

HORSES, OXEN, AND TECHNOLOGICAL INNOVATION

The Use of Draught Animals in English

Farming from 1066 to 1500

by

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## SYNOPSIS

This study is primarily intended as a contribution to the subject of medieval technology. In it the introduction of the work-horse to English farming as a replacement for oxen has been traced through nearly 450 years to see how medieval English society reacted to and upon this particular technical innovation. It has been found that in the adoption of the horse and in the use of draught animals generally there was a sharp differentiation between the experience of the demesne and that of the peasantry. Horses were adopted slowly on demesnes, such that by the end of the fourteenth century oxen still dominated as draught animals here by a ratio of two to one over horses. On the peasant side the adoption of horses for work was much quicker. Nearly half of the peasantry's draught animals were horses by the end of the thirteenth century, and this proportion continued to increase, especially during the fifteenth century and afterwards. Smallholders in particular were in the vanguard in using horses, because they found the beasts so much more versatile than oxen.

The use of draught animals overall seems to have been linked most intimately to the activities of the market. Thus when the economy began to expand in the twelfth and thirteenth centuries, so did the employment of horses, especially in their capacity as hauling animals. Similarly, when market relationships became more complex at the end of the medieval period, there was a marked specialisation in the use of draught animals, as some areas began to employ horses exclusively and others reverted to the more intensive use of oxen. On the other hand, such changes had little effect on agricultural production, since any cost savings resulting

from improvements in traction tended to be spent on increased consumption or other non-agricultural purposes. This seems to have been particularly true of lords and other demesne holders, and it is clear from this study that, in the matter of traction at least, they took a firm second place to the peasantry in the adoption of new techniques.



To Lynne, David, and Daniel

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Note on maps: The county boundaries shown are those that existed between 1935 and 1974, and it is these boundaries that have been used to determine the counties for the various places mentioned in the text and appendices. It is to be noted, however, that there are some discrepancies between these relatively recent boundaries and those that existed in medieval times, although in general these differences are minor and only affect a few of the places mentioned in our study.



## ABBREVIATIONS

### a) Record Offices and Repositories

BC	Berkeley Castle
BCM	Buckinghamshire County Museum (Aylesbury)
BI	Borthwick Institute (York)
BL	British Library
BoL	Bodleian Library
BRL	Birmingham Reference Library
BRO	Bedfordshire Record Office (Bedford)
BuRO	Buckinghamshire Record Office (Aylesbury)
CCL	Canterbury Cathedral Library
CUL	Cambridge University Library
CoRO	Cornwall Record Office (Truro)
CuRO	Cumbria Record Office (Carlisle)
DCD	Dean and Chapter of Durham Records, Prior's Kitchen, the Cathedral, Durham
DCLL	Dean and Chapter Library, the Cathedral, Lichfield
ERO	Essex Record Office (Chelmsford)
ESuffRO	East Suffolk Record Office (Ipswich)
ESussRO	East Sussex Record Office (Lewes)
GLRO	Greater London Record Office
GRO	Gloucestershire Record Office (Gloucester)
HRO	Hampshire Record Office (Winchester)
HeRO	Herefordshire Record Office (Hereford)
HertsRO	Hertfordshire Record Office (Hertford)
HumRO	Humberside Record Office (Beverley)
KAO	Kent Archives Office (Maidstone)
LeRO	Leicestershire Record Office (Leicester)
LiRO	Lincolnshire Record Office (Lincoln)
LJRO	Lichfield Joint Record Office
LP	Lambeth Palace
LRO	Lancashire Record Office (Preston)
MCL	Merton College Library (Oxford)
NNRO	Norfolk and Norwich Record Office (Norwich)
NoRO	Nottinghamshire Record Office (Nottingham)
NRO	Northamptonshire Record Office (Northampton)
NYRO	North Yorkshire Record Office (Northallerton)
PRO	Public Record Office (Chancery Lane, London)

SBT	Shakespeare Birthplace Trust (Stratford-upon-Avon)
SL	Sheepscar Library (Leeds)
SRO	Somerset Record Office (Taunton)
StRO	Staffordshire Record Office (Stafford)
TCL	Trinity College Library (Cambridge)
WAM	Westminster Abbey Muniments Room
WaRO	Warwickshire Record Office (Warwick)
WCL	Worcester Cathedral Library
WiRO	Wiltshire Record Office (Trowbridge)
WoRO	Worcestershire Record Office (Worcester)
WSuffRO	West Suffolk Record Office (Bury St Edmunds)
WSussRO	West Sussex Record Office (Chichester)

b) Periodicals

AHR	Agricultural History Review
ECHR	Economic History Review
EHR	English Historical Review
JRAS	Journal of the Royal Agricultural Society
P & P	Past and Present
SS	Surtees Society
YASRS	Yorkshire Archaeological Society Record Series

c) Selected Sources and Secondary Works

<u>Abbey of Bec</u>	<u>Select Documents of the English Lands of the Abbey of Bec</u> , ed. M. Chibnall (Camden Third Series, lxxiii, 1951)
<u>Battle Abb. Cust.</u>	<u>Customals of Battle Abbey in the Reigns of Edward I and Edward II (1283-1312)</u> , ed. S.R. Scargill-Bird (Camden New Series, xli, 1887)
<u>Beauchamps of Hatch</u>	<u>Two Registers Formerly Belonging to the Family of Beauchamp of Hatch</u> , ed. H.C. Maxwell-Lyte (Somerset Rec. Soc., xxxv, 1920)
<u>Boldon Buke</u>	<u>Boldon Buke: a survey of the possessions of the see of Durham, 1183</u> , ed. W. Greenwell (SS, xxv, 1852)
Brown	<u>The Yorkshire Lay Subsidy, 25 Edward I</u> , ed. W. Brown (YASRS, xvi, 1894)
Burton Abbey Survey B	<u>The Burton Abbey Twelfth Century Surveys</u> , ed. C.G.O. Bridgeman (William Salt Arch. Soc., 1916)
<u>Cal. Inq. Misc.</u>	<u>Calendar of Inquisitions Miscellaneous</u> , 7 vols, London (1916-1968)

- Cart. Mon. Glos Historia et Cartularium Monasterii Sancti Petri Gloucestriae, ed. W.H. Hart, 3 vols (Rolls Series, 1863-1867)
- Cart. Mon. Ram. Cartularium Monasterii de Rameseia, ed. W.W. Hart and P.A. Lyons, 3 vols (Rolls Series, 1884-93)
- Cart. Os. Abb., vi Cartulary of Oseney Abbey, vi, ed. H.E. Salter (Oxford Hist. Soc., ci, 1936)
- C.E.H., i Cambridge Economic History of Europe, i, 2nd edition, ed. M.M. Postan, Cambridge (1966)
- Chalgrave Court Roll Court Roll of Chalgrave Manor 1278-1313, ed. M.K. Dale (Beds Hist. Rec. Soc., xxviii, 1948)
- Chertsey Court Rolls Chertsey Abbey Court Roll Abstracts, ed. E. Toms, 2 pts (Surrey Rec. Soc., no. 38, 1937 and no. 48, 1954)
- Chibnall Early Taxation Returns, ed. A.C. Chibnall (Bucks Rec. Soc., xiv, 1966)
- Chichester Custumals Thirteen Custumals of the Sussex Manors of the Bishop of Chichester and other Documents, ed. W.D. Peckham (Sussex Rec. Soc., xxxi, 1925)
- DB Domesday Book (Exchequer version)
- Dom. St Paul Domesday of St Paul's of the Year 1222, ed. W.H. Hale (Camden Soc., lxi, 1858)
- Durham Halmote Rolls Halmota Prioratus Dunelmensis, ed. W.H.D. Longstaff and J. Booth (SS, lxxxii, 1886)
- Earldom of Cornwall Ministers' Accounts of the Earldom of Cornwall, 1296-1297, ed. L.M. Midgley, 2 vols (Camden Third Series, lxvi, 1942; lxxviii, 1945)
- Farr Accounts and Surveys of the Wiltshire Lands of Adam de Stratton, ed. M.W. Farr (Wilts Arch. Soc. Rec. Ser., xiv, 1959)
- Gaydon The Taxation of 1297, ed. A.T. Gaydon (Beds Hist. Rec. Soc., xxxix, 1959)
- Glast. Cust. Rentalia et Custumaria Michaelis de Ambresbury, 1235-1252, et Rogeri de Ford, 1252-1261, Abbatis Monasterii Beatiae Mariae Glastoniae, ed. C.J. Elton (Somerset Rec. Soc., v, 1891)
- Gras and Gras N.S.B. and E.C. Gras, The Economic and Social History of an English Village, Harvard (1930)
- Hale and Ellacombe Accounts of the Executors of Richard Bishop of London 1303 and of the Executors of Thomas Bishop of Exeter 1310, ed. W.H. Hale and H.T. Ellacombe (Camden New Series, x, 1874)
- Hales Court Rolls Court Rolls of the Manor of Hales, 1272-1307, ed. J. Amphlett, S.G. Hamilton, and R.A. Wilson, 3 pts (Worcs Hist. Soc., 1910, 1912, 1933)
- Harvey, Man. Records Manorial Records of Cuxham, Oxfordshire, ed. P.D.A. Harvey (Oxfordshire Rec. Soc., 1, 1976)
- Harvey, Med. Ox. Vil. P.D.A. Harvey, A Medieval Oxfordshire Village: Cuxham 1240-1400, Oxford (1965)

Hockey	<u>The Account-Book of Beaulieu Abbey</u> , ed. S.F. Hockey (Camden Fourth Series, xvi, 1975)
<u>Inq. Hil.</u>	<u>Inquisitio Hilberti</u> , TCL MS R.5.33, fos. 115-116A
<u>Liber Henrici de Soliaco</u>	<u>Liber Henrici de Soliaco Abbatis Glastoniensis</u> , ed. J.E. Jackson, Roxburghe Club (1882)
<u>Liber Niger</u>	<u>Liber Niger Monasterii S. Petri de Burgo</u> , in <u>Chronicon Petroburgense</u> , ed. T. Stapledon (Camden Soc., xlvii, 1849)
Lyons	<u>Two "Compoti" of the Lancashire and Cheshire Manors of Henry de Lacy, Earl of Lincoln, xxiv and xxxiii Edward I</u> , ed. P.A. Lyons (Chetham Soc., cxii, 1884)
<u>OED</u>	<u>Oxford English Dictionary</u>
Page	F.M. Page, <u>The Estates of Crowland Abbey</u> , Cambridge (1934)
<u>Pipe Roll, etc.</u>	<u>Pipe Rolls 5 Henry II - 1 John</u> (Pipe Roll Society, i, 1884 - new series, x, 1933)
Powell	<u>A Suffolk Hundred in the Year 1283</u> , ed. E. Powell, Cambridge (1910)
<u>Prebends of York</u>	<u>Extents of the Prebends of York</u> , ed. T.A.M. Bishop (YASRS, xciv, 1937)
Raftis and Hogan	<u>Early Huntingdonshire Lay Subsidy Rolls</u> , ed. J.A. Raftis and M.P. Hogan, Toronto (1976)
<u>RBW</u>	<u>Red Book of Worcester</u> , ed. M. Hollings, 4 pts (Worcs Hist. Soc., 1934-1950)
<u>Select Pleas</u>	<u>Select Pleas in Manorial and other Seignorial Courts, Hen III - Edw I</u> , ed. F.W. Maitland (Selden Society, ii, 1889)
<u>Taunton Cust.</u>	<u>The Medieval Customs of the Manors of Taunton and Bradford on Tone</u> , ed. T.J. Hunt (Somerset Rec. Soc., lxvi, 1962)
<u>Templar Records</u>	<u>Records of the Templars in England in the Twelfth Century</u> , ed. B.A. Lees (British Academy Records of Social and Economic History, ix, London, 1935)
<u>Wakefield Court Rolls</u>	<u>Court Rolls of the Manor of Wakefield, 1274-1331</u> , ed. W.P. Baildon, J. Lister, and J.W. Walker, 5 vols (YASRS, xxix, 1901; xxxvi, 1906; lvii, 1917; lxxviii, 1930; cix, 1945)

## INTRODUCTION

Detailed works concerning technology and practice in medieval England are exceedingly rare. Postgraduate theses on the subject are virtually non-existent, and most of the published work is limited to small articles or is subsumed in larger works about the English economy or medieval technology as a whole across Europe. Only exceptionally does one find an extensive study on a specific item of technology as it related to medieval England.<sup>1</sup>

As a result of this general lack of study, the information base upon which to construct a balanced view of the impact of new technology on medieval English and, indeed, European society is largely lacking. It is hardly surprising, then, that opinion on the subject has varied wildly, from the view that technology during the period was virtually stagnant to the view that it was affecting great changes upon the medieval economy and society that were nothing short of revolutionary.<sup>2</sup>

Accordingly, it is the purpose of this enquiry to examine closely one particular innovation as it related to medieval English agriculture: that is, the introduction of horses to draught work on English farms as a replacement for oxen. Since horses had theoretical advantages of speed and strength over oxen, their potential for improving agriculture was substantial, and consequently the innovation has been hailed by certain writers as one of the great technological advancements of the medieval period.<sup>3</sup> Equally, though, it has often been dismissed as being of little importance.<sup>4</sup>

This study will attempt to determine to what extent either view is correct. The approach followed will be based almost purely upon documents. Iconographic and archaeological sources are also considered, but reference to them will be restricted to work or illustrations already published.

Another limitation that should be mentioned here is that only animals involved in farm work are included in this analysis. Thus, except for occasional references, riding animals are excluded, as are horses and oxen used on the transportation network for other than agricultural purposes. This approach was considered necessary because the sources seldom permit a satisfactory examination of anything but the rural situation; consequently it was thought better to consider the problem in isolation. It is, however, quite likely that in a predominantly agrarian society, such as that prevailing in medieval England, the great majority of draught animals would be employed in farming, and in consequence the study might well be representative of medieval English traction as a whole.

The organisation of the study is largely chronological. Chapter 1 will consider why the introduction of the work-horse should be classified as a technical innovation and will fill in its pre-Conquest history. Chapter 2 will assess its impact from the Conquest to 1200, taking demesne and peasant experience together. Chapter 3 will examine its effects upon demesne farming from 1200 to 1500, and Chapter 4 will deal similarly with peasant farming over the same period. Chapter 5 will present the conclusions.

Compared with Chapters 1 and 5, the middle three chapters will be relatively large. These chapters will present the bulk of the data and will have four and sometimes five basic objectives. First, the data obtained will be employed to determine the proportion of horses versus oxen engaged in farm work at various stages throughout the medieval and somewhat into the early modern period. In this way, it will hopefully be possible to measure the relative success that the horse had in displacing

oxen from medieval agriculture and to highlight those periods when progress was rapid and those when it was not. Second, details of ploughing, hauling, harrowing, and other activities will be investigated in an attempt to relate the increase (or decrease) in the proportion of horses to specific changes in practice. Third, the controversial matter concerning the size of the medieval plough-team will be discussed, as a relevant factor in the use of horses and oxen in the Middle Ages. Although not strictly pertinent to our study, some reflections on the open-field system and its connection with the size of the plough-team will also be made here. Fourth, the relationship between plough and vehicle design and the employment of horses and oxen will be investigated. In particular, a rough typology of medieval ploughs and vehicles will be attempted. Fifth, Chapters 3 and 4 will include a discussion of the various considerations influencing demesne and peasant policy as regards the use of horses and oxen.

Finally, the documents to be employed in this enquiry are varied and will include Domesday Book, surveys and extents, leases, exchequer pipe roll material, demesne accounts, detailed lay subsidy tax assessments, court rolls, probate wills and inventories, and sundry other documents covering the period from the eleventh to the sixteenth century. Discussion of the failings and merits of each of these sources will occur at the proper time in the body of the study.

#### FOOTNOTES

1. Limiting ourselves to agricultural technology, the most extensive study of an item of English medieval technology is probably R. Bennett and J. Elton's History of Corn Milling, i-iv, London (1898-1904), which deals to a large extent with medieval English sources. Articles concerned with English medieval technology and practice include M. Hodgen, 'Domesday Water Mills', Antiquity, xiii (1939); E.M. Carus-Wilson, 'An Industrial Revolution in the Thirteenth Century', ECHR, xi (1941); F.G Payne, 'The

British Plough: Some Stages in its Development', AHR, v (1957); M. Nightingale, 'Ploughing and Field Shape', Antiquity, xxvii (1953); S.A. Eyre, 'The Curving Plough-strip and its Historical Implications', AHR, 111 (1955); and more generally M.N. Boyer, 'Medieval Pivoted Axles', Technology and Culture, 1 (1959-60). Larger works having much of interest concerning medieval English technology include C. Singer, E.J. Holmyard, A.R. Hall, and T.I. Williams (eds.), A History of Technology, ii, Oxford (1956); M. Daumas (ed.), A History of Technology and Invention, 1 and ii, New York (1962 and 1964); Lynn White, Jr., Medieval Technology and Social Change, Oxford (1962); C. Parain, 'The Evolution of Agricultural Technique', in Cambridge Economic History of Europe, 1, 2nd edition, ed. M.M. Postan, Cambridge (1966); M.M. Postan, The Medieval Economy and Society, Harmondsworth, M'sex (1975), esp. ch. 4. Several more could be cited.

Postgraduate theses, as indicated, are disappointing. The recent Dissertations on British Agricultural History, by Raine Morgan, Reading (1981), lists none that are primarily concerned with technology in the medieval period, although J.B. Passmore's 'The English Plough' (Univ. of Reading MSc thesis, 1929) has some relevance. A more recent contribution, however, is C.A. McNeill's 'Technological Developments in Wheeled Vehicles from Prehistory to the Sixteenth Century' (Univ. of Edinburgh PhD thesis, 1979).

2. For the "stagnant technology" view, see Postan's works, esp. 'Why was Science Backward in the Middle Ages', in Essays on Medieval Agriculture and General Problems of the Medieval Economy, Cambridge (1973), pp. 81-6; for the opposite, White, op. cit.

3. White, pp. 57-69.

4. R.H. Hilton and P.H. Sawyer, 'Technical Determinism: The Stirrup and the Plough', P & P, no. 24 (1963), pp. 99-100; R. Trow-Smith, A History of British Livestock Husbandry to 1700, London (1957), pp. 92-3; J.Z. Titow, English Rural Society 1200-1350, London (1969), pp. 38-40.



## CHAPTER 1

### The Work-horse as a Technical Innovation

It is possible that, in the mind of the reader, a certain difficulty occurs in imagining the introduction of the work-horse as a technical innovation, since, whatever its advantages, the simple substitution of one animal for another might appear to be technologically irrelevant. But, in fact, this "simple" transition marks the culmination of a series of intricate mechanical and physiological changes. These involved not only developments in harnessing, shoeing, and breeding, but also refinements in plough and vehicle design. It was, in essence, the substitution of one technological package for another, for which the physical replacement of the ox by the horse in front of the cart or plough was simply the most eye-catching step.

In the context of this study, it should also be pointed out that, when we consider horse and ox traction, we are dealing with largely finished technological products, that is, those for which most of the practical problems have already been ironed out. Thus, we are admitting that this investigation has one further limitation as a technical study, and this is that we are not dealing with the whole of a technological process but only a part of it. Applying Bertrand Gille's schema, the progression of a technique may be said to fall into five phases: 1) the original idea, 2) testing and perfecting, 3) innovation (that is, the spread of the technique, 4) development (economic consequences of the basic technique and improvements and adaptations upon it), and 5) dis-

appearance.<sup>1</sup> Consequently it is obvious (or soon will be obvious) that, as regards horse traction during the period of the study, we are dealing only with steps three and four and with ox traction mostly step five, although elements of step four are also involved with the latter. This limitation, however, should not be taken as too severe a criticism of the topic we have chosen to study, since with almost any aspect of medieval technology we would have been faced with the same problem; the creative and experimental phases simply do not come to light in the records.

The stages corresponding to steps one and two in Gille's outline can at least be sketched in lightly, though. Systems of ox and horse traction both existed very early in ancient times. Oxen and donkeys, for instance, were first harnessed at about the dawn of the historic period (4000-3000 B.C.) and horses perhaps a little later (c.2000 B.C. or after).<sup>2</sup> Then, as now, ox traction was based on a system of yoking, either to the horns or round the neck. The latter arrangement was made possible by the ox's somewhat bony back which provided humps between which the neck yoke could comfortably sit,<sup>3</sup> and where, once positioned, it could be secured to the animal by means of ropes, ox-bows, or any other suitable method.<sup>4</sup> In almost all ancient societies oxen were yoked in single pairs to the central shaft or rope of the vehicle or plough, as shown in Figure 1.1. If more than two animals were required, the tendency was to yoke abreast rather than in file, a phenomenon noted with much surprise by R. Lefebvre des Noëttes in his well-known study on the subject,<sup>5</sup> although more recent research has indicated that ox-yoking in file may have been more common than he thought.<sup>6</sup>

The system for harnessing equids (that is, horses, donkeys, and mules) was very similar. Donkeys seem to have been yoked in a fashion identical to oxen (see Figure 1.2), but for horses and probably mules<sup>7</sup> a modified version, known as throat-and-girth harness, was employed,

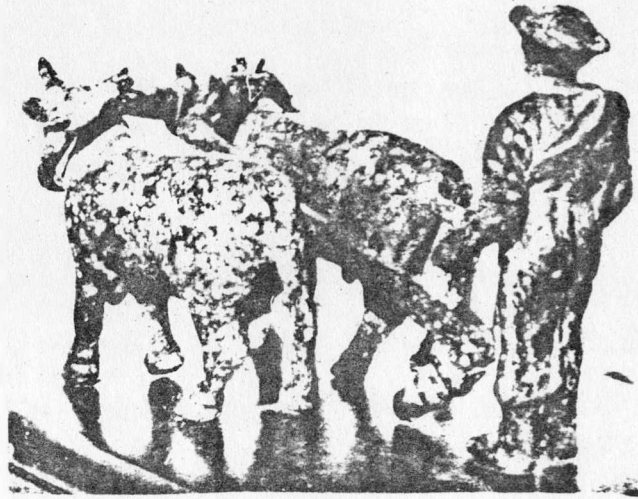


Figure 1.1 - Etruscan scratch-plough and two-ox team. A bronze figure from Arezzo (as shown in L'Homme et la Charrue à travers le monde by André G. Haudricourt and Mariel Jean-Brunhes Delamarre, photo 14, opposite p. 97, copyright - Editions Gallimard, Paris).

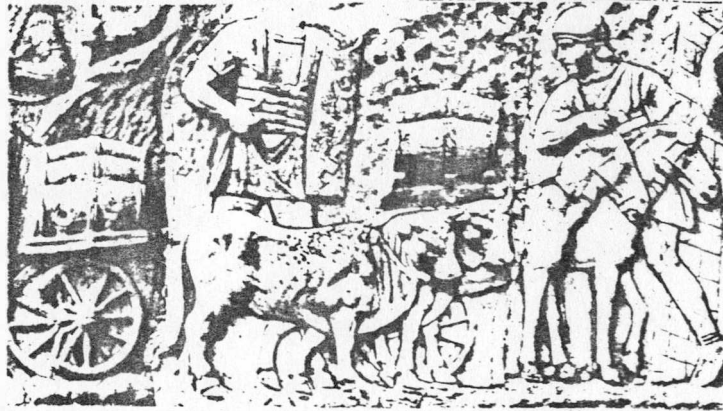


Figure 1.2 - Oxen and donkeys yoked for hauling. From Trajan's Column (R. Lefebvre des Noëtttes, L'Attelage et le Cheval de Selle à travers les âges, fig. 84; reproduced by permission of Editions A. et J. Picard, Paris).

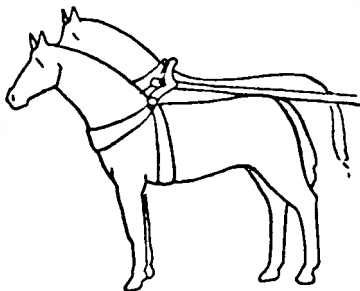


Figure 1.3 - Diagram of throat-and-girth harness (drawing after Lefebvre des Noëtttes, as taken from L'Homme et la Charrue à travers le monde by André G. Haudricourt and Mariel Jean-Brunhes Delamarre, p. 169, copyright - Editions Gallimard).

as shown in Figure 1.3. Here the feature of the yoke was kept, but adapted to the horse's more upright stance by means of two supple bands, one encircling the throat and the other the belly.<sup>8</sup> Lefebvre des Noëttes noted that a problem with this method of harnessing was that the throat band tended to slide up the horse's neck to a point where the animal was virtually being strangled; he further commented that this was why horses in ancient depictions have such high arched necks, a result of their defensive posture against choking.<sup>9</sup> Recent work has indicated that this choking could have been minimised or even avoided altogether by sensible positioning of the straps,<sup>10</sup> but it may always have been a problem area preventing horses from pulling their full weight.

As with oxen, arrangements of more than two horses were made frontally rather than in file, and indeed teams of three or four horses abreast were commonly used for pulling chariots at this time.<sup>11</sup> One illustration from a Roman boss even shows a line of twenty abreast drawing what looks to be a single vehicle (although it is not possible to make out its type).<sup>12</sup> Such fantastic representations obviously had little to do with everyday reality, but they do emphasise that, except on rare occasions, the fashion at the time was to harness side-by-side rather than in file. If so, it was clearly at the expense of tractive effort. Lefebvre des Noëttes noted that often only the two inside animals in the team were yoked to the shaft of the vehicle.<sup>13</sup> Horses on the outside were connected by a single rope leading to the top of the throat-and-girth harness, and consequently these animals wasted much of their energy by pulling at an angle to the most effective line of thrust. An attempt was made to overcome this by employing large frontal yokes, accommodating four rather than just two animals,<sup>14</sup> or by adding extra draught-poles to the front of the vehicle,<sup>15</sup> but even so such a system was manifestly less versatile than a team of horses in single or double file, simply because the number of horses possible abreast was limited by such factors as the

width of the road.

Altogether the placing of animals abreast coupled with the potentially disabling effects of the throat-and-girth harness meant that horse traction in particular was likely to be severely limited in ancient times. This is indicated by the Theodosian Code of 438 A.D., which restricted the weights to be drawn by teams, including vehicles, to just under 500 kilograms, allegedly to protect the animals from injury.<sup>16</sup> In contrast, by the middle of the nineteenth century, teams of four to eight horses were pulling coach-loads of 6,000 to 9,000 kilograms, well over ten times the Theodosian limits.<sup>17</sup> As a result, horses in ancient times were virtually employed only for pulling light chariots, the aim, apart from their military uses, being "to have a fine show of horses rearing and struggling, and drawing a ridiculously light load as fast as possible."<sup>18</sup> If equid traction was used at all for more practical purposes, it was limited mainly to mules and donkeys,<sup>19</sup> donkeys in particular, with their low-headed stance, being somewhat immune to any choking effects from ancient methods of harnessing. Otherwise, oxen carried all the burden for ploughing and hauling in ancient times.<sup>20</sup>

When did this pattern begin to change? Essentially not until the collapse of the Roman Empire in the West, although towards the end of the Roman era we do find a quickening in the use of horses for other purposes than display or sport, primarily for hauling coaches and wagons.<sup>21</sup> It is at this stage that we begin to perceive the first glimmerings of what we might call a new system of traction, one that would dramatically raise the value of the horse as a beast of work. This new system was composed of several technological elements, many of which could be claimed as major innovations in their own right. Treating them roughly in order of their importance, these are:

- 1) The modern harness. Most of what we know about the development

of the modern harness stems from the work of Lefebvre des Noëttes. As he pointed out, the main defect with ancient methods of horse harnessing was that they were likely to choke the animals. In the end, two separate solutions were found: the breast-strap harness and the collar-harness, shown in Figures 1.4 and 1.5 respectively. Both worked by removing the point of application of the harness from the throat to a less sensitive area: the breast-strap harness by setting the throat band horizontally so that it bore more against the horse's chest, and the collar by being made large enough so that it rested on the horse's shoulder-blades rather than round its neck. In both cases the yoke was eliminated, to be replaced by traces or lateral shafts attached to one or both sides of the harness (see Figures 1.4-1.6 and 1.8 to 1.11 below).

Although it is not a matter of certainty, it appears from philological evidence that the breast-strap harness arrived in Europe at about the sixth century A.D.<sup>22</sup> From the same evidence the collar-harness did not appear in the west until two or three centuries later,<sup>23</sup> although, once arrived, it soon began to compete successfully with the breast-strap harness, and probably even more so once the technique for padding the collar became common. By the twelfth and thirteenth centuries, according to drawings from illuminated manuscripts of the time, the collar-harness was predominant in Western Europe.<sup>24</sup>

2) Horseshoeing. This markedly improved the endurance of the horse, particularly in the cold, wet climate of northern Europe, where hooves tended to get soft and prone to wear, leading eventually to lameness. Shoeing prevented this premature wearing down of hooves and also allowed the horse to get a better grip on the road surface. Archaeological evidence shows that the horseshoe was known in Roman times, both as a hipposandal and in the more modern version of a bent strip of iron nailed to the horse's hoof.<sup>25</sup> There is, however, a puzzling hiatus from the end of the Roman era when horseshoes fail to appear in iconographic



Figure 1.4 - Breast-strap harness. From a bone carving on a Byzantine casket. Ninth century A.D. (from C. Singer, E.J. Holmyard, A.R. Hall, and T.I. Williams (eds.), A History of Technology. ii, p. 553; reproduced by permission of the Oxford University Press).



Figure 1.5 - Collar-harness. From a tenth-century Frankish manuscript (Singer et al, op. cit., ii, p. 554; reproduced by permission of the Oxford University Press).

or literary sources until the ninth century.<sup>26</sup> It is difficult to know whether this is due to the inadequacies of the sources or whether an actual break in the use of horseshoes occurred. In any case, when they reappear in the documents, their adoption seems to have been rapid; by the eleventh century horseshoeing was an almost universal practice.<sup>27</sup>

3) Harnessing in file. As has been indicated, this was not a noted feature of traction in ancient times, particularly for horses, for which examples of harnessing in file are rare before the end of the Roman era.<sup>28</sup> In contrast, during the medieval period teams arranged in single or double file were the rule almost everywhere, although the first depictions of harnessing in such a fashion do not occur until the tenth or eleventh century.<sup>29</sup> Some countries on the "Celtic fringe" - Wales, Scotland, and Ireland, for instance - continued to use the long frontal yoke for ploughing, where possibly up to eight animals were arranged in line abreast; but this seems to have been a dying practice during the Middle Ages and one that applied to oxen more than horses.<sup>30</sup> Certainly harnessing in file held great advantages for traction in that theoretically unlimited power could be added to the team by simply attaching extra units of horses or oxen to the front of the line. In this way some very large teams are recorded for the medieval period; one in France was comprised of twenty-six pairs of oxen.<sup>31</sup>

4) Whippletrees, also known in England as whiffletrees, swingletrees, splinter bars, or swing bars. These are simple bars of wood, attached at their ends to the horses' traces and at their centre to the plough or vehicle, as shown in Figure 1.6, or else by small lengths of chain or rope to combinations of other whippletrees, which are themselves eventually attached to the vehicle, a typical layout being shown in Figure 1.7. Despite their unassuming appearance, whippletrees were an important development for traction. First of all, they allowed much more flexibility in harnessing arrangement; teams for odd numbers of



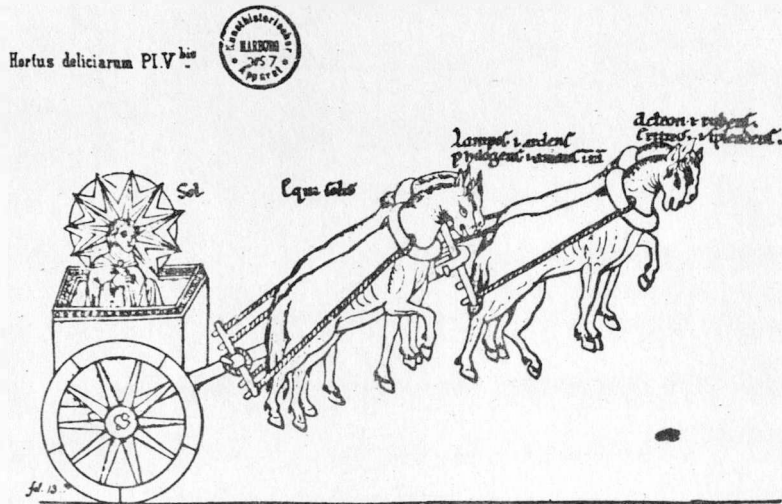


Figure 1.6 - Horse-collars, traces, and whippetrees. Herrad of Landsberg, Hortus Deliciarum, c.1170 (as shown in A.C. Leighton, Transport and Communication in Early Medieval Europe AD 500-1100, p. 114; reproduced by permission of David and Charles Ltd.).

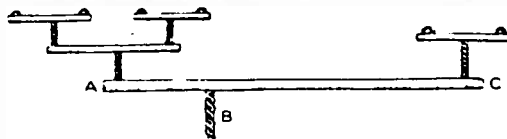


Figure 1.7 - Nineteenth-century arrangement of whippetrees for a three-horse team (A.T. Lucas, 'Irish Ploughing Practices, Part Three', Tools and Tillage, ii, no. 3, p. 150; reproduced by permission of Tools and Tillage).

animals, for instance, could be made up much more easily than under the old system of yoking (Figure 1.7). Manoeuvring was made much easier, too, in that the whippetrees equalised the stress on the traces when turning and kept reins and traces apart.<sup>32</sup> Finally, the whippetree provided a cushioning effect for horses in particular as they took up the strain of hauling or ploughing. This last was important because horses tended to pull in jerks, exposing both animals and equipment to injury unless precautions were taken to counter it.<sup>33</sup>

The whippetree may have been an invention dating from the pre-Christian era, but the point is one of conjecture.<sup>34</sup> In any case, it seems to have been unknown in medieval Europe until it first turns up in the twelfth-century Herrad of Landsberg illustration shown in Figure 1.6. Thereafter it becomes a common feature in depictions of medieval traction,<sup>35</sup> although mainly for horse-ploughing. Oxen, with their more deliberate pull, did not need the protection of a whippetree as much;<sup>36</sup> nor did horses hauling in tandem apparently, for in none of the illustrations showing such an arrangement is there a whippetree (see, for example, Figures 1.9 and 1.11).

5) Traces. The use of rope and leather for harnessing animals in more complicated fashion than simple yoking became more and more prevalent in the medieval period. Principally, traces formed flexible extensions for the plough and vehicle shafts or draught-pole and so were vital for harnessing in file, either double or tandem (Figures 1.9, 1.11, and 1.12). In combination with whippetrees they provided even greater flexibility, particularly when used with the collar-harness (Figures 1.6 and 1.10).

6) Changes in vehicle design. These took several forms, including the development of lighter, spoked wheels, which offered less resistance to draught, and the substitution of the single vehicle shaft or draught-pole with a double one, in between which a single animal, usually a horse, could be installed. The latter facilitated single file or tandem

harnessing, shown below in Figure 1.11, for which the advantages were ease of turning and a more balanced traction. Moreover, because of the horse between the shafts, particularly if it were the only animal in the team, the cart or wagon could easily be reversed as well as pulled forward. The same horse also provided a substantial braking effect against the vehicle when going downhill.<sup>37</sup>

Tandem harnessing was seemingly unknown in the ancient European world, although a few examples of single animals harnessed between shafts do exist from the later Roman era.<sup>38</sup> However, it was not until well into the medieval period that double-shafted vehicles and harnessing in tandem became commonplace.<sup>39</sup> Similarly, spoked wheels, although certainly well-known in ancient times,<sup>40</sup> probably did not reach their full potential as load carriers until the later Middle Ages.<sup>41</sup>

7) Changes in plough design. The most important development here was the spread of the heavy plough in northern Europe as a replacement for the earlier scratch plough or ard. Unlike the innovations listed above, however, the heavy plough cannot be rated as an improvement for traction, but rather as a change to which the available traction had to adjust. Consequently alterations in plough design that directly improved the effectiveness of animal power were more in the way of minor adjustments, such as the superstructure for the reins shown in Figure 1.10.<sup>42</sup> This provided better control of the team and to a large extent eliminated the need for a fugator, or driver, shown holding a long whip in Figure 1.12. Some ploughs, though, may have been double-shafted, allowing for the positioning of a single horse or string of horses in tandem, with all the advantages already outlined for such arrangements. Indeed, an illustration of a double-shafted plough does appear in a fourteenth-century French manuscript, as shown in Figure 1.8.<sup>43</sup> On the whole, however, such ploughs were rare in western Europe.<sup>44</sup>

8) Miscellaneous developments. These included incidental items,



Figure 1.8 - Fourteenth-century double-shafted plough. From the French "Ovide Moralisé" (as shown in L'Homme et la Charrue à travers le monde by André G. Haudricourt and Mariel Jean-Brunhes Delamarre, photo 53, opposite p. 440, copyright - Editions Gallimard).

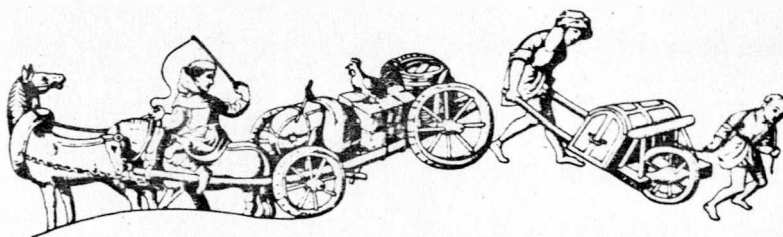


Figure 1.9 - Baggage-wagon (with postillion) and wheelbarrow. French manuscript, 1460 (Singer et al, op. cit., ii, p. 547; reproduced by permission of the Oxford University Press).

such as improvements in reins, bits, and bridles, or relatively new developments, such as cart-saddles and postillions. All of these were designed to enhance the control over the team, or, in the case of the cart-saddles, to distribute the weight of the shafts more evenly over the horse's back (as shown in Figure 1.11). Such changes are perhaps minor in themselves and were certainly not applicable in every case, but they do show that ingenuity in matters of harnessing was an on-going process in the Middle Ages. The idea of men riding postillion - see Figure 1.9 - as an alternative to reins for directing teams in file was a particular medieval invention.<sup>45</sup>

When taken altogether, the innovations and inventions listed above considerably increased the effectiveness of animal power in the Middle Ages. The point here is not to look at any one development, such as the modern collar-harness, as being crucial. Rather there was a whole series of improvements, some of them known in Roman times and before, which gradually coalesced into a new system or systems of traction. These improvements were especially beneficial to horse traction, where harnessing for all types of work had attained considerable sophistication by the medieval era, as is amply shown in Figures 1.10 and 1.11. Ox traction, on the other hand, was less affected, and even as detailed a representation as that contained in the Luttrell Psalter (Figure 1.12) indicates that arrangements for harnessing or yoking oxen in the Middle Ages were still essentially the same as in ancient times, with the possible exception of yoking in file, and even this, as we have seen, may have been known in the earlier period. Some shoeing of oxen was introduced,<sup>46</sup> but it was always on a marginal scale compared to horses.<sup>47</sup> Altogether the improvements to horse traction far outweighed those for ox traction, and as a result this allowed the horse to catch up to and, in many cases, surpass the ox in terms of work efficiency and animal economy.

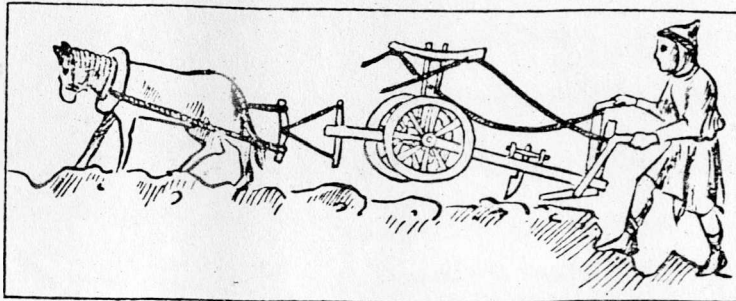


Figure 1.10 - Horse-ploughing, with collar, traces, whippetrees, and plough superstructure for reins (presumably attached to the horse's bit, although discontinued in the drawing). From a thirteenth-century Brussels manuscript (drawing after Lefebvre des Noëttes; taken from L'Homme et la Charrue à travers le monde by André G. Haudricourt and Mariel Jean-Brunhes Delamarre, p. 364, copyright - Editions Gallimard).



Figure 1.11 - Tandem harnessing, showing collar, traces, cart-saddle, double-shafted vehicle, and horseshoes. From the Luttrell Psalter (Singer et al, op. cit., ii, p. 548; reproduced by permission of the Oxford University Press); c.1338.



Figure 1.12 - Ox-ploughing, showing yokes and double file harnessing (Drawing after the Luttrell Psalter, E.G. Millar, London, 1932; taken from L'Homme et la Charrue à travers le monde, by André G. Haudricourt and Mariel Jean-Brunhes Delamarre, p. 364, copyright - Editions Gallimard).

The same may also have been the case with breeding. This of course applied to horses and oxen alike. The size and strength of one animal versus the other clearly had great importance in the choice of draught animal. Although the evidence is fragmentary, it appears that improvements in the size of both horses and oxen were occurring throughout the medieval period. In the case of cattle, late medieval bone and horn finds from Kirkstall Abbey (Yorks) and Baynard's Castle in London show a significant increase in cattle size over that in Anglo-Saxon and earlier times, in some cases approaching a size comparable to modern cattle.<sup>48</sup> P.L. Armitage claims that most of this improvement in size dates from the late fourteenth century and after, corresponding to a change in cattle type from a small, short-horned variety to a larger, long-horned animal. Armitage feels that this was not a new breed imported from the Continent, but a result of gradually improving techniques of cattle breeding and keeping.<sup>49</sup> This is supported by documentary evidence, which shows no visible sign of a change in breeds, at least in regard to draught cattle; medieval farmers, in England at least, seem to have employed the same red Devon and black Welsh oxen used by farmers two or three centuries later.<sup>50</sup>

A similar situation existed for horses. The remains of these animals found at the medieval sites of Wharram Percy (Yorks) and Petergate, York indicate that they ranged up to 15 hands in height, still of pony size but somewhat larger than Anglo-Saxon horses, which seem to have reached only 13 or 14 hands.<sup>51</sup> This probably modest increase in the size of the horse during the medieval period may have arisen as a spin-off from the development of the medieval warhorse. It has been claimed that the much vaunted warhorse in the Middle Ages was never bigger than a cob,<sup>52</sup> but the appearance of the terms magnus equus or grant chival in France and England by the beginning of the fourteenth century when describing such horses indicates that an increase in size was taking place. At the

same time selective breeding programmes to produce large horses were evident in Italy,<sup>53</sup> and perhaps some of this rubbed off onto agricultural horses.

