different ways. Some were specialist producers such as cutlers and scythesmiths, while blacksmiths focussed on the repair of metal goods. There is a high degree of regional variability: in the Weald, smiths largely focussed on the production of agricultural tools, whereas nailers were more common in Staffordshire, for example (Zell 1994, 133). Usually, the specialist smiths were wealthier than the ubiquitous blacksmith, having the capital to invest in quantities of iron for the production of goods, rather than specialising in repair. Britnell (2015) demonstrates the importance of smiths to the agrarian economy, using manorial records to show how smiths operated commercially to produce and repair agricultural tools. Of particular significance to understanding the organisation of rural smithing is the evidence he presents for the recycling and repurposing of ironwork in the assembly or repair of items such as ploughs or carts.

The appearance of smiths in the escheators' records provides the opportunity for some further exploration of their role in the rural economy.<sup>395</sup> Eleven individuals in the escheators' dataset have been identified as smiths on the basis of stated occupation, surname or possessions (or a combination), with smithing equipment also appearing in a small number of other lists. These lists overwhelmingly demonstrate how smiths participated in a mixed rural economy; however, contrary to the situation described by Frost in Staffordshire and Zell in the Weald, this includes a mix of pastoral and arable husbandry (Table 8.10). For example, in 1403 Robert Sprakelyng of Codford (Wiltshire) had over 400 sheep, as well as cattle and arable crops (see Chapter 9 for further discussion), while in addition to his smithing equipment (an iron anvil worth 20s and four iron hammers, four iron tongs and smith's tools worth 13s 4d), he had brewing

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<sup>395</sup> There are six smiths within the coroners' records collected for the project, but their lists comprise total valuations only.

vessels.<sup>396</sup> The list of John Euerdon of Welton (Northamptonshire), dating to 1395, is particularly informative, as it refers to 12 quarters of charcoal (16s), an anvil, a pair of bellows, two hammers, one pair of pincers, and broken iron (9s), all described as located in the forge. He had some tongs as well which, although grouped with agricultural items, are also specifically described as ‘in the forge’. Euerdon also had a mix of arable produce worth over 10s, a cow and calf, and eight sheep.<sup>397</sup> Robert Smyth of Sutton (Wiltshire) had an anvil with other ‘necessaries’ in the forge (13s 4d), but was clearly engaged in arable cultivation, possessing a heap (*cumulus*) of malt (6s), as well as wheat (2s), two harrows (20d) and an acre of oats (8d) among other produce, his only animals being two horses (valued with a cart at 8s) and a sow (3s 4d).<sup>398</sup> Two small-town examples are Thomas Smyth of Chippenham (Wiltshire), who possessed vats and barrels, possibly suggesting engagement in an activity such as brewing; and William Smyth of Bromsgrove (Worcestershire), neither of whom appears to have engaged in arable or pastoral husbandry.<sup>399</sup>

The escheators’ evidence demonstrates that smithing was undertaken as one component of a mixed rural household economy, and even those who identified as smiths could have extensive agricultural holdings which would have required considerable stock or land management. It is noticeable that there is little investment in non-utilitarian goods within the smiths’ lists. Archaeological evidence has the potential to provide further insights into the organisation of domestic smithing. The principal evidence is the remains of smithing hearth bases or hammerscale, the waste products from the heating and hammering of iron. Dense concentrations might indicate the location of a smithy, while smaller quantities are indicative of smithing taking place close by, with waste materials being removed and dumped elsewhere. Archaeological evidence for smithing is much more common than that for smelting (see Tylecote 1981 for a summary). There are a small number of sites (Yarm, Lamberhurst, Melksham and Tonbridge, discussed above) where evidence for smithing and smelting co-occur, and some of this evidence may be representative of primary smithing of the bloom; however, in most cases the evidence appears related to secondary iron working. It is clear that smithing took place at urban and rural sites, providing understanding of the role of iron working within household economies.

Reviewing the known evidence for smithies, Goodall (2011, 2) concluded that most excavated examples are from monastic, manorial or village sites. From an urban perspective, it is clear from the evidence of smelting and smithing that some small towns were particularly associated with iron production and working. As well the evidence of both processes from High Street, Yarm, there is further evidence of smithing in the form of hammerscale from a site

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<sup>396</sup> E317.

<sup>397</sup> E913. The broken iron was associated with another, unidentified object, possibly related to smithing.