Consequently, it is likely that both horses and oxen were improving in size and presumably power over the medieval period, although it is not certain which animal was gaining the advantage over the other. Nevertheless, even if the rate of increase in the power of horses was no greater than that for oxen, this would still have favoured the former. Horses were at their worst in heavy, slow-moving situations, either for ploughing or hauling, and often broke down completely in such situations.<sup>54</sup> Any increase in power to help them over this threshold, regardless of how much an improvement it was compared to that being made by oxen, would have brought a disproportionate advantage to the horse in its ability to compete as a draught animal.<sup>55</sup> In any case, it is likely that horses were soon exerting a very real superiority over oxen. Modern experiments indicate that when hauling equal loads a horse can do so 50 per cent faster than an ox.<sup>56</sup> Horses are also capable of toiling longer and harder during the day and supposedly have a longer working life.<sup>57</sup> It is difficult to assess how much this applied to the Middle Ages, but, as we shall see later in this study,<sup>58</sup> advantages of a similar scale for horses over oxen are intimated for this period as well.

In short, from the end of the Roman period onward, it would seem that the door was increasingly open to the substantial, even massive, introduction of the horse to general draught work. Nevertheless the transition was painfully slow, especially in its early stages. Road haulage was seemingly the first to be affected, although, until the tenth or eleventh century, the evidence is far from conclusive. The wagon and coach hauling performed by horses towards the end of the Roman era has already been alluded to, and more cases arise for the Merovingian



period.<sup>59</sup> Unfortunately the larger number of documents available for Carolingian times does not make the picture clearer. A four-wheeled vehicle drawn by two horses is seen in the Trier Apocalypse (c.800),<sup>60</sup> but equally reference is made to Avar treasure being brought to Charlemagne in fifteen wagons pulled by four oxen apiece.<sup>61</sup> Charles Parain also claims that the early ninth-century polyptyque of Abbot Irminon shows the ox always drawing ploughs and carts, while the horse was only used as a pack-animal or for riding.<sup>62</sup> On the other hand, inventories from four royal demesnes in northern France about the year 810 show levels of horses well in excess of oxen, making it at least possible that horses were used for hauling here.<sup>63</sup> In short, the situation at this time is confused, and it is only in the tenth century and later that illuminated manuscripts begin to show horse hauling as the dominant mode of road transport.<sup>64</sup>

Another practice connected with horse traction was harrowing. This type of activity was in a sense new to farming, for although a type of harrow was probably known in ancient times it was only in temperate Europe that the modern toothed version came to be widely used in breaking down the furrow left by the heavy plough.<sup>65</sup> The harrow's introduction in this new form may have dated from Carolingian times or earlier,<sup>66</sup> but its first undisputed appearance does not occur until the eleventh-century Bayeux Tapestry shows a modern harrow being hauled by a single horse.<sup>67</sup> Harrowing seems in fact to have been an activity very dependent upon horse traction, even at this early stage, since speed greatly increased its effectiveness.<sup>68</sup> Consequently, although oxen were employed on occasion for harrowing, it was horses that mainly took over this particular task.

Ploughing, however, proved more difficult, and in ancient times it was an undertaking for which horses were excluded entirely.<sup>69</sup> Nevertheless one benefit of modern systems of harnessing was to allow the

horse to participate in this activity, and eventually this happened. The first uncontested reference to horse-ploughing is recorded in King Alfred's Orosius, written in the late ninth century, in which the Norwegian chief, Ohthere, when describing his home farm in northern Norway, stated that "the little that he ploughed he ploughed with horses".<sup>70</sup> This, however, seems to have been exceptional for the time, and it is only in the eleventh and twelfth centuries that references to horses ploughing - whether alone or in mixed teams with oxen - are frequent enough to indicate that it was becoming a fairly common occurrence. A pertinent example is that provided by Pope Urban II at the Council of Claremont in 1095, when he extended sanctuary to all oxen, plough-horses (equi arantes), and harrowing horses, and to all men who guided them.<sup>71</sup> This implies a fairly widespread and probably growing distribution of plough-horses at the time, perhaps as the various elements of modern horse traction were being consolidated and perfected. Once begun, the trend quickened markedly, such that by the thirteenth and fourteenth centuries many areas in Europe had converted over entirely to horses for ploughing.<sup>72</sup>

We should not imagine, though, that the horse was beginning to ~~totally~~ <sup>totally</sup> dominate medieval ploughing and farming in general, because in practice the situation was very mixed. A survey of the secondary literature indicates that northern France,<sup>73</sup> Russia,<sup>74</sup> the Ukraine,<sup>75</sup> Flanders,<sup>76</sup> and even Ireland<sup>77</sup> were all converting to the horse during the Middle Ages, while Spain and parts of southern France were beginning to use mules.<sup>77a</sup> On the other hand, central and most of southern France, Germany, and Italy continued to rely on the ox,<sup>78</sup> and many historians would include England in this category as well.<sup>79</sup> Clearly the decision to employ horses instead of oxen depended upon local conditions and inclinations. This element of personal or regional preference is reflected in the opinions of several agriculturalists during the period. Some, like the Frenchman,

Olivier de Serres, writing at the end of the sixteenth century, were so impressed by the speed of the horse that they were willing to overlook its extra expense and "hazard".<sup>80</sup> Others, particularly those in England, as we shall see later,<sup>81</sup> obviously preferred oxen, mainly because of their lower cost.

This, then, is the context in which the problem considered by this study is set. It is clear that, with the introduction of the horse to general draught work, a notable metamorphosis in traction was occurring, one that had a double importance because it involved not only agriculture but road transport as well. The potential significance of this change should not be underestimated. For example, it can be calculated from the Domesday figures that over 70 per cent of the power available at the time was supplied by animals, the remaining 30 per cent or so being provided by mill- and manpower together (see Appendix A). Thus, any improvement on the nature of this animal power, such as replacing oxen with horses, would clearly have had important ramifications for medieval man's relationship with his physical environment. For instance, if the 50 per cent improvement in speed for horses over oxen indicated by modern experiments was also the case in the Middle Ages, then an increase of half again in terms of sod turned or goods transported would have been an event of some moment for medieval farmers. Nor can it be argued that there was little outlet for this extra power. In particular, the upsurge in land clearance that characterised twelfth- and early thirteenth-century Europe would have found this excess traction especially useful. The same would apply in gradually industrialising areas, where the horse's greater speed would have allowed the peasant spare time for other activities. Furthermore, if, as has been claimed,<sup>82</sup> understocking was a problem for much of the Middle Ages due to the difficulties of maintaining animals in a highly arable economy, then the improvement attendant upon changing from

oxen to horses would be even more significant. The next three chapters of this study will determine how much of this potential motivation to convert from oxen to horses was turned into actual practice in medieval England.

#### FOOTNOTES

1. As outlined in M. Daumas, 'The History of Technology: its Aims, its Limits, its Methods', History of Technology, i (1976), p. 106.

2. R. Lefebvre des Noëttes, L'Attelage et le Cheval de Selle à travers les Âges, Paris (1931), p. 25; C. Singer, E.J. Holmyard, A.R. Hall, and T.I. Williams (eds.), A History of Technology, i, Oxford (1954), p. 721; A. Burford, 'Heavy Transport in Classical Antiquity', ECHR, 2nd series, xiii (1960), pp. 7-8.

3. Joseph Needham, Science and Civilisation in China, iv, pt. 2, Cambridge (1965), p. 306.

4. Several examples of yoke types are shown in A.G. Haudricourt and M.J-B. Delamarre, L'Homme et La Charrue à travers le monde, Paris (1955), p. 165; see also G.W.B. Huntingford, 'Prehistoric Ox-yoking', Antiquity, viii (1934), p. 457.

5. Op. cit., p. 16.

6. Haudricourt and Delamarre, op. cit., pp. 115-7; Burford, op. cit., pp. 5, 13; Needham, op. cit., p. 329.

7. When discussing the modern harness, Lefebvre des Noëttes (p. 122n.) indicates that mules were normally harnessed in the same fashion as horses; presumably the same applied for the ancient harness.

8. On occasion, though, only a throat band is evident; e.g., see Singer et al, ii, p. 543, fig. 498.

9. Op. cit., p. 13.

10. J. Spruytte, Etudes Expérimentales sur l'Attelage, Paris (1977), esp. pp. 9-15, 101-7.

11. E.g., Lefebvre des Noëttes, figs. 21, 54-5, 58-60, 68, 70-1; Singer et al, p. 542 (fig. 486; same as fig. 55 in Lefebvre des Noëttes), p. 543 (fig. 488).

12. Lefebvre des Noëttes, fig. 79.

13. Ibid, p. 14.

14. Ibid, pp. 14-5 and p. 70 (for mules four to a yoke); also figs. 60, 69.

15. Ibid, pp. 76-7, figs. 52, 69.

16. Ibid, pp. 162-4, 157-8; A.C. Leighton, Transport and Communication in Early Medieval Europe AD 500-1100, Newton Abbot (1972), p. 72. Curiously the laws also applied to oxen, although it seems certain they were capable of much heavier loads (e.g., see Burford, op. cit., pp. 4-5, 9).

17. Lefebvre des Noëttes, pp. 128-9.

18. Burford, p. 9.

19. Mules were employed to haul Alexander the Great's funeral chariot (Lefebvre des Noëttes, pp. 69-71), while donkeys were often used for hauling in Egyptian and Roman times (ibid, pp. 52, 87, fig. 84). Mules and donkeys were also used for ploughing light soils (Columella, De Re Rustica, ii, trans. E.S. Forster and E.H. Heffner, London (1954), Book VI, p. 223; Book VII, p. 231; Singer et al, ii, p. 91).

20. See, for instance, Lefebvre des Noëttes, p. 86 and figs. 84-6; Haudricourt and Delamarre, plates V and VI (between pp. 128-9).

21. As indicated by various late Roman illustrations; e.g., Singer et al, ii, pp. 546, 553 (figs. 494 and 506); Leighton, op. cit., pp. 77, 81.

22. Haudricourt and Delamarre, p. 178. The first pictorial representation of the breast-strap harness in western Europe appears at the base of an eighth-century Irish cross (Singer et al, ii, p. 544, fig. 507). Needham, op. cit., pp. 304-28, claims that both the breast-strap and collar-harness originated in China.

23. Haudricourt and Delamarre, p. 178. The first picture of it appears in the ninth century (White, op. cit., p. 61).

24. See, for instance, the numerous examples provided by Lefebvre des Noëttes, figs. 147-62.

25. R.E.M. and T.V. Wheeler, Verulamium: a Belgic and two Roman Cities, Oxford (1936), p. 220; R.E.M. Wheeler, Maiden Castle, Dorset, Oxford (1943), pp. 77, 120, 290-1, pl. XXXb; C.F.C. Hawkes and M.R. Hull, Camulodonum, Oxford (1947), pp. 73, 342-3; Leighton, op. cit., pp. 104-7.

26. According to the work of Lefebvre des Noëttes; see especially p. 145 and figs. 190-2.

27. White, pp. 58-9; Lefebvre des Noëttes, pp. 145-6.

28. A four-wheeled wagon hauled by four horses in double file is shown on a Gallo-Roman bas-relief found at Langres in 1849. Lefebvre des Noëttes, p. 85; Leighton, p. 81; Spruytte, p. 138 (pl. 37).

29. Perhaps the earliest being the tenth century Cottonian MS illustration of an English four-ox plough-team in double file (see Figure 2.2).

30. H.P.R. Finberg (ed.), The Agrarian History of England and Wales, i, pt. 2, Cambridge (1972), p. 370; F. Seebohm, The English Village Community, 4th edition, London (1905), p. 63; A.T. Lucas, 'Irish Ploughing Practices', pt. 1, Tools and Tillage, ii, no. 1 (1972), p. 60. There is also a reference to the use of a long yoke in thirteenth-century France (F.G. Payne, 'The Plough in Ancient Britain', Archaeological Journal, civ (1947), p. 87).

31. Employed for hauling the capitals and columns for a church at Conques en Rouerges in the south of the country (Lefebvre des Noëttes, p. 132). Teams of twenty-one and sixteen oxen have also been recorded for medieval Normandy. L. Delisle, Études sur la Condition de la Classe Agricole et L'État de L'Agriculture en Normandie au Moyen-Age, Paris (1903), p. 76.

32. Leighton, pp. 114-7; The Book of Husbandry by Master Fitzherbert, 1534 edition, ed. W.W. Skeat, London (1882), p. 25.

33. Leighton, p. 115.

34. A. Steensberg, 'The Vebbestrup Plough', Acta Archaeologica, xvi (1945), p. 65, feels it was a feature of the Vebbestrup plough (c.500-100 B.C.). Haudricourt and Delamarre, p. 185, disagree strongly. On the other hand, Needham, op. cit., p. 328n, believes that whippletrees were employed in third century A.D. China at the latest.

35. E.g., Lefebvre des Noëttes, figs. 150-1; A. Steensberg, 'North West European Plough-types of Prehistoric Times and the Middle Ages', Acta Archaeologica, vii (1936), pp. 272-3 (figs. 15 and 17); Singer et al, ii, p. 94 (fig. 59); Haudricourt and Delamarre, pp. 360, 365 (figs. 141 and 147).

36. Although the Haudricourt and Delamarre illustrations referred to in the note above both show them being used with oxen.

37. Leighton, p. 112.

38. Singer et al, p. 554 (fig. 489); White, p. 60; Leighton, pp. 112, 204, and figures on pp. 149, 150. Needham points out that double-shafted vehicles were known in China as early as the fourth century B.C. (op. cit., pp. 246-7; also fig. 546 opposite p. 310).

39. All medieval illustrations showing harnessing in tandem tend to be twelfth century or later: e.g., Singer et al, ii, pp. 547-9 (figs. 496-7, 499-500); Lefebvre des Noëttes, figs. 154-5, 159; see also Leighton, p. 113.

40. Singer et al, i, pp. 211-4.

41. Ibid, ii, pp. 548-9.

42. Similar arrangements for plough-reins were also suitable for small teams of oxen. Haudricourt and Delamarre, p. 365 (fig. 147) and photos 52 and 55 (opposite pp. 440 and 441). All the teams shown in these examples consisted of two oxen abreast; interestingly the last of these (photo 55) show the reins attached to nose-rings on the animals.

43. Haudricourt and Delamarre call such a harnessing system a bourrel and indicate that it was prevalent in southern France after the Carolingian period (p. 179).

44. Judged on the evidence of other illuminated manuscripts; out of twenty or so illustrations of medieval ploughs from western Europe examined for this study, only the one indicated shows a double-shafted plough.

45. Singer et al, ii, p. 555.

46. See Appendix D; also Leighton, p. 107.

47. As were other innovations adopted for oxen; see note 42 above.

48. Juliet Clutton-Brock, 'The Animal Resources', in The Archaeology of Anglo-Saxon England, ed. D.M. Wilson, London (1976), pp. 378-80; P.L. Armitage, 'A Preliminary Description of British Cattle from the Late Twelfth to the Early Sixteenth Century', Ark (Journal for the Rare Breeds Survival Trust), vii, pt. 12 (1980), pp. 405-13; M.L. Ryder, 'Livestock', in The Agrarian History of England and Wales, i, pt. 1, ed. S. Piggott, Cambridge (1981), p. 387; idem, 'Livestock Remains from Four Medieval Sites in Yorkshire', AHR, ix (1961), pp. 105-10. Measurements of meta-carpal bones found at Baynard's Castle indicate that the mean height of cattle here at the end of the medieval period was 1.23 metres at the shoulder, with one animal attaining a height of 1.51 metres. In comparison, cattle from the thirteenth century and before seldom exceeded 1.14 metres. Armitage, op. cit., p. 409; Ryder, 'Livestock', p. 387. On the other hand, oxen employed at Cirencester in the 1940s stood at 1.65 metres (or 16.2 hands). E.M. Clifford, 'Working Oxen at Cirencester', Trans. of the Bristol and Glos Arch. Soc., lxiii (1942), p. 170.

49. Op. cit., pp. 409-11.

50. Thus, red oxen are mentioned at Ravenfield (Yorks) in 1275 and at Sevenhampton (Wilts) in 1284, while a red bull is recorded at East Troswell (Cornwall) in 1366. Black oxen are again found at Ravenfield in 1275 and are also mentioned in relation to ploughing services owed at Winterbourne Monkton (Wilts), c.1235-40, while a black steer (bovettus nigrus) is recorded at Chatteris (Cambs) in 1270. Later on, another black ox is provided as a heriot at Sutton Coldfield (Warks) in 1479-80. In comparison, Leonard Mascall, writing in the late sixteenth century,

stated that red and black oxen were still considered the best for draught, and probate inventories from the late fifteenth and sixteenth centuries also attest to their continued popularity: e.g., "Item I gyve and beqwethe to Martyn Reder my Ladde my ij red workyng steres" (will of Richard Shurlock of Withyham, Sussex, 1553); "Item vj Oxen and a blak Walshe stere" (inventory of Thomas Parkyns of Minsterworth, Glos, 1496); "Item j plough and vij Walshe Oxen" (inventory of John Bowell of Southwark and Stepney, 1495). Wakefield Court Rolls, i, p. 144; Court Rolls of the Wiltshire Manors of Adam de Stratton, ed. R.B. Pugh (Wilts Arch. Soc. Rec. Ser., xxiv, 1968), p. 86; H.P.R. Finberg, Tavistock Abbey, Cambridge (1951), p. 132; Wakefield Court Rolls, i, p. 100; Glast. Cust., p. 61; Court Rolls of the Abbey of Ramsey and of the Honor of Clare, ed. W.O. Ault, Yale (1928), p. 261; Ministers' Accounts of the Warwickshire Estates of the Duke of Clarence, 1479-80; ed. R.H. Hilton (Dugdale Soc., xxi, 1952), p. 43; Leonard Mascall, The Government of Cattel, London, 1662 edition, p. 52; ESussRO Archdeaconry of Lewes Wills, W/A/3, 1550-9, fo. 106; PRO Probate 2, nos. 127a, 91.

51. Ryder, 'Livestock', pp. 399, 401; idem, 'Livestock Remains from Four Medieval Sites in Yorkshire', pp. 108-9; Clutton-Brock, op. cit., p. 383. The size of the horses found at Wharram Percy and Petergate agrees with those indicated by the oft-quoted statutes of Henry VIII (for 1535 and 1541), which attempted to restrict stallions of less than 14 or 15 hands from mingling with mares and fillies on common pasture, in order to improve the stature and strength of English horses. The mares themselves had to be at least 13 hands. The levels set indicate that the average size of horses at this time was still less than 15 hands. M.E. Seebohm, The Evolution of the English Farm, London (1927), p. 219; R. Trow-Smith, A History of British Livestock Husbandry to 1700, p. 254; E. Kerridge, The Agricultural Revolution, New York (1968), p. 319.

52. Daphne Machin Goodall, A History of Horse Breeding, London (1977), pp. 144-6.

53. At least in 1341; R.H.C. Davis, 'The Development of the Medieval Warhorse', paper delivered at the 8th International Economic History Congress, Budapest, 1982.

54. For example, when ploughing hard ground, as indicated by Walter of Henley; Walter of Henley, ed. Dorothea Oschinsky (Oxford, 1971), p. 319, c. 37; for hauling, see p. 180 below.

55. Although it is possible, too, that increases in the power of oxen might have been able to improve their performance crucially in some areas, such as hauling.



56. Rankine's Useful Rules and Tables, 6th edition, London (1883), p. 251. Rankine's figures were apparently based on tests using dynamometers (A.P. Usher, A History of Mechanical Invention, 2nd edition, Harvard (1954), p. 156). See also White, p. 62; R.J. Forbes, Studies in Ancient Technology, ii, Leiden (1955), p. 83.

57. White, p. 62; Huntingford, op. cit., pp. 458-9; Walter of Henley, op. cit., p. 162.

58. Pp. 187-90 below.

59. E.g., Lefebvre des Noëttes, figs. 116-7; Leighton, p. 84.

60. White, p. 61 and plate 3.

61. Leighton, p. 85.

62. C.E.H., i, p. 142.

63. B.H. Slicher van Bath, The Agrarian History of Western Europe A.D. 500-1850, London (1963), p. 67.

64. E.g., Lefebvre des Noëttes, figs. 140ff.

65. Parain, for instance, feels that the ancient harrow "was as a rule nothing but a wooden frame with wattles woven across it." C.E.H., i, p. 129.

66. Parain, for example, claims that modern harrows are referred to in the early eighth-century Alemannic Laws. Ibid, p. 154; see also Guy Fourquin in Histoire de la France Rurale, i, Seuil (1975), p. 407.

67. F.M. Stenton (ed.), The Bayeux Tapestry, London (1957), plates 11, 12.

68. Parain, C.E.H., i, p. 154; Singer et al, ii, p. 94.

69. Lefebvre des Noëttes, p. 86; Burford, pp. 5, 7.

70. King Alfred's Orosius, ed. H. Sweet, London (1883), i, p. 18; a translation of the pertinent passage is provided by A.S.C. Ross in The Terfinnas and Beormas of Onthere, Leeds (1940), p. 21.

71. The Ecclesiastical History of Ordericus Vitalis, v, ed. M. Chibnall, Oxford (1975), p. 21.

72. As in France; Georges Duby, Rural Economy and Country Life in the Medieval West, London (1968), pp. 110, 269; R. Grand and R. Delatouche, L'Agriculture au Moyen Age de la Fin de l'Empire Romain au XVI<sup>e</sup> Siècle, Paris (1950), p. 461; Delisle, op. cit., pp. 222-4; C.E.H., i, pp. 142, 297.

73. C.E.H., i, p. 142.

74. Ibid, p. 528; A.V. Chernetsov, 'On the Origin and Early Development of the East-European Plough and the Russian Sokha', Tools and Tillage, ii, pt. 1 (1972), p. 46.

75. White, p. 63.
76. C.E.H., 1, pp. 143, 297.
77. A.T. Lucas, 'Irish Ploughing Practices', pt. 2, Tools and Tillage, ii, pt. 2 (1973), p. 68.
- 77a. C.E.H., 1, p. 143.
78. Ibid. Italy also used the buffalo for work on very heavy land.
79. J.Z. Titow, English Rural Society 1200-1350, London (1969), p. 38; E. Miller and J. Hatcher, Medieval England - Rural Society and Economic Change 1086-1348, p.227; H.S. Bennett, Life on the English Manor, Cambridge (1937), p. 90; Lord Ernle, English Farming: Past and Present, 6th ed., London (1961), p. 13; G.E. Fussell, Farms, Farmers, and Society, Lawrence, Kansas (1976), p. 111; J.H. Moore, 'The Ox in the Middle Ages', Agricultural History, xxxv (1961), pp. 91-2. On the other hand, R-H. and A-M. Bautier claim that in no other country was the horse figuring so much in daily life as in England at the end of the twelfth century. 'L'élevage du cheval', Bulletin Philologique et Historique (1978), p. 59; I am grateful to Professor R.H.C. Davis for pointing out this source to me.
80. Olivier de Serres, as quoted by Parain, C.E.H., 1, p. 144.
81. See pp. 183-4 below.
82. Hilton and Sawyer, op. cit., pp. 99-100; Postan, The Medieval Economy and Society, op. cit., pp. 63-7.

## CHAPTER 2

### The Initial Stages: England from 1066 to 1200

It appears that when the Normans invaded England they found a country in which oxen were, by far, the predominant work animals. The evidence for this state of affairs is fragmentary but nonetheless persuasive. All Anglo-Saxon references to animals used for draught work involve oxen only. For example, in the laws of Ine (c.688-694) it is decreed that if a ceorl hires another's yoke of oxen he is bound to pay the hire in fodder if he can, or half in fodder and half in other goods.<sup>1</sup> In this case it is not possible to specify the use to which the oxen were being put, but ploughing must certainly be the most likely. The later Aelfric's Colloquy, for instance, provides a lively account from about the year 1000 of how the ploughman and his boy drive the oxen to the field, yoke them to the plough, and then proceed to turn over a whole acre a day.<sup>2</sup> The size of the team is not mentioned here, but illustrations from the Caedmon and Cottonian MSS show oxen yoked to ploughs in teams of two abreast or of four in double file (see Figures 2.1 and 2.2). The tenth-century Cottonian MSS also depict oxen being employed for hauling, as shown in Figure 2.3. Here men are gathering wood and placing it in a cart by which stand two oxen still in their yoke, presumably having a rest before being connected up to the cart again. This apparent Anglo-Saxon preference for oxen over horses, as far as farm work is concerned, is also reflected in the stock listings found on several estate leases and inventories during the period, as summarised in Table 2.1. As can

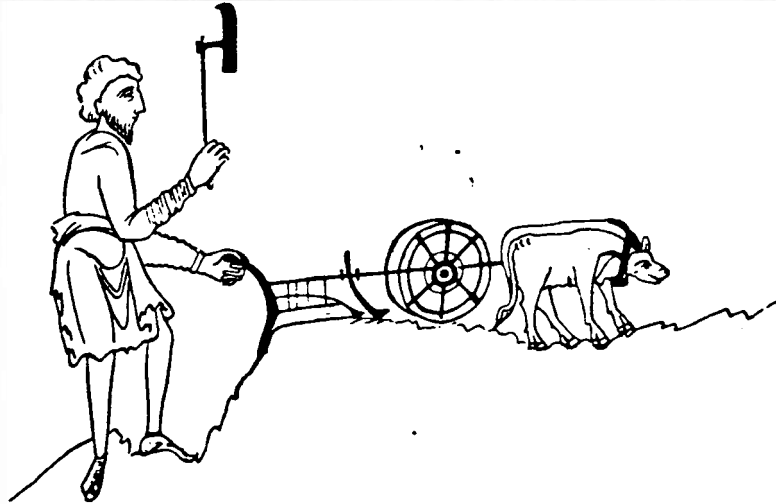


Figure 2.1 - Anglo-Saxon wheeled plough, c.1000. Caedmon MS (as shown in M.E. Seebohm, The Evolution of the English Farm, p. 109; reproduced by permission of George Allen & Unwin Ltd.).



Figure 2.2 - Tenth-century Anglo-Saxon wheeled plough. Cottonian MS (Singer et al, op. cit., ii, p. 88; reproduced by permission of the Oxford University Press).

TABLE 2.1

Stock Listings on Some Anglo-Saxon Estates<sup>3</sup>

<u>Estate</u>	<u>Date</u>	<u>Animals</u>
Hatfield, Herts	prob. 10th cent.	40 oxen, 250 sheep, 47 goats, 15 calves, 190 swine
Yaxley, Hunts	c.963	16 oxen, a stalled ox, 305 sheep, 9 one-year-old stallions, 30 swine, 1 fat pig
Beddington, Surrey	899-908	9 full-grown oxen, 114 full-grown pigs, 50 wethers, 110 full-grown sheep, plus assorted sheep and pigs to which the herdsmen were entitled
Egmere, Norfolk	prob. 11th cent.	7 oxen, 8 cows, 4 grazing bullocks, 2 inferior horses or "stotts", 115 sheep and lambs, 1 pig
Luddington, Warks	early 11th cent.	2 teams of oxen, 100 sheep
Norton, Worcs	early 11th cent.	6 oxen, 20 sheep

be seen, oxen dominate almost totally, the only adult horses being the two "stotts" found at Egmere. These listings, of course, only represent substantial holdings, but the same inclination towards oxen also seems to have applied to the farms of lesser men. The Rectitudines Singularum Personarum stipulate that the gebur, with only seven acres of sown land, was to have as a normal livestock complement to his land, two oxen, one cow, and six sheep.<sup>4</sup>

It would not do, though, to suppose that horses were decidedly uncommon in Anglo-Saxon England, since the same Rectitudines indicate that the gebur was expected to have a horse to fulfil carrying services (probably by pack), although the animal was not listed as essential stock.<sup>5</sup> Horses might also have been used for harrowing, since the technique was obviously performed - and perhaps even introduced - at some stage during the Anglo-Saxon period; for example, the supervision of harrowing is mentioned as part of the reeve's duties in the eleventh-century treatise, Gerefa.<sup>6</sup> Some quite large stud farms are recorded for the period as well. Burton Abbey, for instance, received 100 wild horses



Figure 2.3 - Anglo-Saxon cart and oxen, tenth century. Cottonian MS (M.E. Seebohm, *op. cit.*, p. 117; reproduced by permission of George Allen & Unwin Ltd.).



Figure 2.4 - Mule or donkey ploughing, horse harrowing. Bayeux Tapestry, second half of the eleventh century (Singer et al, *op. cit.*, ii, p. 91; reproduced by permission of the Oxford University Press).

and sixteen tame geldings from a certain Wulfric at the beginning of the eleventh century,<sup>7</sup> and similar bequeathals of studs are also mentioned for Troston in Suffolk and Ongar in Essex.<sup>8</sup> It would appear, however, that the horses from these studs, more often than not, were bound for military use or as riding animals for the privileged. Consequently a certain Aethelwold, sometime after 987, gave two horses with shields and spears as a heriot to his king; similarly in a bequeathal of c.946-51, the earldorman, Aelfgar, left three stallions, again with shields and spears.<sup>9</sup>

The indication from all this is that, generally speaking, the horse in Anglo-Saxon times tended to be very much a luxury beast, primarily a riding animal for the well-to-do, while the ox fulfilled the more menial role as a beast of labour. This finds some support from the ordinances of the bishops and reeves in the district of London during Athelstan's reign, where the theft of a horse required up to half a pound's compensation, while that of an ox was only thirty pence.<sup>10</sup> It would not do, though, to oversimplify the matter. Although, as has been said, there is no evidence for horses either hauling or ploughing in Anglo-Saxon England, the Welsh Laws, purportedly referring to conditions in a time as early as the tenth century, mention work-horses and even point to them hauling.<sup>11</sup> Elements of horse harness have also been found in excavations of Anglo-Saxon village sites,<sup>12</sup> but this may be consistent with the use of the horse solely as a harrowing, pack-, or riding animal.

What about the numbers of horses and oxen on the eve of the Conquest then? Based on the stock listings in Table 2.1, the preponderance of oxen is very great indeed. Treating the "stalled" ox at Yaxley as a supernumerary and assuming that the teams of oxen at Luddington were comprised of eight oxen apiece, the number of oxen to adult horses works out at ninety-four to two, a great majority for oxen. On the other hand,

if the Anglo-Saxon gebur did indeed have a horse to go along with his two oxen, then the ratio of oxen to horses in this case would only be two to one, still a majority for oxen, but very much less so.<sup>13</sup> Clearly the true situation was somewhere in between, although at this stage it is impossible to say exactly where it was. There does seem, however, to have been a distinct division of duties between the two animals. Thus, only oxen were employed for ploughing and possibly hauling, while horses were used for riding and probably for pack-saddle work. Harrowing is in doubt either way, because of the lack of evidence, but since it is an activity eminently suited to horses we may suspect that horses were in fact performing it.

Beyond this there is not much to say. The fact that the numbers of oxen in the stock listings of Table 2.1 are mostly divisible by eight, or thereabouts, indicates that the large plough-teams we will become familiar with in post-Conquest England were already in existence at this earlier period. The small two- and four-animal teams in the Caedmon and Cottonian MSS belie this, of course, but more will be said about this later. On the other hand, the Caedmon and Cottonian illustrations do indicate that some Anglo-Saxon ploughs at least were wheeled and that they could well have been of the "heavy" type, although the presence of a mould-board with which to throw up a substantial furrow is ambiguously drawn in the manuscripts.<sup>14</sup> On the vehicle side, there are one or two mentions of "wains" in the Anglo-Saxon documents,<sup>15</sup> but nothing to tell anything about their size and appearance. Curiously there are no references to carts; the Welsh Laws do mention "karrs", but it is likely these correspond to a heavier type of vehicle.<sup>16</sup> These matters, however, will be discussed in more detail later. For the moment we must now turn our attention to the period after the Conquest.

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a) The Numbers of Horses and Oxen, 1066-1200

Despite the single mule or donkey drawing a plough and the horse harrowing in the Bayeux Tapestry (see Figure 2.4),<sup>17</sup> there are enough clues in the available documentation to indicate that the ox easily held its position as the dominant draught animal in England for at least a full generation after Hastings. The chief source here is the Domesday survey, for which information about farm animals is given for two separate groups of counties: that is, the East Anglian counties of Norfolk, Suffolk, Essex, and Cambridgeshire and the south-western group of Dorset, Somerset, Devon, and Cornwall. All these counties are covered by variants of the survey which provide detailed information about manorial livestock otherwise missing from the final exchequer version.<sup>18</sup> Thus, for example, at Great Cressingham in Norfolk the Little Domesday Book recounts that the villeins of the manor had half a plough-team, while the demesne had three, as well as five rounceys (a type of work-horse<sup>19</sup>), twenty-two animalia (that is, non-working cattle), seventeen swine, and eighty sheep.<sup>20</sup> As can be seen, there are a number of qualifications about this information. First, only the demesne stock is given; peasant stock is never itemised. This is a serious omission but one we can do little about, and we must in fact make do with what is told about demesne stock only. Second, the plough animals are incorporated in the plough-team figures. This qualification, however, can be got round by simply assuming that each plough-team had eight oxen, an assumption that will be investigated in a short while, but which for the moment can stand as it is. This means, then, that the demesne at Great Cressingham had twenty-four oxen (for its three plough-teams) as well as five horses, and that in this case horses provided 17.2 per cent of the demesne working stock.

Altogether the working stock for some 4,000 demesnes can be extracted in this way for the above-mentioned counties. To speed up matters, a systematic sample of every tenth of these demesnes was taken and the level

of horses for each county worked up in the way shown in Table 2.2.<sup>21</sup> The number of horses was adjusted for those which were definitely not working animals, namely the large numbers of wild and forest mares which crop up on some estates, particularly in the western counties. These herds of primarily breeding animals, comparable to the Anglo-Saxon studs mentioned above, took no part in the agricultural process and hence are excluded from our analysis. It is presumed that the numbers of adult horses remaining were working animals and these are shown in column 4. Included in these figures are donkeys and mules, which were almost certainly part of the demesne animal work force and, in the case of mules at least, only a little less efficient than horses. In any event, they only amounted to a small fraction of the work-horse total.<sup>22</sup>

TABLE 2.2

Sampled Domesday Data for Demesne Horses and Oxen

<u>County</u>	(1) <u>No. of Demesnes</u>	(2) <u>Demesne Plough- teams (A)</u>	(3) <u>No. of Oxen (A x 8)</u>	(4) <u>No. of Work- horses</u>	(5) <u>Percentage Work- horses</u>
Norfolk	69	116.5	932	61	6.1
Suffolk	62	107.5	861 <sup>23</sup>	62	6.7
Essex	65	129.0	1,032	88	7.9
Cambs	18	45.0	360	18	4.8
Dorset	12	23.5	188	13	6.5
Somerset	66	126.0	1,008	48	4.5
Devon	89	135.125	1,081	14	1.3
Cornwall	25	32.375	259	3	1.1
Total			<u>5,721</u>	<u>307</u>	
Average					5.1

Altogether the average level of work-horses for the eight counties comes to 5.1 per cent, or one horse for every nineteen oxen, a considerable majority for oxen. There is, as well, a significant distinction between those counties in the east, where the proportion of work-horses was

6.7 per cent (or one horse for every fourteen oxen), and those in the west, where the proportion was only 3.0 per cent (or one horse for every thirty-two oxen). We are fortunate in this respect in having two regions which, as we shall see later, were very much on opposite poles as far as the use of work-horses is concerned. Since both regions are fairly equally represented in Table 2.2 (214 demesnes for the East Anglian group of counties compared to 192 demesnes for those in the south-west), then we might expect the figure of 5.1 per cent given in the table for the eight counties altogether to be fairly representative of the country as a whole, at least to within a per cent or two.

However, there is still the possibility that horses were underenumerated, even in those variants of the survey that normally recorded them. This suspicion is hardened in our sample by the number of demesnes that fail not only to mention horses but all other animals as well. This is particularly the case for the eastern group of counties where 24.8 per cent of the demesnes in the sample had no animals save those mentioned incidentally in the plough-teams; in comparison the western group of counties only had 8.3 per cent of such demesnes. In some cases, of course, this may have only reflected actual conditions, since, as indicated by later material, it was not unknown for some demesnes to have plough animals only. Even so, it seems probable that the commissioners often simply elected not to record extra animals, particularly those on small demesnes of one plough-team or less. To correct for this possible distortion, the demesnes with no extra animals were eliminated from the sample and the results recalculated, as shown in Table 2.3.

In the end, the possibility that some horses may have been purposefully ignored by the Domesday commissioners seems to have had little effect; the exclusion of the suspected demesnes only made a slight change in the overall level of work-horses for the eight counties - a rise from 5.1 to 5.8 per cent, which we can more or less regard as minimum and maximum figures.

TABLE 2.3

Work-horse Levels Excluding Demesnes with Suspected  
Underenumeration of Livestock

<u>County</u>	<u>No. of Demesnes</u>	<u>% Horses (excl. suspected demesnes)</u>	<u>% Horses (all demesnes)*</u>
Norfolk	49	7.9	6.1
Suffolk	47	7.6	6.7
Essex	49	9.8	7.9
Cambs	16	5.0	4.8
Dorset	12	6.5	6.5
Somerset	60	4.8	4.5
Devon	81	1.4	1.3
Cornwall	23	1.2	1.1
Average		5.8	5.1

\* from Table 2.2

As expected, the exclusion of these demesnes had rather more effect on the eastern counties, raising the proportion of horses here from 6.7 to 8.0 per cent - in Essex it rose to nearly ten per cent. The rise in the western counties was much more modest, from 3.0 to 3.1 per cent overall. In both regions, however, oxen still clearly dominated, and this is despite the most optimistic estimate we can make for the overall percentage of work-horses at Domesday; it is unlikely, for instance, that in the remaining demesnes the commissioners would go to the trouble of recording sheep, cattle, goats, and pigs without fully recording horses as well.

At this point we must consider an essential question. How sure are we of the assumption that the Domesday plough-team always consisted of eight oxen? The number is not so much in doubt. For most of the country the concept of an eight-animal plough-team was an integral part of the Domesday survey, where it was used more as an accounting aid than as a factual description of plough-team sizes at the time. Reginald Lennard

has shown how this intention may have broken down for the south-western counties, however, where a comparison between the exchequer and Exeter Domesdays reveals that here the commissioners may have elected to deal with actual team sizes rather than a notional one of eight oxen. Thus, for example, when the exchequer Domesday referred to half a plough-team at a certain place, the Exeter version often described the same team as being of three oxen. Lennard, by equating the two, maintained that in cases like these the commissioners were considering a full plough-team as being one of six oxen.<sup>23</sup> On the other hand, H.P.R. Finberg argued that the apparent variability was caused by the clerks rounding up to the nearest half or full team when preparing the final exchequer version.<sup>24</sup> As he puts it, "One or two beasts more or less were not allowed to interfere with the standard reckoning [of eight oxen]."<sup>25</sup> Therefore three oxen were near enough to half a team of eight oxen to justify them being considered as such. In general, it would seem that, at best, Lennard's argument as to a variable Domesday plough-team only applies to certain parts of the country, particularly the south-west.<sup>26</sup> Even if one accepts his variable plough-teams, they still tend to average out to an eight-animal team, or at worst a seven-animal one, which would not make any significant change to our results.<sup>27</sup>

The composition of the Domesday plough-team presents a much more serious problem. Although we have been assuming that oxen were the only plough animals at Domesday, it is not inconceivable that some of the plough-teams in the country were comprised not only of oxen but horses as well, say four of each, or even of horses alone. Fortunately Domesday is full of incidental remarks from which it is possible to infer the normal composition of the plough-team in a particular area. These usually occurred when the number of plough animals available on a manor did not fit neatly into the groups of eight favoured by the commissioners. Thus at Sotterley in Suffolk it was stated that at the time of the Conquest there had been two plough-teams and "now" (1086) there were "three and

three oxen"; or it may have been even more explicitly stated, as at Durnford in Wiltshire: "There are six oxen in the demesne plough".<sup>28</sup> Consequently a sample of twelve counties was taken - Norfolk, Suffolk, Kent, Bedfordshire, Buckinghamshire, Oxfordshire, Northamptonshire, Wiltshire, Cornwall, Worcestershire, Cheshire, and Yorkshire - and the surveys for these counties examined entry by entry. Altogether there were over 250 references for which the plough animals were specified in a fashion similar to the examples given for Sotterley and Durnford above. All the plough animals mentioned were oxen. There were as well over fifty references where oxen were mentioned in relation to land measurements: e.g., "There is land for four ploughs and two oxen" (Lilbourne, Northants), or in the more common form, "There is land for six oxen" (Weel, Yorks).<sup>29</sup> These last, of course, are less conclusive in that the measurement of land in oxen, as in the northern "bovate", may refer to an archaic situation; nonetheless they are still suggestive.

These references to oxen in the plough-team were not restricted to demesnes either. In fact the majority of them referred to peasant plough-teams. Take the example of Norfolk. Of nearly a hundred references to oxen in plough-teams, only ten involved demesne ploughs; the rest dealt strictly with the peasantry. Some of these latter references were quite specific, as a small sample of them shows:

- 1) "In Kirby Bedon there are two sokemen and a half with twelve acres. Then as now they plough with three oxen.
- 2) "In Bastwick two freewomen...plough now as then with two oxen."
- 3) "In Ashby there are two freemen...with nine acres. Now as then they plough with two oxen."
- 4) "In Rockland and Surlingham William de Noers holds two villeins with sixteen acres and two acres of meadow. Then and afterwards they held half a plough; now they plough with two oxen."
- 5) "William the Fat held of Robert in Fersfield one freeman...with four acres...He then ploughed with two oxen, now one."

- 6) "In Plumstead is one bordar, Godric's man, with nine acres of land. Now as then he ploughs with two oxen."<sup>30</sup>

As can be seen, oxen were employed as plough-beasts by every sort of tenant, and this unanimous preference for the animals at this time is all the more significant when one considers that Norfolk was one of the very first counties to start replacing them with horses, as we shall see later. In short, although such informative references as those above represent only a small fraction of the entries in Domesday, their sheer consistency points to the overwhelming use of oxen as plough animals for all sections of society. The only other interpretation that can be entertained is that the commissioners were so perversely bureaucratic that they blithely ignored all the horses, mules, and donkeys ploughing in front of them and jotted down oxen instead. Had this situation existed, however, it would almost certainly have revealed itself very quickly in the variety of the Domesday record. We can only assume, therefore, that oxen were the sole plough animals in use at the time of the survey.<sup>31</sup>

The evidence, then, still swings very much towards the ox as being the pre-eminent draught animal in England at the time. The uniformly low averages for the level of horses, however, does hide a great degree of variation. The contrast from county to county can be seen in Tables 2.2 and 2.3, but even within counties a fair degree of differentiation is encountered. Using our sample again, Table 2.4 provides a county by county breakdown of this variation in work-horse levels, expressed in per cent of total draught stock - horses and oxen - and excluding those questionable demesnes mentioned above where the presence of horses may have gone unrecorded. As is evident from the table, even when the questionable demesnes have been excluded, more than half of the remaining demesnes still had no horses. The majority of these horse-less demesnes came from the west, but even the east had a high proportion of them.

TABLE 2.4

Variations in the Levels of Domesday Work-horses

County	No. of Demesnes with no Horses	Less than 5% Horses	No. of Demesnes with Horses							
			5.1- 10.0%	10.1- 15.0%	15.1- 20.0%	20.1- 25.0%	25.1- 30.0%	30.1- 35.0%	35.1- 40.0%	40.1- 45.0%
Norfolk	22	--	10	11	5	--	--	--	--	1
Suffolk	16	1	11	14	2	1	--	1	1	--
Essex	16	3	5	15	7	1	1	1	--	--
Cambs	8	2	3	1	1	1	--	--	--	--
Dorset	6	--	3	--	3	--	--	--	--	--
Somerset	30	7	11	10	1	1	--	--	--	--
Devon	70	--	5	6	--	--	--	--	--	--
Cornwall	21	--	1	1	--	--	--	--	--	--
Total	189	13	49	58	19	4	1	2	1	1
%	56.1	3.9	14.5	17.2	5.6	1.2	0.3	0.6	0.3	0.3

Essex, for instance, the county with the greatest proportion of horses, had none of the animals on nearly a third of its demesnes. This seemingly country-wide prevalence of horse-less demesnes goes a long way to explain why the average percentages of work-horses were so low. On the other hand, considered by themselves, the 148 demesnes with horses had an average 11.1 per cent of them in their draught stock totals, and some individual demesnes reached considerably higher levels. Rudham in Norfolk, for instance, with five rounceys and one mule accompanying a single plough-team, consequently had its horses and mule comprising 42.9 per cent of the animal work force.<sup>32</sup> Demesnes with proportions of work-horses at this level, however, were rare, and it could be that these cases included riding horses as well.

An interesting feature of the demesnes that did have horses is that the animals were often found in set proportions to the number of plough-teams on the demesnes. Thus 55 (or 37.2 per cent) of the 148 demesnes with horses had them in proportions of one horse for every plough-team, and another 34 (or 23.0 per cent) had one horse for every two plough-



teams. Ratios of this kind are often found in later material, where the single horses are shown to be harrowing animals following after the plough (or ploughs).<sup>33</sup> Presumably the same sort of situation existed at Domesday.

What effect did geographical factors, such as soil or terrain have on the distribution of Domesday work-horses? Although, as we have seen, some differences in work-horse levels did exist between counties, particularly when comparing the east and west, these geographical factors seemingly had little effect within counties. An attempt was made to quantify this by separating the demesnes with work-horses from those without and plotting them statistically to see if some sort of infra-county regional variation was at work. In view of the time-consuming nature of the exercise, it was limited to the three eastern counties of Norfolk, Suffolk, and Essex. The results were disappointing. Although the distribution of demesnes with horses versus those without did show some differences in trend - for example, in Essex demesnes with work-horses were situated somewhat more northerly than those without - the degree of scatter in the data was enough to rob the results of any great significance.<sup>34</sup> One of the counties, again Essex, was further analysed hundred by hundred. Once more, although there was some grouping of demesnes with work-horses in some hundreds and demesnes without such horses in others, the situation was too mixed to form any firm conclusions. We can only surmise that the introduction of the horse into English farming at this time was still too much in its infancy for detailed regional variation to have formed, or that the Domesday data are not accurate enough to support analyses of this type.

Another possible factor affecting the use of horses at Domesday is that of landlordship, in particular whether the demesne was run under lay or ecclesiastic control. Ecclesiastic and especially monastic

agriculture during the early medieval period has often been cited as being notably innovative, particularly in such matters as land reclamation and stock raising.<sup>35</sup> Was this supposedly enlightened attitude also reflected in the number of horses found on ecclesiastic estates at Domesday, as churchmen experimented with new modes of traction? To answer this question, the demesnes in our sample - excluding the questionable ones - were separated according to whether they were lay or ecclesiastic and the percentage horses worked out for each grouping. The results are contained in Table 2.5.

TABLE 2.5

The Level of Domesday Work-horses on  
Lay versus Ecclesiastic Demesnes

a) Eastern Counties

<u>County</u>	<u>Lay Demesnes</u>		<u>Ecclesiastic Demesnes</u>	
	<u>No. of Demesnes</u>	<u>% Horses</u>	<u>No. of Demesnes</u>	<u>% Horses</u>
Norfolk	43	7.8	6	8.2
Suffolk	40	7.6	7	7.7
Essex	39	10.4	10	7.5
Cambs	12	5.4	4	4.1
Average		8.3		7.0

b) Western Counties

<u>County</u>	<u>Lay Demesnes</u>		<u>Ecclesiastic Demesnes</u>	
	<u>No. of Demesnes</u>	<u>% Horses</u>	<u>No. of Demesnes</u>	<u>% Horses</u>
Dorset	9	6.6	3	5.9
Somerset	53	4.5	7	7.1
Devon	76	1.4	5	0.0
Cornwall	20	0.9	3	3.4
Average		3.0		4.6

A particular demesne was considered lay or ecclesiastic according

to whom was last in the chain of tenure. For example, a demesne held as tenant-in-chief by a great ecclesiastical lord but given in fee to a lay sub-tenant was considered to be a lay demesne on the grounds that it was the sub-tenant who effectively managed the land.<sup>35a</sup> As a result, the proportion of demesnes actively administered by churchmen was very small - only 45 (or 13.2 per cent) of the 342 demesnes making up Table 2.5. In any case, the table indicates that whether a demesne was run by laymen or clerics made very little difference to the number of horses that was employed on it. Seemingly laymen tended to use more horses than churchmen in the east, but less in the west. On the other hand, the proportion of demesnes with horses - as opposed to those without - was greater for church-run rather than lay estates, 57.8 per cent (or 25 out of 45 demesnes) versus 42.1 per cent (or 123 out of 292 demesnes). The inference here is that, although the overall level of horses was more or less the same on both lay and ecclesiastic demesnes, a rather greater percentage of clerics was employing the animals than laymen. Statistically speaking, though, the significance of this trend is very weak.<sup>36</sup>

In short, it seems for the moment at least that Anglo-Norman landholders, both lay and ecclesiastic, were content to use a heavily ox-dominated system of traction. Was this the one they inherited from the pre-Conquest period? A check on this is furnished by the Little Domesday survey for Norfolk, Suffolk, and Essex. Here the livestock was recorded on a considerable number of manors for both 1086 and T.R.E. (that is, the time of Edward the Confessor on the eve of the Conquest). The data from the cases that occurred in our sample are summarised in Table 2.6.

From the table it seems clear that the percentage of horses in the draught stock of these demesnes differed little in 1086 from that found over twenty years earlier in the time of Edward the Confessor; only Essex demonstrates what could be called a significant shift to horses over the

TABLE 2.6Percentage Work-horses at Domesday and T.R.E.

<u>County</u>	<u>No. of Demesnes</u>	<u>% Work-horses</u>	
		<u>1086</u>	<u>T.R.E.</u>
Norfolk	37	7.9	7.0
Suffolk	33	7.7	8.8
Essex	33	10.0	6.9
All 3 Counties		8.6	7.6

intervening period. However, this appearance of unchangeability may be somewhat illusory, since it must be noted that the demesnes included in the table are only those cases where extra livestock (beyond that indicated in the plough-teams) was definitely mentioned at T.R.E. The underlying assumption here is that when Little Domesday is silent about this extra livestock T.R.E. it simply means that the commissioners omitted to record it or did not have the relevant information to hand. This, of course, may be mistaken. Silence about livestock T.R.E. may also have meant that there was no extra livestock there; hence, by excluding these cases from Table 2.6, we overestimate the numbers of this ancillary livestock - and thus horses - at the time of the Conquest. In order to determine how much effect this could have on the figures, it was decided to create a "worst scenario" situation for horses T.R.E. by including all the demesnes in Table 2.3 for these three counties and recalculating the figures. In this way we can obtain minimum and maximum figures for horses T.R.E., which are comparable with those already calculated for 1086. Both sets of data are contained in Table 2.7 and shown pictorially in Figure 2.5.

We can see from Table 2.7 and Figure 2.5 that the larger range of figures for T.R.E. reflects the uncertainty of the data for this earlier period. Apart from that, there seems little to choose between the levels of farm-horses at T.R.E. and 1086. Only Essex again shows what looks

TABLE 2.7

Likely Limits for the Percentages of  
Work-horses at 1086 and T.R.E.

<u>County</u>	% Work-horses			
	1086		T.R.E.	
	<u>Max*</u>	<u>Min**</u>	<u>Max</u>	<u>Min</u>
Norfolk	7.9	6.1	7.0	4.5
Suffolk	7.6	6.7	8.8	6.0
Essex	9.8	7.9	6.9	3.5

\* from Table 2.3

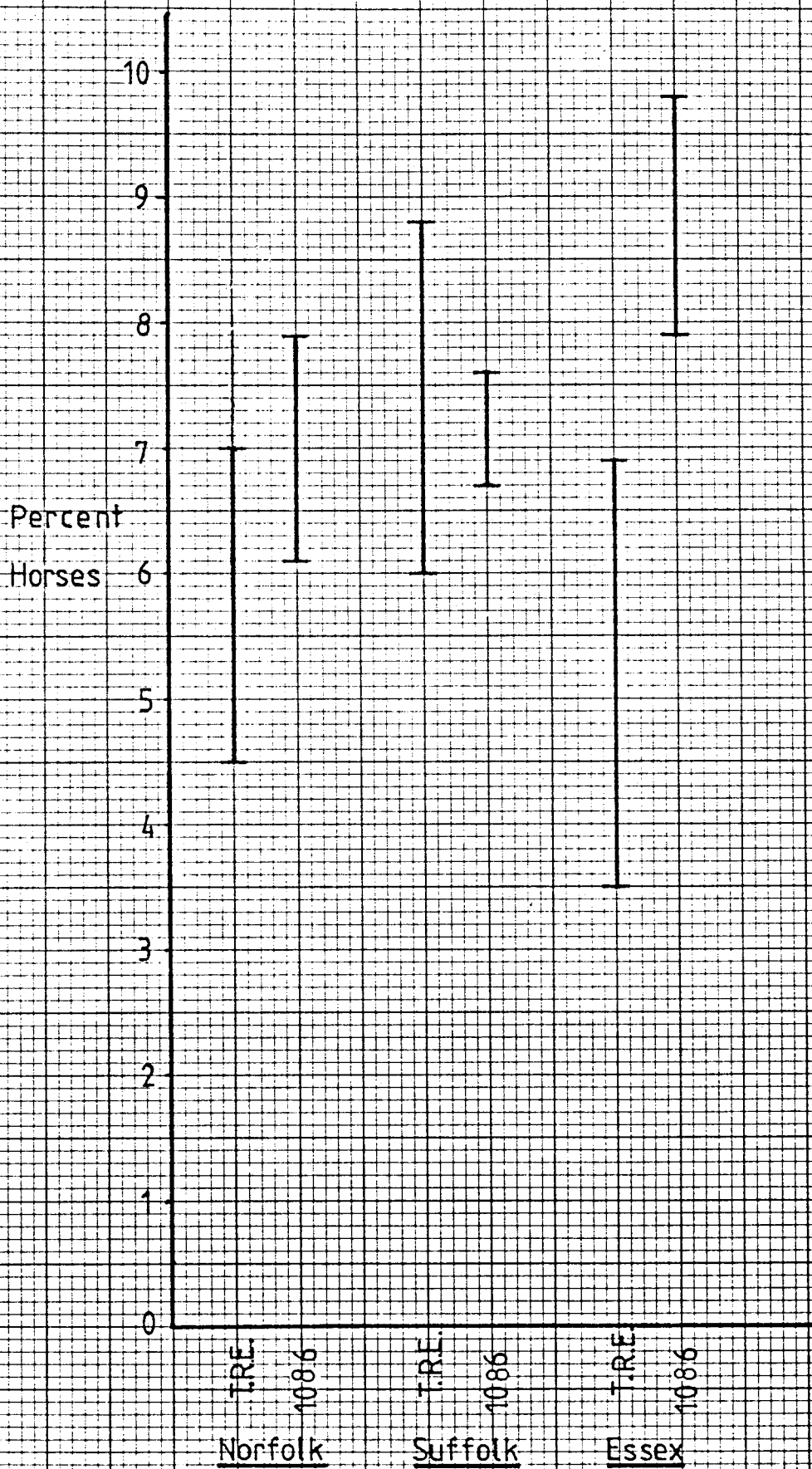
\*\* from Table 2.2

to be a definite rise in the incidence of horses, although in absolute terms the new levels of horses in the county were still very small in comparison to oxen, at best only one horse to every nine oxen.

If the Domesday survey can be trusted at all, then, the percentage of work-horses engaged on English demesnes remained low for at least twenty years after the Conquest.<sup>36a</sup> As for peasant draught animals, we are almost completely in the dark. We do know that they used only oxen for ploughing, and that consequently most peasants probably had one or two of the animals and perhaps even more. As with the Anglo-Saxon gebur, however, it is entirely possible that the Domesday peasant also had a horse to go along with his oxen, and that this would automatically push horse levels among the peasantry above that on the demesne. That the peasantry probably did have horses is indicated by an entry for Dean in Bedfordshire, where it is said that William de Warenne disseised a certain William Spec of his land there and took away two horses from his men.<sup>37</sup> Beyond this, however, little can be said for the moment.

Fortunately new and more accurate sources become available in the twelfth century. First among these were the great estate surveys. The earliest is the Burton Abbey Survey B, dating from c.1114-8, and other

Figure 2.5: Percentage Of Horses At 1086 And T.R.E.  
For Three Counties



valuable surveys and extents follow later in the century.<sup>38</sup> Although the primary purpose of these surveys was to record the services and dues owed by the various tenants on each manor of the estate in question, they also included in many cases a short inventory of the demesne livestock. Thus on the Ramsey Abbey manor of Elton in Huntingdonshire it is stated that, during the reign of Henry I, the demesne had five plough-teams of eight oxen apiece, ten cows, one bull, 160 sheep, two harrowing horses (equis occatoribus), and 100 pigs.<sup>39</sup> Such detailed lists are extremely useful for indicating the labouring horses and oxen, especially at places such as Elton, where later listings provide interesting comparisons with the earlier ones.

A second source is that provided by stock-and-land leases of the type already cited for the Anglo-Saxon period. The twelfth century, particularly the early and middle decades, was a notable time for the letting out of whole manors, demesne and all, and as a result a number of stock-and-land leases survive for this period. For example, c.1191, two Suffolk manors belonging to the Abbey of St. Edmunds, Groton and Semer, were leased to Adam of Cockfield for life. Along with Groton went the stock for one plough-team, namely six oxen and two horses, as well as one harrowing horse; Semer, on the other hand, was supplied with three plough-teams, two of six oxen and two horses apiece and a third of eight horses alone, plus one harrowing horse, six cows, one bull, 100 sheep, and ten pigs.<sup>40</sup> Here, as to a certain extent is the case with the surveys as well, the stock listing may be describing what the lessor thought was suitable for the demesne rather than what the farmer actually used. Still, the leases accurately reflect the practice at the time of leasing (if not afterward), and as such they are statistically grouped with the surveys. Grants of land complete with stock are also included in this category.

A third source is provided by a single set of documents, the Rotuli de Dominabus et Pueris et Puellis.<sup>41</sup> This set of rotulets listed all the

manors held in wardship or "marriage" by the king or his designates in twelve counties during the period from Whitsuntide to Michaelmas, 1185.<sup>42</sup> The prime concern of the documents was to record the annual monetary return of the manors, but frequently indicated as well is the stock normally appurtenant to the demesne. Thus the demesne of the manor of Dunton Chamberlain in Dunton, Bedfordshire had twelve oxen, four horses (averis), one calf, five pigs, and seventy-eight sheep, the manor itself being worth fifteen pounds per year.<sup>43</sup>

A fourth major source is that of the Pipe Rolls, which are extent in the Pipe Roll Society volumes from 1159 to the end of the century and beyond. Contained in them are numerous references to the restocking of escheated manors. Apparently this restocking often had to be done from scratch, since in a number of cases it is stated that the manor was sine instauratione.<sup>44</sup> In cases where the stock purchased was insufficient for even one plough-team, an additional <sup>purchase</sup> often occurred in the following year which filled out the working and non-working stock to a more practicable level. A good example is provided by the manor of Rotherfield Greys in Oxfordshire, where one ox and four sheep were bought in 1194-5 and a further twelve oxen, one affer (that is, a work-horse), five cows, one bull, fifty sheep, and six pigs added the following year "to complete the stock of the said land".<sup>45</sup> In short, it seems reasonable to expect that in the majority of cases the stock bought for the escheated manors do in fact represent complete or nearly complete sets of demesne animals. This is particularly evident in the case of draught oxen, which are continually being bought in multiples of six, eight, or ten, corresponding - presumably - to the size of the plough-team on those particular manors. However, since we cannot be certain that the Pipe Rolls are dealing with full sets of demesne stock, it was decided to use them as an independent check rather than combining them with the other sources.

These are not all the sources that can be invoked. Grants involving



pasture rights often list work animals, but since it is difficult to know how representative they were of normal demesne or peasant operating levels they have not been employed in this study. In any case, the surveys, leases, Rotuli de Dominabus, and Pipe Rolls altogether yield demesne draught stock data for over 400 manors or groups of manors. These are contained in Appendix B and are summarised by county in Table 2.8. The surveys, leases, etc., have been divided into those dating from the first half of the century and those dating from the second, while, as indicated, the Pipe Rolls are treated separately.

As in the Domesday material, the only horses considered are working animals. Those which were obviously used only for riding or for breeding purposes, as in a stud, are excluded from the analysis.<sup>46</sup> Another point to make here is one of terminology. This particularly applies to horses, which are found under a number of aliases in the documents, where they appear variously as averi, avri, auri, affri, caballi, stotti, hercarii, and occatores, the last two referring to their function as harrowing animals.<sup>47</sup> Faced with this confusing array of possibilities, doubts can be raised as to whether all of them were horses. In the experience of this study, however, the terms almost invariably referred to horses, and they have been considered as such for the purposes of Appendix B and Table 2.8. The ones causing the most trouble here are averus, avrus, and aurus; these are often confused with the neuter form, averium, which appears to have been a term for livestock in general.<sup>48</sup> When the masculine or feminine forms, averus, avera, avrus, avra, etc., are used, the internal evidence always suggests that they are horses. Thus in the Liber Niger of Peterborough Abbey, c.1125-8, we find reference being made to an avra cum pullo (foal).<sup>49</sup> Similarly, in the Liber Henrici de Soliaco of 1189, averi are continually being shod in a fashion that makes it difficult to consider them as anything but horses.<sup>50</sup> Other examples can be cited, particularly for later material, but for the moment we

TABLE 2.8

The Proportion of Work-horses on English Demesnes  
during the Twelfth Century

a - No. of Demesnes  
b - No. of Oxen  
c - No. of Work-horses  
d - % Work-horses

County	Surveys and Leases (1101-1150)				Surveys, Leases, and Rot. de Dom. (1151-1200)			
	a	b	c	d	a	b	c	d
Bedfordshire	3	44	10	18.5	4	88	9	9.3
Berkshire	1	64	3	4.5	1	30	4	12.1
Buckinghamshire	--	--	--	--	5	53	15	22.1
Cambridgeshire	2	28	7	20.0	5	60	21	25.9
Cheshire	--	--	--	--	--	--	--	--
Cornwall	--	--	--	--	--	--	--	--
Cumberland	--	--	--	--	--	--	--	--
Derbyshire	2	64	2	3.0	--	--	--	--
Devon	--	--	--	--	--	--	--	--
Dorset	3	108	3	2.7	2	50	2	3.8
Durham	--	--	--	--	1	20	2	9.1
Essex	2	86	10	10.4	5	70	21	23.1
Gloucestershire	4	168	14	7.7	1	20	2	9.1
Hampshire	1	60	5	7.7	1	35	1	2.8
Herefordshire	5	72	9	11.1	--	--	--	--
Hertfordshire	1	20	1	4.8	1	54	6	10.0
Huntingdonshire	8	170	24	12.4	10	238	47	16.5
Kent	--	--	--	--	--	--	--	--
Lancashire	--	--	--	--	--	--	--	--
Leicestershire	2	36	1	2.7	--	--	--	--
Lincolnshire	4	59	2	3.3	4	102	6	5.6
Middlesex	--	--	--	--	--	--	--	--
Norfolk	7	91	39	30.0	14	122	59	32.6
Northamptonshire	17	343	17	4.7	2	24	5	17.2
Northumberland	--	--	--	--	--	--	--	--
Nottinghamshire	1	16	0	0.0	--	--	--	--
Oxfordshire	--	--	--	--	--	--	--	--
Rutland	1	12	0	0.0	--	--	--	--
Shropshire	--	--	--	--	--	--	--	--
Somerset	22	466	33	6.6	23	388	31	7.5
Staffordshire	8	136	11	7.5	--	--	--	--
Suffolk	--	--	--	--	14	117	59	33.5
Surrey	--	--	--	--	--	--	--	--
Sussex	--	--	--	--	--	--	--	--
Warwickshire	1	16	1	5.9	--	--	--	--
Westmorland	--	--	--	--	--	--	--	--
Wiltshire	9	216	11	4.8	--	--	--	--
Worcestershire	--	--	--	--	7	119	3	2.5
Yorkshire	--	--	--	--	--	--	--	--
County Unknown	1	22	1	4.3	2	32	0	0.0
Total	105	2,297	204		102	1,622	293	
Overall %				8.2				15.3

TABLE 2.8 (continued)

a - No. of Demesnes or  
Groups of Demesnes  
b - No. of Oxen  
c - No. of Work-horses  
d - % Work-horses

County	Pipe Rolls (1159-1200)			
	a	b	c	d
Bedfordshire	7	132	8	5.7
Berkshire	5	156	7	4.3
Buckinghamshire	8	102	9	8.1
Cambridgeshire	2	18	6	25.0
Cheshire	--	--	--	--
Cornwall	11	135	12	8.2
Cumberland	2	70	5	6.7
Derbyshire	1	56	8	12.5
Devon	6	132	5	3.6
Dorset	5	134	6	4.3
Durham	1	8	0	0.0
Essex	21	226	78	25.7
Gloucestershire	1	8	1	11.1
Hampshire	7	182	3	1.6
Herefordshire	2	2	1	33.3
Hertfordshire	2	19	5	20.8
Huntingdonshire	--	--	--	--
Kent	9	74	17	18.7
Lancashire	--	--	--	--
Leicestershire	2	34	3	8.1
Lincolnshire	2	17	0	0.0
Middlesex	1	80	0	0.0
Norfolk	2	8	6	42.9
Northamptonshire	6	84	13	13.4
Northumberland	8	171	5	2.8
Nottinghamshire	5	42	0	0.0
Oxfordshire	20	464	33	6.6
Rutland	--	--	--	--
Shropshire	--	--	--	--
Somerset	11	162	12	6.9
Staffordshire	7	78	5	6.0
Suffolk	2	30	3	9.1
Surrey	6	65	2	3.0
Sussex	11	266	25	8.6
Warwickshire	4	93	9	8.8
Westmorland	--	--	--	--
Wiltshire	12	207	9	4.2
Worcestershire	2	28	2	6.7
Yorkshire	7	154	14	8.3
County Unknown*	25	903	169	15.8
Total	223	4,340	481	
Overall %				10.0

\* or demesnes of groups of manors covering or likely to cover more than one county

shall refer the reader to Appendix E, where the question is explored more fully. Of mules and donkeys, only three Spanish asses appear in the twelfth-century material (i.e., at Burton upon Trent, c.1114-8). Similarly the working cattle were virtually all oxen<sup>(boves)</sup>, although two cows are mentioned as part of the three plough-teams at Pinbury (Glos) in the early part of the century. These were considered - statistically at least - as oxen and are included as such in our figures.

The data from Table 2.8, as regards the percentage of work-horses from period to period, can be quickly summarised as shown in Table 2.9.

TABLE 2.9

Summary of Percentage Work-horses from Various Sources, 1086-1200

	<u>% Work-horses</u>
Domesday Book (1086)	5.1-5.8
Surveys, etc. (1101-1150)	8.2
Surveys, etc. (1151-1200)	15.3
Pipe Rolls (1159-1200)	10.0

The figures show a gradual increase in the use of horses (on the demesne at least) from Domesday right through the twelfth century. This is especially the case with the surveys, etc., where the use of horses seems to have tripled by the end of the twelfth century. The Pipe Roll data show a less obvious rise, but it is still significant when compared to the Domesday figures.

A feature of this rise that becomes clear upon a closer look at Table 2.8 is the extreme importance that region had upon it, as is readily apparent in Table 2.10. The figures in brackets refer to the number of demesnes or groups of demesnes upon which each regional percentage is based. Figure 2.6 shows the same thing in pictorial form for the surveys, leases, etc. only, where the years 1125 and 1175 have been arbitrarily chosen as the midpoints for the pre-1150 and post-1150 periods.

TABLE 2.10Regional Variation in Demesne Work-horse Levels, 1086-1200

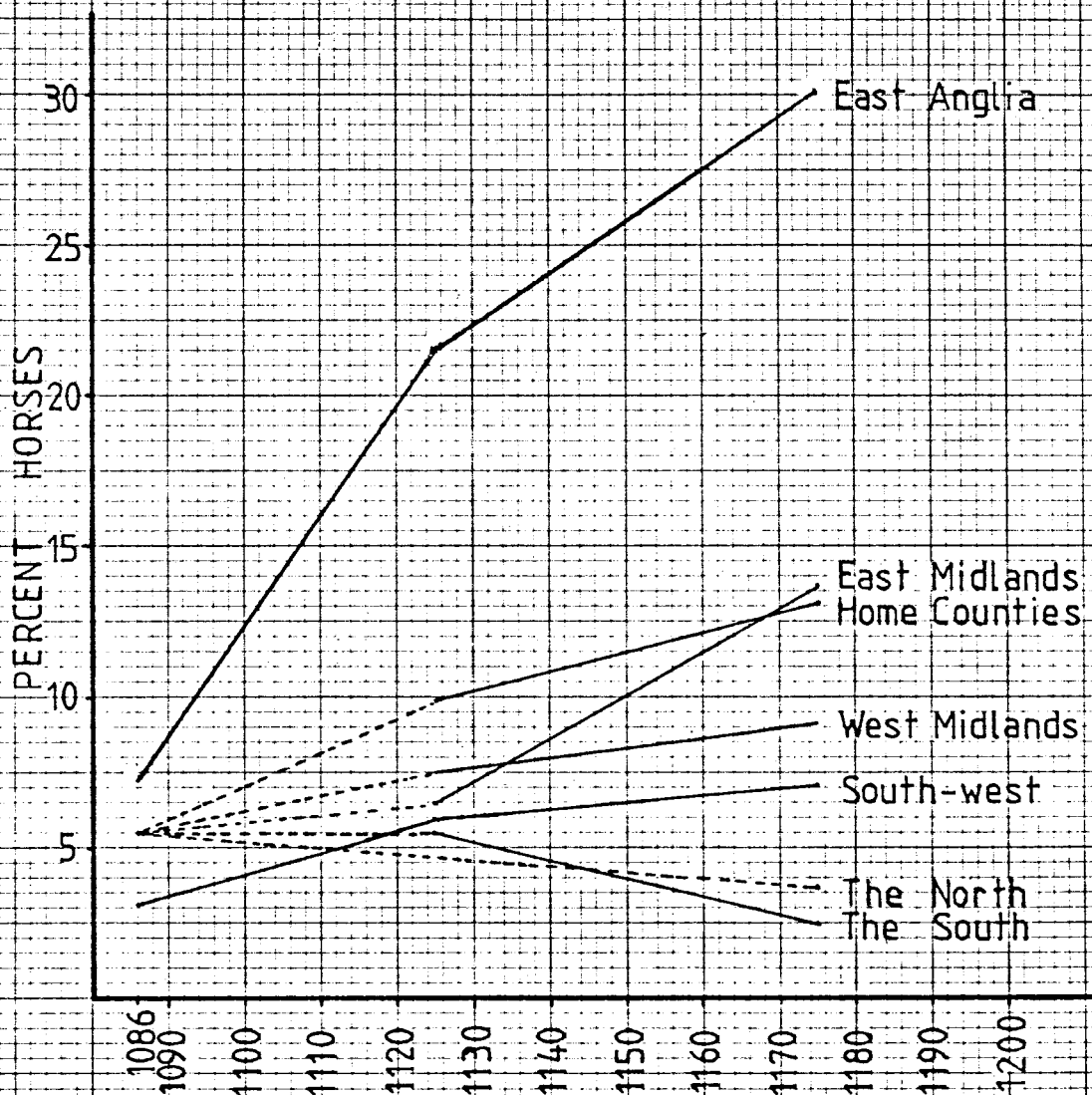
<u>Region</u> <sup>51</sup>	<u>Domesday</u>	<u>Percentage Work-horses</u>		
		<u>Surveys, etc.</u> <u>(1101-1150)</u>	<u>Surveys, etc.</u> <u>(1151-1200)</u>	<u>Pipe Rolls</u> <u>(1159-1200)</u>
East Anglia	6.7-8.0	21.5(11)	30.2(38)	24.8(27)
Home Counties	---	9.9(5)	13.1(11)	5.9(49)
The South	---	5.5(10)	2.5(8)	6.9(39)
South-west	3.0-3.1	5.9(25)	7.1(22)	5.9(33)
East Midlands	---	6.5(33)	13.7(16)	8.3(15)
West Midlands	---	7.5(20)	9.1(1)	8.9(17)
The North	---	---	3.7(3)	5.6(18)

Both Figure 2.6 and Table 2.10 show East Anglia taking a clear lead in the use of horses during the twelfth century. It also seems that, towards the end of the century, more horses were beginning to be employed in the Home Counties and the East Midlands, although the lower figures from the Pipe Roll data in these areas may cast some doubt on this. All other areas, that is, the South, South-west, West Midlands, and the North, remained under the 10 per cent level. It seems that in these areas the use of horses on manorial demesnes had not changed substantially since Domesday.

What was the timing in the areas that did change? Figure 2.6 shows that in East Anglia the shift towards the use of horses was already taking place by the first half of the twelfth century. Such at least was the case on eight Ramsey Abbey demesnes, mostly in East Anglia, which had converted to higher work-horse levels as early as the reign of Henry I.<sup>52</sup> However, it is likely that the change occurred towards the end of the reign (1135) rather than earlier, since on three other Ramsey demesnes the alteration did not happen until the middle of the century, as indicated in Table 2.11.

From the presence of two Huntingdonshire demesnes in Table 2.11, it

Figure 2.6: Regional Trends For The Use Of Horses From Domesday To c.1175 (based on surveys, leases, grants and Rotuli de Dominabus only)



N.B.: The dotted lines extrapolate to the midpoint between the minimum and maximum values for the overall Domesday figure (see p. 39 above).

TABLE 2.11

The Growth in the Use of Horses as Demonstrated  
on Three Ramsey Abbey Demesnes<sup>53</sup>

<u>Demesne</u>	<u>"tempus H I"</u>			<u>c.1160</u>		
	<u>a</u>	<u>b</u>	<u>c</u>	<u>a</u>	<u>b</u>	<u>c</u>
Elton, Hunts	40	2	4.8	24	8	25.0
Houghton with Wyton, Hunts	24	2	7.7	16	6	27.3
Girton, Cambs	16	1	5.9	12	5	29.4

a - No. of Oxen  
b - No. of Work-horses  
c - % Work-horses

would appear that the transition to higher working levels of horses was now moving into the East Midlands.<sup>54</sup> Meanwhile, the process was still taking place in East Anglia itself. At "Adulvesnasa", that is, the composite manor of The Sokens in north-east Essex, the arch-deacon, Richard Ruffus, who leased the manor c.1150, was farming land with twenty-nine oxen and thirteen stotti that his predecessor had worked with fifty-eight oxen and only six horses.<sup>55</sup> Similarly at Hardley in Norfolk, c.1175-86, the proportion of horses had risen to a third, where as recently as c.1163 the normal complement had seemingly been as many as thirty-two oxen with, at most, two horses.<sup>56</sup> In summary, it appears that the transition to higher levels of working horses was a process taking place throughout the twelfth century, affecting East Anglia first, but gradually moving into the East Midlands and the Home Counties.

At this point, it is time to consider in more detail the question of the percentage of work-horses across the country as a whole during the twelfth century. In order to compare this percentage with those of later eras, it is imperative that we obtain as representative a figure as possible, and in this we are faced with at least one major problem:

the overall percentage figures as they now stand in Table 2.8 are not based upon data evenly spread across the country. For instance, the post-1150 surveys, etc. produce the relatively high figure of 15.3 per cent for the level of horses among demesne draught animals, but much of this is due to the fact that the sample has an inordinately large proportion of demesnes (over a third) from the "high" horse area of East Anglia.

A method by which this distortion can be corrected is to weight the percentages of each of the seven regions in some way such that the unevenness of representation between areas can be eliminated. The difficulty, of course, is to find a suitable means of weighting. In this case it was decided to use the plough-team figures from Domesday, since for each area save the northern-most counties they provide a reasonable indicator of both the amount of arable in cultivation and the number of animals needed to work it. There are of course several reservations about using Domesday materials in a twelfth-century context. First, since we are dealing only with demesnes, it must be assumed that the proportion between peasant and demesne plough-teams was uniform from region to region. Although there are data that indicate that this was more or less the case for Domesday,<sup>57</sup> it is debatable how much this applies to the twelfth century. For one thing, it is well-known that the twelfth century, except perhaps for the last decade or so,<sup>58</sup> was a period of large-scale leasing by landlords, by which many demesnes passed out of the effective control of large landholders into the hands of smaller ones; some demesnes may even have been partly disintegrated to form new peasant holdings. Nevertheless it appears from the leases which are extant that in most cases the lessees carried on the same latifundial-type farming that had existed before, and so the land that they farmed can still in essence be considered as demesne. A more serious problem concerns the increased incidence of land clearance and assarting that took place during



the twelfth century, adding considerably to the cultivated land. It is entirely possible that this clearance altered not only the arable proportion between demesne and peasant land but also between region and region, thus tending to render the Domesday data more and more obsolete. It is to be hoped, however, that the Domesday plough-team figures can still provide a reasonable estimate of the relative proportions of arable between regions at the end of the twelfth century, even if in absolute terms the figures are somewhat low. In the absence of other suitable material, it is the best we can do.

The method of calculation can be inferred from Table 2.12. The Domesday plough-team figure for the North has been adjusted for the missing counties of Cumberland, Westmorland, Northumberland, and Durham using the same techniques employed by J.C. Russell in determining the Domesday population for this area.<sup>59</sup> Similarly the dearth of figures for the North from the pre-1150 surveys and leases was made up using the Pipe Roll data (the bracketed figure) as seemingly the best estimate for the region at this time.

When calculated in this fashion, the figures undergo some change, as Table 2.12 shows. The post-1150 survey figure, now corrected, has dropped to 12.4 per cent and is now only 3 per cent or so greater than the level of work-horses in the previous half-century. Only the corrected Pipe Roll figure at 10.2 per cent stays pretty much as it was before.

These figures now allow certain conclusions to be made. In short, it seems that the overall percentage of horses in the draught stock of demesnes across the country had risen to about 12½ per cent by the second half of the twelfth century, or one horse to every seven oxen. Relatively this was a considerable advance over the Domesday period when the ratio was more like one horse to every sixteen to nineteen oxen, but in absolute terms oxen were still very much the dominant draught animals. Only in eastern England and in particular East Anglia was the heavily ox-dominated

TABLE 2.12Correction for Overall Work-horse Levels in the Twelfth Centurya) Surveys and Leases (1101-1150)

<u>Region</u>	<u>% Work-horses(A)</u>	<u>Domesday Plough-teams(B)</u>	<u>A x B</u>
East Anglia	21.5	14,896	320,264.0
Home Counties	9.9	11,124	110,127.6
The South	5.5	12,102	66,561.0
South-west	5.9	12,738	75,154.2
East Midlands	6.5	12,383	80,489.5
West Midlands	7.5	14,675	110,062.5
The North	(5.6)	6,410	35,896.0
Total		84,328(C)	798,554.8(D)

Corrected % Work-horses (D/C) - 9.5

b) Surveys, Leases, and Rotuli de Dominabus (1151-1200)

<u>Region</u>	<u>% Work-horses(A)</u>	<u>Domesday Plough-teams(B)</u>	<u>A x B</u>
East Anglia	30.2	14,896	449,859.2
Home Counties	13.1	11,124	145,724.4
The South	2.5	12,102	30,255.0
South-west	7.1	12,738	90,439.8
East Midlands	13.7	12,383	169,647.1
West Midlands	9.1	14,675	133,542.5
The North	3.7	6,410	23,717.0
Total		84,328(C)	1,043,185.0(D)

Corrected % Work-horses (D/C) - 12.4

Continued on next page

TABLE 2.12 (continued)c) Pipe Rolls (1159-1200)

<u>Region</u>	<u>% Work-horses(A)</u>	<u>Domesday Plough-teams(B)</u>	<u>A x B</u>
East Anglia	24.8	14,896	369,420.8
Home Counties	5.9	11,124	65,631.6
The South	6.9	12,102	83,503.8
South-west	5.9	12,738	75,154.2
East Midlands	8.3	12,383	102,778.9
West Midlands	8.9	14,675	130,607.5
The North	5.6	6,410	35,896.0
Total		84,328(C)	862,992.8(D)

Corrected % Work-horses (D/C) - 10.2

system of traction beginning to break up. As for the timing of what change there was, the weighted averages indicate that a good part of it had already occurred by the first half of the century, particularly in counties such as Norfolk. The process was certainly continuing, though, and was spreading outwards from East Anglia right through the twelfth century.

In general, the data were unsatisfactory for determining whether this change in favour of horses was lay- or ecclesiastic-inspired, since no single source provided a suitable mix of lay and ecclesiastic estates with which to compare performance. The first signs of demesne managers suddenly employing greater numbers of horses, however, do occur, as we have already indicated, on the estates of Ramsey Abbey during the reign of Henry I,<sup>60</sup> while similar changes for lay estates are not definitely observed (in the Pipe Rolls and the Rotuli de Dominabus) until much later in the century. This, of course, may simply be due to accident, but the lower level of horses on the lay-dominated estates recorded in the Pipe Rolls, even in the latter part of the century, seems to indicate that

these estates were slower than their ecclesiastical counterparts to capitalise on the use of horses, particularly in the Home Counties and the East Midlands.

Finally, it must be noted that any conclusions concerning the level of work-horses in twelfth-century England is severely limited by the fact that, till now, we have only been considering demesne stock. In our discussion of the Domesday material, we questioned whether peasants employed horses at the same level as on the demesne, and the twelfth-century evidence presents us with the same dilemma. A particularly pertinent example occurs in an 1189 survey of the Glastonbury Abbey manor of Kentisford in Dorset, where it is stated that virgate-holders there held of the lord one horse, two oxen, and one cow, presumably as a normal livestock complement to the holding.<sup>61</sup> What is especially interesting here is the ratio of one horse to two oxen, a proportion well above that for demesnes in this part of the country. It is to be noted that this proportion of horses to oxen is identical to that implied for the Anglo-Saxon gebur in the Rectitudines Singularum Personarum (see pp. 33-6 above) and reinforces the speculation that one horse and two oxen might have been a typical draught stock complement for a peasant holding right through the Anglo-Norman period. If this were the case and assuming a ratio between peasant and demesne land of something like two to one,<sup>62</sup> then the overall level of horses among the working stock for all sectors of society at Domesday would be around 24 per cent, or one horse for every three oxen. This would rise to at least 26 per cent by the end of the twelfth century and probably much more.<sup>63</sup> Unfortunately there are no more references as clear as the Kentisford case with which to test this intriguing possibility. However, as we shall see, the extensive use of horses by the peasantry is frequently alluded to in twelfth-century documents, particularly in relation to labour services.

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b) The Employment of Horses and Oxen, 1066-1200

Of course, any increases in the proportion of horses engaged in farm work arises directly as a consequence of changes in the way in which the animals were employed. As we have surmised for Anglo-Saxon times, apart from riding, horses were only used for carrying by pack or perhaps for some harrowing. Oxen performed the major tasks of hauling and ploughing. By Domesday, despite the influx of a new ruling hierarchy, the situation had changed little. As we have seen, references to horses in the plough-team are non-existent in the Domesday survey. Nor is there any evidence as to their use in hauling, where oxen again dominate. Thus, on the demesne at Offenham, Littleton, and Bretforton in Worcestershire it is stated that "there are oxen for one plough, but they draw stone to the church."<sup>64</sup> Although there are no other entries in Domesday that so categorically show the ox as both ploughing and hauling beast, oxen for hauling alone are recorded for the Cheshire salt towns of Nantwich, Middlewich, and Northwich, where, for instance, "a man who brought a cart with two or more oxen from another shire paid four pence in toll."<sup>65</sup> The Domesday entries for Middlewich and Northwich are also interesting for their references to pack-horses; it was specified that men who loaded up their horses with salt so much as to break their backs paid two shillings if caught within a league of the town.<sup>66</sup> In other words, the Cheshire salt tolls highlight two distinct modes of transport that existed in England at this time, one based on ox-hauled carts or wains, and the other on pack-horses. The scarcity of evidence makes it a matter of conjecture whether this sort of partition existed right across England, but the low level of demesne horses even in East Anglia indicates that it may well have. Presumably, as indicated by the Bayeux Tapestry (see Figure 2.4), most horses were also employed with harrowing, although there is no direct evidence of this in Domesday save for the hercerarius found at Clopton in Cambridgeshire, which was probably a horse.<sup>67</sup> As we have already

indicated, the proportion of one horse to every one or two plough-teams supports this interpretation.

Demesne farms in the Domesday mould can best be seen in the Burton Abbey survey of some thirty years later. Thus, on the home manor of Burton itself there were two ploughs with sixteen oxen, plus four oxen for carting lime and another four for carting wood. On the equid side, there was one harrowing horse (equa ad herzandum) and the above-mentioned three Spanish asses, which were probably employed for pack-work. Also present at Burton was a stud of seventy mares and foals, but this was an exceptional feature found on only a few manors in the twelfth century.<sup>68</sup> Excluding these non-working mares and foals, the remaining horse and three asses comprised 14.3 per cent of the working stock. Relatively speaking, this is a much higher proportion than on the eleven other manors in the Burton survey for which the draught stock is adequately recorded.<sup>69</sup> Here the composition of the working stock was just over one horse for every two-and-a-half plough-teams, which, when included with the Burton figures, results in horse levels of 5.9 per cent of the working stock, very close to the Domesday average. On these other eleven manors there were no carting animals per se, and it seems that here this duty was performed by the plough oxen, as in the Domesday case for Worcestershire below. Nor were there any obvious pack-animals on these manors, and it must be presumed that this work was carried out by the one or two horses attending the plough-teams or that such animals were only considered necessary for the home farm at Burton.

As we have already noted, the relative consistency of work-horses levels at Domesday, even between regions as disparate as East Anglia and the South-west, indicates that the sort of draught stock arrangement outlined above was the prevailing mode all across England, and it was to continue so in many areas throughout the twelfth century. In other areas, though, change was clearly occurring. This is first noticed on

the Ramsey Abbey demesnes during the reign of Henry I, where for the first time in England horses are recorded as being used for ploughing. For example, at Ringstead in Norfolk, it is stated that in the time of the said king there were three ploughs, "each of four oxen and three horses".<sup>70</sup> As can be seen from this quotation, the horses were not used on their own but in conjunction with oxen, creating what is known as the "mixed team". Here the horses, whether two, three, or four, acted as pace-setters for the oxen following behind. Technically the effect was to achieve a greater ploughing speed while retaining the strength of oxen in slow-moving situations, especially when encountering patches of heavy, sticky soil.