<sup>398</sup> E1281.

<sup>399</sup> E1294; E131; note William Smyth did possess a horse (3s 4d).

at 4 Westgate (Jenkins 2001). This evidence was not related to any artefactual or stratigraphic evidence of domestic activity, and may represent redeposited material. Similarly, a small quantity of smithing slag from 182 High Street, Tonbridge is redeposited and, although associated with medieval pottery, could be from a nearby post-medieval blacksmith's shop (Collings 2010). Clearer evidence for smithing workshops comes from excavations in Staines (Middlesex) and Doncaster. At Low Fisher Gate, Doncaster, hearths associated with a possible forge are probably of thirteenth-century date, with a large quantity of smithing slag being recovered from a later fourteenth-century pit (McComish *et al.* 2010). It seems that the tenement was subdivided in the early fourteenth century, and it is unclear whether smithing persisted here. There is additional evidence of grain processing (a corn drying oven), but charcoal remains in the same area may be suggestive of the persistence of industrial activities. The associated finds are largely utilitarian: cooking vessels and tools such as whetstones, knives and quern fragments. The evidence points to an urban household or households with a mixed economy, engaging in industry and the processing of foodstuffs, but with no clear evidence of consumption beyond the requirements of everyday food preparation and basic clothing.

A possible smithy has also been identified through the presence of slag, hearth base fragments and a tile hearth at the County Sports site, Staines (Jones 2010, 229). The evidence suggests that both iron and copper were worked here between the fourteenth and sixteenth centuries in the backlands of a plot fronting onto to a major intersection at the heart of the town. A further hearth base at the nearby MacKay Securities site may relate to a further workshop (Jones 2010, 318). Finds from County Sports perhaps provide hints at a higher standard of living here: a mortar is suggestive of the processing of condiments, while a tuning peg and stylus are unusual finds from the site, suggestive of literacy and the pursuit of leisure activities. Querns from McKay Securities, as well as a pin from this site and a needle from County Sports, also provide hints of the mixed household economy, where domestic and economic activities blurred into one another. A final, but less conclusive, example is the evidence from Stricklandgate, Kendal (Cumbria), where deposits of fifteenth- to seventeenth-century date provided evidence for smithing in the form of hearth base fragments, as well as the working of lead, the processing of crops and the production of leather and textiles (Whitehead, Williams and Mace 2013). Environmental evidence indicates that this area was colonised by wild plants, suggesting that the area to the rear of the tenement plots was given over to industrial activities and the range of activities represented may suggest that this land was used by several households (it is noteworthy that further smithing slag was recovered from a cess pit at 104–112 Stricklandgate, as well as from Elephant Yard at the opposite end of the street (Bagwell 2004; Hair 1998)). This perhaps demonstrates how industrial waste might have been redeposited, or how this area of the town was engaged in industrial production across several households, creating a distinction between economic and domestic activities.

This can be seen in other towns where urban decay in the fourteenth and fifteenth centuries created opportunities for such spatial separation (Jervis 2016a, 22). Here though, it is suggested that spaces behind plots were left clear of development, creating a space which could be colonised by a range of industrial activities (Cumbria County Council 2002, 18). Elsewhere, small quantities of slag are redeposited and indicate nothing more than the undertaking of smithing within the wider vicinity.

This urban evidence can be contrasted with that from rural sites. Goodall (2011) cites examples of smithies from within our study period at Waltham Abbey (Essex; on the home farm of an Augustinian abbey) and within manorial complexes at Goltho (Lincolnshire) and Alstead (Surrey). These are all specialised buildings, with features including hearths, lined pits used as water boshes (troughs for cooling ironworking tools) and clear concentrations of hammerscale. Within our dataset, comparable or less conclusive evidence comes from a moated rectory at Wimbotsham (Norfolk; Shelley 2003). Here though, it is unlikely that this small quantity of material relates to a permanent smithy, but rather temporary smithing to service the household of higher than average status. This evidence shows how smithies formed a part of the infrastructure of a manorial household. The smith may have been a waged employee, kept on retainer or provided service through the employment of their skills. Increasingly through the fourteenth century, this relationship was commercialised (Britnell 2015). More conclusive is the evidence from Huish (Wiltshire), where a building with two hearths and numerous metal objects and ash is interpreted as a farrier's workshop or smithy (Thompson 1972; Goodall 2011, 2). This was situated close to a barn and the church, probably within a manorial complex; the finds from the site including a Venetian soldino. At Tresmorn (Cornwall), a smith's forge has been excavated adjacent to a longhouse with a byre, within a croft at the centre of a small settlement (Beresford 1971). This would appear to provide direct evidence of a household with a mixed economy, combining pastoral agriculture with smithing, presumably to serve the needs of the settlement.