However, even a partial replacement of oxen by horses in the plough-team had an immediate effect on the level of work-horses on the demesne, as the three Ramsey manors dealt with in Table 2.11 amply demonstrate. In time, mixed teams became a dominant feature on the Ramsey Abbey estates, where a possible fifteen out of eighteen demesnes had switched to the new ploughing arrangements by the end of the twelfth century.<sup>71</sup> The mixed team also introduced a new variety into the plough-team structure. Five different types of mixed plough-teams are evident on the Ramsey demesnes, ranging from two horses and eight oxen to four horses and two oxen, and at least three more types can be found on the demesnes of other estates (see Table 2.13 below for the full range of types). In some cases, plough-teams composed entirely of horses are evident, as, for example, at Semer in Suffolk mentioned above and at Keyston, Hunts, where the Pipe Roll for 1165-6 records the purchase of three plough-teams of oxen and one of horses.<sup>72</sup> On the other hand, there are no undisputed cases of demesnes using nothing but horses for their draught work, although two possible instances do occur at Great Wratting in Suffolk and Olney in Northamptonshire. The manor at Great Wratting had two horse, two cows, and twenty sheep in 1185. However, the small number of potential

draught animals and the heavy nature of the soil around Great Wratting - it is mainly clay - indicates that the working stock was incomplete, perhaps needing some oxen, or that the manor lacked arable. At Olney the Pipe Roll for 1166-7 records a purchase of six horses only for the manor, without, however, indicating their employment. In this case, although six horses could certainly have constituted an adequate plough-team, it is possible that the animals were simply being added to stock already there, or that the horses were being employed for purposes other than farming.<sup>73</sup> Otherwise the mixed team held sway whenever horses were used for ploughing.

Since the mixed team was becoming so prevalent in certain parts of the country, it would be instructive to chart its spread throughout the century. The main problem here involves trying to decide whether a demesne had mixed teams or not, since in most cases the plough-team composition can only be inferred from the numbers of draught animals available. Fortunately this can be simplified statistically. An examination of the Ramsey Abbey demesnes in Table 2.11 shows the scale of increase in the percentages of work-horses that occurred when there was a transition from all-ox to mixed plough-teams. It appears that a 20 per cent level of horses was the absolute minimum needed to support mixed teams, and indeed all demesnes for which mixed teams were unmistakably present had proportions of work-horses at this level or above.<sup>74</sup> Conversely, where the demesne undoubtedly employed all-ox teams, the level of horses remained below 20 per cent and usually less than 10 per cent.<sup>75</sup> The only possible exception to this rule occurred at Keyston above, where the single horse-plough may have pushed the level of work-horses on this manor to 20 per cent or above, even though there were no mixed teams. Among the verifiable cases, though, Keyston is very much the exception, and it may be that the single team of horses here was simply the transitory phase of a manorial demesne about to switch to mixed teams.<sup>76</sup> In



consequence, it seems reasonable to use the 20 per cent work-horse level as a dividing line in deciding whether a demesne had mixed plough-teams or not. In this case, those demesnes with 20 per cent or more horses are considered as having mixed plough-teams, and those with less than 20 per cent are considered as having all-ox plough-teams. Both types of demesnes have been plotted in Figures 2.7 to 2.10 for the first and second halves of the twelfth century.<sup>77</sup>

The maps show definite trends. Reginald Lennard, in his seminal article on twelfth-century demesne plough-teams stated that mixed teams were generally confined to eastern and east midland England,<sup>78</sup> and certainly this seems to have been the case by the end of the twelfth century (Figure 2.8). The main concentration of these teams falls within the counties of Norfolk, Suffolk, Essex, Cambridgeshire and Huntingdonshire. There is also a sprinkling of <sup>mixed</sup> teams in Kent, and one or two in outlying counties such as Buckinghamshire and Berkshire, although none of these cases is totally verifiable and may in fact be due to faulty data. Even within the mixed team counties, there were still areas - some quite extensive - where all-ox teams continued to predominate, for instance, in south central Essex or west Huntingdonshire (Figure 2.10). In general, these pockets of all-ox teams corresponded to areas of heavier soils. The three Huntingdonshire manors in Figure 2.10 - Kimbolton, Old Weston, and Ellington - are in the main situated on heavy clay land, as is south central Essex.<sup>79</sup> The inference here is that soil or terrain characteristics often prevented or at least delayed the introduction of mixed teams.

Nevertheless, as a comparison of the mixed plough-team distribution from the first to the second half of the century indicates (Figures 2.7 and 2.8), the practice of employing mixed teams on medieval demesnes was growing throughout the twelfth century. The striking degree of change over the century as shown on the maps is somewhat illusory, though, since

Figure 2.7. DISTRIBUTION OF DEMESNES HAVING OR LIKELY TO HAVE MIXED PLOUGH-TEAMS, 1001 - 1150



Figure 2.8. DISTRIBUTION OF DEMESNES HAVING OR LIKELY TO HAVE MIXED PLOUGH-TEAMS, 1151 - 1200

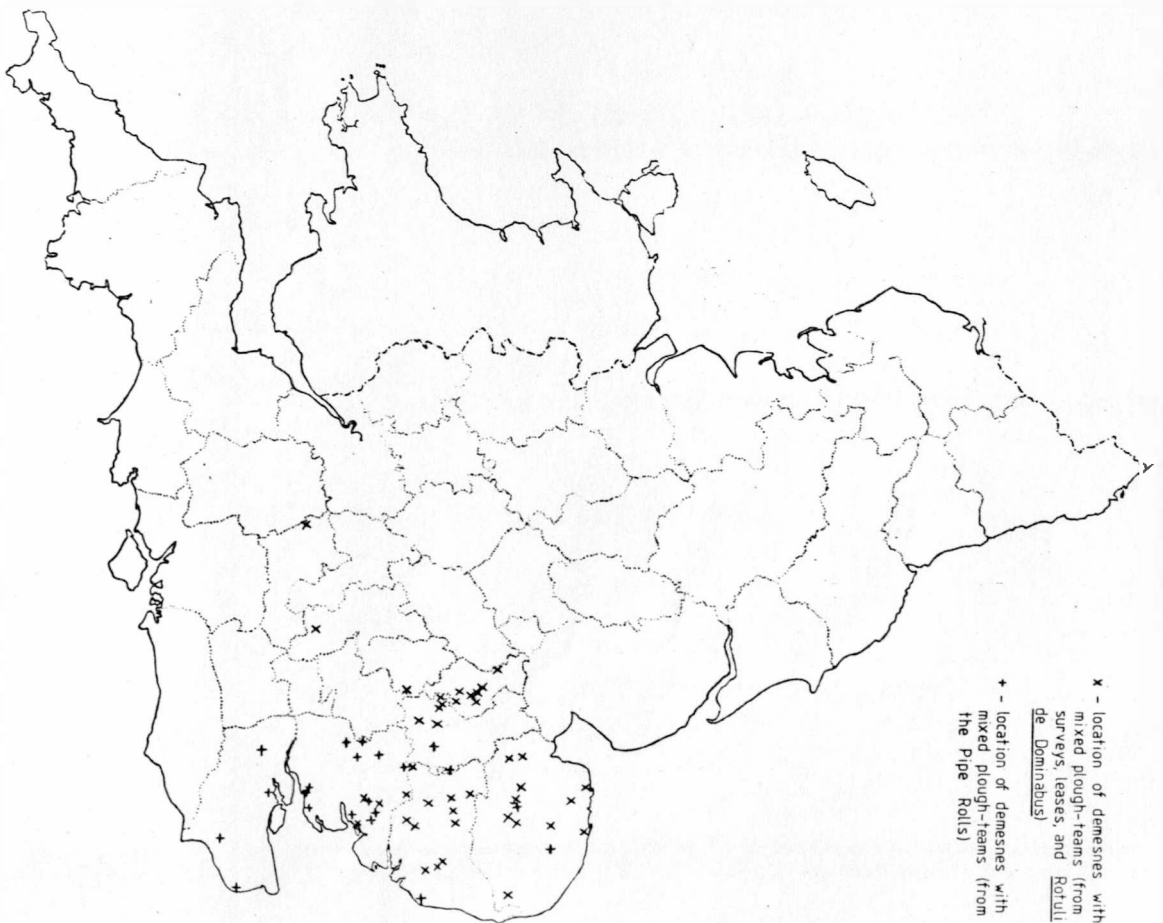


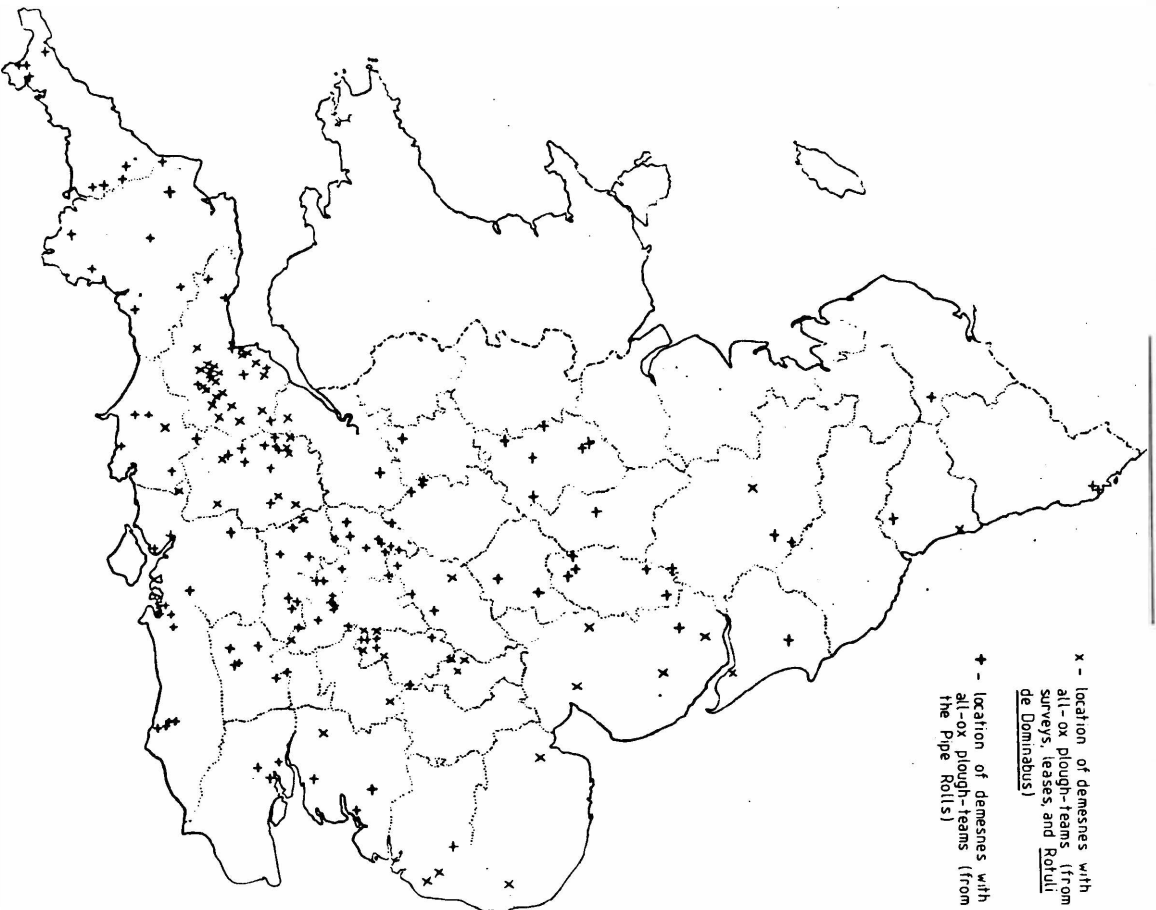
Figure 2.9. DISTRIBUTION OF DEMESNES HAVING OR LIKELY TO HAVE

ALL-OX PLOUGH-TEAMS, 1101 - 1150



Figure 2.10. DISTRIBUTION OF DEMESNES HAVING OR LIKELY TO HAVE

ALL-OX PLOUGH-TEAMS, 1151 - 1200



the relative lack of data for the eastern counties in the first part of the century may hide a greater incidence of mixed teams at that time than is otherwise indicated. However, the practice clearly seems to have been spreading into Huntingdonshire and probably northern Essex from the first to the second half of the century, as we have already seen above from the increase in horses levels.<sup>80</sup> In the early part of the century the incidence of mixed plough-teams was higher for Norfolk than anywhere else, and it seems natural to assume that the practice was first introduced here. This may either have been as a spontaneous innovation or as a technique borrowed from the Continent. The latter would seem more probable, since the use of the horse for ploughing on the Continent clearly predated its employment as such in England;<sup>81</sup> furthermore, East Anglia, with its connections with the Low Countries, would be a natural point of entry for both the idea and the horses needed to implement it.

Did peasants have mixed plough-teams? There is no evidence in the twelfth-century material that they did, and presumably because of their shortages of animals they might have been tempted to go completely to horses than a mixed team intermediate. Unfortunately there is little evidence that they did this either. Virtually all references to peasant ploughing animals in the twelfth century involve oxen only, such as the ploughing ox (boue arabili) owned by customary tenants at Temple Ewell in Kent in 1185,<sup>82</sup> or those associated with the widow, Gunora de Rode, who, along with other half-virgate holders at Pucklechurch (Glos) in 1189, had to appear at the lord's plough-boons with as many oxen as she had at the time.<sup>83</sup> Similar references to peasant oxen, usually in relation to ploughing services, occur at a number of other places in the documents.<sup>84</sup> On the other hand, peasant plough-horses are mentioned on the bishop of Worcester's manors of Kempsey (Worcs) and Hampton Lucy (Warks), c.1170, where customary tenants were required to harrow with a plough-horse or -horses (equo arantis or equis aratrorum).<sup>85</sup> These are curious references,

because they occur in a region which, even in later times, was noted for its loyalty to oxen for ploughing. It is possible that there has been a mistake in transcription - for example, equis aratorum may in fact have been wrongly copied for equis carectarum - but since the original document (i.e., the Red Book of Worcester) has been lost, there is little that can be done to check this out.<sup>86</sup> Otherwise, references to peasant plough-horses are non-existent at this time, and their presence must remain a matter of conjecture.

We have already reviewed the scanty evidence relating to harrowing at Domesday. Fortunately the twelfth century is much more forthcoming in this matter, especially in relation to manorial demesnes, where harrowing horses, appearing as equi hercatorii, equi occatores, or just hercarii and occatores in the documents, are a common occurrence in all parts of the country.<sup>87</sup> As we have seen with the Burton material, even in areas where oxen seem to have handled every other type of draught work, there were one or two horses to do the harrowing. This use of horses for harrowing even extended to the peasantry. For example, among the services listed for sixteen farmers (firmarii) holding twenty-five bovates at Morton (Durham) in 1183, it is stated that every two bovates owed eight days harrowing "with one horse".<sup>88</sup> The same peasant use of horses for harrowing is evident at nearby Warden,<sup>89</sup> and both references are all the more remarkable for occurring so far away from the relatively horse-oriented south and east. In the same way, good references to peasant horses harrowing in the twelfth century are also recorded for Gloucestershire, Kent, Somerset, Warwickshire, and Worcestershire.<sup>90</sup> Nowhere in the twelfth-century material examined in this study are oxen mentioned for harrowing.

Of all the activities dealing with horses and oxen in twelfth-

century England, the one for which it is hardest to draw firm conclusions is that of hauling. The early twelfth-century example of oxen being employed for hauling lime and wood at Burton in Staffordshire has already been referred to. On the other hand, it soon became a policy in many places to use horses for the same thing. Alexander Neckam, writing towards the end of the century, mentions horses for hauling and ploughing as a normal occurrence.<sup>91</sup> This is supported by occasional references from manorial documents. Thus, in 1155, a carectarius equus is found among the stock of the St Paul's demesne at Sandon in Hertfordshire, while a grant to the nuns at Yedingham in Yorkshire, 1185-1195, allowed them to take a cart and one horse every year to fetch plough rods from a wood in Staindale.<sup>92</sup>

Often, however, the documents are not very helpful on the question of hauling. This is particularly the case with the demesnes, where, as we have seen, it was very seldom the practice to lay aside any animals specifically for hauling, but rather to use the ploughing and possibly the harrowing animals whenever carting or suchlike was needed. This sort of doubling up also tended to eliminate harrowing animals as well, particularly on those manors which had adopted mixed plough-teams, the harrowing being taken over by one or more of the ploughing horses whenever opportunity permitted.<sup>93</sup> The avoidance of additional animals for hauling and harrowing was obviously undertaken from a cost-saving point of view, but it must have often limited the demesne manager's choice of draught animal for a particular job. Demesnes falling outside the mixed plough-team area, for instance, must often have been forced to use oxen rather than horses for hauling, simply because there not enough of the latter animals about. Thus at Hampton Lucy (Warks), c.1170, part of the services owed by the ox-men (bovarii) was to haul materials for the ploughs with the lord's plaustrum and oxen.<sup>94</sup> This is an isolated example, but the same sort of thing can be gleaned from looking at labour services due

from free and customary tenants, particularly those whose holdings were seemingly large enough to qualify as demesnes in their own right. Thus, according to the 1183 survey contained in Boldon Buke, Simon Vitulus held the village of Plausworth in Durham, for which, among other things, he had to haul wine with eight oxen, the only qualification here being that the formula describing the service was seemingly an ancient one and may not have been referring to conditions existing at the time.<sup>95</sup> A reference with a more contemporary ring to it occurs in the 1189 Glastonbury Abbey survey contained in the Liber Henrici de Soliaco. There a certain Godwin, holding half a hide in Nettleton, Wilts, owed as part of his labour services four oxen to carry a load (carriatam) of hay.<sup>96</sup> Smaller holdings also used oxen for hauling. Thus, in the same Glastonbury survey, Osbert de Bradafeld, holding a half-virgate at Wrington (Somerset) owed carrying services "with that which he has in plough"; given the area, this could only be oxen.<sup>97</sup> This same predilection for using oxen for ploughing and hauling is also seen across the border in twelfth-century Wales, where Giraldus Cambrensis describes it as an everyday event.<sup>98</sup>

On the other hand, it is clear that peasants in particular often employed horses for transporting goods, although in many cases this was by pack-saddle rather than by cart. Accordingly, c.1114-8, villeins at Burton, Abbots Bromley, and Leigh in Staffordshire all owed pack-horse service (auras ad summagium) to the Abbot of Burton.<sup>99</sup> Later in the century (c.1170) carrying by pack-horse (cum equis summagia facere) is specified as a service for tenants of the bishop of Worcester at Tredington (Warks) and similarly at Henbury-in-Salt-Marsh (Glos).<sup>100</sup> At other places carrying by horse is also indicated but the method unspecified. Thus, at Temple Ewell (Kent) in 1185, tenants were given food ipsi et equi for bringing two and a half seams of seed from Ospringe or any other appointed place, while at Greet (Glos) in the same year certain bordars had to

perform carrying services to Gloucester, Hereford, or elsewhere, while those who did not have horses had to do other works of a similar value.<sup>101</sup> This ambiguity in the method of carrying is also found in our "mixed team" area, as at Knapwell in Cambridgeshire, where each virgate holder was required to find two horses to carry provisions to Ramsey, without specifying how this carrying was to be done.<sup>102</sup>

What can we make of all this? Instances of ox- and horse-hauling have both been given, including a number of inconclusive examples relating to the peasantry. The few tentative conclusions that can be drawn are as follows:

1) If, as we have suggested previously, the ox was the dominant hauling beast in England during the eleventh and early twelfth centuries, then clearly some change towards using horses for hauling was taking place during the remainder of the period, as, for instance, the Sandon, Hertfordshire and Yedingham, Yorkshire examples indicate.

2) On the other hand, there is enough evidence, some of it late in the century, to indicate that ox-hauling continued to have popularity right to the end of our period, particularly in that part of the country falling outside the "mixed team" area.

3) Although carting by horses on a peasant level is not proven, clearly they were accustomed to using the animal for some form of goods transportation, whether by pack-horse or cart, and that this tendency was virtually countrywide. Consequently the level of horses owned by the peasantry across the country must have been quite high, if only to satisfy the carrying and harrowing services to which they were liable.<sup>103</sup> Indeed the typical draught stock ratio of two oxen to one horse indicated at Kentisford, Dorset (see p. 64) begins to look quite plausible.

c) The Size of the Plough-team, 1066-1200

The argument concerning the size of the medieval plough-team has



had a long and distinguished history in England, not only for its importance in interpreting the Domesday survey, but also for its implications concerning the formation of the open- or common-field system. It is a full century since Frederic Seebohm first developed his thesis that the large, eight-ox plough-team held the key to the communal system upon which the open fields were based.<sup>104</sup> Such a large team, Seebohm claimed, was by its very size beyond the means of all but a few cultivators. Consequently the inhabitants of a village had to group together to form communal ploughs, each villager contributing animals and equipment according to his means. The degree of cooperation thus engendered led to the careful allocation of strips so that, in the words of a later commentator, they "should be ploughed successively for each contributor to the plough team."<sup>105</sup> In its inception, this allocation was very fluid, each peasant annually receiving land according to the size of his contribution. It was only later that the strips became fixed in the possession of individual villagers.<sup>106</sup>

This strict technical interpretation concerning the origins of the open-field system has been much modified and refuted in the years since Seebohm first offered it. Maitland and Vinogradoff maintained that it was the need for the equality of land share-out, rather than any ploughing arrangement, that led to the regular lay-out of strips.<sup>107</sup> Gray, and later Homans, while admitting the importance of co-eration, preferred to see the creation of the various field systems as being imported by successive waves of Germanic tribes, each of which left their cultural imprint on the agriculture of the area where they settled.<sup>108</sup> The Orwins on the other hand denied that the open-fields were imported but felt that they arose directly out of the pioneering spirit of a people faced with clearing and farming new land, all of which created a nexus of cooperation that was far greater than the simple arranging of communal ploughing that Seebohm postulated.<sup>109</sup> The most radical departure from established

theory, however, has been that of Joan Thirsk, who sees the creation of the common- or open-field system as coming from a much later period in English history, primarily the twelfth and thirteenth centuries. Here the problem is not one of original settlement, but of a forced reorganisation of agriculture because of population pressure, a reorganisation, moreover, in which livestock grazing arrangements played a much more important role than co-aration.<sup>110</sup>

It is not the purpose of this study to delve too deeply into the questions concerning the origins of the open fields,<sup>111</sup> but simply to examine those aspects of the problem that hinge most directly upon the subject of traction, especially ploughing and the related question of co-aration. Here we want to do two things: 1) to look at the average size of the plough-team across England and thus to show the extent to which co-aration was necessary, and 2) to show what effect, if any, the horse had in reducing plough-team size and, hence, the need to practise co-aration.

How do we start? As we have seen, the eight-ox plough-team was an integral part of the Domesday survey, even if only as a computational aid, but there are grave questions as to whether it reflected the actual team size in everyday operation. Fortunately the twelfth-century material is a help here. Many of the surveys, leases, and Pipe Rolls are very explicit about plough-team size and composition, for the demesnes at least, and as a result it has been possible to construct in Table 2.13 a list of all those cases where the demesne plough-team is explicitly given or at least fairly obvious in the documents.<sup>112</sup>

As we can see from the table, there was in fact a wide spectrum of plough-team sizes on English demesnes in the twelfth century, ranging from five animals in a mixed team in Suffolk (Elveden) to teams of twelve oxen apiece in Sussex (the valley of Singleton).<sup>113</sup> Despite these extremes, the dominant plough-team size was still one of eight animals. Thus over

TABLE 2.13

Distribution of Twelfth-Century Demesne Plough-team Sizes1. All-Ox Teams<sup>113a</sup>

a - No. of Cases

b - No. of Teams

County or Area	No. of Oxen in Team									
	6		7		8		10		12	
	a	b	a	b	a	b	a	b	a	b
Bedfordshire	-	-	-	-	2	5	-	-	-	-
Berkshire	-	-	-	-	1	6½	-	-	-	-
Buckinghamshire	-	-	-	-	1	1	-	-	-	-
Cambridgeshire	-	-	-	-	1	2	-	-	-	-
Cornwall	-	-	-	-	-	-	1	1½	-	-
Derbyshire	-	-	-	-	2	8	-	-	-	-
Devon	-	-	-	-	-	-	2	3	-	-
Dorset	-	-	-	-	1	7	1	8	-	-
Essex	-	-	-	-	1	1	1	5	-	-
Gloucestershire	-	-	-	-	4	21	-	-	-	-
Hampshire	-	-	-	-	-	-	1	4½	-	-
Hertfordshire	-	-	-	-	-	-	1	1	-	-
Huntingdonshire	2	4	-	-	6	22	1	3	-	-
Honour of Lancaster	-	-	-	-	1	15	-	-	-	-
Leicestershire	1	2	-	-	1	3	-	-	-	-
Lincolnshire	1	4	1	1	3	8	-	-	-	-
Middlesex	-	-	-	-	1	10	-	-	-	-
Northamptonshire	1	2	-	-	14	34	-	-	-	-
Nottinghamshire	-	-	-	-	1	2	-	-	-	-
Honour of William Peverill of Nottingham	-	-	-	-	1	7	-	-	-	-
Oxfordshire	1	9	-	-	-	-	-	-	-	-
Rutland	1	2	-	-	-	-	-	-	-	-
Somerset	-	-	-	-	5	15	-	-	-	-
Staffordshire	-	-	-	-	8	16	-	-	-	-
Sussex	-	-	-	-	-	-	-	-	1	7
Warwickshire	-	-	-	-	1	2	-	-	-	-
Yorkshire	-	-	-	-	2	7	-	-	-	-
Total	7	23	1	1	57	192½	8	26	1	7
% (Cases)	9.5		1.4		77.0		10.8		1.4	
% (Teams)		9.2		0.4		77.2		10.4		2.8

Continued on next page

TABLE 2.13 (continued)

2. Mixed and All-Horse Teams<sup>113b</sup>

a - No. of Cases  
 b - No. of Teams  
 H - Horses  
 O - Oxen

County	No. of Horses and Oxen in Team															
	5		6		7		8				10					
	3H,20	4H,20	2H,40	3H,40	8H	4H,40	2H,60	4H,60	2H,80	4H,60	2H,80	4H,60	2H,80			
	a	b	a	b	a	b	a	b	a	b	a	b	a	b		
Beds	-	-	1	2	-	-	-	-	-	-	-	-	-	-		
Cambs	-	-	-	-	-	-	-	-	-	-	1	2	-	-		
Essex	-	-	-	-	-	-	-	-	-	-	1	1	1	2		
Hunts	-	-	-	-	-	-	-	-	1	3	1	4	-	-		
Norfolk	-	-	-	1	1	4	8½	-	-	-	2	4	-	-		
Suffolk	1	1	-	-	-	-	-	1	1	-	2	3	-	-		
Total	1	1	1	2	1	1	4	8½	1	1	1	3	7	14		
% (Cases)	5.3		10.5			21.1			47.4					15.8		
% (Teams)	2.6		7.8			22.1			46.8					20.8		

75 per cent of the all-ox plough-teams contained exactly this number, as well as nearly 50 per cent of the mixed plough-teams. Consequently the decision of the Domesday commissioners to adopt the eight-ox team as a unit of calculation seems quite justified in the circumstances. Nor did switching to mixed teams make any noticeable difference. Although isolated cases of a drop in plough-team size when converting from all-ox to mixed or all-horse teams appear to have occurred,<sup>114</sup> the average size size of the latter at 8.0 animals was only slightly less than that for all-ox plough-teams (8.1 animals). It appears that, at this time, the benefit of introducing horses to shorten the plough-team was either not possible, or for some reason not acted upon. One must assume that the transition to mixed teams was made almost solely for the technical reason of speeding up the plough.

Not surprisingly the distribution of plough-team sizes displayed a significant degree of regionality. Thus it is noticeable that large plough-teams of ten animals or more tended to be congregated in the

south-west (especially Devon and Cornwall), Sussex, and Essex, where the soil was often heavy or the terrain uneven.<sup>115</sup> On the other hand, smaller than average plough-teams of six oxen occurred in the East Midlands, particularly in areas of light limestone soils, such as at Great Easton in Leicestershire, Tinwell in Rutland, and Cottingham in Northamptonshire.<sup>116</sup> Small mixed teams were also found in Norfolk and Suffolk. In most cases, however, the eight-animal team remained dominant, particularly in the north, which seems to have been a bastion for teams of this size during the twelfth century.<sup>117</sup> In conclusion, it can be said that regionality did play a part in determining plough-team size, but that generally soil and terrain had to be somewhat out of the ordinary to push a particular demesne off the eight-animal standard.

The most basic point to arise from all this is that, despite some variation in size and composition, the demesne plough-team was still a very large one. As such, it tends to give credibility to the idea that co-aration was a powerful force in determining the shape of twelfth-century agriculture, perhaps even to the extent of lending support to Seeborn's theory. Here, however, we run up against a major contradiction. Despite the seemingly overwhelming evidence for the large plough-team in the documents, it is seriously - and curiously - at odds with the evidence from medieval iconography, which never shows plough-teams approaching anything like the eight- or ten-animal monsters outlined above. As it happens, the largest plough-teams portrayed in medieval illumination are found in English manuscripts (e.g., see figures 1.12 and 2.2), but in no instance do they portray a team of greater than four animals.<sup>118</sup>

There are three plausible explanations for this apparent contradiction:

- 1) For reasons of economy, it may have been an artistic convention of the time to represent the large plough-team with smaller ones.
- 2) The large plough-team represented in the documents may have

been indicating units of cultivation rather than just plough-teams. That is, the recorded eight-animal or so team may have included both ploughing and harrowing beasts, or perhaps even two smaller plough-teams which alternated with each other during the working day.

3) Medieval illustrations only portray peasant plough-teams, which are smaller than the demesne plough-teams indicated in the documents.

The first of these, concerning the artistic convention, is very difficult to resolve conclusively. Several of the illustrations do show unlikely plough-teams, such as the single mule or donkey in the Bayeux tapestry (Figure 2.4), for which there is no real parallel in English agriculture either before or after.<sup>119</sup> On the other hand, if such illustrations were solely a matter of convention, one would expect the representations to have rapidly become stereotyped into, as H.G. Richardson wrote, "a common symbol infinitely repeated".<sup>120</sup> Instead one is struck by the variety of plough-teams shown - four oxen in double file, two oxen abreast, two horses abreast, one horse alone, one mule alone, two oxen led by a donkey, two oxen in tandem, and so on.<sup>121</sup> Although some of these cases show what seem to be impractically small teams, in other instances it seems likely the artist drew what he actually saw. This is especially the case where the representation was obviously a meticulous one. Why should the illustrator of the Luttrell Psalter, say, have gone to all the trouble of realistically portraying three- and even five-horse hauling teams - for which we do have substantial documentary evidence - and yet fail to do the same for the plough-team?<sup>122</sup> As indicated, there is likely to be no final answer on this question, but it would seem unlikely that the plough-teams the artists portrayed were entirely divorced from reality.

The second contention - i.e. the large plough-team should be treated as an agricultural unit - was introduced in a persuasive article written by H.G. Richardson during the last war.<sup>123</sup> Richardson suggested that

the large plough-team was rather more than it appeared and that in fact it represented two possible types of agricultural organisation. The first, which he personally preferred, was that the plough-team recorded in the documents included both ploughing and harrowing animals. As an example, Richardson cited a passage from Piers Plowman, where Piers drove a plough of four oxen followed immediately by two harrows drawn by two horses apiece, resulting in the total of eight animals so often seen in the documents.<sup>124</sup>

How does this premise fit into our twelfth-century evidence? It admittedly has its attractions after what we have said above about the doubling up of ploughing, harrowing, and hauling animals, and accordingly this facet of Richardson's theory works rather better for the twelfth-century sources than for those which follow in the thirteenth and fourteenth centuries. Even with the twelfth-century material, however, there are problems. For one thing, it is patently obvious that provisions for harrowing were more often than not made outside the recorded plough-team, simply from the number of extra harrowing horses that appear in the documents, even with mixed teams on occasion. In any case, harrowing was a much quicker chore than ploughing and in fact could be accomplished by one horse alone, as is amply indicated in many medieval illustrations.<sup>125</sup> It would hardly need the four animals indicated in the Piers Plowman example (which in any case were presumably only included for literary symmetry). Some of the "plough" animals might have been used for carting, reducing further the size of the actual plough-team, but in fact this did not necessarily happen, since much, if not most, of the hauling took place at the harvest, a time when a break was normally taken in the ploughing anyway. In other words, it is most unlikely that the extra duties of harrowing and carting entailed with the operation of one plough-team would have required four or more animals. This becomes even more obvious in the next century, when specialised carting horses begin to

appear on the demesne, but without any reduction in plough-team size.

The second alternative in Richardson's theory was that the large plough-team concealed two smaller teams which worked half a day each. Such a system was not unknown in the nineteenth century, but it was reckoned to be very expensive and very much a matter of choice.<sup>126</sup> In medieval times there is no firm evidence that such an arrangement ever existed, and in fact Walter of Henley clearly implies that it did not.<sup>127</sup> Moreover, if a changeover arrangement did exist it would create some curious problems among some of the recorded plough-team sizes. For instance, how would one split up a six-ox plough-team? Oxen are much more conveniently yoked in pairs (unless one is willing to spend money on the more expensive collar-harness or go to the more cumbersome three-ox yokes), and of course it is difficult to do this in dividing up a six-ox team without creating a serious imbalance between the two smaller teams - one in fact would have to be double the size of the other. The situation is even more difficult with mixed plough-teams. The division of a team of two horses and six oxen into two equal parts would result in plough-teams of one horse and three oxen, which would look bizarre in almost any arrangement. Finally, if a changeover system did exist, one would expect a bi-modal distribution of plough-team sizes with peaks at the four- and eight-animal levels - as some manors used two teams spelling each other while others tried to make do with only one - instead of the uni-modal distribution which in fact was the case.<sup>128</sup>

The third explanation for the discrepancy in the size of the plough-team between the documents and the illustrations is that they may well have been describing two different things, the documents being concerned only with demesne plough-teams and the illustrations with peasant plough-teams. The idea is not new,<sup>129</sup> but it does shatter one long-held assumption. When large plough-teams are mentioned it is usually presumed that their large size was necessary to pull the heavy plough of the time through



the soil. In other words, it was a strictly technical limitation that applied to lords and peasants alike. We will examine this technical assumption in more detail shortly, but for the moment let us consider one of its possible effects upon the peasantry, that is, in promoting the need for cooperative ploughing, or co-aration.

The main implication of a large plough-team, of course, is that it was patently beyond the resources of the average villein or sokeman. It has been calculated that the Domesday villeins had almost three oxen apiece on average.<sup>130</sup> Consequently, if the normal working plough-team was of eight or so animals, then at least two and probably three villeins would have had to club together to make it up. Did the peasants group together to this extent? Or, as Vinogradoff suggests, was the four- or even the two-animal team the more likely complement for the peasant plough, such that most peasants did not have to practice co-aration at all?<sup>131</sup> The answers to these questions are not easy to find. Although some cases of co-aration must be assumed for Domesday,<sup>132</sup> it is never explicitly mentioned. Fortunately we fare better with the twelfth-century material, where cases specifying or at least hinting at co-aration are sometimes found, especially in relation to ploughing services owed by tenants to lords. A number of these cases are found in the Glastonbury Abbey survey of 1189 contained in the Liber Henrici de Soliaco. Thus at Meare in Somerset John Bulbulcus, holding a messuage and three acres, owed two days ploughing to his lord in winter, which he performed by joining his one or two oxen with those of his friends to make up a plough (...si habet unum bovem ut duos junget illos cum sociis et perficient carrucam).<sup>133</sup> John was very much a smallholder, and so it is not surprising that he would need to cooperate with his friends in order to do his ploughing, but the same thing is implied for more substantial tenants. For instance, Godwin, the half-hide holder at Nettleton, Wiltshire, already mentioned above, owed three-quarters of an acre's ploughing to the lord each week; but if he only had one or two oxen, he

still had to find a whole plough or plough-team (carruca integra) with which to fulfil his services.<sup>134</sup> Where he obtained the other oxen from is not mentioned, but presumably there is a good chance that he entered into a ploughing arrangement with other tenants. On the other hand, he may simply have borrowed or hired them.

The "whole plough" in the passage above may have referred to the large demesne plough-team rather than any smaller peasant one, and it has been suggested that peasants cooperated to plough the lord's demesne but did so to a much lesser extent on their own lands.<sup>135</sup> The Glastonbury material gives some indirect support for this. Thus at Winscombe in Somerset each half-virgate holder was required to plough three times during Lent with a "whole" team, while at the more flexible plough-boon he could plough "with as many oxen as he has".<sup>136</sup> The implication here is that the monks of Glastonbury preferred their tenants to use a full eight-ox team to do their ploughing services, perhaps to accomplish a deeper ploughing that might not otherwise have been possible with the peasants' smaller teams, but were willing on occasion to allow them to do it with less. Similarly at Buckland Abbas in Dorset, Walter de Hennelea, a virgate holder, is cited as owing nine ploughing services during the year, which he ploughed "with a whole plough if he has one, with half a plough if he only has that, (or) with two oxen if he has no more."<sup>137</sup> The same thing is observed on other estates. Thus on the bishop of Worcester's manor at Withington (Glos), c.1170, virgate holders were allowed to do their weekly ploughing for the demesne "with as many animals as they have", while at 'Bulney' in Suffolk, c.1198-1200, Galant Blund and his heirs, holding some twenty to thirty acres from the Abbot of St Edmunds, owed ploughing services "with as many animals of his as he will have in his plough".<sup>138</sup> It is possible that when peasants arrived at ploughing services with their animals and ploughs, the lord's bailiff or reeve recombined their animals into larger teams, but often it seems there were used as is.

At Northwick (Worcs), for instance, it is specified that each virgate holder should perform his ploughing services with "his own plough".<sup>139</sup> It should also be pointed out that the above cases are very much the exception as far as ploughing service formulae are concerned. Most simply state that so-and-so owes so many ploughing services, without qualifying how large the plough-team should be or whether the person involved should plough with others. In this case, we must presume that the practice of peasants clubbing together to form a full-size demesne plough-team was so prevalent that it did not need mentioning, or that, more likely, most lords were not so fussy and let the peasant get on with his demesne ploughing as he saw fit.

In short, the evidence seems to imply that the peasant managed to get away with ploughing with much smaller teams than the eight-animal standard, with all the advantages that had for cost and convenience. Giraldus Cambrensis indicated that the normal plough-team size among Welsh farmers in his time (late twelfth century) was most often one of four oxen and sometimes only two.<sup>140</sup> What stopped the demesne from also using smaller teams? Perhaps they did. It has been suggested (without invoking Richardson's theories) that the large plough-teams described in the surveys were in fact only employed on special occasions during the year, that is, when virgin land was being broken up or in the spring planting season, when stock was weakest after the long winter layover.<sup>141</sup> On almost all other occasions, it is claimed, smaller teams were used. Such a theory seems improbable. Apart from the obvious waste of keeping a large team available all year for use on only a few occasions, it is not supported by the operating costs for the animals recorded in the thirteenth and fourteenth centuries, which generally show the operation of a full demesne team throughout the winter and spring at least.<sup>142</sup>

Also suggested to explain the probable difference between peasant and demesne plough-teams is that the peasants used lighter ploughs to save on

team strength,<sup>143</sup> and the apparent attempts of the Glastonbury monks to keep their tenants' ploughing services up to the demesne mark tends to support this. It is a mistake, though, to assume that this must necessarily be the explanation. Another factor that can explain the difference in plough-team size is the organisation of demesne versus peasant ploughing. Demesne ploughing was a very long-winded affair. A conservative estimate would be 180 full days of ploughing per team dispersed over the year, and in many cases it was likely to be much more.<sup>144</sup> Walter of Henley, for instance, suggested a total of 240 to 264 days ploughing per year as a likely work-load for the average plough-team.<sup>145</sup> Under these conditions it was mandatory to have a large team simply so the plough animals were never over-taxed at any point. The variability of team size - whether six, eight, ten, or even twelve animals - reflected the different cost optimums for different types of ground. Any reduction in team size below these optimums, which were presumably arrived at through centuries of experience, would lead to excessive animal losses while any beasts above would be wasted.

On the other hand, such high work-levels per team did not normally apply to the peasantry, simply because they ploughed very much less than on the demesne. It is difficult to cite a typical example, since the amount of ploughing required for a peasant holding could vary considerably according to circumstances, not least in the amount of ploughing services owed. For instance, it can be calculated that a tenant holding thirty acres or so and owing weekly ploughing services could well have a ploughing requirement approaching 100 days per year.<sup>146</sup> If some degree of co-ration were needed, requiring his animals to plough on a friend's lands as well as his own, or if ploughing speeds were significantly less than an acre a day, this could escalate into considerably more.<sup>147</sup> On the other hand, a small holding with little in the way of ploughing services would require far less. Thus, twelve-acre half-virgate tenants at Cuxham (Oxon) in the

thirteenth century, with virtually nothing in the way of ploughing services to perform, seemingly ploughed little more than 30 days per year, even assuming that each tenant had to cooperate with a friend.<sup>148</sup> On balance, it would seem that the experience for the majority of peasant farms would be closer to the Cuxham case than to the thirty-acre virgate with heavy ploughing services, since in many cases week-work ploughing never existed or soon decayed into money payments.<sup>149</sup> On Russian peasant farms at the turn of the century the actual number of days spent ploughing was seldom greater than sixty to seventy days,<sup>150</sup> and an upper limit of this sort would not seem out of line for most medieval peasant holdings. In consequence, peasant draught animals tended to have a much easier life than their counterparts on the demesne. To some extent this must be qualified by the fact that peasant plough animals would be expected to haul and harrow as well, whereas on the demesne these tasks were increasingly being taken over by specialist cart- and harrowing horses, but even so it is unlikely that this would make up the yearly work load to anything like the 180 days per year or more demanded of the demesne animals. As a result, it was possible to keep fodder costs for peasant draught animals down,<sup>151</sup> while still allowing their peasant owners to work them very hard when needed. Chayanov, when considering the Russian case, commented: "The fact that the Russian peasant horse is not used much explains why, although it is fed on hay, it endures much, serves long, and, in general, is little subject to disease."<sup>152</sup>

The difference between the peasant and demesne plough-teams can thus be reconciled on economic grounds as much as technical ones, the demesne manager preferring large teams in order to cut down on his animal losses through overwork. Nor does a difference in the weight of plough need to be postulated. Working his animals in short bursts, it is entirely possible that the peasant could have had as heavy a plough as on the demesne. After all, some of the ploughs being hauled by small teams in

medieval illustrations are decidedly heavy affairs (see Figure 1.12). There were limits, of course, as to how long these "short" bursts could be maintained, but for most peasants they were probably sufficient to see them through the ploughing year.

This rather long exposition of the plough-team problem has been set out to provide a basis for discussion in this and later chapters. What is needed to attack the problem of peasant versus demesne plough-teams is, in particular, definitive proof of small peasant teams, or, failing that, proof that peasants ploughed individually, except perhaps at the very lowest land-holding levels. Unfortunately the Domesday and twelfth-century materials contribute little to either of these proofs, and looking over our survey of the evidence, basically only two conclusions can be reached: 1) the demesne plough-team in the twelfth century was almost certainly a large one, centring around the eight-animal team, and 2) on balance, it seems the peasant team was smaller. Beyond that, we must leave the question for a later chapter.

#### d) Ploughs, Harrows, and Vehicles, 1066-1200

The relationship between these larger farm implements and the use of horses and oxen is often a very precise one. The early dichotomy between horses for harrowing and oxen for ploughing and hauling has already been remarked upon, but even where horses do begin to plough and haul in the twelfth century, there are some areas where they patently perform better than in others. Much of this is connected with soil and terrain, but the type of plough and vehicle used in a certain area can often have a bearing as well.

Considering ploughs first, the vital distinction here is between the scratch plough or ard and the heavy mould-board plough. Unfortunately the post-Conquest documentation is unhelpful in this regard, and linguistic evidence in particular is disappointing. The distinction between the

light scratch plough and the heavier mould-board plough is thought to have been reflected at one time in the Latin terms aratrum (for the scratch plough) and carruca (for the heavy mould-board plough).<sup>153</sup> Both terms occur frequently in the twelfth-century documents, but so interchangeably that the distinction seems obviously to have become blurred in the minds of the clerks.<sup>154</sup> Certainly on the demesnes both the aratrum and carruca are used in connection with the large plough-team, indicating that any difference represented by the two terms must have been largely superficial; it would seem by this time that they were virtually synonymous.

The only certifiable plough illustration from the period of a likely English origin is that of the Bayeux tapestry.<sup>155</sup> The plough in this case is wheeled, although, as with the Anglo-Saxon examples in Figures 2.1 and 2.2, the function of turning a furrow is not clearly evident. As a result, we may be seeing a wheeled ard here rather than, as some people have assumed, a heavy, wheeled mould-board plough.<sup>156</sup> The presence of large plough-teams on the demesne does argue strongly for the existence of heavy ploughs here, but the same cannot be said of the peasant case. As long as small peasant plough-teams remain a possibility, so too must small ard-like ploughs (although, as we have seen, the connection between small plough-teams and light ploughs was by no means inevitable). Unfortunately the documentary evidence is almost totally inadequate here; the only useful piece of information comes from the 1185 Templar Inquest, where, at Temple Ewell in Kent, a carrying service is detailed in which plough-wheels, plough-tails, and yokes are to be transported from Canterbury.<sup>157</sup> This implies that wheeled ploughs were prevalent in this part of the country at least.

The information about harrows at this time is even less. That the practice of harrowing was country-wide has already been discussed, but only the Bayeux tapestry shows what a harrow might have been like, in this case rectangular and seemingly of the modern toothed variety.

Fortunately there is rather more information about vehicles used in this period. Altogether four types are mentioned frequently in the documents: carts or carectae, carrae, quadrigae, and plaustra. (The Latin is retained for the last three of these because of the great variety of interpretation, often wrong, that these terms undergo.) By the late twelfth century it appears that carts were becoming the prime vehicle for road transport. For example, in the Pipe Rolls we read of carts being employed to haul various items for the king to all parts of England.<sup>158</sup> Carts, although here they faced competition from the other types of vehicles, were also found on the farm, where they turned up in connection with labour services. Thus, during the course of the twelfth century, carts or cart-loads (carectatae) are recorded in relation to farm work on manors in Cambridgeshire (2), Hertfordshire (1), Huntingdonshire (3), Somerset (1), ~~Worcestershire (1)~~ and Yorkshire (2).<sup>159</sup> Presumably these carts were two-wheeled, although there is no twelfth-century evidence to prove this. The Yedingham example and the carectarius equus at Sandon (see p. 74 above) indicate that they were hauled by horses.

At this time a more popular vehicle on demesne and peasant farms was the carra (or sometimes carrus). The carra may have been related to the cart, but later evidence indicates that it was a larger, heavier vehicle.<sup>160</sup> The same is indicated by some of the twelfth-century surveys, where carrying services are measured in terms of dimidiae carrae rather than whole vehicles as is always the way with carts.<sup>161</sup> Certainly the scribes were always careful to distinguish between the two types of vehicles.<sup>162</sup> Altogether references to carrae or carra-loads (carratae, careatae, etc.) are found in the various extents and surveys for manors in Cambridgeshire (2), Dorset (2), Essex (4), Gloucestershire (1), Hertfordshire (2), Huntingdonshire (2), Lincolnshire (1), Northamptonshire (6), Somerset (3), Warwickshire (1), Wiltshire (1), and Worcestershire (1).<sup>163</sup> It appears these vehicles were hauled by oxen, as indicated by the four



required to carry the carriatam of hay at Nettleton (see p. 75). The Revised Medieval Latin Word-list also cites a c.1180 reference to a carra ad duos boves.<sup>164</sup> It seems, too, that the ox-hauled "carts" transporting salt at Middlewich and Northwich in the Domesday survey were also carrae.<sup>165</sup>

The third type of vehicle was the quadriga, which, in the twelfth century, was commonly found in the north and north-west. Thus, besides the somewhat specialised wine-hauling services found in Boldon Buke,<sup>166</sup> quadrigae are also mentioned in relation to carrying services for hay, wood, and corn on manors in Durham (3), Staffordshire (2), Warwickshire (1), and Worcestershire (1).<sup>167</sup> They are also cited for road hauling in Yorkshire and Lincolnshire.<sup>168</sup> Concerning the vehicle itself, the term quadriga has often been taken as meaning a wagon,<sup>169</sup> although strictly speaking the word refers to a vehicle drawn by four animals.<sup>170</sup> The latter interpretation is supported by the wine-hauling services in Boldon Buke, which indicate that quadrigae were normally hauled by four oxen.<sup>171</sup> According to Alexander Neckam, they could also be hauled by horses.<sup>172</sup>

The fourth type of vehicle was the plaustrum, which first shows up at Domesday in a reference to five plaustratas, or plaustrum-loads, of lead sheets paid as part of the pre-1066 render for the manors of Bakewell, Ashford, and Hope in Derbyshire.<sup>173</sup> Again the plaustrum is often interpreted as being a wagon, but it should be more properly referred to as a wain, reserving the possibility of both a two-wheeled and a four-wheeled vehicle.<sup>174</sup> Like the carra, it was apparently ox-hauled, as in the Hampton Lucy case above (p. 74). Ox-hauled plaustra were also common in Wales at the time.<sup>175</sup> The geographical distribution of the plaustrum was similar to that of the carra, although with more of a concentration in the west and south-west. Altogether it was found on manors in Bedfordshire (1), Cambridgeshire (2), Dorset (2), Gloucestershire (3), Somerset (1), Warwickshire (2), Wiltshire (2), and Worcestershire (2).<sup>176</sup>

This, of course, does not exhaust the total variety of vehicles that

could be found in post-Conquest England. For example, Alexander Neckam produces a long passage describing the virtues of a rheda, which apparently was a travelling carriage, possibly four-wheeled.<sup>177</sup> The rheda of raeda), however, is not found in the manorial documents. On the other hand, another vehicle mentioned by Neckam, the biga,<sup>178</sup> is recorded for manors in Wiltshire and Worcestershire.<sup>179</sup> As with the quadriga, this probably indicates a vehicle hauled by two animals rather than one with two wheels (although it was undoubtedly the latter as well). It was a small vehicle, at least smaller than the plaustrum, since the Wiltshire passage refers to a carrying service that had to be done cum dimidio plauastro vel cum biga. Another interesting reference occurs at Old Weston in Huntingdonshire, where various carrying services were performed using a sled (traham).<sup>180</sup>

Consequently by the end of the twelfth century the medieval farmer had a variety of vehicles from which to choose, both wheeled and unwheeled. Admittedly some of the terms in the documents may have been describing the same vehicle - later evidence, for example, indicates that the carra and plaustrum were often identical vehicles - but certainly there were enough distinct types to establish some sort of pattern. Thus, although carts were employed almost everywhere for road transport, their use in farm work was much more circumscribed, where heavier and larger vehicles, probably ox-hauled, tended to dominate. Regionally it seems that carts and carrae were to be found more to the south and east, quadrigae and plaustra to the north and west. It would appear that ox-hauling still dominated in most of these regions and that horses, whenever they did manage to penetrate farm hauling, only did so at the light end of the vehicle range.

Summarising the chapter, the situation as regards the level of work-horses on manorial demesnes throughout the period is fairly clear. At

Domesday it was on average little more than 5 per cent of the total animal draught force on the demesne and no greater than 10 per cent in any of the regions for which we have figures. The twelfth century saw a gradual rise, as the horse began to penetrate demesne ploughing and hauling, although most of this rise was restricted to the eastern areas, notably East Anglia. By the end of the century the level of work-horses on English demesnes had reached 10-15 per cent on average, with some of the East Anglian counties reaching 30 per cent or more.

On the peasant side it is impossible to say with certainty what the level of horses was among their draught stock, but most signs indicate that it was always higher than on the demesne. Even at Domesday it may have been as high as 33 per cent right across the country, if only to satisfy the harrowing and carrying services to which the peasants were liable. It is impossible to tell, however, whether any of the change towards horses shown on the demesne was also occurring on a peasant level, and for this we must wait for the greater abundance of later material.

#### FOOTNOTES

1. English Historical Documents, i, c.500-1042, ed. Dorothy Whitelock, 2nd ed., Oxford (1972), p. 405. The oxen are not specifically mentioned, but the presence of yokes indicates that these were the animals involved.

2. Documents in Economic History, ed. H.E.S. Fisher and A.R.J. Juřica, London (1977), pp. 400-1.

3. As found in Anglo-Saxon Charters, ed. A.J. Robertson, Cambridge (1939), pp. 74-5, 154-5, 156-7, 196-7, 256-7, and H.P.R. Finberg (ed.), The Agrarian History of England and Wales, i, pt. 2, Cambridge (1972), p. 498.

4. English Historical Documents, ii, 1042-1189, ed. D.C. Douglas, London (1961), p. 814.

5. Ibid. Note also the bee-keeper's and swineherd's horses (pp. 814-5).

6. As printed in W. Cunningham, The Growth of English Industry and Commerce, i, 4th ed., Cambridge (1905), pp. 572, 574.

7. Anglo-Saxon Wills, ed. Dorothy Whitelock, Cambridge (1930), pp. 50-1.
8. That is, c.975-1016 and 1042-3. Ibid, pp. 32-3, 82-3.
9. Ibid, pp. 30-1, 6-7. Other references to military horses are found on pp. 22-3 and 26-7.
10. Eng. Hist. Doc., 1, p. 424.
11. A.W. Wade-Evans, Welsh Medieval Law, Oxford (1909), pp. 68, 215.
12. D.M. Wilson, The Anglo-Saxons, 3rd ed., Harmondsworth, Middlesex (1981), p. 95. Skeletal remains of animals from these sites also show in many cases a significant level of horse bones, although it is difficult to draw any firm conclusions from them, beyond the fact that horses were often present in some number in Anglo-Saxon villages. In some cases, the animals were eaten. D.M. Wilson, 'Anglo-Saxon Rural Economy', AHR, x (1962), pp. 69-70; idem (ed.), The Archaeology of Anglo-Saxon England, op. cit., pp. 376-7, 383-4.
13. To some extent, this agrees with the bone find evidence; see previous note.
14. As a result, there is some difference of opinion as to what type these Anglo-Saxon ploughs were. Haudricourt and Delamarre, pp. 358, 361, believe they were of the heavy, charrue type, while Axel Steensberg, 'North West European Plough-types', pp. 262-5, maintains they were wheel ards that scratched the earth rather than turning a furrow. F.G. Payne, 'The Plough in Ancient Britain', op. cit., pp. 103-7, takes the intermediate view that the Caedmon and Cottonian MSS ploughs could turn a furrow but much less so than the traditional "heavy" ploughs of later Europe. A scratch plough - supposedly Anglo-Saxon - is also seen in a Harleian MS illustration (G.S. and O.S. Orwin, The Open Fields, 3rd ed., pl. 6 (opp. p. 31)), but it has been conjectured that this is simply a copy from the Utrecht Psalter (Payne, op. cit., p. 106).
15. Anglo-Saxon Wills, op. cit., pp. 92-5; Anglo-Saxon Charters, op. cit., pp. 254-5.
16. Welsh Medieval Law, op. cit., pp. 68, 215. "Karr" here may refer to the carra; see pp. 92-3 below.
17. It is difficult to know how seriously to treat the Bayeux Tapestry as evidence on this point, since a single-animal ploughing team seems very unlikely in the circumstances (see p. 82 below). It is notable, too, that the ploughing and harrowing scene takes place in that part of the narrative dealing with events in France. Perhaps the scene was meant to reflect agriculture there rather than in England.
18. That is, the Little Domesday for Norfolk, Suffolk, and Essex; the

Inquisitio Comitatus Cantabrigiensis and the Inquisitio Eliensis for Cambridgeshire, and the Exeter Domesday for Somerset, Devon, Cornwall, and part of Dorset. The Inquisitio Eliensis also contains livestock information for a handful of manors in Huntingdonshire and Hertfordshire, but these were not included in the study because it was felt they were too few to be properly representative of the counties involved.

19. See Appendix E.

20. Little Domesday, fo. 191; also VCH Norfolk, ii, p. 114.

21. The sample was taken from the translations in the pertinent Victoria County Histories and checked on occasion against the original Latin in the 1783-1814 Record Commission version. Only the Inquisitio Comitatus Cambrigiensis was used for Cambridgeshire. As indicated by H.C. Darby (Domesday England, Cambridge (1977), p. 164), only about 40 per cent of the communities in Dorset and 90-95 per cent of those in Devon and Cambridgeshire are represented.

22. Altogether one mule and eleven donkeys are included in the 307 "work-horses" in Table 2.2, or 3.9 per cent of the total. This is somewhat larger than the proportion of 1.9 per cent indicated by Darby's overall figures (op. cit., p. 164, excluding wild and forest mares and foals) and is due to the chance inclusion in the sample of two demesnes with seven donkeys between them.

23. R. Lennard, 'Domesday Plough-teams: the South-Western Evidence', EHR, lx (1945), pp. 217-33.

24. H.P.R. Finberg, 'The Domesday Plough-team', EHR, lxvi (1951), pp. 67-71.

25. Ibid, p. 70.

26. A fact Lennard admits in his rejoinder to Finberg. 'The Composition of the Domesday Caruca', EHR, lxxxI (1966), pp. 770-5.

27. The adoption of a seven-ox Domesday plough-team would raise our optimum work-horse level by about a percentage point (i.e., 5.8 to 6.7 per cent).

28. Little Domesday, fo. 301; DB, fo. 67b.

29. DB, fos. 224, 304.

30. Little Domesday, fos. 143, 174b, 177b, 195b, 276b, 228b.

31. Despite some speculation to the contrary; e.g., Ryder, 'Livestock', op. cit., p. 400.

32. Assuming, again, eight oxen per plough-team; Little Domesday, 169b.

33. As on the demesnes of the manors of St Paul's in London in 1222. Dom. St Paul, pp. 28, 52-3, 69, 74-5, 85-6, 103-4.

34. Student's  $t$  tests performed on the east-west and north-south coordinates showed that in no case were the results significant to more than the  $p > 0.05$  level.

35. E.g., C.E.H., i, p. 292; Georges Duby, The Early Growth of the European Economy, London (1974), pp. 213-21; Colin Platt, The Monastic Grange in Medieval England, London (1969), pp. 13-4; J. Gimpel, The Medieval Machine, London (1977), pp. 46-50.

35a. The chain of tenure may even have extended beyond this, with the last recorded tenant in Domesday himself letting out his land for a limited term to yet another man. This is the sort of thing indicated by the stock-and-land leases already referred to in the Anglo-Saxon period. (For a discussion of this type of leasing, see R. Lennard, Rural England 1086-1135, Oxford (1959), chs. V-VII.) As this limited-term leasing was generally unrecorded, it is impossible to quantify. However, since the stock-and-land lease was probably the most common type of lease in use (Lennard, *op. cit.*, pp. 195-6), it is felt that the composition of the draught stock given to the tenant would not have changed significantly in his hands. This may not necessarily have been the case, of course, but for the purposes of the analysis it is an assumption we must make.

36. The chi-square coefficient was only 0.08 ( $\chi^2 = 2.34$ ).

36a. This is also supported by two stock-and-land leases contemporaneous within a decade or so of Domesday. These leases, from Thornley in Durham and Charlcombe in Somerset, between them listed eighteen oxen but no horses. Lennard, *op. cit.*, p. 195.

37. DB, fo. 211b.

38. Notably for Peterborough Abbey, Ramsey Abbey, and Glastonbury Abbey.

39. Cart. Mon. Ram., iii, p. 257.

40. The Kalendar of Abbot Samson, ed. R.H.C. Davis (Camden Third Series, lxxxiv, 1954), p. 128.

41. Pipe Roll Society, xxxv (1913).

42. These at least are the dates indicated by J.H. Round. *Ibid*, p. xx.

43. *Ibid*, p. 32.

44. As at Edlesborough, Bledlow, and a number of other Buckinghamshire manors. Pipe Roll of 7 Richard I (Pipe Roll Soc., New Series, vi, 1929), p. 35.

45. "...in instauratione eiusdem terre perficiendo", Pipe Roll 7 Ric I, p. 44; Chancellor's Roll (8 Ric I) (Pipe Roll Soc., New Series, vii, 1930), p. 203.

46. Altogether there are four studs mentioned in the twelfth-century sources, amounting to some two hundred animals: that is, at Burton and Whiston, Staffs; Glington, Northants; and Walton, Somerset. Burton Abbey Survey B, pp. 212, 228; Liber Niger, p. 163; Inquisitio Hilberti, fo. 115.

47. At Wistow in Huntingdonshire there are also some animals recorded as crocinis, which are seemingly horses (Cart. Mon. Ram., iii, p. 273). R. Lennard wonders if this might be a corruption for runcini. 'The Composition of Demesne Plough-Teams in Twelfth-Century England', EHR, lxxv (1960), p. 198n.

48. For example, in a court case in 1194-5 Avicia de Ocel accused William Basset of unjustly detaining her averia, which are later itemised as three cows and nine sheep. Rolls of the King's Court (Pipe Roll Soc., xiv, 1891), p. 26.

49. Liber Niger, p. 54.

50. Liber Henrici de Soliaco, pp. 71, 124, 138, 142.

51. Each region being composed of the following counties: East Anglia: Norfolk, Suffolk, Essex, Cambridgeshire; Home Counties: Surrey, Middlesex, Hertfordshire, Bedfordshire, Buckinghamshire, Oxfordshire, Berkshire; The South: Kent, Sussex, Hampshire, Wiltshire; South-west: Dorset, Somerset, Devon, Cornwall; East Midlands: Huntingdonshire, Northamptonshire, Rutland, Leicestershire, Nottinghamshire, Lincolnshire; West Midlands: Warwickshire, Worcestershire, Gloucestershire, Herefordshire, Shropshire, Staffordshire, Cheshire, Derbyshire; The North: Lancashire, Westmorland, Cumberland, Northumberland, Durham, Yorkshire.

52. That is, Brancaster with Deepdale, Ringstead, Holme next the Sea, Wimbotsham, and Hilgay with Snorehill, Norfolk; Graveley, Cambs; Hemingford Abbots, Hunts; and Pegsdon, Beds. Cart. Mon. Ram., iii, pp. 261, 266 (bis), 285, 287, 278, 277, 307.

53. *Ibid.*, pp. 257, 259-60 (Elton), 279 (Houghton with Wyton), 313-4 (Girton).

54. The same thing is indicated for the Home Counties, where, for example, the twenty oxen and one horse at Ardeley (Herts) in 1141 had given way sometime after that to sixteen oxen and eleven horses (according to an undated but probably later lease). Dom. St Paul, pp. 135-8.

55. *Ibid.*, pp. 129-32.

56. The Register of the Abbey of St Benet of Holme, 1020-1210, i, ed. J.R. West (Norfolk Rec. Soc., ii, 1932), pp. 129, 112.

57. For example, A.H. Inman worked out the proportion of demesne to peasant plough-teams for nine counties in the Domesday survey. The percentage of demesne teams varied from 18 to 40½ per cent, but were mostly

concentrated between 25 and 35 per cent.

58. When direct demesne farming became more prevalent. P.D.A. Harvey, 'The English Inflation of 1180-1220', in Peasants, Knights and Heretics, ed. R.H. Hilton, Cambridge (1976), pp. 58-9.

59. British Medieval Population, Albuquerque (1948), pp. 52-3. On the basis of land area, Russell extrapolated from the known Domesday populations for Yorkshire, Cheshire, and Lancashire to obtain that for the other four northern counties. In our case, Cheshire has been considered as being in the West Midlands (see note 51 above), so the extrapolation must come from Lancashire and Yorkshire alone. Furthermore, since the plough-team figures are so fragmentary for Lancashire it has been decided here to extrapolate for the whole northern area from the figures of Yorkshire alone. Thus, Yorkshire has a land area of 6,066 square miles, for which at Domesday there were 2,927 plough-teams (Darby, Domesday England, op. cit., p. 336). The total area of all six northern counties is 13,284<sup>square miles</sup> (from Russell, p. 53), and therefore the projected plough-team figure for the entire region is  $(13,284/6,066) \times 2,927 = 6,410$ .

60. Some of these demesnes, however, may have been leased out, complicating our analysis somewhat.

61. Liber Henrici de Soliaco, p. 138.

62. As implied by Inman's plough-team figures; see note 57 above.

63. At Domesday:

$\frac{1}{2} \times 5.45$  (the midpoint of the minimum and maximum figures for the level of work-horses on Domesday demesnes; see p. 39 above)  
 $+ \frac{1}{3} \times 33.3 = 24$  per cent.

At the end of the twelfth century:

$\frac{1}{2} \times 12.4$  (the corrected post-1150 surveys, etc., figure) +  
 $\frac{1}{3} \times 33.3 = 26$  per cent.

64. DB, fo. 175b: "Ibi sunt boues ad .I. carucam sed petram trahunt ad aecclesiam."

65. E.g., at Northwich: "Quisquis ex alia scira carrum ad ducebat cum .ii. bobus aut cum pluribus dabet de theloneo .iiii. denarios." DB, fo. 268; see also Eng. Hist. Doc., ii, p. 871.

66. Ibid. Pack-horses (sumarii) are also mentioned in relation to carrying services owed to the queen at Leighton Buzzard, Luton, and Houghton Regis, Bedfordshire. DB, fo. 209b.

67. Inquisitio Comitatus Cantabrigiensis, ed. N.E.S.A. Hamilton, London (1876), p. 55. See also Appendix E under hercarius.



68. Burton Abbey Survey B (c.1114-8), p. 212. See also note 46 above.
69. That is, Branston, Stretton, Wetmore, Abbots Bromley, Leigh, Stapenhill, and Winshill (Staffs); Mickleover and Littleover (Derbys); Appleby (Leics); Austrey (Warks). For references, see Appendix B, pt. 1.
70. "Et tunc erant in curia de Ringstede tres carrucae. Quaeque de quatuor bobus et tribus equis." Cart. Mon. Ram., iii, p. 266.
71. That is, at Knapwell, Girton, Graveley, and Elsworth (Cambs); Broughton, Hemingford Grey, Warboys, Elton, Wistow, Upwood, and Houghton with Wyton (Hunts); Wimbotsham, Hilgay with Snorehill, and Brancaster (Norfolk); and Lawshall (Suffolk). For references, see Appendix B, pt. 2.
72. Pipe Roll 12 H II, p. 86. The number of animals in each team is not specified, but from the purchase costs it appears the ox-teams consisted of eight animals apiece and the horse-team of only six. See Lennard, 'Twelfth-Century Demesne Plough-teams', op. cit., p. 202n.
73. Rot. Dom. (Rotuli de Dominabus), p. 59; Pipe Roll 13 H II, p. 115.
74. E.g., as on the various demesnes making up Table 2.13, pt. 2, below.
75. As on the demesnes making up Table 2.13, pt. 1.
76. Although later evidence indicates it may have been more permanent than this; see p. 142 below.
77. The data making up Figures 2.7 to 2.10 can be extracted from Appendix B. The lands and manors in inverted commas could not be placed and so were not included on the maps. Demesnes with five or less draught animals were also not mapped, because of doubts that the stock listings here were complete. Finally, the conflicting cases at Ashbury (Berks) and Hardley (Norfolk) in Appendix B, pt. 2, have been plotted separately.
78. 'Twelfth-Century Demesne Plough-teams', op. cit., p. 201.
79. See, for example, Cassell's Gazetteer of Great Britain and Ireland, London (1898), ii, p. 352; iv, p. 5; vi, p. 353. Also H.C. Darby (ed.), The Domesday Geography of Eastern England, 3rd edn., Cambridge (1971), fig. 55 (p. 217).
80. See pp. 57-9 above.
81. See p. 22 above.
82. Templar Records, p. 23.
83. "Cum tot bobus quot habebit". Liber Henrici de Soliaco, p. 97.
84. As at Meare, Blackford, and Winscombe (Somerset); Nettleton (Wilts); Ashbury (Berks); Buckland Abbas (Dorset); Fiskerton (Lincs); Ringstead with Holme next the Sea and Walsoken (Norfolk). Ibid, pp. 28, 81, 85-6, 103, 116, 140; Liber Niger, p. 164; Cart. Mon. Ram., iii, pp. 269, 292. The Walsoken case actually occurs just after the turn of the century in 1200-1.

85. RBW, 1, p. 84; iii, p. 276. The date is according to C. Dyer, Lords and Peasants in a Changing Society: The Estates of the Bishopric of Worcester, 680-1540, Cambridge (1980), p. 3.

86. The eighteenth-century transcript of Dr. Thomas, upon which Marjorie Hollings based her published edition of the RBW also refers to "plough-horses". WoRO Ref. 009:1 BA 2636/10, pp. 50, 163.

87. E.g., Boldon Buke, pp. 3, 5, 6 (bis), 8, 10, 18, 19, 20, 21, 29, 34 (bis), 35 (bis); Liber Niger, p. 158; Cart. Mon. Ram., iii, pp. 257, 261, 266, 274, 278, 279, 285, 307, 311, 313 (bis), 314; Dom. St Paul, pp. 124, 128; Kalendar of Abbot Samson, op. cit., p. 128 (bis); Rot. Dom., pp. 20, 56, 61, 62, 63, 66, 68, 69, 74, 77; Pipe Roll 12 H II, pp. 43, 125 (bis); 13 H II, p. 30; 32 H II, p. 186; 33 H II, p. 30; 7 Ric I, pp. 52, 129; Chanc. Roll (8 Ric I), pp. 98, 121.

88. Boldon Buke, p. 8.

89. Ibid.

90. Templar Records, pp. 23, 51; Liber Henrici de Soliaco, p. 85; RBW, 1, p. 84; ii, p. 169; iii, p. 276.

91. De Naturis Rerum, ed. T. Wright (Rolls Series, 1863), p. 259.

92. Dom. St Paul, p. 134; Early Yorkshire Charters, 1, ed. W. Farrer, Edinburgh (1914), p. 307. A mixed hauling team of two oxen and two horses was used to cart turves or peat at 'Fuelesholm' near Fraisthorpe, Yorkshire, c.1185-95. Early Yorkshire Charters, ii, ed. W. Farrer, Edinburgh (1915), p. 154.

93. Thus, most of the Ramsey Abbey manors that did have mixed teams did not have separate harrowing horses, while those that had all-ox teams did (see the various extents in Cart. Mon. Ram., iii).

94. "Materium aratorum adportabunt de bosco cum plaustro et bobus Episcopi", RBW, iii, p. 277.

95. Boldon Buke, p. 2: "Simon Vitulus...quadrigat vinum cum viij bobus".

96. "Godwinus debet iiij<sup>or</sup> bobus carriare unam carriatam feni" (p. 103).

97. "Osbertus de Bradafeld tenet unam virgatam pro quinque solidis, et debet...carriare cum hoc quod habet in carruca..." (ibid, p. 89). Only oxen are mentioned for ploughing in this survey (e.g., at nearby Winscombe, pp. 85-6).

An example of ox-hauling also seems to occur at Ashbury, Berks, where the widow Ragenilda, holding a virgate, owed carrying services cum duobus bobus. However, the context here indicates that hominibus rather than bobus may have been meant. Ibid, p. 116.

98. "Boves autem ad aratra vel plaustra binos quidem jungunt rarius, sed quaternos frequentius". Giraldus Cambrensis, Descriptio Kambriae, in

Opera, vi, ed. J.F. Dimock (Rolls Series, 1868), p. 201.

99. Burton Abbey Survey B, pp. 212, 222, 226. The same is also implied for Cauldwell, Derbyshire. *Ibid*, p. 244.

100. RBW, iii, p. 293; iv, p. 409.

101. Templar Records, pp. 23, 51.

102. In this case, it was quite possibly by pack-horse, since summagium, the traditional carrying service by pack-animals, is mentioned in relation to the services owed by cot-landers on the same manor. Cart. Mon. Ram., iii, p. 301. J.A. Raftis, The Estates of Ramsey Abbey, Toronto (1957), p. 307, gives the date of this extent as c.1195.

103. Some peasants even had riding horses, as indicated by the tolls charged for such animals at Bishop's Cleeve and Henbury-in-Salt-Marsh, Gloucestershire. RBW, pp. 353, 409. (c.1170)

104. The English Village Community, first published in 1883. The fourth edition (1905) was employed for this study. See especially chapter IV, pp. 105-25.

105. H.L. Gray, English Field Systems, Cambridge, Massachusetts (1915), p. 9.

106. A process which may have taken centuries, according to Seebohm. *Ibid*, pp. 123-4, 409-11, 437-8.

107. F.W. Maitland, Domesday Book and Beyond, Cambridge (1921 ed.), pp. 337, 346; P. Vinogradoff, Villainage in England, Oxford (1892), pp. 230-8, 252-4.

108. Gray, *op. cit.*, esp. ch. X; G.C. Homans, 'The Explanation of English Regional Differences', P & P, no. 42 (1969), esp. pp. 29-31.

109. Orwin and Orwin, *op. cit.*, esp. pp. 12-4, 51-2.

110. Joan Thirsk, 'The Common Fields', in Peasants, Knights and Heretics, ed. R.H. Hilton, Cambridge (1976); also the preface to the third edition of Orwin and Orwin, esp. pp. xiii-xv.

111. I have not, for instance, dealt with the later theories of, among others, McCloskey, Dahlman, and Dodgshon.

112. Much of this material has already been outlined in Lennard's excellent article on twelfth-century demesne plough-teams (*op. cit.*, see esp. Table A, p. 205). I have, however, excluded a small number of his examples which, upon scrutiny, did not seem rigorous enough to include in the table. Specific examples of mixed teams have already been given (pp. 51, 67). Several good examples of all-ox teams are contained in the Liber Niger for Peterborough Abbey. Thus, at Kettering, Northants, it is stated that in dominio sunt .iiii. carrucae de .xxxii. bobus (pp. 157-8), strongly indicating eight-ox teams.

113. Kalendar of Abbot Samson, p. 120; Pipe Roll 7 Ric I, p. 37. A possible four-ox team not included in Table 2.13 occurred at Cockley Cley in Norfolk, where ij carruce de viij bobus et iiij caballi et j vacca are stated to have been the stock of the manor in 1185. The grammar indicates two teams of four oxen each here, but it seems more likely that, following the experience in the rest of Norfolk, the four caballi or horses were also plough-beasts, thus making two mixed teams of two horses and four oxen apiece. Rot. Dom., p. 58.

113a. Sources as follows: Beds: Cart. Mon. Ram., iii, pp. 274, 307; Berks: Inq. Hil. (Inquisitio Hilberti), fo. 116A; Bucks: Rot. Dom., p. 35; Cambs: Cart. Mon. Ram., iii, p. 313; Cornwall: Pipe Roll 7 Ric I, p. 132; Derbys: Burton Abbey Survey B, pp. 229, 232; Devon: Pipe Roll 7 Ric I, p. 129 (bis); Dorset: Inq. Hil., fo. 116A (bis); Essex: Dom. St Paul, p. 126 (bis); Glos: Delisle, op. cit., pp. 254 (bis), 255, Inq. Hil., fo. 116v.; Hants: *ibid*; Herts: Dom. St Paul, p. 134; Hunts: Liber Niger, pp. 160, 165, Cart. Mon. Ram., iii, pp. 257, 279, 306, 311-2, 313, Rot. Dom., p. 46, Cart. Mon. Ram., iii, p. 274; Honour of Lancaster: Chanc. Roll (8 Ric I), p. 98; Leics: Liber Niger, p. 160, Burton Abbey Survey B, p. 244; Lincs: Liber Niger, pp. 165, 160, 164, Rot. Dom., pp. 8, 20; M'sex: Pipe Roll 7 Ric I, p. 50; Northants: Liber Niger, pp. 159, 157-8, 158 (bis), 159, 160, 161, 162, 163 (bis), 165 (bis), 166 (ter); Notts: *ibid*, p. 159; Honour of William Peverill of Nottingham: Pipe Roll 7 Ric I, p. 23; Oxon: *ibid*, p. 43; Rutland: Liber Niger, p. 158; Somerset: Inq. Hil., fo. 115 (ter), 115v, Liber Henrici de Soliaco, p. 39; Staffs: Burton Abbey Survey B, pp. 212, 215, 217, 219, 222, 225-6, 238, 241; Sussex: Pipe Roll 7 Ric I, p. 37; Warks: Burton Abbey Survey B, p. 246; Yorks: Early Yorkshire Charters, iii, ed. W. Farrer, Edinburgh (1916), p. 38, vii, ed. C.T. Clay, Edinburgh (1952), p. 168. The three teams at Pinbury, Glos, included two cows (Delisle, p. 255).

113b. Sources: Beds: Cart. Mon. Ram., iii, p. 307; Cambs: *ibid*, p. 278; Essex: Rot. Dom., pp. 68-9, Pipe Roll 7 Ric I, pp. 52, 53; Hunts: Cart. Mon. Ram., iii, pp. 259, 277, 273; Norfolk: St Benet of Holme, i, p. 129, Cart. Mon. Ram., iii, pp. 261 & 265, 266 (bis), Pipe Roll 7 Ric I, p. 51, Cart. Mon. Ram., iii, pp. 285, 287; Suffolk: Kalendar of Abbot Samson, pp. 120, 128 (ter). The locations for these mixed teams and the all-ox teams in the preceding note can for the most part be inferred from Appendix B by looking under the appropriate county.

114. As at Keyston, Hunts; see p. 67 and note 72 above. Also the thirty-two oxen at Hardley, Norfolk, 1153-68, implying four plough-teams of eight oxen apiece, had, by 1175-86, shrunk to a single mixed team of two

horses and four oxen. St Benet of Holme, op. cit., i, pp. 112, 129.

115. The presence of large plough-teams in these areas is also supported by less rigorous evidence. For example, the numbers of oxen purchased for fourteen manors in Devon and Cornwall, as recorded in the Pipe Rolls, were 10, 10, 20, 10, 10, 10, 20, 10, 10, 10, 22, 20, 10, and 50. Significantly, with one exception, all are divisible by ten, implying a regional plough-team of that size. See under Appendix B, pt. 3, under Cornwall and Devon and excluding Climson, Tawton, and Venn Ottery, which are already in Table 2.13.

116. Liber Niger, pp. 160, 158, 159; also Edmund King, Peterborough Abbey 1086-1310, Cambridge (1973), p. 143.

117. E.g., see the figures for Staffordshire, Derbyshire, Nottinghamshire, Yorkshire, and the Honour of Lancaster in Table 2.13.

118. The same applies to a substantial number of medieval illustrations from the Continent which I have examined from various published works.

119. One-horse plough-teams were in evidence in the nineteenth century, but only for the very lightest of stirrings; e.g., James Caird, English Agriculture in 1850-1, London (1852), p. 291.

120. 'The Medieval Plough-team', History, xxvi (1942), pp. 288-9.

121. All these and more are found in various English and European medieval illustrations: e.g., see Singer et al, ii, pp. 88-94; Steensberg, 'North West European Plough-types', pp. 263-73; Haudricourt and Delamarre, pp. 358-64; Leighton, p. 99; also Figures 1.8, 1.10, 1.12, 2.1, 2.2, 2.4.

122. E.G. Millar, The Luttrell Psalter, London (1932), fos. 160 (see also Figure 1.11), 173b, and esp. 181b-182; cf. the plough-team on fo. 170 (also shown in Figure 1.12). For the documentary evidence concerning horse hauling, see pp. 148, 177-8, 284 below.

123. Op. cit.

124. Ibid, pp. 291-2.

125. E.g., Singer et al, ii, pp. 91, 94; Millar, Luttrell Psalter, fo. 171. See also pp. 145, 281 below.

126. "Many people who work oxen keep 4, and work each pair only one half of the day. This is a most expensive system, and were a good selection of the oxen to be made is most unnecessary." James Cowie, 'An Essay in the Comparative Advantages in the Employment of Horses and Oxen in Farm Work', JRAS, v (1844), pp. 54-5.

127. Walter expected his oxen to cover six leagues a day while ploughing, equivalent to an acre's cultivation, a good day's work (Walter of Henley, op. cit., p. 315); see also Fitzherbert's reference to oxen ploughing all day (The Book of Husbandry by Master Fitzherbert, op. cit., p. 15).

128. Richardson, p. 291, cites the four oxen found at Gosberton (Lincs) in the Liber Niger (p. 165) as demonstrating the probability of a four-animal plough-team, but of all the stock listings in the Liber Niger it is the only one for which the number of ploughs is not recorded, indicating that the scribes considered that the draught stock was incomplete or perhaps destined for another manor. There is also the question of the possible four-ox team at Cockley Cley (see note 113 above), but this, too, is an uncertain reference.

129. E.g., Edward Miller and John Hatcher, Medieval England - Rural Society and Economic Change 1086-1348, London (1978), p. 13. The idea of small peasant plough-teams was in fact first postulated by Seebohm (op. cit., pp. 84-5), who saw it as a result of the natural decay of co-aration throughout the Middle Ages. See also Vinogradoff, op. cit., pp. 252-3.

130. R. Lennard, 'The Economic Position of the Domesday Villani', Economic Journal, lvi (1946), p. 252. The average for sokemen seems to have been slightly higher; idem, 'The Economic Position of the Domesday Sokemen', Economic Journal, lvii (1947), pp. 185-6; see also idem, Rural England, op. cit., pp. 352-3.

131. Op. cit., p. 253.

132. The sheer number of tenants given for a single plough often presupposes some degree of co-aration, as at Bradenham in Norfolk, where eight sokemen held half a plough-land and had between them one plough. Little Domesday, fo. 235.

133. Liber Henrici de Soliaco, p. 28.

134. Ibid, p. 103.

135. H.S. Bennett, Life on the English Manor, London (1937), p. 46.

136. Liber Henrici de Soliaco, p. 86: "Et in quadragesime debet ter arare cum integra carruca. et semel ad preces cum tot bobus quot habet".

137. Ibid, p. 141.

138. RBW, iv, p. 367; Kalendar of Abbot Samson, p. 130.

139. RBW, i, p. 34: "quaeque virgata...arare debet proprio aratro".

140. See note 98 above.

141. B.H. Slicher van Bath, The Agrarian History of Western Europe AD 500-1850, London (1963), p. 69; M.M. Postan, 'The Economic Foundations of Medieval Society', in his Essays in Medieval Agriculture and General Problems of the Medieval Economy, Cambridge (1973), p. 17; S.R. Eyre, 'The Curving Plough-strip and its Historical Implications', AHR, lxi (1955), p. 93.

142. Almost any number of demesne accounts from the thirteenth and fourteenth centuries will verify this, where fodder costs remain constant

right through the winter and early spring months. However, some variation of plough-team size over the year is indicated in the thirteenth century for peasant ploughing, as at Shirehampton (Glos) in 1299, where peasants were required to plough with six oxen in winter and eight in summer. RBW, iv, p. 393.

143. Miller and Hatcher, op. cit., p. 13.

144. E.g., see my analysis for the demesne at Cuxham. 'The Economics of Horses and Oxen in Medieval England', AHR, xxx (1982), p. 38; see also T.H. Lloyd, 'Ploughing Services on the Demesnes of the Bishop of Worcester in the Late Thirteenth Century', Univ. of Birmingham Hist. Journal, viii (1961), pp. 189-96.

145. Walter of Henley, p. 157.

146. Thus, assuming a three-course rotation with a double ploughing of fallow, this would mean that a 30-acre holding would need 40 acres of ploughing (10 + 10 + 20). Assuming (probably somewhat optimistically) a ploughing speed of an acre a day, this would require 40 days' ploughing. (The same holding under a two-course rotation would need 45 days' ploughing.) To this is added the ploughing services. If they were weekly, it meant one day a week was spent ploughing for the lord. This usually amounted to no more than 50 days per year, since even the most severe weekly ploughing services generally allowed the peasant two weeks off at Christmas. Finally, there were the occasional plough-beans, in most cases 2-4 per year, say 5 for easy calculation. Thus the number of days per year ploughing in a three-course system would be 40 + 50 + 5 = 95; in a two-course system this would be 100 days.

147. Co-aration with a friend would effectively double the ploughing work a peasant's draught animals would have to do, exclusive of the ploughing services. Thus, in the case outlined in the previous note for a three-course rotation, the extra ploughing required would be 40 acres (assuming the friend's holding was the same size). The ploughing services were generally unaffected here, because lords, in cases like this, usually allowed the cooperating peasants to get away with doing no more than a tenant with a full plough-team; in other words, ploughing services in effect were levied on the number of plough-teams held by the tenants rather than on the tenants themselves (e.g., pp. 294-5). Similarly, ploughing services were unaffected by ploughing speed since it was the number of days that counted more than that acreage ploughed, or at least if the service was expressed in land area the amount set (often a strip) was that which could be ploughed in a day. However, ploughing speed certainly affected the time needed by a peasant to plough his own land. If, say, the normal ploughing

speed was half an acre a day, as it seems to have been on many of the Bishop of Worcester's estates (Lloyd, op. cit.), then the time needed by a peasant to plough a 30-acre holding under a three-course rotation (with one plough) would be  $40\frac{1}{2} = 80$  days. If he cooperated with a friend, then his animals would be required for 160 days' ploughing (i.e., to plough both sets of land). Adding again weekly and boon ploughing services, this brings the total up to 215 days for the year's ploughing. This is a level comparable to that on the demesne, although it may be argued that the assumed conditions would be very exceptional.

148. Langdon, 'Economics of Horses and Oxen', op. cit., p. 38. The evidence, in fact, suggests there was little or no co-aration.

149. E.g., see Lloyd, op. cit., pp. 189-90.

150. A.V. Chayanov, The Theory of Peasant Economy, ed. D. Thorner, B. Kerblay, and R.E.F. Smith, Illinois (1966), p. 156 (table 4-24).