In contrast, other archaeological evidence points to smithing being undertaken at the periphery of settlements, often in association with other agricultural or industrial activity. At Shotton (Northumberland), smithing debris including slag and smithing hearth bottoms were recovered from an industrial zone which also housed a pottery kiln at the south-eastern limit of the village (Muncaster and McKelvey 2013). In contrast to other sites, the industrial infrastructure, which dates to the earliest part of our period, was associated with a building; however, this is interpreted as a workshop or drying shed, rather than a house (Muncaster and McKelvey 2013, 146). Similarly, at Edenbridge (Kent) smithing evidence, but no other material culture or structural evidence, was recovered from two sites at the periphery of the settlement and it is unclear if this was redeposited (Jeffery 2012; Oxford Archaeology 2005); however, further

evidence came from a ditch to the rear of tenement plot within the core of the settlement (Thorne 2005). Also in Kent, at Great Chart, a small quantity of (probably redeposited) smithing waste was recovered from an area which had previously been wooded, again possibly suggesting the location of a forge at the periphery of settlement (Holden 2009), while at Lamberhurst the excavated enclosure discussed previously appears to have been used for smithing as well as smelting (Turner 2004). Potentially similar evidence comes from Lexham (Norfolk) where hammerscale and hearth bottom fragments were recovered from an enclosure which also had evidence of a kiln or dryer, perhaps used for drying crops (Wilson *et al.* 2012). Elsewhere, smithing debris was redeposited, perhaps being incorporated with domestic waste removed from settlements and spread on fields. Such evidence comes from a number of rural excavations including those at Lydd Quarry (Barber and Priestly-Bell 2008) and Beere (Devon; Jope and Threlfall 1958).

Where buildings identified as smithies have been excavated, it seems that they often formed a part of the infrastructure of manorial sites (Goodall 2011, 2). This suggests that it is not necessarily the case that a smith owned their forge or the equipment within it. It is therefore noteworthy that several of the smiths referred to in the escheators' records do own tools and, in some cases, seem to have had possession of the forge as well. The majority of the archaeological evidence for rural smithing identified here comes from the periphery of settlements. This does not preclude these putative smithies being a part of manorial infrastructure, but the association of these smithies with agricultural enclosures, other industrial infrastructure (as at Shotton) or agricultural infrastructure (as at Lexham) may be suggestive of smithing being one component of mixed domestic economies, or the co-operation between households in the use of land held around settlements. In towns such as Yarm, Tonbridge, Doncaster and Staines, there is strong evidence for households specialising in smithing, although not necessarily exclusively. The evidence for the status of these households is limited, but the evidence from County Sports, Staines is perhaps suggestive that smithing households could maintain a comparatively high standard of living, an observation further corroborated by the wealth of possessions in the lists of smiths such as Robert Sprakelyng. Elsewhere though, for example in Kendal or at the peripheral sites around North Molton, where smithing and smelting were taking place, it seems that smithing could have been combined with agricultural activities or other crafts, perhaps by the same household, or through multiple households using decayed or peripheral locations within and around the town. When we talk of medieval industry being undertaken at the 'household' level, we think of houses as multipurpose spaces, but the evidence presented here for metalworking suggests that there may have been an increasingly clear distinction between domestic and industrial spaces, even as industry became an increasingly important element of household economies.

### *Non-ferrous metalworking*

There is little evidence of bronze production in medieval England, with copper alloys largely being imported from continental Europe (Goodall 1981; although see Blair, Blair and Brownsword 1986 for evidence of bronze production in Oxford). Bronzsmiths would commonly have utilised scrap metal, and this may be one reason for the valuation of some cooking pots within the escheators' records by weight (see Chapter 3). Copper alloy scraps and sheet are difficult to interpret, as these could be a resource for metalworking, but could equally be remnants of household objects. Perhaps most compelling is an assemblage of 203 fragments of scrap metal from a house at Island Farm, Ottery St Mary (Devon), which are interpreted as being associated with the repair of copper alloy vessels (Mudd *et al.* 2018). Other scraps cannot be clearly interpreted as evidence of copper alloy working unless associated with other associated finds such as crucibles, moulds or copper slag. Five sites provide such evidence, all of them urban (Table 8.11).