151. See p. 312 below.

152. Op. cit., p. 155.

153. E.g., R.C. Collingwood and J.N.L. Myers, Roman Britain and the English Settlements, Oxford (1936), p. 211, as quoted in Orwin and Orwin, op. cit., pp. 10-1. The same distinction exists between the French araire and charrue, which are seemingly derived from the Latin terms, although Georges Duby in particular has some reservations about the connection. Rural Economy and Country Life, op. cit., pp. 18-9; see also Haudricourt and Delamarre, p. 47.

154. This is particularly true of the Ramsey Abbey twelfth-century extents, where the use of both terms is about evenly split when the demesne ploughs or plough-teams are mentioned (e.g., see Cart. Mon. Ram., iii, pp. 257, 259, 273, 274, 279, 285, 287, 305, 306, 307, and 310 for aratrum and ibid, pp. 241, 261, 265, 266, 274, 277, 278, 279, 311, 312, 313, and 314 for carruca). There is no obvious connection between the use of the terms and regional differences or the use of mixed versus all-ox plough-teams.

155. See Figure 2.4; also The Bayeux Tapestry (ed. Stenton), op. cit., p. 11.

156. Steensberg, 'North West European Plough-types', pp. 264-6, feels this; see also note 14 above.

157. Templar Records, p. 23.

158. Involving trips from Shrewsbury to Gloucester, Winchester to Salisbury, Yorkshire to London, and so on. Pipe Roll 18 H II, p. 53; 24 H II, p. 97; 30 H II, pp. 80, 85, 92; 31 H II, pp. 78, 127; 34 H II, p. 13; 6 Ric I, pp. 113, 211.



159. Cart. Mon. Ram., iii, pp. 249, 309; Dom. St Paul, pp. 136-8; Cart. Mon. Ram., iii, pp. 243, 259, 280; Liber Henrici de Soliaco, p. 76; Early Yorks Charters, i, p. 307; ii, p. 154. The figures in brackets refer to the number of manors in each county.

160. In a few cases even a four-wheeled one, although these were not used for farm work; see pp. 177-8 below.

161. Liber Henrici de Soliaco, pp. 95, 141, 195.

162. As at Elsworth, Cambs, c.1195, concerning the carrying services owed by Reginald filius Lewini, a virgate holder: "Et ter in autumnno auxilium praestabit cum carra sua, sive cum carecta, ad bladum ad domum ducendum" (Cart. Mon. Ram., iii, p. 249).

163. Cart. Mon. Ram., iii, pp. 249 & 300, 300; Liber Henrici de Soliaco, pp. 135, 141-2; Dom. St Paul, pp. 132, 132-3; Templar Records, pp. 7 & 8, 9; Liber Henrici de Soliaco, p. 95; Dom. St Paul, pp. 134, 137; Cart. Mon. Ram., iii, pp. 306, 312; Liber Niger, pp. 164, 160, 161 (bis), 163, 165, 169; Liber Henrici de Soliaco, pp. 34, 77, 81; RBW, iii, p. 278; Liber Henrici de Soliaco, p. 103; RBW, ii, p. 233.

164. Revised Medieval Latin Word-list, ed. R.E. Latham, London (1965), p. 73.

165. See p. 65 above; also note 65.

166. E.g., see p. 75 and note 95 above.

167. Boldon Buke, pp. 6, 12 & 13, 23; Burton Abbey Survey B, pp. 212 & 213, 215, 246; RBW, ii, p. 187.

168. Early Yorks Charters, i, p. 465; Templar Records, p. 257.

169. E.g., Revised Medieval Latin Word-list, op. cit., p. 386.

170. Chambers-Murray Latin-English Dictionary (1976), p. 602; see also Singer et al, ii, p. 540.

171. That is, it is specified that the service should be performed with four oxen or some multiple of four; see pp. 2 (bis), 18, 20, 27 (bis), 31 (bis), 32. Quadrigae with three and six oxen, however, are indicated on pp. 6 and 36.

172. De Naturis Rerum, op. cit., p. 259.

173. DB, fo. 273.

174. As we shall see in the next chapter, it was more likely to have been a two-wheeled vehicle in medieval England, although Lynn White does cite an interesting mid-thirteenth-century example from the Continent, where the teachings of a certain scholar are summarily dismissed as being of as much value as the fifth wheel of a plaustrum ("Tantum curo de Ioachym quantum de quinta rota plaustri"); Chronica Fratris Salimbene de Adam,

ed. O. Holder-Egger (*Momenta Germaniae Historica, Scriptores*, xxxii, 1905-13), p. 239, as quoted in White, *op. cit.*, pp. 66-7.

175. Giraldus Cambrensis; see note 98 above.

176. Three Records of the Alien Priory of Grove and the Manor of Leighton, ed. R. Richmond (*Beds Hist. Rec. Soc.*, viii, 1923), p. 23; Cart. Mon. Ram., iii, pp. 245, 250; Liber Henrici de Soliaco, pp. 135, 138; RBW, iv, pp. 352, 367, 408-9; Liber Henrici de Soliaco, p. 88; RBW, iii, pp. 277, 293-4; Liber Henrici de Soliaco, pp. 107, 123; RBW, i, p. 35; ii, 167-70.

177. De Naturis Rerum, pp. 279-80.

178. *Ibid.*, p. 259.

179. That is, Grittleton (Wilts) and Fladbury (Worcs). Liber Henrici de Soliaco, p. 107; RBW, ii, p. 148.

180. Cart. Mon. Ram., iii, p. 312.

### CHAPTER 3

#### The Demesne: 1200-1500

By the end of the twelfth century, medieval agriculture had entered a distinctly new phase. This was the era of direct demesne farming, where rising grain and livestock prices persuaded even the greatest lords to farm their demesne land directly under a manager rather than rent it out. As leases on demesnes expired, lords simply took the land and any appurtenant stock back into their own hands. This was a policy already evident in the closing decades of the twelfth century,<sup>1</sup> and it continued to gain in strength during the next hundred years. As a trend, however, it was relatively short-lived, effectively reaching its zenith in the last quarter of the thirteenth century when faltering grain prices began to make the renting out of demesnes or at least portions of them attractive again to demesne owners.<sup>2</sup> Nevertheless, the decline of interest in direct demesne farming was not immediate. Leasing of demesnes did not become wholesale until the beginning of the fifteenth century, and some remnants of direct demesne farming lingered on into the late fifteenth and even the sixteenth century.<sup>3</sup> Thus we have a period of about two hundred years, from the beginning of the thirteenth century to the beginning of the fifteenth when demesne farming tended to find itself under the effective control of landlords rather than lessees. This is crucial for our purposes, because lords seem to have been much more inclined to keep records than lessees, and as a result we have a great deal more information about demesne farming during this two hundred year interval than we have for the previous and following periods.

It is at this point that we should be more precise in what we mean by demesne farming. Essentially, the demesne can be defined as the lord's farm, that is, those lands on the manor which were farmed directly for the lord's own profit and provisions, as opposed to those let or held by his various free and customary tenants.<sup>4</sup> As such, demesnes tended to have a number of basic farming characteristics. First, they normally encompassed large areas of land, generally well over a hundred acres and sometimes over a thousand.<sup>5</sup> These areas of demesne included wood, pasture, meadow, and waste, but most of it was usually arable, either scattered in strips among those of the peasantry or gathered together in one large compact holding.<sup>6</sup>

Second, the labour arrangement on demesnes was a highly specialised one, which drew from a number of different sources. On most demesnes there was a permanent staff of famuli or demesne servants for those jobs which had a relatively constant labour demand - primarily ploughing, carting, dairying, and animal-herding.<sup>7</sup> The remaining labour needs were fulfilled by labour services owed by tenants or by casual hired labour. These were particularly important during periods of exceptional activity, such as the harvest, hay-making, and threshing, and for odd, intermittent jobs, such as weeding and repairing buildings.<sup>8</sup> The proportion of labour services to casual hired labour varied from region to region and indeed from manor to manor. Generally speaking, the former were heaviest in the Midlands and parts of East Anglia, where two, three, and even four days per week of week-work were not uncommon.<sup>9</sup> Here the labour services eliminated most if not all of the need for casual hired labour and also accounted for much of the ploughing and other work normally performed on other manors by famuli. As the Middle Ages waned, however, the proportion of labour services actually employed declined as they were commuted or regularly sold for money payments, particularly as many demesne administrators began to make the calculation that casual hired labour was often cheaper than having to supply the meals and so forth that often went along with labour services.<sup>10</sup> In

any case, whether by famuli, labour services, or casual hired labour, the large resources of labour overall that a demesne owner commanded had at least one special advantage: it meant that many of the demesne operations could be carried on in parallel rather than successively as on peasant holdings. Thus ploughing, for instance, was carried out for an extended period of time during the year, as we have already indicated in Chapter 2, at the same time as other activities, such as threshing, sheep-shearing, hay-making, hedging, carting, animal-herding, and the like, were being performed. The advantage of this was to even out as much as possible the labour demand for both men and animals over the year and thus to obtain the most economical use of both.

Third, demesne farming tended to have a strong market orientation. Although much of the demesne produce was admittedly destined for household consumption, substantial amounts were sold. The location of a manor often determined the emphasis of its demesne's production, whether for the market or for home consumption. This was particularly the case for large estates consisting of several manors, which were often split into "farm" manors (i.e., for home consumption) and "revenue" manors.<sup>11</sup>

Finally, as we have already indicated, there was a much greater emphasis on documentation, especially among landlords. Three main classes of manorial records were involved here: court rolls, surveys and extents, and accounts. Court rolls in general are more illuminating for peasant farming than that of the demesne, but the other two classes of documents are of great use. First of all, the surveys and extents which were so valuable in analysing the situation in the twelfth century continue in substantial number for the thirteenth and early fourteenth centuries. Unfortunately proportionally fewer of them comment on the demesne draught animals during the latter centuries, and so they become progressively less valuable for the purposes of this chapter. On the other hand, this deficiency is more than amply compensated for by the third class of document - the manorial account.

The first surviving series of these date from 1208-9 in the Winchester pipe rolls, which form a remarkably complete run for the bishopric until the sixteenth century. Accounts for other manors and estates exist only sporadically before 1250, but they become increasingly abundant afterwards, numbering in the tens and perhaps even hundreds of thousands. Those accounts describing manors where direct demesne farming was still being carried on are especially detailed and informative, each one containing a more or less complete record of yearly<sup>12</sup> receipts and expenditures incurred in running the demesne, plus - usually - a detailed accounting of the grain and livestock on the back of the document. It is from these accounts that the bulk of information for this chapter is derived, and from now on they will be referred to as "demesne accounts", in order to distinguish them from the generally much shorter accounts which describe manors where the demesne was already farmed out.

As we might expect, the abundance of demesne accounts from about the middle of the thirteenth century to the early decades of the fifteenth roughly coincides with the most active period of direct demesne farming. Before this, with the notable exception of the Winchester pipe rolls, accounts in general are scarce, while afterwards demesne leasing substantially reduces the number of demesne accounts available. As a result, although demesne accounts have been examined and will be commented on for the entire period 1200-1500, most of the effort has been concentrated on the middle period from 1250 to 1420, where the demesne accounts are most abundant.

In preparation for the various analyses performed in this chapter, the relevant account material has<sup>been</sup> gathered into two large samples, one covering the period 1250 to 1320, henceforward called Sample A, and the other the period from 1350 to 1420, henceforward called Sample B. The thirty-year gap from 1320 to 1350 is to allow for a sharper differentiation between the two samples and also to eliminate as much as possible

the effect of the serious animal murrains, particularly to cattle, that affected draught stock proportions during the 1320s. Thus Sample A represents a period of peak population levels and of "high" demesne farming. Sample B, on the other hand, represents an era of sharp population decline and of increasing difficulties for direct demesne farming. The seventy-year period for each sample was chosen as a compromise between having samples large enough to allow a good geographical representation across the country and yet small enough so that variations occurring within the samples will not seriously affect the reliability of the overall results.

Altogether the demesnes of 637 manors have been surveyed for Sample A (based on 956 accounts) and the demesnes of 399 manors for Sample B (based on 609 accounts). The pertinent data for each demesne and a summary of the method of collection are contained in Appendix C. The difference in size between the two samples reflects the greater difficulty in obtaining information for the later period. Unavoidably the spread of data within each sample is somewhat uneven. Thus the bulk of information for Sample A is found towards the end of the sample period (the median year being 1293), while that for Sample B is found more towards the beginning (median year, 1381).<sup>13</sup>

Besides having an unequal distribution of data through time in each sample, the geographical spread is also uneven. Figures 3.1 and 3.2 show the distribution of demesnes for both samples. As can be seen, the south and east of the country, with the exception of the Weald (particularly in Sample A), is much more fully represented than the north and west. There are a number of reasons for this. One, there is a relative lack of good farming land in the north and west, particularly along the Pennines. Two, the survival of accounts seems to have been better for the south and east, perhaps because of a more developed tradition of record keeping.<sup>14</sup> Three, demesnes in these outlying areas of the north and west were often leased out, even during the high farming period of the thirteenth century.<sup>15</sup>

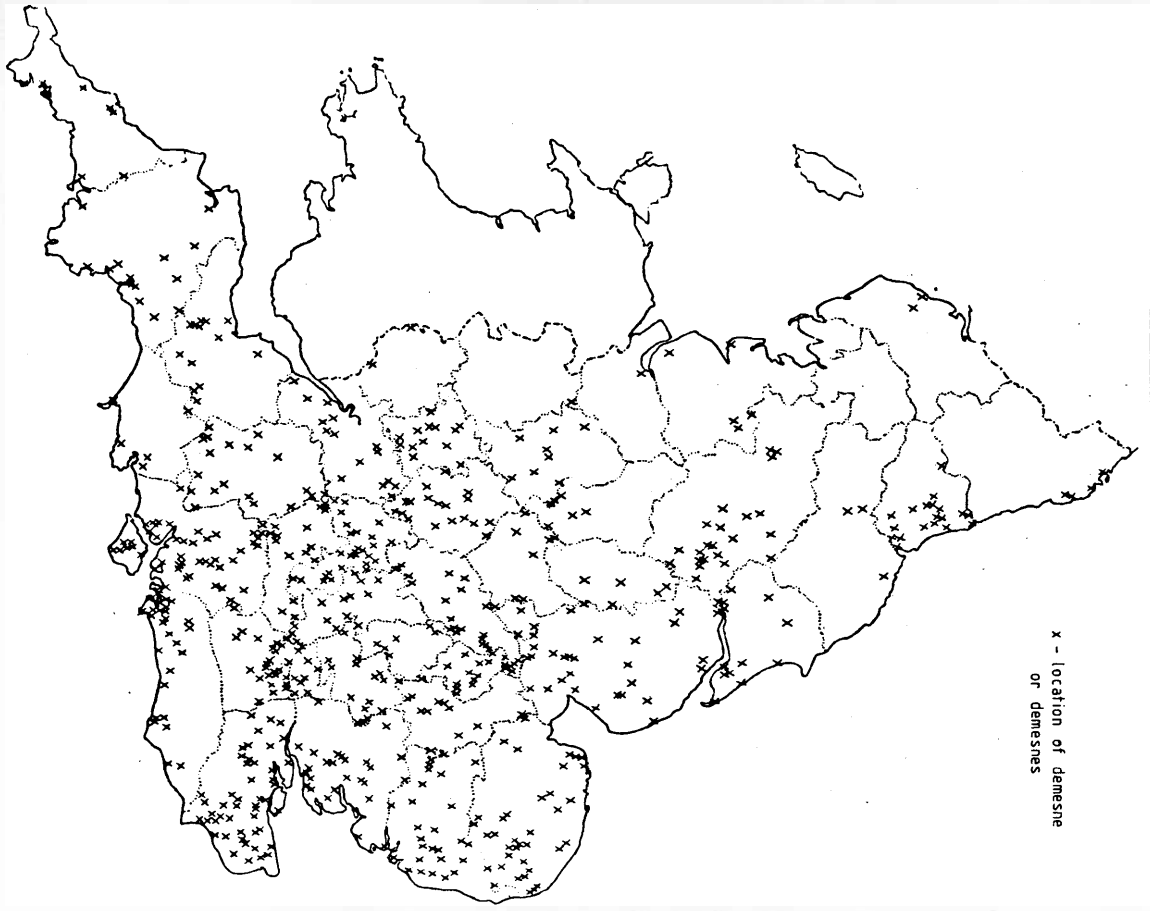


Figure 3.1 DISTRIBUTION OF DEMESNES FOR SAMPLE A (1250 - 1320)

x - location of demesne  
of demesnes

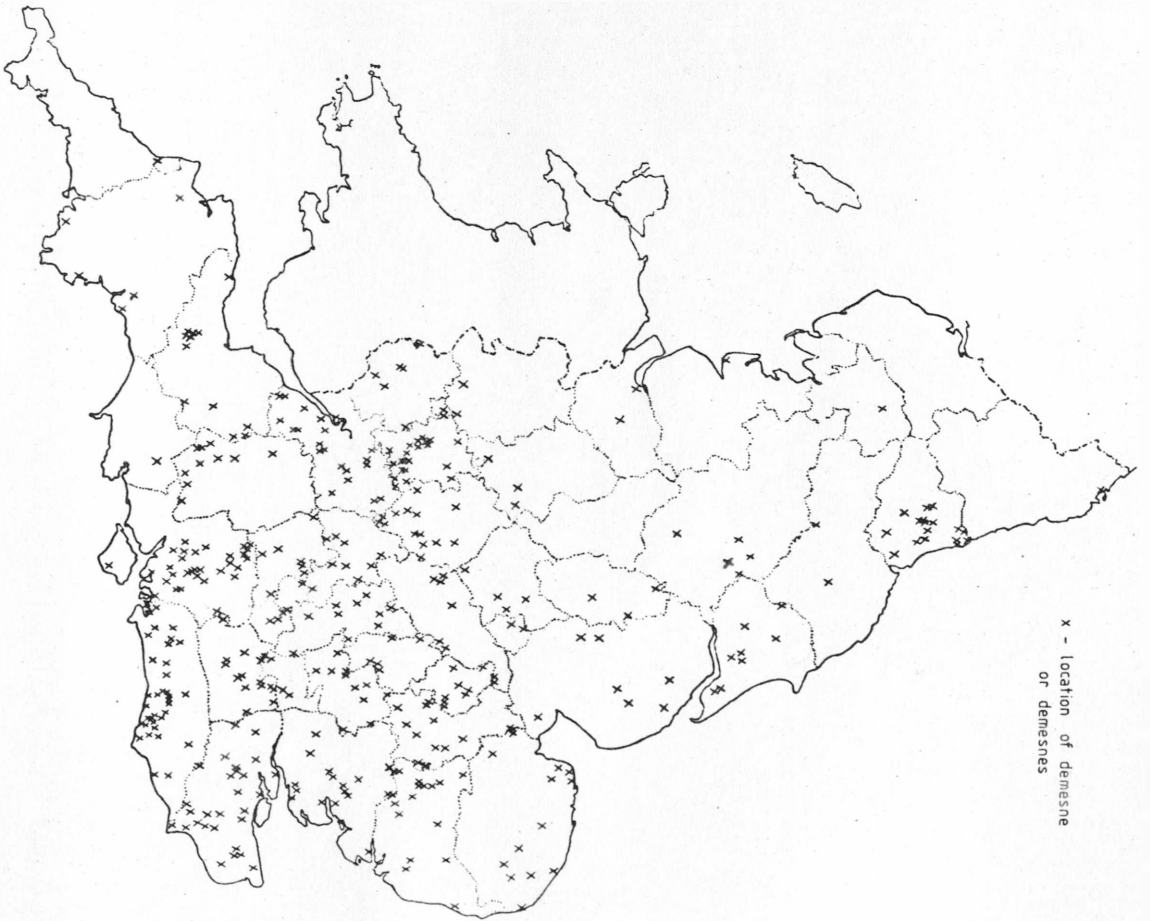


Figure 3.2 DISTRIBUTION OF DEMESNES FOR SAMPLE B (1350 - 1420)

x - location of demesne  
of demesnes



Four, these areas in the north and west may already have been exhibiting the elements of pastoral farming that would characterise these parts of the country in later times.<sup>16</sup>

As we shall see, these distortions in data distribution may only have marginal effects, but they should be kept in mind. Unless otherwise indicated, the sources for individual accounts mentioned in what follows can be found in Appendix C.

a) The Numbers of Horses and Oxen on Medieval Demesnes, 1200-1500

Altogether Sample A contains 625 demesnes for which draught animal numbers are given and Sample B 393 demesnes. In both cases only adult<sup>17</sup> horses and oxen (including the odd bull<sup>18</sup>) are considered and - with few exceptions - only those remaining at the end of each account year. As in Chapter 2, horses for riding or patently for stud are not included,<sup>19</sup> although mares serving as combination working-breeding stock are, as well as a small number of pack- and mill-animals. Also included, when they appear in the totals at the end of the account year, are old and disabled animals, plus any oxen destined for the larder. It is presumed here that the animals were working right up to the end of the year and had not yet been replaced, although clearly they were of no further use. In any case, they amount to well less than one per cent of the total number of draught animals.

The same proliferation of terms for horses occurs in the accounts just as they did in the twelfth-century surveys. Five terms are most commonly encountered: affrus, stottus, jumentum, equus carectarius, and just equus (or equa). The first three represent low-grade animals. These were generally used for ploughing in those regions where horses were employed for this, but often for harrowing and hauling as well. The higher-priced equus carectarius, as the name implies, was used mainly for hauling, as was - usually - the equus. Less often, but still occasionally encountered are the older terms of runcinus and aver' (see Appendix E), and the occupational

terms of hercatorius (harrowing horse), summarius (sumpter or pack-horse), and equus molendinarius (mill-horse).<sup>20</sup> As with the Domesday and twelfth-century material, mules and donkeys are also found in the accounts and, as before, have been considered as horses for the purposes of the following analyses. Their proportion in the totals, however, is very small, being well less than one per cent in both samples.<sup>21</sup>

When finally collated, the numbers of horses and oxen found in Samples A and B appear county by county as in Table 3.1. The overall proportion of work-horses came to 26.7 per cent for the 1250-1320 period and 29.4 per cent for the 1350-1420 period.<sup>21a</sup> In both cases the level of horses represents a significant rise over that evident in the twelfth century, although oxen were still easily dominant at a ratio of between two and three of the animals to every horse. This, however, does hide the performance of some individual counties, which were beginning to employ quite high levels of demesne horses (e.g., Hertfordshire, Essex, and Norfolk). On the other hand, other counties, particularly those in the far west and north, continued to use horses at levels little changed from those at Domesday, although, in general, almost all counties showed some increase. Table 3.2 shows the figures arranged by region. Again East Anglia tops the list with nearly 50 per cent horses during the period before the Black Death, rising to nearly 60 per cent afterwards. The Home Counties and the East Midlands followed with 25-40 per cent, in both cases rising after the Black Death. The South came in at about 25 per cent, while the remaining regions - the South-west, West Midlands, and the North - were all less than 20 per cent, confirming the trend noted in the twelfth century that the use of horses tailed off markedly towards the north and west.

Notwithstanding the degree of regional variation, if Samples A and B had conformed strictly to the precepts of random sampling we might have been fairly confident in saying that the figures for the country as a

TABLE 3.1

The Proportion of Work-horses on English Demesnes,1250-1320 and 1350-1420

a - No. of Demesnes  
 b - No. of Oxen  
 c - No. of Work-horses  
 d - % Work-horses

County	Sample A (1250-1320)				Sample B (1350-1420)			
	a	b	c	d	a	b	c	d
Bedfordshire	9	135	59	30.4	5	75	47	38.5
Berkshire	17	379	113	23.0	11	142	77	35.2
Buckinghamshire	15	238	118	33.1	10	199	92	31.6
Cambridgeshire	13	173	100	36.6	11	119	91	43.3
Cheshire	1	34	5	12.8	2	62	14	18.4
Cornwall	8	194	43	18.1	2	28	14	33.3
Cumberland	2	27	4	12.9	--	--	--	--
Derbyshire	4	40	8	16.7	--	--	--	--
Devon	14	402	53	11.6	5	72	14	16.3
Dorset	4	131	18	12.1	1	18	2	10.0
Durham	19	614	87	12.4	17	325	58	15.1
Essex	30	287	370	56.3	19	110	235	68.1
Gloucestershire	12	330	51	13.4	20	279	54	16.2
Hampshire	45	1,381	451	24.6	31	631	176	21.8
Herefordshire	2	83	12	12.6	6	81	15	15.6
Hertfordshire	14	107	231	68.3	11	48	98	67.1
Huntingdonshire	11	207	126	37.8	8	122	78	39.0
Kent	49	520	494	48.7	28	213	210	49.6
Lancashire	6	101	8	7.3	1	29	4	12.1
Leicestershire	8	155	39	20.1	5	96	52	35.1
Lincolnshire	29	654	184	22.0	7	103	67	39.4
Middlesex	15	185	136	42.4	5	51	31	37.8
Norfolk	37	252	266	51.4	13	26	70	72.9
Northamptonshire	25	511	233	31.3	9	119	59	33.1
Northumberland	3	50	13	20.6	1	26	5	16.1
Nottinghamshire	5	129	31	19.4	3	42	11	20.8
Oxfordshire	30	507	195	27.8	11	152	69	31.2
Rutland	3	26	15	36.6	2	12	13	52.0
Shropshire	1	18	2	10.0	2	27	2	6.9
Somerset	16	409	34	7.7	11	204	14	6.4
Staffordshire	10	246	31	11.2	2	46	8	14.8
Suffolk	29	271	222	45.0	17	152	163	51.7
Surrey	19	225	121	35.0	13	151	65	30.1
Sussex	28	661	84	11.3	36	681	154	18.4
Warwickshire	19	357	63	15.0	14	217	64	22.8
Westmorland	--	--	--	--	1	11	1	8.3
Wiltshire	19	569	81	12.5	10	219	39	15.1
Worcestershire	11	275	30	9.8	25	398	94	19.1
Yorkshire	38	804	143	15.1	16	333	74	18.2
County Unknown	5	74	20	21.3	2	12	6	33.3
Total	625	11,761	4,294		393	5,631	2,340	
Overall %				26.7				29.4

TABLE 3.2

Regional Variation in Demesne Work-horse Levels,  
1250-1320 and 1350-1420

<u>Region</u> <sup>22</sup>	<u>Sample A (1250-1320)</u>				<u>Sample B (1350-1420)</u>			
	<u>a</u>	<u>b</u>	<u>c</u>	<u>d</u>	<u>a</u>	<u>b</u>	<u>c</u>	<u>d</u>
East Anglia	109	983	958	49.4	60	407	559	57.9
Home Counties	119	1,776	973	35.4	66	818	479	36.9
The South	141	3,131	1,110	26.2	105	1,744	579	24.9
South-west	42	1,136	148	11.5	19	322	44	12.0
East Midlands	81	1,682	628	27.2	34	494	280	36.2
West Midlands	60	1,383	202	12.7	71	1,110	251	18.4
The North	68	1,596	255	13.8	36	724	142	16.4

a - No. of Demesnes  
b - No. of Oxen  
c - No. of Work-horses  
d - % Work-horses

whole were accurate to within a few percentage points.<sup>23</sup> However, even allowing for the fact that true random sampling is seldom possible within the confines of the various record offices across the country, the uneven distribution of the accounts over time and geography makes the creation of truly representative samples highly unlikely. As a result, we are again faced with the problem of determining how seriously our results are affected by these difficulties.

Fluctuations over time do not appear to be much of a problem. In most cases the level of work-horses on a demesne changed little unless events of an exceptional nature occurred, such as disease or the sudden influx of horses and oxen from outside the demesne because of heriots, stock movements from other manors, and so on. Generally when these events occurred, however, adjustments were made through the buying and selling of animals such that the event hardly showed in the draught stock levels remaining at the end of each account year. Thus an analysis of end-of-year work-horse levels for five demesnes over extended periods of time shows that the variation in work-horse levels about the mean was usually 10 per cent or less at the

95 per cent probability level.<sup>24</sup> That is, if a series of accounts had a mean end-of-year level of horses of, say, 50 per cent, there would be a 95 per cent probability, if not more, that an account selected at random from the series would have an end-of-year level of horses between 40 and 60 per cent. This included alterations in the amount of demesne arable, which, as we shall see, tended to have some effect on the level of work-horses. As a result, it appears that even though in most cases we are basing our experience of a demesne on only one or two accounts (see the introduction to Appendix C) it is likely that these accounts will be fairly representative of the demesne experience as a whole over the period. Furthermore, in those cases where we are unlucky enough to have chosen freaks it is likely that such aberrant accounts will occur randomly in our sample and to a large extent will cancel each other out.

On demesnes where a policy change was affected, though, the situation is very different. The decision to go from all-ox to mixed plough-teams, to use horses for hauling rather than oxen, or even to go to all-horse farming, all had dramatic effect on the level of work-horses. The adoption of the mixed plough-team as a substitute for the all-ox team, for instance, had the immediate effect of raising the level of horses in the demesne draught stock to 20 per cent or more, and the adoption of all-horse farming, of course, catapulted the level of horses right to the maximum of 100 per cent. It is very important, therefore, that we obtain some idea as to how much of this policy changing was occurring within our sample periods, since our faith in the reliability of an overall or average figure depends very much upon how rapidly the situation was changing at the time. In the event, such policy changes seem to have had surprisingly little effect on the level of work-horses during our two sample periods. It appears that most of the transition to all-horse farming, for instance, occurred either before our sample periods, between them, or even after them.<sup>25</sup> The same seems to have held true for the transition from all-ox to mixed plough-

teams, which appears to have reached its medieval limits by the 1250-1320 period at least and probably earlier.<sup>26</sup> There are some signs that the trend to using horses for hauling may have been increasing steadily right through our two sample periods,<sup>27</sup> but other indicators<sup>28</sup> suggest that this change had already been completed by the second half of the thirteenth century. Consequently, even though our two samples do not evenly cover the periods they represent, it seems that policy changes of the type just described should not greatly affect the reliability of our overall results, although a gradual increase in the proportion of work-horses would seem probable for both periods.

Geographical distortions, however, are much more of a problem. For example, is the rise in the percentage of work-horses after the Black Death a real trend, or is it due to the type of uneven distribution from region to region that complicated the comparison of our twelfth-century material? The problem, as before, is to find a suitable method of correction for this uneven geographical distribution. One method is to use the Domesday plough-team figures again, although the same reservations about using them for the twelfth-century material applies with even more force now. Land reclamation and assarting continued to make its mark on the English landscape well into the thirteenth century, and this process must surely have altered the proportion of demesne arable between regions. Demesne leasing, especially those let out piecemeal to peasants, would also upset these proportions. Unfortunately we have no adequate method of measuring the total effect of these changes and must assume for the moment that the demesne arable proportion between regions had not altered sufficiently to invalidate the use of the Domesday figures as a correction factor.

A second method of correction can be attempted by using the 1377 poll tax returns, although again a number of somewhat questionable assumptions must be made. The first is that the population in a particular region is directly related to the amount of arable land in production there and hence,

to a large degree, the draught stock population. Such an assumption is perhaps acceptable in a medieval context, where most of the food produced would be consumed within a few miles of where it was grown, and where net imports or exports of grain to or from a region would be minimal compared to the total production. Even here there are notable exceptions, since much of the grain grown in East Anglia and the South, for example, would have made its way across our regional boundaries into the Home County city of London or even out of the country. Again we must assume that this grain flow comprises only a small proportion of the total production. We have also to assume, as with the Domesday plough-team method, that the proportion of demesne to peasant land was uniform from region to region. E.A. Kosminsky's work on the Hundred Rolls indicates that the percentage of demesne land could undergo extreme fluctuation from hundred to hundred, but that it tended to be a little more consistent at a county level.<sup>29</sup> In any case, the poll tax method of correction provides a useful alternative to that of the Domesday plough-team, as it should give more weight to those areas where the effect of land reclamation and assarting was likely to have been the greatest.

The method of calculation for both lines of approach is that given in Table 2.12,<sup>30</sup> and the results for each are contained in Table 3.3 below.

TABLE 3.3

Overall Percentage of Demesne Work-horses Corrected by the  
Domesday Plough-team and 1377 Poll Tax Methods

	<u>Uncorrected from Table 3.1</u>	<u>Corrected by Domesday Plough- team Method</u>	<u>Corrected by 1377 Poll Tax Method</u>
Sample A (1250-1320)	26.7	26.3	25.9
Sample B (1350-1420)	29.4	30.5	30.1

The agreement between the uncorrected and the two corrected values is surprisingly good for both samples. There is a slight widening between the

corrected figures for Samples A and B, but in absolute terms the difference is small. It seems that the overall figures in Table 3.1 were relatively unaffected by any uneven geographical distribution in the accounts, unless both corrected methods curiously fail to point it out.

There is, however, another factor that we would do well to consider. This is the question of landlordship. We have up till now been ignoring the differences between demesne landlords, large or small, lay or ecclesiastic. There is a strong possibility that these differences in types of lords might have had an important bearing on the level of horses found on a particular demesne, and so would add yet another distorting factor to our figures in Table 3.1. This is a worrisome problem, because our samples are biased, through the survival of records, towards large, mainly ecclesiastic, landlords with many manors under their control. Minor landlords, both lay and ecclesiastic, tend to be severely underrepresented, particularly during the earlier period covered by Sample A. It is difficult to assess how much effect this underrepresentation, if corrected, would have on the levels of horses and oxen as recorded in Table 3.1. From our analysis of lay subsidy material in the next chapter, however, it appears that the draught animal experience of minor landlords (and indeed the more substantial peasants) did not differ markedly from that of more powerful and wealthy lords and thus their absence is unlikely to have affected the figures substantially.<sup>31</sup>

Fortunately it is much easier to make the basic distinction between lay and ecclesiastic lords in our samples, and this is of some use. As we have already indicated, farming management by churchmen in the Middle Ages has often been considered more progressive than that by laymen. The ecclesiastic and particularly the monastic contribution to the development of agriculture in undeveloped areas of marsh and waste is well-known,<sup>32</sup> and even on land with a long history of cultivation the ecclesiastical perform-



ance was often superior.<sup>33</sup> We should not assume, however, that lay estate management was automatically inferior, particularly in its ability to adjust to new circumstances; some lay estates displayed a keen awareness of changing conditions and reacted to them with commendable speed.<sup>34</sup>

How did these possible differences between lay and ecclesiastical management affect the demesne use of horses and oxen? To answer this question, the demesnes in Samples A and B were classified, where possible, according to whether they were lay or ecclesiastic, and the level of work-horses for each group was calculated. The results by region are shown in Table 3.4.

TABLE 3.4

Regional Variation in Work-horse Levels on Lay and Ecclesiastic Demesnes, 1250-1320 and 1350-1420

<u>Region</u> <sup>35</sup>	<u>Sample A (1250-1320)</u>				<u>Sample B (1350-1420)</u>			
	<u>Lay Demesnes</u>		<u>Ecclesiastic Demesnes</u>		<u>Lay Demesnes</u>		<u>Ecclesiastic Demesnes</u>	
	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>
East Anglia	47	44.4	59	52.8	17	59.3	39	57.6
Home Counties	32	35.7	84	34.7	19	36.1	44	37.5
The South	27	14.0	111	28.3	32	16.4	70	28.7
South-west	20	10.9	22	12.0	9	12.7	8	5.7
East Midlands	39	23.3	41	30.5	15	36.2	16	34.9
West Midlands	18	11.1	41	13.3	22	17.6	48	19.1
The North	42	14.2	25	13.0	8	16.1	27	16.0
Overall <sup>36</sup>	228	23.0	385	28.2	122	27.2	253	30.0

Altogether ecclesiastical demesnes used rather more horses than lay demesnes, although the difference was more pronounced in Sample A (28.2 vs. 23.0 per cent) than in Sample B (30.0 vs. 27.2 per cent). Part of this difference, however, seems to have arisen from there being a somewhat greater concentration of lay demesnes in the more ox-oriented parts of

the country. As a result, when corrected by the Domesday plough-team and 1377 poll tax methods, the difference between the percentage of work-horses on ecclesiastic versus lay demesnes closes slightly for Sample A (27.6 vs. 22.6 per cent for the Domesday plough-team method and 27.3 vs. 22.6 per cent for the 1377 poll tax method) and considerably for Sample B (29.8 vs. 29.1 for the Domesday plough-team method and 29.7 vs. 29.1 for the 1377 poll tax method). From these figures it appears that there was some difference between the percentage of horses used by ecclesiastic and lay demesnes during the 1250-1320 period but little or none for the 1350-1420 period.

It is difficult to assess the significance of all this. For one thing, it is certain that lay demesnes are significantly underrepresented in the samples. Altogether they comprise only 37.2 per cent of the demesnes in Sample A for which the lords are known and 32.5 per cent in Sample B, or roughly two ecclesiastical demesnes for every lay demesne. The true proportions are likely to have been the other way round, that is, two (or more) lay demesnes to every ecclesiastical one.<sup>37</sup> There are also severe fluctuations from county to county. For example, Kent, Huntingdonshire, and Hampshire are almost completely dominated by ecclesiastical demesnes in the samples, while other counties - Lincolnshire, Leicestershire, and Derbyshire - are dominated by lay demesnes,<sup>38</sup> a degree of segregation unlikely to have been the case in real life.

This sort of unevenness in representation makes it very difficult to treat the problem of lay versus ecclesiastical demesnes in a statistical manner, since it is obvious they do not constitute true random samples. The discrepancy in the percentage of horses for lay and ecclesiastical demesnes in Sample A, however, is marked enough for us to speculate that it is based on some real difference occurring at the time.<sup>39</sup> If such a situation was the case, then the inflated ecclesiastical presence in Sample A would distort the overall percentage of work-horses in the direction of a higher

figure. When corrected, this would result in a level of work-horses some one or two per cent lower than that given in Table 3.1. After 1350, when the difference between the percentages of work-horses on lay and ecclesiastical demesnes closes, this sort of distortion is no longer a problem.

It appears, then, that the overall figures given at the bottom of Table 3.1 are plausible. The marked ecclesiastical presence in both samples may have inflated the overall percentages of horses in Sample A, but it would have been no more than a per cent or two. In general the figures tell us that the level of work-horses on English demesnes climbed to 25 per cent or so during the high farming period of 1250-1320, and that after the Black Death it continued to rise to about 30 per cent. Altogether the proportion of demesne work-horses seems to have doubled or better since the twelfth century.

When did the bulk of this rise occur? With one exception, the availability of accounts before 1250 is not abundant enough to allow an adequate answer to this question. The single exception occurs with the bishopric of Winchester pipe rolls, which provide a very good run of accounts from the first decade of the century. Here, an interesting analysis can be made by taking one of the early pipe rolls and comparing it with some that follow. For this purpose, the rolls for 1210-1, 1286-7, and 1381-2 have been chosen.<sup>40</sup> Before they can be studied profitably, though, there is at least one difficulty to iron out, namely that the demesnes represented in the pipe rolls vary slightly from roll to roll. For instance, direct demesne farming was practised on the Isle of Wight manor of Calbourne in 1210-1 but had been abandoned by the time of the 1286-7 and 1381-2 rolls. Similarly in the 1210-1 roll horses are unaccountably omitted from the stock listings for three of the manors - East Woodhay, Ashmansworth, and Echinswell (Hants) - even though in two of these cases references to farm horses being fed or shod are found elsewhere in the

same accounts. For a valid comparison to be made, then, only demesnes for which complete stock listings are available in all three rolls have been considered. Thirty-four demesnes satisfy this criteria.<sup>41</sup>

The percentage of work-horses for these thirty-four demesnes work out to 12.6 per cent for the 1210-1 roll, 18.1 per cent for the 1286-7 roll, and 22.5 per cent for the 1381-2 roll. The low levels for the 1286-7 and 1381-2 rolls compared to the overall percentages for Samples A and B highlight the fact that the bulk of the Winchester demesnes come from relatively ox-oriented regions of the country, primarily the south and south-west. Of more interest here is the horse level in the 1210-1 roll, which is considerably lower than that later in the century, but at the same time quite a bit higher, considering the region it covers, than that in the twelfth century. Clearly the position in the 1210-1 roll is an intermediate one, and this is reflected in a number of individual cases. Thus some demesnes, such as Crawley, where the percentages of work-horses in the three rolls are 21.3, 20.0, and 23.3 per cent respectively, had obviously made the switch to higher horse levels already by 1210-1, while others, such as Cheriton, where the percentages of horses in the rolls are 3.0, 23.8, and 20.0 respectively, and Beauworth (4.0, 13.6, and 23.1), would do so sometime after. More detailed research on the pipe rolls will probably reveal the exact timing of the changes for these latter demesnes, but there is enough here to suggest that the first half of the thirteenth century and probably the last decade or so of the twelfth were optimum periods for increasing the involvement of horses in demesne agriculture.

What are the reasons for this rise in demesne work-horse levels? Two stand out. The first is a greater participation of horses in ploughing, which will be discussed later. The second is a sudden popularity in the use of horses for hauling. For example, of the 4,294 horses records in Sample A, 591 (or 13.8 per cent) are specifically referred to as equi carectarii, while in Sample B, 513 (or 21.9 per cent) are similarly referred

to as cart-horses. Compared to the twelfth century, where only one such demesne animal is recorded in the material examined,<sup>42</sup> this represents a considerable advance, and to this must be added a great number of equi, affri, stotti, and jumenta, which, although not referred to specifically as "cart-horses", are often unmistakably connected to hauling.<sup>43</sup> This increase in hauling horses is easy to see in the context of the expanding economy that characterised the latter part of the twelfth century and most of the thirteenth. Once any technical limitations were overcome, the attractions of quick transport for hauling grain and other goods to market must have become obvious to demesne managers and administrators.

More difficult to explain is the continued rise in the level of demesne work-horses after the Black Death. This is a period which, although not without its spells of recovery, has been characterised as one of economic decline.<sup>44</sup> Despite this atmosphere of decline, the level of horses, and particularly those named as "cart-horses", continued to increase. What makes it all the harder to account for is that, seen in economic terms, the level of horses should have dropped. One of the characteristics of horses is that, compared to oxen, they are grain rather than grass consumers. This made them more expensive animals to feed,<sup>45</sup> but when meadow and pasture were in short supply this consideration became less important. On the other hand, when grass and hay were in plentiful supply, then for economic reasons the ox became, in theory at least, the more sensible animal to keep, as Fitzherbert indicated in the early sixteenth century.<sup>46</sup> Consequently, with much more pasture land being freed upon the shrinkage of arable after the Black Death, it would seem natural to expect a shift back to oxen, but in fact, as we have seen, the proportion of horses on demesnes still continued to rise. Much of this seems to have been due to an increase in all-horse farms (to be discussed later), and consequently when these farms are excluded, the percentages of work-horses in Samples A and B closes to within

a percentage and a half of each other (25.4 and 26.7 per cent for both samples respectively). There was, as well, a tendency for demesne farms, or at least the arable component of these farms, to become smaller after 1350,<sup>47</sup> and this in turn may have led to a greater proportion of horses. That this was so can ~~be~~ most easily be seen by rearranging the demesnes in Samples A and B according to the total number of draught animals - considered here as roughly proportional to the size of the demesnes - and working out the percentages of work-horses for each group as shown in Table 3.5.

TABLE 3.5

Percentage Work-horses vs. the Total Number  
of Draught Animals on Demesnes

<u>Total No. of Draught Animals</u>	<u>Sample A (1250-1320)</u>		<u>Sample B (1350-1420)</u>	
	<u>No. of Demesnes</u>	<u>% Work- horses</u>	<u>No. of Demesnes</u>	<u>% Work- horses</u>
1-10	76	33.4	50	30.0
11-20	195	31.7	139	30.1
21-30	151	25.2	107	25.5
31-40	91	26.2	38	22.6
41-50	41	18.6	15	24.3
51+	43	20.5	7	22.1

All-horse farms are excluded from these figures,<sup>48</sup> since they tend to cluster in the smaller groups and so would exaggerate the proportion of horses here. Even so, the trend towards having more horses in small farms is evident in these figures, although the degree of significance that should be attached to them is debatable.<sup>49</sup> The reason for the trend seems to have been one of horse economy. For example, if a demesne had a single plough-team of eight oxen, it would in all probability require at least one horse for harrowing. If, however, the demesne arable was expanded such that it now needed two plough-teams of eight oxen instead of just one, it may still have been possible to make do with the single harrowing

animal. Carting horses could be economised in the same way. In other words, the ancillary harrowing and hauling animals, usually horses, were often in excess on small farms.

In short, it does appear that the period after the Black Death continued to experience an increase in the level of work-horses and that this increase was probably significant.<sup>50</sup> The rise in cart-horses and all-horse farms and the decline in demesne arable would all seem to have played a part. Added to this would be the continued buoyancy of grain prices and farming for the market in general in the late fourteenth century, which would have maintained the need for hauling horses in particular.

What happened after 1420? The buoyancy of grain prices in the late fourteenth century meant that direct demesne farming was slow to die off, but by the early fifteenth century most demesnes were now being leased. As a result, details about farming on these lands were now lost to documentation, and consequently we have records of only a handful of demesnes remaining in direct exploitation during the remainder of the century. Table 3.6 lists the results from some twenty-four demesnes, based on fifty accounts and inventories.<sup>51</sup>

Only ten counties are represented and half of these by only one demesne apiece. The overall percentage of work-horses is lower than that for both Samples A and B, but this is hardly surprising given the bias towards northern and western counties. Altogether the post-1420 sample is too small to draw any firm conclusions, but movement in both directions is clearly evident. Thus, for example, the demesne at Waterston in Dorset is an all-horse farm in an area where such farms were not apparent before, while in other parts of the country a partial reversion to oxen is noticeable, especially in the north.<sup>52</sup> This limited evidence suggests that there was a growing polarisation in the use of horses and oxen, with <sup>demesnes in</sup> some areas going completely to horses while others took up the option of reverting to

TABLE 3.6

The Percentage of Work-horses on English Demesnes, 1420-1500

<u>County</u>	<u>No. of Demesnes</u>	<u>No. of Oxen</u>	<u>No. of Horses</u>	<u>% Horses</u>
Dorset	1	0	7	100.0
Durham	9	171	27	13.6
Essex	1	7	4	36.4
Norfolk	3	0	17	100.0
Northumberland	1	15	4	21.1
Somerset	1	20	2	9.1
Warwickshire	2	35	7	16.7
Wiltshire	1	17	4	19.0
Worcestershire	3	64	13	16.9
Yorkshire	2	35	7	16.7
Total	24	364	92	
Overall Percentage				20.2

oxen and the economic advantages that that held.

As has been said, once demesnes were leased, details of agricultural practice are no longer available. In some cases, however, the accounts for the period after the demesne is leased continue to list the draught stock normally appurtenant to the demesne. Here the lord is handing on the draught stock to the lessee as part of a stock-and-land lease, probably with the intention of having the draught stock immediately available should the demesne revert to direct cultivation. Generally the draught stock recorded in these "lease" accounts are at the same level as when the lord farmed the demesne himself.<sup>53</sup> On the other hand, there are at least two cases where the level of horses in the leased accounts are significantly higher than when the demesne was farmed directly, indicating, perhaps, that the levels of draught animals on the demesne were changing to fit the actual levels preferred by the lessee. Thus at Knowle (Warks) in 1398-9 and 1400-1 the nine oxen and six jumenta supposedly present on the demesne gave a level of horses of 40 per cent, which was much higher than the 20 per cent or so



when the demesne was farmed directly.<sup>54</sup> Similarly at Houghton (Hunts) the demesne draught stock changed from five oxen and ten horses in 1419 (when the lord farmed it) to twelve horses alone during the period 1445-54 (when the demesne was leased).<sup>55</sup> It is of course difficult to project how accurately these levels of leased stock represent the actual levels employed by the lessee, but it does seem that the trend in many areas may have been towards using more horses. This conclusion, however, can only be a very tentative one.

In concluding this section, then, we can say that there was a marked increase in the use of demesne work-horses from 1200 to 1500. Although most of this increase occurred in the very early stages of our period, there was a continued progression in the use of the animals right through to the beginning of the fifteenth century at least and possibly beyond. We have already indicated that some of this was due to the rise and continued buoyancy of the market economy, but we must also consider how much of it was due simply to changes in practice, a topic we shall discuss in the next section.

#### b) The Employment of Demesne Horses and Oxen, 1200-1500

The most dramatic manifestation of changes in practice regarding demesne draught oxen and horses occurred with the creation of all-horse farms, in which the use of oxen as draught animals was completely eliminated. Although these demesnes were always in a minority, their numbers grew steadily throughout the period.

Considering the 1250-1320 sample (A) first, there were altogether twenty-eight demesnes (or 4.5 per cent of the 625 demesnes in Table 3.1) which were employing nothing but horses for their farm work.<sup>56</sup> Of these, four did display small numbers of oxen,<sup>57</sup> but these were mostly supernumerary beasts arising naturally from the breeding cattle on the demesne to be sent or sold off as working stock elsewhere. There were as well four demesnes

in transition, three proceeding towards the status of all-horse farms and one - Ebony, Kent - seemingly reverting from an all-horse state to using oxen again.<sup>58</sup> Finally, the glebe-demesne of East Meon Church (Hants), although it displayed only horses for draught, may well have borrowed plough-teams of oxen from those available on the adjacent demesne of East Meon Manor, also held by the bishop of Winchester.

The geographical distribution of these demesnes is shown in Figure 3.3. Most of them are clustered in three areas: Norfolk, the Chiltern Hills, and parts of eastern Kent. Norfolk is a county with a large proportion of light, easily worked soils, especially in the "good sand" region of the north-west, where most of the Norfolk all-horse demesnes in Figure 3.3 are found. As noted by Fitzherbert, ploughing with horses is more suited to light soils, since here they are much quicker than oxen and will not become bogged down as they are prone to do on heavier soils.<sup>59</sup> Similarly, soils undoubtedly accounted for the presence of all-horse farms on or very close to the Chiltern Hills, represented on Figure 3.3 by a long string of demesnes from Wheathampstead and Kingsbourne in Hertfordshire to Checkendon in Oxfordshire. The soils here were not only thin but often stony, precisely of the type that Walter of Henley conceded were poor for oxen, since the animals tended to slip on the stones.<sup>60</sup> It thus comes as little surprise that many of the all-horse farms found outside the Chilterns in this period and later were also located in relatively upland areas, where similar types of soil prevailed.

Kent provides a more variable experience. While some of the demesnes conformed to the upland pattern just described, such as Petham and Bishopsbourne fringing on the North Downs, others are less easy to categorise. This is particularly the case with the Romney Marsh demesnes of Agney and Orgarswick, Appledore, and Ebony, all belonging to Canterbury Cathedral Priory. These demesnes contained much newly reclaimed land and the high percentages of oats grown upon it indicates that it was wet and poorly

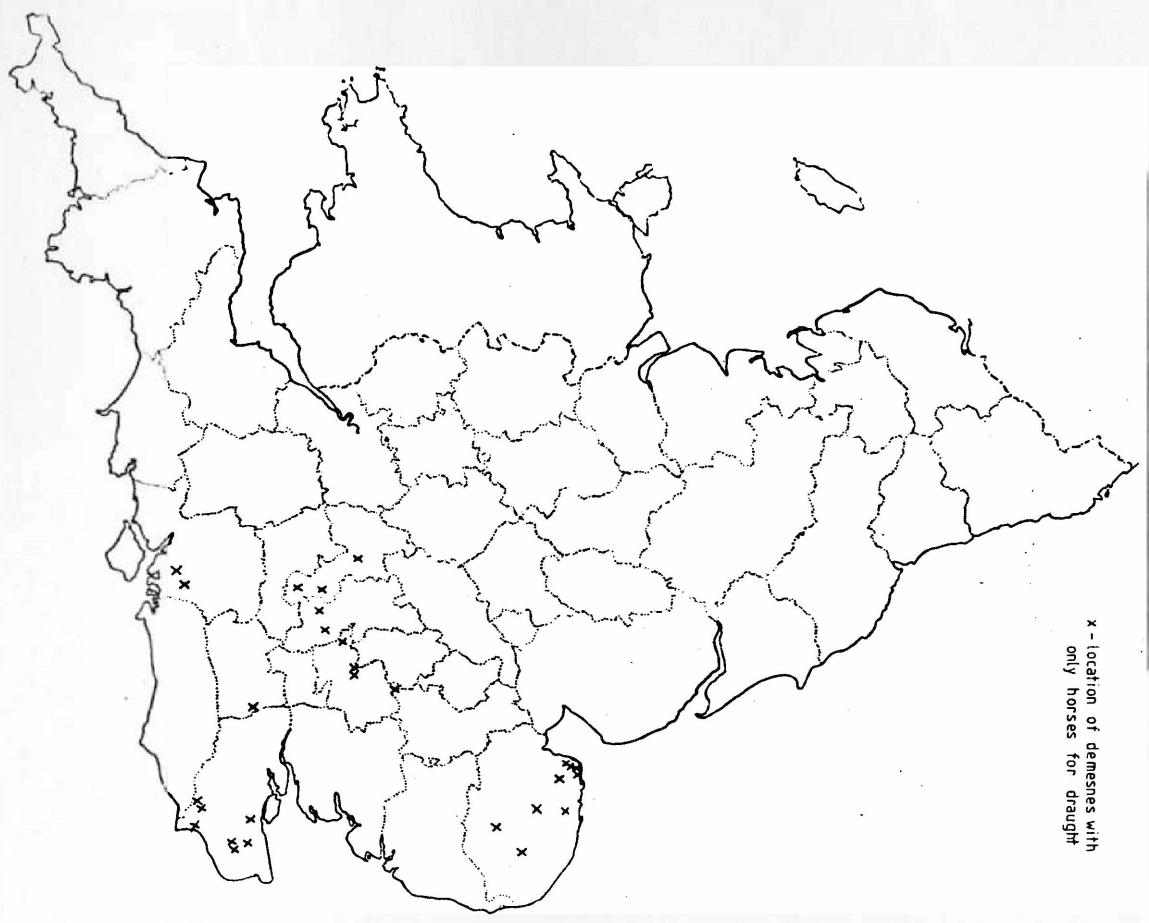


Figure 3.3 ALL-HORSE DEMESNES (SAMPLE A 1250-1320)

x - location of demesnes with only horses for draught

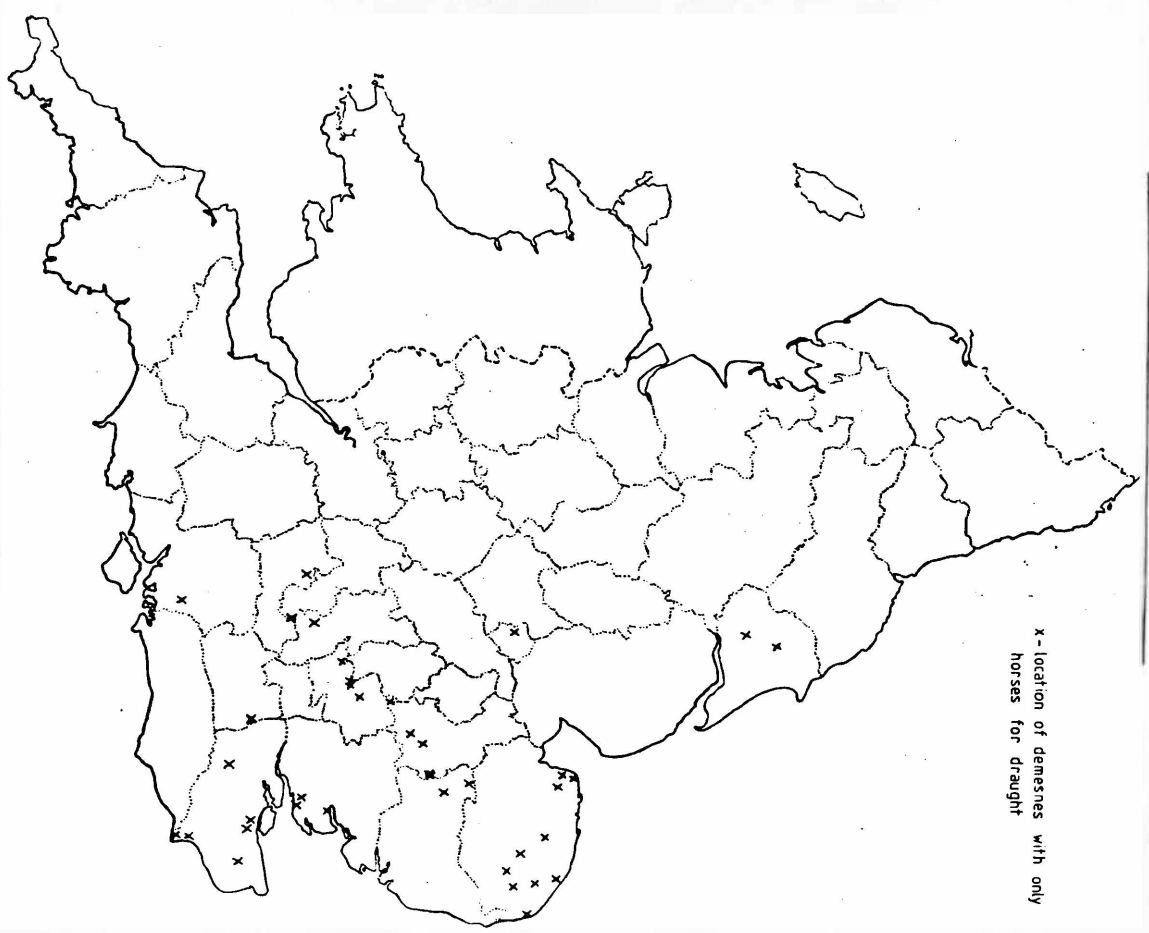


Figure 3.4 ALL-HORSE DEMESNES (SAMPLE B 1350-1420)

x - location of demesnes with only horses for draught

drained and of a type seemingly ill-suited to horses.<sup>61</sup> It may, however, have had a high sand content, making it easier to work than other alluvial soils.

During the fourteenth century the number of all-horse demesnes increased markedly. Altogether in Sample B, despite its smaller size, there are thirty-seven all-horse demesnes (or 9.4 per cent of the total of 393).<sup>62</sup> Of these thirty-seven, two record oxen at one time or another but apparently did not use them for draught, while two other demesnes were in a state of transition. One of these - Knebworth in Hertfordshire - became an all-horse farm sometime between 1370-1 and 1401-2, while Farleigh (Surrey) was seemingly reverting to oxen between 1360-1 and 1371-2.

The area of most notable increase was Norfolk, although the smaller number of demesnes in Sample B disguises this somewhat in Figure 3.4. Almost all the county, with the exception of the fen districts, now had all-horse demesnes.<sup>63</sup> All-horse demesnes also began to appear in Suffolk, Essex, and Cambridgeshire. There was also a scattering of such demesnes well outside the previous area of concentration, notably at Oakham in Rutland and Wetwang and Market Weighton in the Yorkshire Wolds.<sup>64</sup> In Kent and the Chilterns, on the other hand, the spread of all-horse demesnes did not proceed much beyond that in the previous century. In fact, in the Romney marshlands the trend was markedly in the opposite direction, where at least two previously all-horse demesnes - Ebony and Appledore - were employing as many oxen as horses by the latter part of the fourteenth century. It may be that the land here was gradually stiffening, perhaps because of the use of marl and other dressings, which were employed in considerable quantities here.<sup>65</sup>

Despite these instances of reversion, the prevailing trend was solidly in the other direction. Of the all-horse demesnes in Sample B, twelve are found to have been employing oxen in Sample A.<sup>66</sup> Examination of the accounts for several of these demesnes indicates that in many cases the turnover to

horses seems to have taken place in the 1340s, either before or immediately after the plague.<sup>67</sup> Why this decade was so popular is not clear, but in a number of cases the transition seems to have been a prelude to the final leasing of the demesnes, as at Oakham in Rutland, which existed as an all-horse demesne for barely ten years before it was leased out in the 1350s.<sup>68</sup> Here it seems that the switch to horses was a failed attempt to revive the fortunes of the demesne. On the other hand, demesnes such as that at Plumstead in Norfolk, once they had been converted to all-horse draught, continued to be farmed in that way until well into the fifteenth century.

In summary, it appears that the trend towards all-horse demesne farming was a very real one, although admittedly on a minor scale. Only in Norfolk and probably the Chilterns could all-horse demesne farming be said to be consolidating itself into a definite regional characteristic. Outside these areas, all-horse demesnes were very scattered and generally surrounded by demesnes that used oxen. This indicates that the choice to go completely to horses was seldom easy to make, but was a finely balanced decision that could go either way.

Demesnes that did go to all-horse farming were generally employing large proportions of horses already, not only for harrowing and hauling but also for ploughing in conjunction with oxen, especially in mixed plough-teams. It is these in-between cases where horses were heavily involved in ploughing without, however, monopolising it that contributed most to the increase in numbers of demesne horses. In the previous chapter we have shown how the phenomenon of mixed plough-teams spread through eastern England during the twelfth century. As to be expected, it continued to spread. Over the next three centuries references to mixed teams or at least to horses ploughing are found all over England. Thus, at Fareham, Cheriton, and Beauworth (Hants) in 1286-7, among the ploughing expenses listed were

charges for shoeing affers "drawing before the oxen".<sup>69</sup> The most northerly indication of mixed plough-teams occurs at Westoe (Durham) in 1446, where a fairly obvious reference to two teams of two horses and six oxen apiece is given.<sup>70</sup> Horses used for ploughing, probably in mixed teams, are also recorded at Portbury and Bedminster (Somerset) in 1323-4, where three and two affers respectively were shoed "for drawing the lord's plough".<sup>71</sup> Again at Howsham, Yorkshire in 1352-3, there were six horses, three "for the cart" and three "for the plough",<sup>72</sup> presumably in some combination with the sixteen oxen on the demesne, while at Fletchamstead (Warks) in 1309-10 five "plough affers" were shoed to serve on three ploughs, along with, again, sixteen oxen.

It is, therefore, easy to obtain likely examples of mixed plough-teams from almost anywhere in England. As in Chapter 2, the problem is to determine whether these cases were typical or exceptional in the counties in which they are found - a difficult proposition, since in most cases the only real clue lies in the numbers of draught animals listed. Fortunately, an indication of this can again be obtained statistically, since, as we have seen in Chapter 2, demesnes without mixed plough-teams generally fail to top the 20 per cent horse level. This, however, is complicated by the rise of cart-horses in the post-1200 material, which may have pushed even demesnes with no plough-horses above the 20 per cent mark. Fortunately this can be corrected for. For example, if a demesne has horses which are specified as being carting animals, these can simply be subtracted. If the level of horses in the remaining draught stock is still 20 per cent or more, we can be fairly sure that mixed plough-teams, or at least horses for ploughing, were present on the demesne. The correction applied to those demesnes where horses for hauling are not openly specified presents a more difficult problem. An examination of the demesnes with cart-horses, however, indicates that there is usually one such animal to about every ten draught animals total. Thus, a demesne having ten or less draught oxen and horses

is likely to have an equivalent of one of them engaged in hauling work, even though none of the animals is specified as such. Similarly those demesnes with eleven to twenty draught animals on them can be assumed to have two cart-horses ~~on them~~, those with twenty-one to thirty draught animals, three cart-horses, and so on. In each case, if the level of horses in the animals remaining after these notional cart-horses have been subtracted still comprises 20 per cent or more, we can assume that we are dealing with mixed plough-teams. Using this criteria, we can separate all the demesnes in Samples A and B into those with all-ox plough-teams and those with mixed plough-teams (excluding, of course, all-horse demesnes). We are admittedly dealing with probabilities rather than certainties here,<sup>73</sup> but, as in Chapter 2, the model does fit the experience of those cases where we are certain of the plough-team composition.

Altogether 274 demesnes in Sample A exhibited mixed plough-teams and 328 demesnes exhibited all-ox teams. In comparison Sample B had proportionally fewer mixed team demesnes (132) as against all-ox team demesnes (226), but much of this was due to the greater proportion of all-horse demesnes in Sample B, with great gaps beginning to appear in Norfolk in particular, where all-horse plough-teams were taking over. The distribution maps for each type of demesne are shown in Figures 3.5 to 3.8 for both samples. Comparing the distribution of mixed teams in Figures 3.5 and 3.6 with that for the late twelfth century in Figure 2.8, it is obvious that the area employing mixed teams clearly expanded during the intervening period, such that the frontiers of the mixed team had been pushed out to a curving line stretching from the Solent to the Wash. Outside this boundary sprinklings of mixed teams were spreading into Lincolnshire and Leicestershire and even beyond. Inside it, only Sussex remained a haven for all-ox plough-teams, although occasional all-ox teams were found in other southeastern counties. Equally obvious, as indicated by the similarity in the distributions of Samples A and B for both mixed and all-ox teams, is that

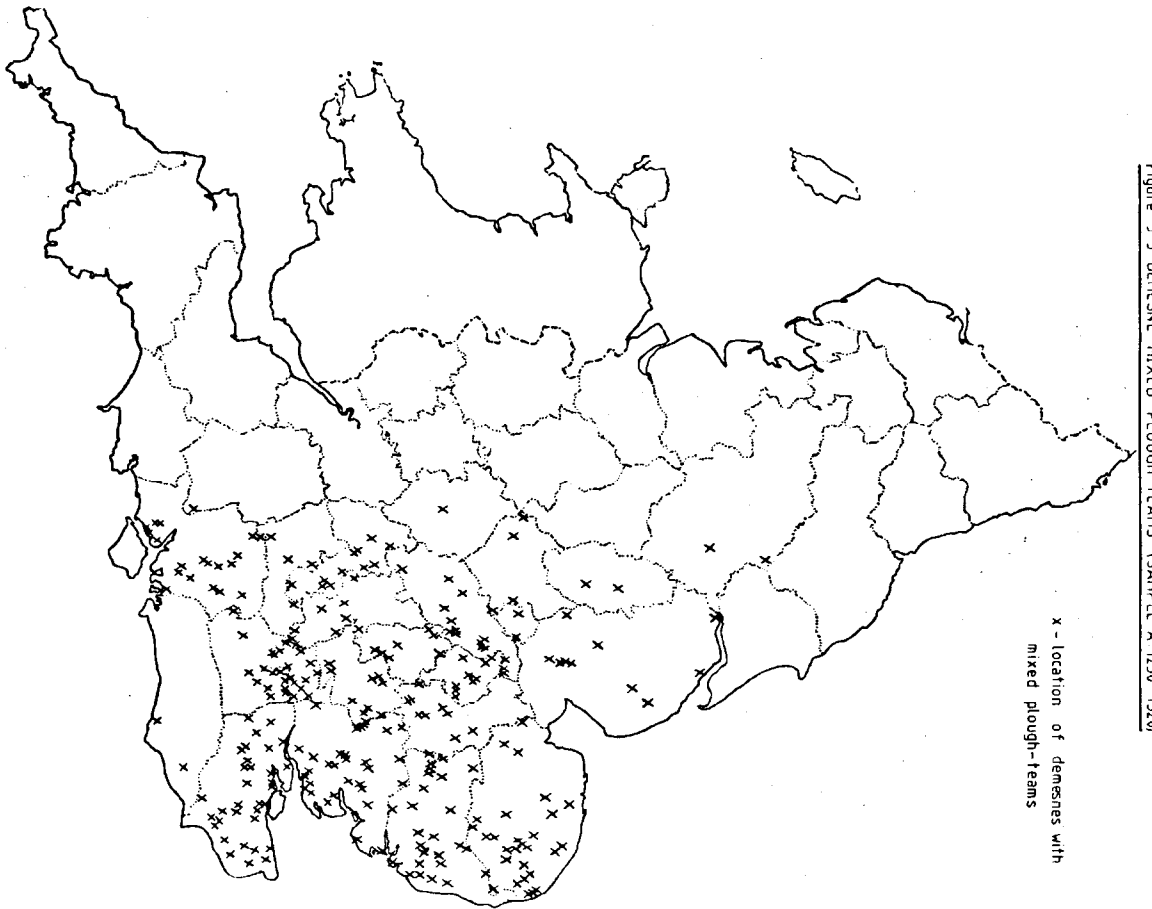


Figure 3.5. DEMESNE MIXED PLOUGH-TEAMS (SAMPLE A, 1250 - 1320)

x - location of demesnes with mixed plough-teams

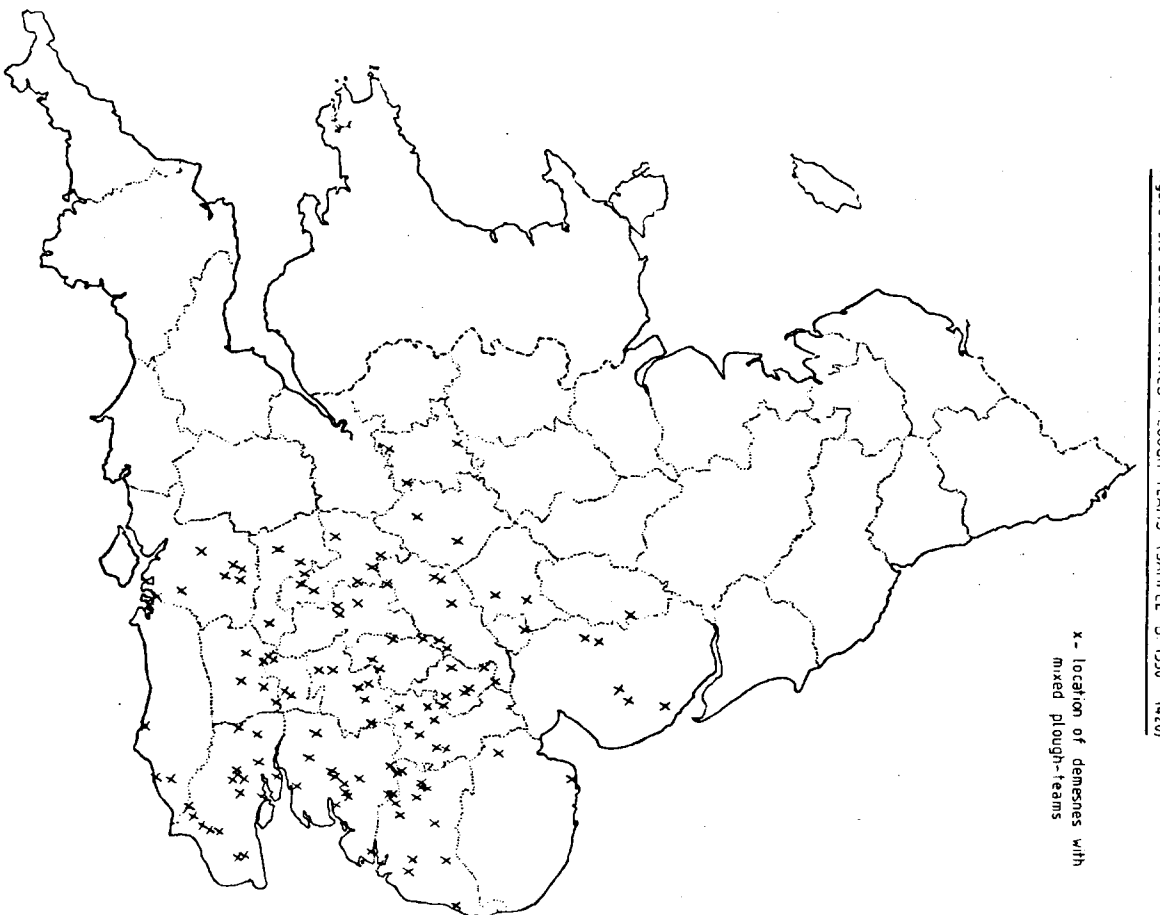


Figure 3.6. DEMESNE MIXED PLOUGH-TEAMS (SAMPLE B, 1350 - 1420)

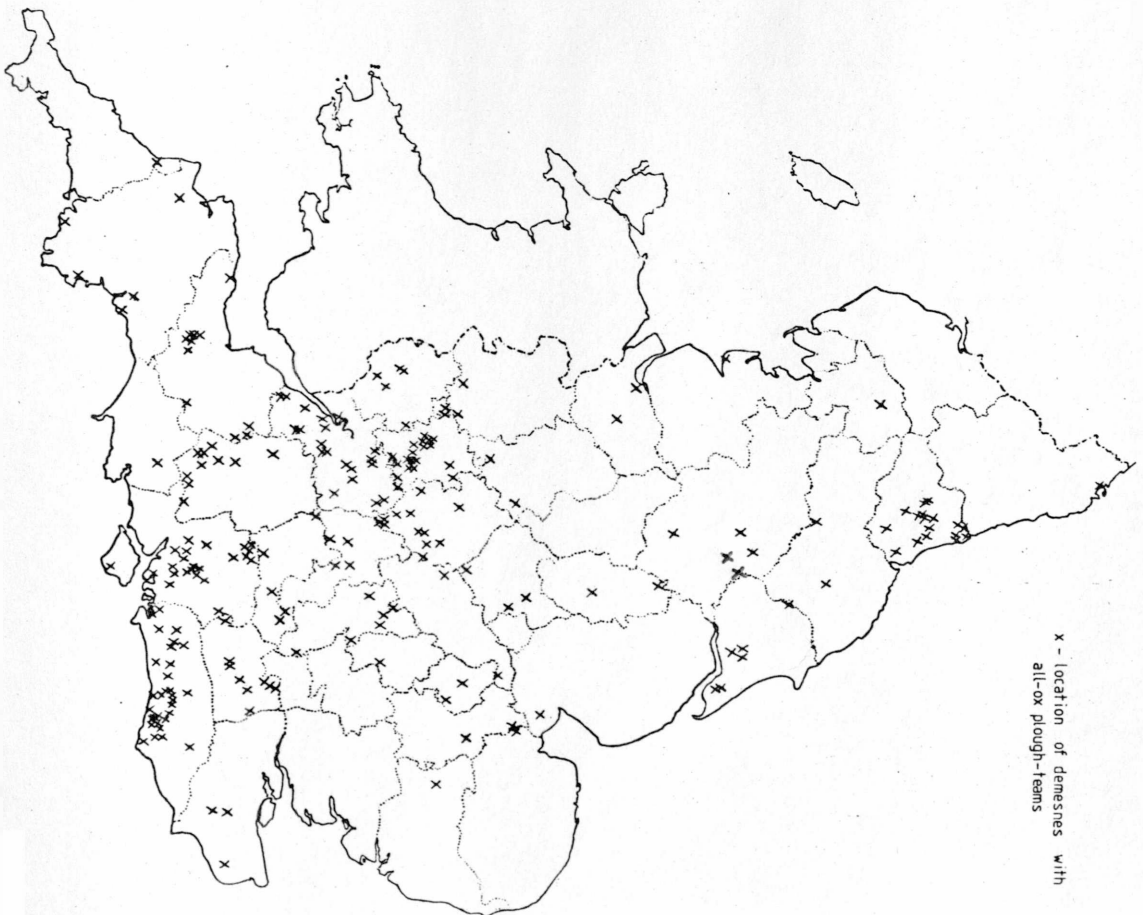
x - location of demesnes with mixed plough-teams





x - location of demesnes with all-ox plough-teams

Figure 3.7. DEMESNE ALL-OX PLOUGH-TEAMS (SAMPLE A: 1250-1320)



x - location of demesnes with all-ox plough-teams

Figure 3.8. DEMESNE ALL-OX PLOUGH-TEAMS (SAMPLE B: 1350-1420)

by the end of the thirteenth century this situation had effectively stabilised, such that there was little change afterwards.

It would be mistaken to think, however, that all these cases that we have labelled as "mixed teams" were necessarily so. We have already indicated in the twelfth-century example of Keyston, Huntingdonshire, how a demesne employing separate all-horse and all-ox plough-teams would show up as a mixed team demesne in our analysis without actually having such teams. It appears that in several instances this happened in Samples A and B as well. Thus the 1286-7 bishopric of Winchester pipe roll records a number of Hampshire and Wiltshire demesnes where all-ox plough-teams operated in parallel with all-horse teams, often throughout the year.<sup>74</sup> Similar arrangements were also evident on the Templar demesne at Swanton (Beds) in 1307-8 and on the Peterborough Abbey demesnes at Cottingham and Boroughbury (Northants) in 1309-10. The same phenomenon occurs outside our mixed team area. Thus an extent for the Gloucester Abbey manor at Northleach (Glos), c.1266-7, states that the demesne normally had six plough-teams, five of six oxen apiece and one of four affers, plus a seventh plough of eight oxen from Christmas to Easter. At nearby Aldsworth the plough-teams consisted of four ploughs of six oxen apiece and one of five affers.<sup>75</sup> It is tempting to surmise, as we did for Keyston, that these arrangements were of a passing nature, the stage before proceeding to mixed teams, but in fact the use of separate horse- and ox-teams in this fashion often lasted for a considerable time. At East Meon Manor (Hants), for instance, separate horse- and ox-teams are mentioned not only in 1286-7 but again in 1381-2.<sup>76</sup>

It is difficult to guess at the reasoning behind such an arrangement, since two different systems of draught performing the same duty would seem an unnecessary complication. It is not inconceivable, however, that a demesne may have had some areas suitable for ox-teams and others suitable for horse-teams. Demesnes having a mixture of vale and uplands, for instance,

would fit this pattern, with all-ox plough-teams being employed on the heavier land in the valleys and all-horse plough-teams on the lighter, high-ground soils.<sup>77</sup> Quick ploughing by horses may also have been needed when there was a heavy spring planting, perhaps because of the sowing of catch-crops or inhokes on the fallow. In any case, these demesnes with separate horse- and ox-teams seem to have been restricted to the outlying areas of our "mixed team" region, particularly in Hampshire, as indicated by the bishopric of Winchester material. Further inside the region true mixed teams clearly predominated. A 1251 survey for the lands of the bishop of Ely, for instance, provides detailed plough-team information for thirty-nine demesnes in the counties of Cambridgeshire, Huntingdonshire, Hertfordshire, Norfolk, Suffolk, and Essex. Thirty-four of these demesnes had mixed plough-teams, with compositions ranging from six horses and four oxen at Rattenden (Essex) to three horses and two oxen at Feltwell (Norfolk) and Brandon (Suffolk). The remaining five demesnes, all in the fenlands, employed ox-teams. Only two demesnes had separate horse-teams: Ely (Cams) and Somersham (Hunts), both in combination with mixed teams.<sup>78</sup>

It is also clear in many cases that the existence of separate horse-teams was not an alternative to mixed teams but simply another way of employing the hauling and harrowing horses on the demesne. It seems likely, from the small number of horses involved, that the Gloucester Abbey examples cited above were of this type. The same can be observed more clearly on other demesnes in the numerous ploughs "raised" at the winter and spring seedings from the cart- and other horses. This could be done on a regular or irregular basis. The demesne at Cuxham (Oxon) provides an example of the latter kind, where in 1309, because the spring planting had been delayed by frost, a third plough comprised of two cart-horses, two horses belonging to the reeve, and an unspecified number of affers was brought into action. Difficulties in raising the animals for this third plough often drove the Cuxham reeve to use some curious combinations, such as the four affers, two

or three cart-horses, ox, and bull employed in 1311.<sup>79</sup> On other estates the creation of these extra ploughs was often made on a very regular basis indeed. Such was the case on the Ramsey Abbey manors, where extra demesne ploughs were seemingly raised from the cart-horses on a year-by-year basis.<sup>80</sup> Indications of the same sort of practice is evident on many other estates as well.<sup>81</sup> Because of our correction for cart-horses, however, most of these cases will not appear on our mixed team maps.<sup>82</sup>

In summary, the extent of our "mixed team" area as indicated on Figures 3.5 and 3.6 would seem to represent with reasonable accuracy the geographical limits that the mixed plough-team actually achieved in the thirteenth and fourteenth centuries. The maps do include some demesnes where the practice was to have separate horse- and ox-teams rather than the mixed variety, but these are unlikely to have constituted more than a small minority of cases and were in any event limited to the fringes of the mixed team area. By the end of the thirteenth century the change to mixed plough-teams seems to have been more or less complete, since there was little expansion and perhaps even a reduction in mixed plough-team demesnes in the following century, as they were increasingly replaced by all-horse farms.

Compared to ploughing, the story for harrowing is easier to tell. Harrowing, of course, is considered to have remained a preserve of the horse all through this period, and there is little in this study to revise this picture. Occasionally it was a very specialised activity, as at Belper (Derbys) in 1256-7, when an affer was bought specifically for the harrow and where the level of horses and the lack of carts indicates that this was all the animal did.<sup>83</sup> On several occasions demesne horses are referred to as hercatorii, equi hercatorii, affri herciantori, etc.,<sup>84</sup> again indicating that this was their main, if not sole, function. It was much more common, however, for harrowing to be only one of a number of duties that a horse might be asked to perform, particularly as harrowing involved only the

winter and spring seedings, which left much time that could be filled in with other chores. Very early on we find horses doing a multitude of tasks, as at Bitterne, Hampshire, in 1210-1, where the "avers" not only harrowed, but ploughed and hauled marl as well.<sup>85</sup> Even more common was for the harrowing to be done by the cart-horses, as many references in the oats sections of the accounts indicate.<sup>86</sup> Even where it is not specifically stated that the cart-horses did harrowing, it is often implied by the extra rations fed to these animals during the planting seasons. The overwhelming impression one gets from all this is that although horses are often grouped as to whether they were ploughing, harrowing, or hauling beasts, in practice the lines of demarcation were not that rigid, allowing for much overlapping of function. This feature is often reflected in the titles of the manorial servants, such as the hercatorius-carectarius found on some demesnes.<sup>87</sup>

Concerning the size of the harrowing team, all medieval illustrations pertaining to England show it to have consisted of a single horse, and the odd reference in the accounts confirms this.<sup>88</sup> Two-horse harrowing teams should not be ruled out, however, as at least one early sixteenth-century European illustration shows such an arrangement.<sup>89</sup> Certainly harrowing could be an onerous job, as at Cuxham (Oxon) in 1327-8, where extra rations of oats were issued to the cart-horses pro suo magno labore at harrowing.<sup>90</sup> Sometimes the ground to be harrowed was so obdurate that oxen had to be used, and Fitzherbert indicates that in many parts of the country in the early sixteenth century the practice was to use ox-harrows to break down the big clods first before using horse-harrows.<sup>91</sup> The same practice was evident on many English demesnes in medieval times, particularly in the west and north.<sup>92</sup> But even when demesnes did have ox-harrows, it is clear that most of the harrowing on these farms was still done by horses. Thus at Monkwearmouth, Durham, where ox-harrowing seems to have been a regular practice, only one out of <sup>the</sup> seven harrows on the demesne in 1362 was actually an ox-harrow, only one out of the ten harrows in 1370, and only two out of

the twelve harrows in 1378-9.<sup>93</sup>

If harrowing changed little in England during this time, the face of hauling was altered dramatically. We have already discussed the spread of cart-horses and how this was reflected in the increased numbers of demesne horses overall. By the time of Sample A the sight of these animals must have been a common occurrence in all counties, particularly for road transport. Journeys involving carts and horses are recorded on the road systems to all parts of England.<sup>94</sup> Even on demesnes, where speed of hauling was perhaps not so urgent, cart-horses were making great inroads, such that they were found on demesnes in almost every county. Indeed, as we shall see, horse-hauled vehicles such as carts were evident on nearly 90 per cent of demesnes by the end of the thirteenth century, and the heavy oats rations that cart-horses in particular were given indicates that these vehicles were extensively employed.<sup>95</sup>

However, we should not think that horses totally monopolised hauling in England at this time, since ox-hauling was still fairly prevalent in some parts of the country. Thus at Huntingdon, Herefordshire in 1371-2 the reeve recorded that more ploughing services than usual were required "because the lord's oxen were occupied in carrying wood and stone for work at the castle", while at Awre (Glos) in 1328-9 the oxen of the lord were engaged in carrying victuals to Hereford.<sup>96</sup> The dual nature of oxen for ploughing and hauling implied in these references is indicated at several other places as well. Thus at Wingate (Durham) in 1360 the demesne stock included seventeen oxen for "two ploughs and plaustra". Demesne oxen for ploughs and plaustra are also listed on the manors of Burstwick and Keyingham (Yorks) in 1353-4 and Maidwell (Northants) in 1383-4. Even when oxen are not specifically mentioned for hauling, it is often clear from other references that they did. For instance, among the livestock and equipment listed for the demesne at Finchale (Durham) in 1411 were "ten yokes for the plough

and plaustra". Yokes were also bought for or with plaustra at Bredon (Worcs) in 1375-6 and Henbury (Glos) in 1385-6.

Altogether there are nearly twenty references to demesne ox-hauling in the accounts examined for this study. Considering the continuous stream of information about horse hauling, this is a rather small amount, but perhaps can be explained by the simpler harnessing equipment for oxen, virtually little more than yokes and bows, the cost of which was often too minor to be recorded, or by the fact that hauling for oxen was in most cases considered as a secondary occupation for the animals, the costs for which were subsumed in the ploughing expenses without special mention. One feature stands out: namely the connection between ox-hauling and the farm vehicle known as a plaustrum (as we shall see, it appears to have been the medieval equivalent of the sixteenth-century wain). Where references to ox-hauling naming the vehicle do occur in the accounts, that vehicle is almost always a plaustrum,<sup>97</sup> and as a result we must suspect that the vehicle was solely designed for oxen. There is, for instance, no certain evidence in this study to a plaustrum being hauled by horses. Equally there are no references to oxen pulling carts (carectae).<sup>98</sup> In short, it appears that there was a very definite split in hauling at this time, one side linking oxen with plaustra (and other similar vehicles) and the other linking horses with carts. As a result, some idea as to the extent of ox- and horse hauling can be gained by simply examining the distribution of carts and plaustra in Figures 3.16 to 3.19 below. It is interesting to speculate whether this dichotomy was a new thing or whether it was of long standing. It is noticeable, for instance, that almost all the ox-hauling examples noted in the accounts were post-1350.<sup>99</sup> Material examined in the next chapter, however, indicates that it was well established in the thirteenth century as well.