The best evidence comes from Caldewgate, Carlisle, an area where goldsmiths are also known to have operated in the medieval period (Jones 1980). A sequence of three workshops was excavated on the street frontage, associated with hearths and furnaces (Giecco and Dearham 2005). A large quantity of metallurgical waste was recovered, including moulds for the casting of cauldrons and skillets, as well as scraps of broken vessels which were due to be melted down. This workshop appears entirely separate from any residential premises, with the finds from the workshop phase being entirely industrial in nature. A building interpreted as a metalworking workshop has also been excavated at 8 Westgate, Ripon (Yorkshire; Stirk 2003). Here, mould fragments, probably associated with the production of metal vessels, were recovered from the remains of a building within an urban tenement. The presence of further fired clay within another building may be suggestive of an additional structure associated with this industry. Quarry pits on the site probably relate to the extraction of clay for the moulds, the clay used geologically matching that underlying the site. Dating to the fourteenth–fifteenth centuries, on the basis of ceramic evidence, the evidence for metalworking appears to extend beyond a thirteenth-century property boundary. This is similar to the evidence from Kendal, discussed above, where industrial activity in the backlands of urban properties appears to extend beyond property boundaries, perhaps taking advantage of decayed plots (Whitehead, Williams and Mace 2013). As with other industrial sites, little domestic waste was recovered from the site. At 50 Finsbury Square, Islington, mould fragments associated with copper alloy working, probably the production of bells and vessels, were recovered from several quarry pits and a ditch (MOLAS 1999). Scrap metal from this site may also have been pieces salvaged for recycling, and a small quantity of copper alloy waste was recovered from the site. Although not associated directly with a workshop, this waste comes from an area of varied industrial production; in the

**Table 8.11:** Summary of evidence for non-ferrous metalworking in the archaeological dataset.

County	Site	Copper alloy			Lead			
		Mould	Waste	Pin Making	Hearth/Furnace remains	Mould	Waste	Hearth/Furnace remains
<b>Copper Alloy Working Sites</b>								
Cumbria	John Street Bronze Working Site, Caldewgate, Carlisle	X	X		X			
Kent	Creedy's Yard, Greenwich			X				
Middlesex	50 Finsbury Square, Islington	X	X					
Wiltshire	35 West Street, Wilton		X		X			
Yorkshire	Rear of 8 Westgate, Ripon	X						
<b>Copper Alloy Waste</b>								
Devon	3-5 Lower Fore Street, Exmouth		X					
Middlesex	County Sports, Staines		X					
Norfolk	Red Lion Public House, Caston		X					
Suffolk	Cedars Park, Stowmarket		X					
Wiltshire	New Flats, St John's Hospital, Wilton		X					
Yorkshire	Greyfriars Road, Doncaster		X					

(Continued)

Table 8.11: Continued.

County	Site	Copper alloy				Lead		
		Mould	Waste	Pin Making	Hearth/Furnace remains	Mould	Waste	Hearth/Furnace remains
<b>Copper Alloy and Lead Working Waste</b>								
Kent	Grange Farm, Gillingham		X				X	
Norfolk	Land off Church Lane, Barton Bendish		X				X	
Suffolk	Land East of Days Road, Capel St Mary		X				X	
Yorkshire	Wharram Percy		X				X	
<b>Lead Working Waste</b>								
Cumbria	Shaw's Wiend, Appleby-in-Westmorland						X	
Devon	Pig's Paradise, Lundy						X	
Hampshire	Market Quay, Fareham						X	
Kent	Lydd Quarry						X	
Middlesex	11–23 City Road, Islington						X	
	43–61 Prescott Street, Tower Hamlets						X	

(Continued)

Table 8.11: Continued.

County	Site	Copper alloy				Lead		
		Mould	Waste	Pin Making	Hearth/Furnace remains	Mould	Waste	Hearth/Furnace remains
Lead Working Waste								
Norfolk	Itteringham (Bacton to King's Lynn Transco Pipeline)						X	
	Walpole Electricity Substation						X	
	Brandon Lane, Weeting						X	
Northamptonshire	Southwick					X	X	
Northumberland	Rowhope Burn						X	
	West Whelpington						X	
Wiltshire	Pennings Road and St. Andrews Road, Tidworth						X	
	Low Fisher Gate, Doncaster						X	
Yorkshire	45 High Street and Land to the rear of Quaker Lane, Northallerton						X	
	Ailcy Hill Playing Fields, Priest Lane/Residence Lane, Ripon						X	

fifteenth century, the area of marsh was drained and utilised for clay extraction (including, perhaps, for mould production) and leather working, as well as the production of metal objects. A final site which provides less concrete evidence of a workshop is 35 West Street, Wilton (Wiltshire), where fragments of crucible, furnace lining and copper alloy slag were recovered, but with no other finds (Wessex Archaeology 2006). This evidence suggests that bronze casting was a primarily urban industry, undertaken in specialist premises rather than being closely integrated with domestic structures.

Evidence for a more specialist form of copper alloy working, pinning, comes from remains at Creedy's Yard, Greenwich (Kent; Cooke and Philpotts 2002). Here, two pinners' bones and a large quantity of pins suggest pinning during the sixteenth century. This evidence is concentrated on an area referred to as Bear Yard, to the rear of high status townhouses fronting onto the river and smaller tenements along East Street. Caple's (1991) analysis of documentary references to pinning suggest this to have been a primarily urban industry, although the site is unusual in dating to the sixteenth century, a period when English pinners faced competition from large quantities of imported products, although this evidence for pin manufacture corresponds with Caple's analysis of pins themselves, which suggests slow change in material and style, contradicting the historical evidence for turbulence in the industry.

In contrast to copper alloy working, the evidence for lead working is largely from rural contexts. Lead was mined from several locations across England, however the majority of these – the Mendips, the Peak District and County Durham – fall outside of the project study area, and no archaeological evidence of lead extraction and working has been identified from the sites examined (see Blanchard 1981). There is a small amount of evidence for the secondary working of lead. This typically takes the form of a small number of lead fragments or fragments of lead slag, suggestive of small-scale working for repair rather than large-scale working. Pewterers were typically based in larger towns, so we would not expect to find waste from the large-scale production of lead alloy vessels (Hatcher and Barker 1974, 40–1). An exceptional site is that at Southwick, where the ground floor of a thirteenth-century stone hall was reused for lead casting in the later fourteenth–fifteenth centuries (Johnston, Bellamy and Foster 2001). The archaeological evidence includes a series of small hearths, a casting pit and 73 mould fragments from the production of skillets or cauldrons. This was a short-lived phase of activity, the building being repurposed as a kitchen and brewhouse in the fifteenth century (see Figure 3.6). It is possible that the upper floor of the house remained habitable during this phase, but it is likely that the building was in decay, perhaps leased to a metalsmith, before being redeveloped as a service block for a new vicarage in the fifteenth century. This site provides exceptional evidence for a rural workshop producing latten or pewter vessels. In contrast, the largest group of lead working waste comes from Walpole (Norfolk; Clarke 2009). This was recovered from a saltern and is likely associated with the repair of vessels used for salt extraction. Similar

evidence comes from Seasalter (Kent; Thompson 1956). At Lydd, offcuts of lead sheet are likely associated with the production of fishing weights (Barber and Priestly-Bell 2008, 186–7). With the exception of the workshop from Southwick, the picture offered by the archaeological evidence is therefore not of large scale lead working, but rather small-scale working by those repairing or producing items to undertake their primary economic activity.

Evidence from Cornwall provides some insight into the organisation of the extraction of another non-ferrous metal – tin – and its relationship to the household. A stone mould from the settlement at Treworld, dating to the earlier part of our period, may be suggestive of a household engaged in tin working, but other finds from the site include a loomweight and whetstones, suggesting a mixed household economy (including pastoral husbandry, demonstrated by the presence of a byre) (Dudley and Minter 1966). Excavation and landscape research at St Neot suggests that households engaged in tin production in the fifteenth century were not self-sufficient, the area specialising in pastoralism (Austin, Gerrard and Greaves 1989). Hatcher (1969; 1974) argues that although mining households engaged in agriculture, this does not mean that they were self-sufficient, but rather were undertaking a mix of specialised agricultural and industrial activities, with demand for food and land rising in periods of intensive tin output. Tin mines and mills operated at a range of scales, being owned by landlords, wealthy merchants or households. The evidence from the excavated tin mill at West Colliford is ambiguous: phases of rebuilding could represent periodic large-scale modification and capital investment, or ongoing, lower level maintenance (Austin, Gerrard and Greaves 1989, 20–1). For example, at Retallack the mills formed a part of the lease-hold lands of the manor of Merthen in 1506, with a descendant of the lessee purchasing nearby woodland, seemingly to provide fuel for the mill in 1545 (Gerrard 1985, 175). Tinnners often collaborated to invest in tinworks, with shares being held both by local householders and merchants from surrounding towns (Gerrard 2000, 38–9). The excavated evidence from West Colliford Mill includes ironwork and preserved wood associated with the carpentry of the mill, as well as fragments of the mortar stones used to crush the ore, reminding us of the interdependencies between trades. In addition to a small quantity of pottery, the only ‘domestic’ find is a copper alloy spoon from the mill and a small quantity of pottery, largely associated with preserved foodstuffs and the transportation of liquids, rather than the cooking wares recovered from an associated farmstead at Bunnings’ Park (Austin, Gerrard and Greaves 1989). Other finds from the farmstead include an iron sickle and whetstones, perhaps for the sharpening of agricultural tools. These, as well as the occurrence of a longhouse with a byre, point to the mixed economy of this agro-industrial landscape, and a general spatial separation of domestic and industrial activities.

To move to the working of precious metals, it is necessary to turn to the records of the escheator and coroner (Table 8.10). In relation to the tools of their crafts, the records provide little detail: in 1418 Patrick Goldsmyth, a

goldsmith of Evesham (Worcestershire) simply had ‘tools of goldsmithery’ (valued at 18d), although an anvil ‘for the art of goldsmithery’ worth 4d is listed separately.<sup>400</sup> Other goods in his list are difficult to interpret. Silver bands for cups (2s) and a silver banded mazer (16d) may be stock, and his other goods are unremarkable, comprising simple bedding and cooking wares. He did have a dagger, sheath and silver adorned belt, however, valued at 13s 4d and perhaps personal possessions, although whether the belt points to a high standard of living or access to silver is unclear. A second goldsmith is Richard Swalwa of Great Torrington (Devon). In 1422 he had goldsmithing tools worth 40d, but his list is more instructive for highlighting the mixed economy of his household. He was an agriculturalist with two cows and a calf. A note at the end of list states that several parts of a horse-mill belonging to Swalwa, value unknown, had been withheld by a local gentleman. The presence of a ‘small mill’ in the list is suggestive of the processing of cereals, and he had elaborate cooking equipment, including a spit, andiron, griddle and brandiron, and tableware including a pewter salt cellar, a lead ewer, three saucers and five pottingers. He also had two hangings, four cushions and a banker, two tablecloths and two napkins. All this points to investment in non-essential interior goods of comfort and display, and are suggestive of a home with specialised spaces for cooking, dining and sleeping. Here we have a small-town household with a high standard of living, specialising in the craft of goldsmithing.

Our evidence therefore provides a variety of insights into the role of households in different stages of the processing and working of non-ferrous metals. Copper alloy and precious metals seem to have been worked primarily in towns. While it is difficult to draw inferences on the living standards of bronzesmiths, the evidence of goldsmiths suggests that they were able to maintain a high standard of living, although as the goods of Robert Sprakelyng demonstrate, high living standards could also be obtained by ironsmiths. The evidence relating to lead shows how metalworking could be subsidiary to other industries, while the evidence from Cornwall provides important insights into the balance between industrial and agricultural income to household incomes.

### *Metalworking households: summary*

The evidence of the role of the metal industries in household economies is highly variable. Even within urban settlements, most sites associated with iron working are representative of a mixed household economy, in which iron working is associated with other crafts or agricultural production. It is noticeable that in many cases, the evidence for smithing is situated away from domestic occupation, either in backlands as at Kendal, within a distinct plot as at Carlisle, or perhaps extending into decayed plots as might be suggested for Ripon. It can be

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<sup>400</sup> E339.

suggested that urban and rural smiths could maintain a high standard of living. The archaeological evidence from Cornwall in particular shows a clear linkage between households engaged in metallurgy and agriculture, and the escheators' records also point to the extensive agricultural activities of some smiths. In the countryside, as in towns, the organisation of metalworking is variable. In some cases, as at Huish, Tresmorn and Southwick, it took place within settlements, although not necessarily within the croft inhabited by the smith, whereas in other places ironworking and other industrial activities were undertaken at the periphery of settlements, as at Shotton and Edenbridge, or in more isolated locations, as seen, for example, at Lamberhurst. This variability is likely due to a variety of factors: the scale of production, patterns of land ownership and the agricultural regime. For smiths largely engaged in the repair of objects or activities such as farriering, a workshop within a settlement would be desirable. For those undertaking primary smithing, a more peripheral location, close to the smelting furnaces and fuel sources, might be more appropriate, while the production of objects could also take place away from settlements, closer to the sources of fuel, reducing transport and labour costs. It is this complex interplay of land and woodland management, labour, technology and access to resources which means that a single model for rural metalworking cannot be advanced, with the organisation and its contribution to household economy varying in accordance with a range of contextual variables.

### **Conclusion: production and household economies**

In this chapter we set out to address three questions. Firstly, how did households obtain their income? The evidence presented here demonstrates clearly that by-employment and mixed economies were typical of households engaged in craft production. Even in urban contexts or those areas particularly associated with industry such as the Weald of Kent, it was usual for households to combine the processing of raw materials or the production of objects with some form of agricultural production. The evidence for textile production demonstrates that households that were primarily agricultural in character, engaged in the processing of at least some of the wool and other fibres that they produced, while the archaeological evidence for retting, tanning and metalworking all show spatial relationships between agricultural and industrial activities in the countryside and around small towns. In the context of debates around gendered work (e.g. Bennett 1996; 1997; Phillips 2013; Whittle 2013; Whittle and Hailwood 2020), we might consider that this mixed household economy provides further evidence for understanding the household, rather than the individual, as a productive economic unit, but one in which labour was differentiated between different household members. We might think primarily of women and children processing the wool from a household's sheep flock or undertaking tasks such as brewing to supplement household income. The

labour-intensive nature of tasks such as tanning likely meant that the division of labour was more fluid, with household members being drawn into a variety of activities at particular stages of production or times of year (see Whittle and Hailwood 2020, 17). We can also begin to think about the relationship of agricultural and industrial activities through the year, with tasks such as smelting or smithing likely being undertaken at quieter points in the agricultural calendar. One feature of the organisation of production which is clear from our evidence is that while the house was one place of work, it was not the only place in which work was undertaken by households. The marked differentiation between spaces of production and living spaces within the archaeological dataset is striking. This corresponds with Whittle's (2011, 138) definition of 'home' as expanding beyond the house (see also Goldberg 2011) and the findings of an analysis of the ordering of goods in the escheators' lists which suggests associations of goods with particular spaces (Briggs *et al.* 2019).

This brings us to the second question of how rural households contributed to the production of goods for the market. The most compelling evidence relates to the processing of raw materials, the spinning of wool and other fibres into yarn, and the smelting and primary smithing of iron. However, we can also demonstrate that industries typically associated with larger urban centres also took place in the countryside. Perhaps most striking in this case is the evidence of lead alloy working at Southwick, but we can also demonstrate engagement of rural households in tanning, sometimes at quite high intensity. The evidence for tanning is particularly interesting as it demonstrates the different ways in which urban and rural households needed to organise production, rural households engaging most commonly in the less labour-intensive light tanning, with heavy leather production being more limited to larger towns due to the capital required to undertake this industry at scale. While the contribution of rural producers to the textile industry is well understood, the limited evidence presented here suggests that we have perhaps underestimated the role of rural producers in other, less well studied, industries. Although production was presumably at a lower scale than that in larger towns where artisans could specialise in intensive production, the scale of the production of goods in the countryside was still significant.

Finally, some rural producers were wealthy and could maintain a high standard of living. In some cases this may have been through investment in livestock and land, as shown, for example, by the smith Robert Sprakelyng, while there are hints that other smiths such as that operating at the County Sports site in Staines were able to invest in luxury foodstuffs or objects. However, we are also able to begin to see that both rural and small-town producers invested heavily in capital: stocks of skins for tanning or the infrastructure required for tanning or dyeing as seen, for example, at Lavenham and Doncaster. It is this relationship between investment in 'consumer' and capital goods which we consider further in the next chapter.