The reason for such a split is that horses probably handled the lighter hauling and oxen the heavier. In particular, the carrying of stone, wood,

coal, and other heavy materials was much more a feature of hauling by oxen than by horses, as indicated by the Huntingdon case above. This is also reflected in hauling team size, which tended to be much smaller for horses than oxen. Thus, horse-hauled cart teams usually varied from two to four animals in the accounts, while ox-hauled teams generally had at least four and often many more.<sup>100</sup>

Although our study is concerned mainly with draught- rather than pack-horses, some examination of the latter is desirable in order to assess their impact as work animals on the demesne relative to that of the hauling beasts. J.F. Willard, in his article on fourteenth-century hauling by carts,<sup>101</sup> assigned a minor role to pack-animals in the transportation of the time, and the work here on demesne draught stock does little to contradict this view. Nor should this be especially surprising. On the basis of the weight of goods transported per animal, the pack-horse was patently inferior to the cart-horse. The maximum load for the former is thought to have been just over 400 lbs.<sup>102</sup> On the other hand, a good cart-horse in the fourteenth century was seemingly capable of hauling over a ton on his own.<sup>103</sup> Even at Domesday it is alleged that each ox in an ox-cart pulled a weight equivalent to twice that carried by a pack-horse,<sup>104</sup> and at least one reference from the surveys indicates that carrying by pack-horse was only half as efficient as carrying by cart.<sup>105</sup> Therefore, whenever the transportation of large amounts of goods was required, such as bringing in the harvest or taking grain to market, carting or some other form of vehicle-hauling was preferable. On the other hand, for small amounts of goods, especially perishables or those needed in a hurry over a long distance or in difficult winter conditions, pack-horsing was best.<sup>106</sup> In the material examined in this study, most of the pack-horses were found on demesnes which adjoined large, usually monastic, households.<sup>107</sup> Here it seems the animals were used for day-to-day provisioning, a state of



affairs also observed on demesnes without any obvious household connection: thus, two summarii at Henley-in-Salt-Marsh (Glos) in 1378 are mentioned in relation to a journey to fetch fish from Bristol. Otherwise, unless terrain made them essential, as appears to have been the case at Yealmpton (Devon) in 1395-6,<sup>108</sup> it was not worth having any of these specialised pack-animals on the demesne, and altogether there are only a very small number of them mentioned in the account material looked at in this study.<sup>109</sup> This does not mean that some of the other horses on the demesne could not at times have performed some pack-saddle carrying, but that it was seldom their primary function. In any case, judging by entries in surveys and extents, such carrying was more often done by the peasantry as part of their labour services than by demesne animals.<sup>111</sup>

Finally, an interesting feature of the demesne material is the light it throws on the question of horse-milling. Horses pro molario or ad molendinum appear a number of times in the material examined in this study,<sup>112</sup> and it must be presumed that they drove the mills rather than, say, simply carrying the grain to and from them. It is difficult to say whether this was a relatively new trend or not, since horse mills are found in England as early as 1183.<sup>113</sup> Marc Bloch, however, cites a thirteenth-century case where the Abbot of St Albans replaced a water-mill, for which the feed channel had dried up, with a mill driven by horses,<sup>114</sup> and there are signs that this sort of phasing out of water-mills was happening elsewhere.<sup>115</sup> It is likely, though, that horse mills in general were much smaller than mills driven by water - perhaps little more than large hand-mills - since they do not seem to have been beyond the means of peasants.<sup>116</sup> The smaller and probably less expensive scale of their construction may thus have appealed to demesne managers, although the horses they employed amounted to only a tiny proportion of all the horses involved in draught work.<sup>117</sup>

c) The Size of the Demesne Plough-team, 1200-1500

We have already discussed in Chapter 2 the importance that plough-team size has had in discussions of the origins of the open-field system and of the contradiction that arises when comparing the small plough-team shown in medieval illustrations with the much larger ones indicated in the documents. The purpose of this section is to carry this discussion further by considering the demesne plough-team from 1200 to 1500. In particular we want to determine if there were any deviations from the large plough-team noted in the twelfth century, and what effect the further introduction of the horse had on the size of this team. As we have already indicated, the documentation for much of this period is very rich. Surveys and extents, which provided the bulk of material for determining demesne plough-team size in the twelfth century, continue to grow in abundance after 1200, although there was an increasing tendency to omit the information about demesne plough-teams given in the earlier documents. Nevertheless there is still a significant amount of evidence to be gained, especially for the period before 1350. Most of this evidence is very explicit, as at Downham in Cambridgeshire in 1251, where it was stated that there was enough land to require three ploughs or plough-teams, "each of six oxen and two stotts (or horses)".<sup>118</sup> Altogether specific data of this sort has been gathered for eighty-three demesnes over the period 1200-1350. These are itemised in Table 3.7 under four categories: 1) all-ox teams, 2) mixed teams, 3) all-horse teams, and 4) teams of known size but unknown composition.

The mean plough-team size for each group is summarised below:

	<u>No. of Animals in Team</u>
All-ox teams	7.8
Mixed teams	7.7
All-horse teams	5.7
Teams of unspecified composition	9.5
Altogether	8.0
Altogether, excluding all-horse teams	8.1

TABLE 3.7

Distribution of Demeane Plough-team Sizes, 1200-1350

a - No. of Cases  
 b - No. of Teams  
 H - Horses  
 O - Oxen

1. All-ox Teams<sup>119</sup>

No. of Oxen in Team

County	6		8		10	
	a	b	a	b	a	b
Cambridgeshire	1	5	1	3	-	-
Durham	-	-	1	5	-	-
Gloucestershire	2	9	4	10½	4	12
Norfolk	3	8	-	-	-	-
Warwickshire	-	-	3	9	-	-
Worcestershire	-	-	8	24	1	2
Total	6	22	17	51½	5	14
% (Cases)	21.4		60.7		17.9	
% (Teams)	25.2		58.7		16.0	

2. Mixed Teams<sup>120</sup>

No. of Horses and Oxen in Team

County	5 3H,20		6 4H,20		7 2H,40		8 3H,40		8 4H,40		8 2H,60		10 6H,40		10 2H,80	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b
Cambs	-	-	1	2	2	5	-	-	-	-	9	23	-	-	-	-
Essex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glos	-	-	-	-	-	-	-	-	5	14	-	-	2	4	1	3
Herts	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-
Hunts	-	-	-	-	-	-	-	-	4	9	1	2	-	-	-	-
Norfolk	1	3	-	-	3	6	1	2	-	-	1	5	-	-	-	-
Suffolk	1	3	-	-	-	-	-	-	5	13	2	4	-	-	-	-
Surrey	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	2	6	1	2	5	11	1	2	14	36	15	40	2	4	2	5
% (Cases)	4.8		14.3		12.3		2.4		69.0		71.7		9.5		8.5	
% (Teams)	5.7						1.9									

3. All-horse Teams<sup>121</sup>

No. of Horses in Team

County	4		5		6	
	a	b	a	b	a	b
Cambridgeshire	-	-	-	-	1	6
Gloucestershire	1	1	1	1	-	-
Hampshire	-	-	1	1	-	-
Hertfordshire	-	-	-	-	1	2
Huntingdonshire	-	-	-	-	1	1
Total	1	1	2	2	3	9
% (Cases)	16.7		33.3		50.0	
% (Teams)	8.3		16.7		75.0	

TABLE 3.7 (continued)4. Teams of Known Size but Unknown Composition <sup>122</sup>

County	No. of Animals in Team			
	8		10	
	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>
Berkshire	1	6	-	-
Dorset	1	2	-	-
Essex	2	3	3	7
Gloucestershire	-	-	4	20
Kent	-	-	1	2
Middlesex	1	1	-	-
Wiltshire	-	-	1	6
Total	5	12	9	35
% (Cases)	35.7		64.3	
% (Teams)	25.5		74.5	

Again, as in the twelfth century, the dominant plough-team size was one of eight animals. Of the 252½ teams detailed in Table 3.7, 139½ (or 55.2 per cent) were of this size. Only the all-horse teams and those of unspecified composition differed markedly. In the latter case this is probably due to coincidence, but the substantial reduction in the all-horse team sizes does seem to be a true reflection of the actual situation existing at the time, as we shall see from account material. Otherwise the presence of horses in the plough-team made little difference to its size. Despite the more varied experience of mixed teams, for instance, the overall similarity in size between them and all-ox teams persisted. It seems that the combination of horses and oxen in plough-teams continued to be done for reasons of speed rather than to enable a reduction in the number of animals per plough. As a result, the average plough-team size for all teams was virtually identical, particularly if all-horse teams are excluded.

After 1350 only a handful of reliable references exists concerning the size of the demesne plough-team, mostly in accounts and inventories from the county of Durham. Thus eight-ox teams are evident at Finchale in 1363, Bewley and Ferryhill in 1446, and Elvethall in 1405-6 and 1422-3. Six-ox teams appear at Monkwearmouth in 1416-7, ten-ox teams at Jarrow in 1362,

1370, 1371, and 1373, and what looks to be a twelve-ox team at Pittingdon in 1446. Two mixed teams of two horses and six oxen apiece appear at Westoe in 1446, while all-horse teams of five and six horses each are found at Durham in 1446 and at Market Weighton (Yorks) in 1403.<sup>123</sup> In general, these scattered references indicate that large <sup>demesne</sup> plough-teams, either mixed or wholly of oxen, remained in evidence well after the advent of the plague, with teams of horses alone being somewhat smaller. This evidence is sufficient only as a vague indication, however, and must be supported by much other evidence before we can say that the state of affairs evident before 1350 continued after that date as well.

Fortunately the account data helps in this regard, since a rough indication of plough-team size can often be worked out from the draught stock listings on the dorse of the accounts, particularly if the accounts also indicate the number of demesne ploughs in normal operation. The latter are intimated either directly by the number of ploughs that needed regular maintenance during the year, particularly with iron, or indirectly by the number of ploughmen hired during the same period. For instance, concerning the latter, with all but the smallest of plough-teams two men per plough were required, one to hold the plough (the tentor) and the other to drive the team (the fugator); the number of ploughs can thus be deduced by simply dividing the number of ploughmen by two. Often the two indicators will reinforce each other. Thus, as one example among many, at Islip (Oxon) in 1357-8 four ploughs were maintained with iron, while at the same time wages were paid to four tentores and four fugatores. When the number of working ploughs is thus known for a particular demesne, it is a simple matter to divide it into the number of ploughing animals present - presumed for convenience in this study to be that remaining at the end of the account year - in order to obtain a rough estimate of plough-team size. The ploughing stock here is assumed to be the total draught stock less hauling stock; harrowing and other animals are presumed to be included with either the

hauling or ploughing beasts. Thus at Islip the draught stock remaining at the end of the account year consisted of thirty-four oxen and five cart-horses. Omitting the cart-horses, this leaves thirty-four oxen as the ploughing stock, which when divided by four - the number of ploughs - results in a notional plough-team size of 8.5, or - rounding off - nine animals. For those demesnes where the hauling stock was not directly indicated, one draught animal out of ten was subtracted, as in our previous calculation for determining the extent of mixed teams, with the exception that the subtraction was not made on demesnes with less than five animals. Here it was assumed that any hauling needed to be done would be performed by the ploughing stock, especially as these very small demesnes invariably had a high proportion of horses.

Altogether, using these methods, the notional plough-team sizes for 381 demesnes in Sample A and 272 demesnes in Sample B were calculated.<sup>124</sup> The frequency of each plough-team size is shown in Table 3.8 and pictorially in Figure 3.9. All demesnes giving results of thirteen or more animals were excluded, as it was felt that these high numbers probably resulted from an underestimation of the number of ploughs or hauling animals on the demesne. In any case, these demesnes represented less than 10 per cent of the total data. The frequency distributions for both samples are strikingly uni-modal, although the mode value here is nine rather than eight as in the survey and extent material. Presumably this reflects the tendency of most demesnes to have one or two animals per plough as spares or perhaps as harrowing animals. There is also a greater spread across the whole range of plough-team values, reflecting the relative weakness of the account material as a measure of plough-team size. Most important, the frequency profiles for the two samples are remarkably similar, and it appears that plough-team size after 1350 followed much the same pattern as it had before. This is also revealed in the average plough-team sizes for the samples (see Table 3.9), which are virtually identical, particularly if all-horse demesnes are excluded.

TABLE 3.8

The Frequency of Plough-team Sizes on English Demesnes  
as Indicated by Accounts, 1250-1320 and 1350-1420

a - No. of Demesnes  
b - No. of Plough-teams<sup>126</sup>

Plough-team Size (animals/plough) <sup>127</sup>	Sample A (1250-1320)		Sample B (1350-1420)	
	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>
2	1	1	-	-
3	1	4	4	8½
4	9	20	10	19
5	15	29½	11	20
6	32	92	22	44½
7	52	150	27	54 <sup>2</sup> / <sub>5</sub>
8	76	202	53	114
9	93	232½	68	143½
10	48	137	48	97 <sup>5</sup> / <sub>6</sub>
11	28	74½	20	44
12	26	65	9	16

Also evident is the much reduced plough-team size on these same all-horse demesnes, which again verifies the survey and extent material. Teams having only two or three horses are indicated on some demesnes.<sup>128</sup>

TABLE 3.9

Average Plough-team Size as Indicated by the  
Accounts, 1250-1320 and 1350-1420

a - No. of Demesnes  
b - Average Plough-team Size  
(animals/plough)

	Sample A (1250-1320)		Sample B (1350-1420)	
	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>
All demesnes	381	8.5	273	8.4
All, except all-horse demesnes	363	8.6	248	8.6
All-horse demesnes	18	5.4	25	5.0

Figure 3.9: Plough-team Size Frequency As Indicated By Accounts

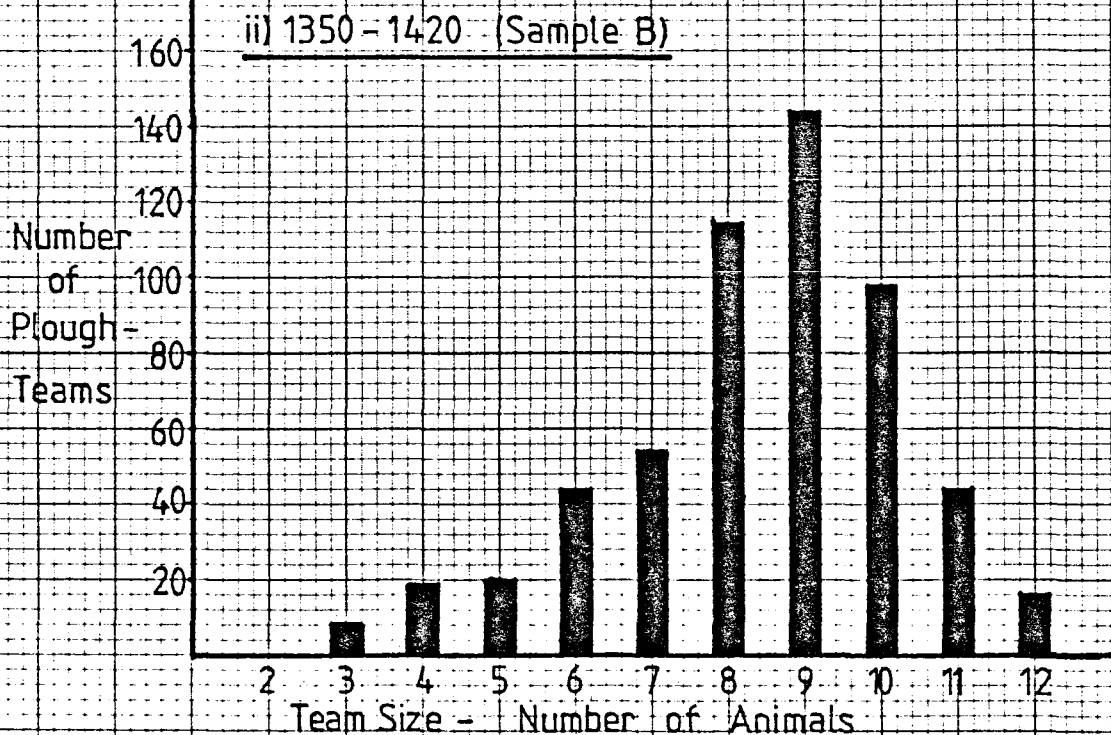
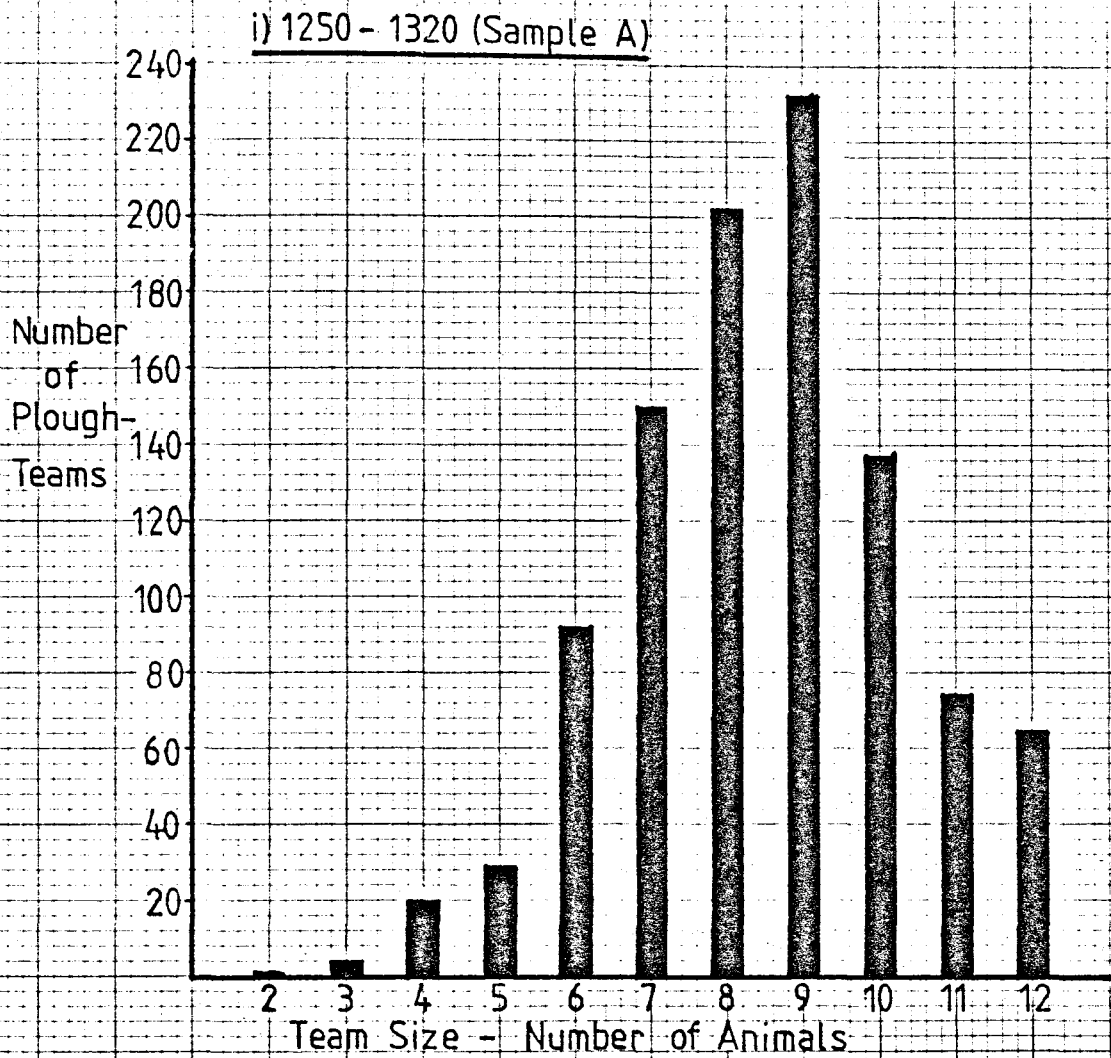




TABLE 3.10

Average Plough-team Size by Region as Indicated  
by the Accounts, 1250-1320 and 1350-1420

a - No. of Demesnes (including all-horse demesnes)  
b - Average Plough-team Size (animals/plough)

<u>Region</u>	<u>Sample A (1250-1320)</u>		<u>Sample B (1350-1420)</u>	
	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>
East Anglia	74	7.8	46	7.9
Home Counties	67	8.4	53	8.3
The South	74	8.8	72	8.7
South-west	24	9.4	12	9.0
East Midlands	61	8.4	21	8.2
West Midlands	33	8.0	46	8.6
The North	45	8.8	21	7.9

Small regional differences can be detected in the figures, as shown in Table 3.10 above. Excepting the result for the North in Sample B, the smallest plough-teams on average are those for East Anglia, reflecting the presence of all-horse farms there, although this is offset <sup>to some degree</sup> by large teams in Essex.<sup>129</sup> On the other hand, as expected from Chapter 2, larger plough-teams are observed in the south and south-west. Beyond this, the striking feature is the uniformity of the average plough-team figure right across the country. Even East Anglia, with its relatively high proportion of all-horse demesnes (30 per cent in Sample B) used, on average, a number of animals per plough not far behind that in the rest of the country.

What conclusions can be drawn from this information? From the surveys and extents it is obvious that the large demesne plough-team of eight animals or so, abundantly evident in the twelfth century, continued with equal popularity into the thirteenth and probably the fourteenth and fifteenth centuries as well, and this is strongly supported by the information in the accounts. It seemingly made little difference whether these teams were

comprised of oxen alone or of horses and oxen combined. Only all-horse teams showed a substantial reduction in size, but as they were in such a minority they had little impact on demesne plough-team size as a whole across the country.

Is there any support for Richardson's theory that, although the large plough-team was undoubtedly the norm as expressed in the documents, in practice much smaller plough-teams were employed? It would appear not. First, Richardson's conjecture that half or more of the animals in these large plough-teams were actually full-time harrowing or hauling beasts is shown to be less and less likely in the material of the thirteenth and following centuries. As we have already indicated, there was an increasing tendency for demesnes to create a permanent body of hauling and occasionally harrowing animals separate from the ploughing stock. Presumably the creation of this separate body of hauling and harrowing stock must have meant a withdrawal of these duties from the animals in the plough-team, but in no instance does this seem to have been accompanied by a sizeable reduction in plough-team size. For example, the bishop of Worcester's demesne at Wick Episcopi, c.1290, was expected to have two cart-horses and two horses for milling and harrowing, as well as a plough-team of eight oxen.<sup>130</sup> The inference is that a large plough-team was still needed, even though there were no other duties for the plough animals to perform. This does not mean that the plough animals, even now, might not have performed hauling and harrowing on occasion, but that it was unlikely they would do so while the team was in action as a ploughing unit.

Similarly, the theory that the large plough-team represented two smaller teams alternating with each other during the day does not prove any more tenable in the face of our thirteenth- to fifteenth-century evidence than it did for the twelfth-century material. The variety of mixed and all-ox teams shown in Table 3.7, with the attendant problems of satisfactorily dividing them into two equal teams, is as complex as it was before.

Similarly the unimodal plough-team distribution noted in the twelfth-century material continues in the post-1200 documentation, as indicated by Figure 3.9, where there is no tell-tale second peak at about four animals to indicate that some demesnes, especially the smaller ones, were trying to make do with one team only. Finally, there are even one or two direct references to teams ploughing all day, as at Cheriton (Hants) during the spring seeding in 1287, where two cart-horses and three horses, making up a single team, ploughed "before and after lunch".<sup>131</sup> In short, the evidence strongly suggests that the normal practice was to push both oxen and horses for a full day's ploughing, as indicated by Walter of Henley and Fitzherbert.<sup>132</sup>

#### d) Ploughs, Harrows, and Vehicles on the Demesne, 1200-1500

As would be expected from the increase in documentation, information about farming equipment on the demesne is much more forthcoming during this period. This is particularly true for ploughs, for which a great deal more is known than in the twelfth century. Demesne accounts are especially useful because they generally have a section dealing with plough costs. It is from these costs that many valuable clues concerning plough design and construction can be gleaned. Unfortunately the accounts tend to record only those costs dealing with iron and steel, the most expensive items for the plough in terms of materials and workmanship. The various wooden parts of the ploughs, because of their cheapness, are usually omitted or referred to only in the most general of terms.<sup>133</sup> This is unfortunate for at least one important aspect of plough typology. It would be most instructive, for example, to know if demesne ploughs were definitely of the heavy mould-board type capable of turning a furrow or whether they were of the ard or scratch-plough variety. References to mould-boards do occur from time to time,<sup>134</sup> but it is difficult to <sup>tell</sup> whether these are typical. The widespread presence of large demesne plough-teams makes us think they must

have been, but it would be nice to have more extensive documentary proof of this. Mould-boards are often seen on medieval illustrations of ploughs, but they are also occasionally missing.

Linguistic evidence is equally ambivalent. In the accounts, as in the twelfth-century survey material, the terms aratrum and carruca often occur interchangeably. This is particularly the case in the north, where it appears that aratrum was a fifteenth-century term which gradually replaced the word carruca. Both terms would seem to be describing essentially the same plough, since they were both drawn by large plough-teams of eight or more animals.<sup>135</sup> On the other hand, in some cases it does appear that two, perhaps slightly different, ploughs were meant, as at Pitlington (Durham) in 1450-1, where 19d. of wages were paid out for the repair of "aratrorum, carucarum, plaustrorum & aliorum necessariorum".<sup>136</sup> Whether or not the aratrum and carruca represented the same type of plough, Fitzherbert in the early sixteenth century talks about the "sheld-" or mould-board plough as if it were a normal occurrence, suggesting the presence of such ploughs, on demesnes and elsewhere, for a considerable time before that.<sup>137</sup>

Even though the accounts fail to establish the complete domination of the heavy mould-board plough on the demesnes, they are very useful for another type of classification: that is, whether the ploughs were of the wheeled, foot, or swing variety. Although there were some important sub-groups,<sup>138</sup> these were the three main kinds of plough in medieval England.<sup>139</sup> The differentiation amongst them is based on the degree of regulation in the depth of ploughing. Wheeled ploughs provided the greatest control in this respect. They could be set up to plough at any given depth by adjusting the wheels in relation ~~XXXXXX~~ to the plough body. If more modern experience is applicable, they were also quicker, easier to handle, and, despite the weight of the wheels, easier to pull.<sup>140</sup> Altogether they were ideal for light, well-drained soils. But once the ground became heavier and stickier, the wheels tended to clog up, such that in extreme

conditions they "resembled two large balls of earth."<sup>141</sup> In such situations, it was often better to have a foot plough instead. Here the wheels were replaced by an adjustable piece of wood or iron, called a "foot", one end of which was inserted in the plough-beam before the coulter while the other rested on the ground. As the foot slid along it kept the plough-beam at a constant height above the soil and assisted the plough-holder in maintaining the share tip at a consistent depth. Finally, we have swing ploughs, where virtually all the depth regulation was in the hands of the ploughman. The handling of these ploughs needed considerable skill, and differences in abilities among ploughmen could make considerable differences in ploughing efficiency.<sup>142</sup> Swing ploughs were most useful on stiff, heavy soils or upon ground of extreme unevenness, where the regulation provided by wheeled or foot ploughs was rendered ineffective.<sup>143</sup>

It is the purpose of this study to analyse the distribution of these three basic types of plough on medieval demesnes through the use of Samples A and B. The method is a simple one. Whenever plough wheels or plough feet are mentioned in an account, it is presumed that the demesne concerned has wheeled or foot ploughs. When neither is mentioned, it is presumed that the demesne has only swing ploughs.

This "simple" method, however, presents several problems. The first is that of under-recording. Just because an account does not mention plough wheels or plough feet does not necessarily mean there were no ploughs of either type on the demesne. It may be that these items were simply not bought that year, perhaps because some were already in stock, or that they were caught up in some more general entry (e.g., "In ferramento carucarum, etc."). In this sense, under-recording is bound to be an unavoidable and largely unmeasured factor. Nevertheless plough wheels and plough feet were normally expensive enough objects to merit individual attention in the accounts, plough wheels because they required a degree of carpentry beyond that of the run-of-the-mill manorial servant and plough feet because - in

most cases at least - they required some iron. Consequently the recording of them on demesnes where they were used was generally very consistent. Thus at Cuxham (Oxon), where both wheeled and foot ploughs were apparently the norm, the purchase of plough wheels and ferra pedalia, because of wear and tear, occurred virtually every year. Similarly at Sevenhampton, Wilts - a foot plough demesne - the purchase of ferra pedalia is recorded in sixteen of seventeen yearly accounts.<sup>144</sup>

The second problem concerns terminology. In general this causes little trouble. Plough wheels are usually referred to as rote ad carucam (or some variation), or occasionally just as rote, but in such a situation, such as being in the plough costs, that it is obvious they are for the ploughs.<sup>145</sup> In a few cases rote are mentioned in contexts where it is not possible to say whether they are for the ploughs or for the carts or other vehicles. These cases have been excluded from the analysis. Plough feet are generally indicated by references to a ferrum pedale or occasionally just a pedale.<sup>146</sup> In a very few instances the anglicised footeyre (foot-iron) is found. Other terms, such as plowsho or longum ferrum, may or may not be plough feet,<sup>147</sup> but it has been decided to err on the side of caution, and so the demesnes displaying them have been excluded. In any case, they only amount to a small number of references.<sup>148</sup> The most difficult decision occurs over the term strakus. Usually this refers to one of a number of iron strips attached to the rim of a wheel, particularly in relation to carts and other vehicles. In East Anglia, however, there are several cases of "strakes" being bought for ploughs.<sup>149</sup> It would seem at first glance that this indicates the presence of wheeled ploughs. Curiously, though, the purchase of the wheels themselves very seldom occurs alongside the purchase of these strakes, and it has been conjectured that the strake in East Anglia was not part of a rim for wheels when used with ploughs, but a long strip of iron nailed to the share-beam.<sup>150</sup> This makes it difficult to be precise about what these strakes actually were and as a result demesnes where they are present have

also been excluded from the analysis. Fortunately references to strakes for ploughs are again enough of a minority not to be overly important.

In summary, only definite references to plough wheels and plough feet have been included in the analysis. This has probably led to some underestimation of the extent of wheeled and foot ploughs, but this underestimation is thought preferable to including false or confusing information. In those cases where a series of accounts has been consulted for the same demesne, that demesne is considered to have wheeled or foot ploughs if definite reference to them is made in half or more of the accounts.

In the end, the accounts for 508 demesnes in Sample A and 332 demesnes in Sample B have been considered suitable enough to determine whether the particular demesnes had wheeled, foot, or swing ploughs. The frequency with which each plough type occurs is indicated for both samples in Table 3.11.

TABLE 3.11

Frequency of Demesne Plough Types, 1250-1320 and 1350-1420

a - No. of Demesnes  
b - % of all demesnes in sample  
for which the plough type  
was determined

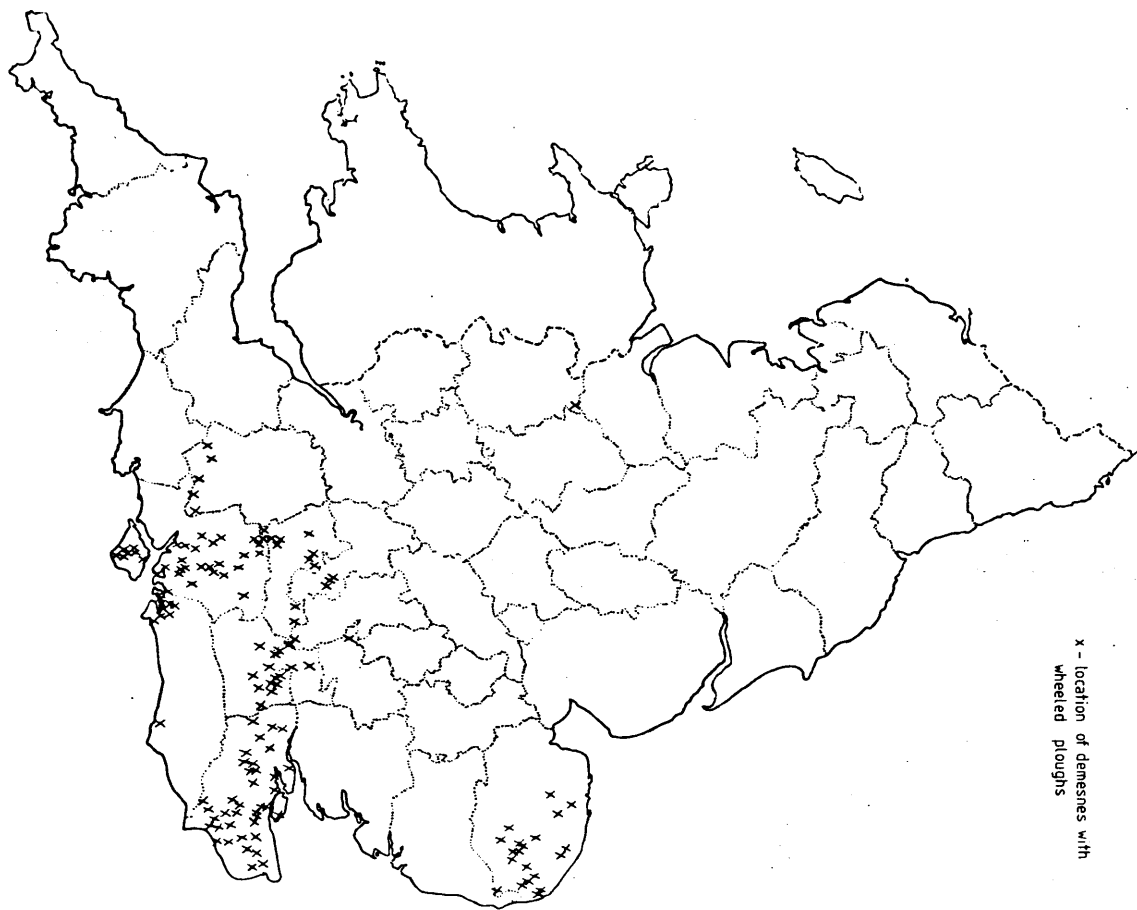
<u>Type of Plough</u>	<u>Sample A (1250-1320)</u>		<u>Sample B (1350-1420)</u>	
	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>
Wheeled	136	26.8	93	28.0
Foot	119	23.4	140	42.2
Swing	280	55.1	141	42.5

Anyone adding up the number of demesnes for each sample in Table 3.11 will quickly realise that they come to more than the 508 and 332 demesne totals. This is because some demesnes - twenty-seven in Sample A and forty-two in Sample B - had both foot and wheeled ploughs and so are counted twice. Comparing the results for the two samples, the domination of swing ploughs is evident in both cases, although much less so in Sample B. It should be

remembered, though, that this is not based on positive proof of the existence of swing ploughs, but rather on the absence of evidence for the other two types. In this regard, it is interesting to note the rise of foot ploughs in the later sample, mostly at the expense of swing ploughs. Does this reflect a real change in the type of plough used on many demesnes? Or is it simply because manorial officials were now more careful in recording the existence of foot ploughs (or, more accurately, the need to purchase extra iron for these ploughs) than they were before? The same uncertainty applies to the much smaller rise in wheeled ploughs.

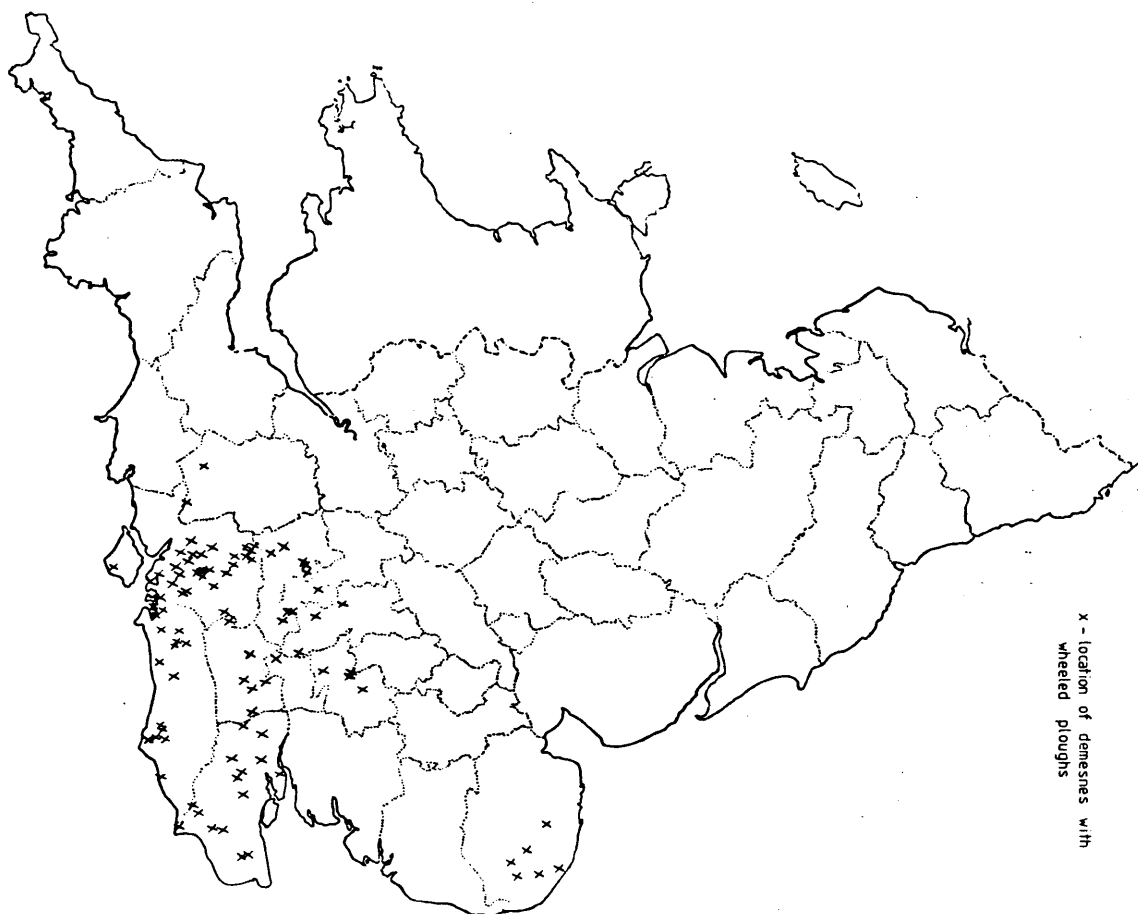
To a certain extent, a look at the plough type distributions across the country, as shown in Figures 3.10 to 3.15, helps to clarify matters. The situation as regards wheeled ploughs is simplest to deal with, since for both samples these ploughs are narrowly concentrated in two main areas: south-east England (mainly below the Thames) and eastern Norfolk. Comparing Figures 3.10 and 3.11 shows the situation to have been a fairly static one for wheeled ploughs. There was virtually no expansion from one sample period to the next; what little there was seems to have been in the direction of Hertfordshire and across the southern reaches of Sussex, although in the latter case this may be due to the relative lack of information for this area in the earlier sample. In the south-eastern region the predilection of wheeled ploughs for upland areas is clear, particularly in the earlier period, where the distribution closely follows the curve of the Hampshire Chalklands and the North Downs, presumably because the well-drained soils found here were ideal for such ploughs. It is more difficult to explain the concentration of wheeled ploughs in low-lying eastern Norfolk in the same way, but it is known from later times that depth regulation was considered crucial here because of the desire not to bring up the "pan" or subsoil, which was thought to be detrimental to crop yield.<sup>151</sup> Outside these areas references to wheeled ploughs are extremely scattered. The wheeled plough at Adderley (Salop) stands out alone in the 1250-1320 sample,





x - location of demesnes with wheeled ploughs

Figure 310: DEMESNE WHEELED PLOUGHS (SAMPLE A: 1250 - 1320)



x - location of demesnes with wheeled ploughs

Figure 311: DEMESNE WHEELED PLOUGHS (SAMPLE B: 1350 - 1420)

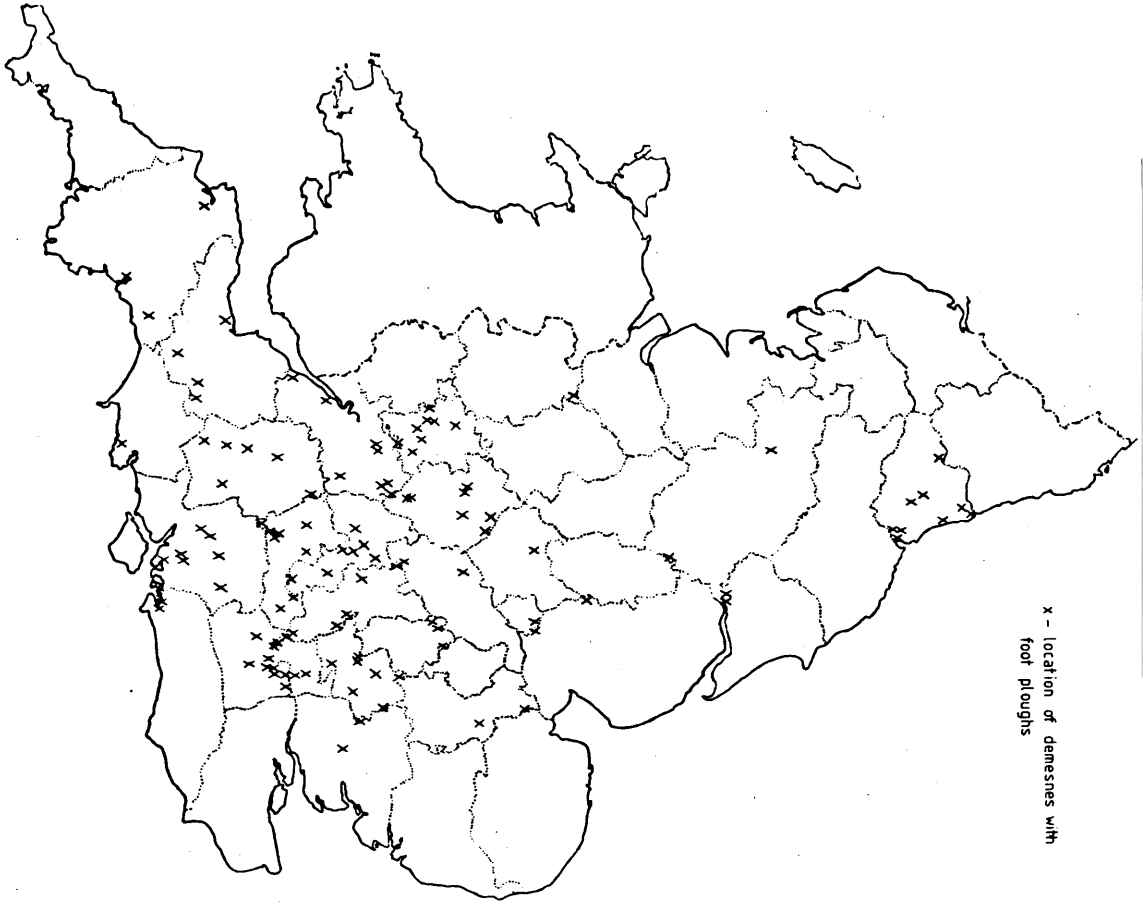


Figure 3.12: DEMESNE FOOT PLOUGHS (SAMPLE A: 1250 - 1320)

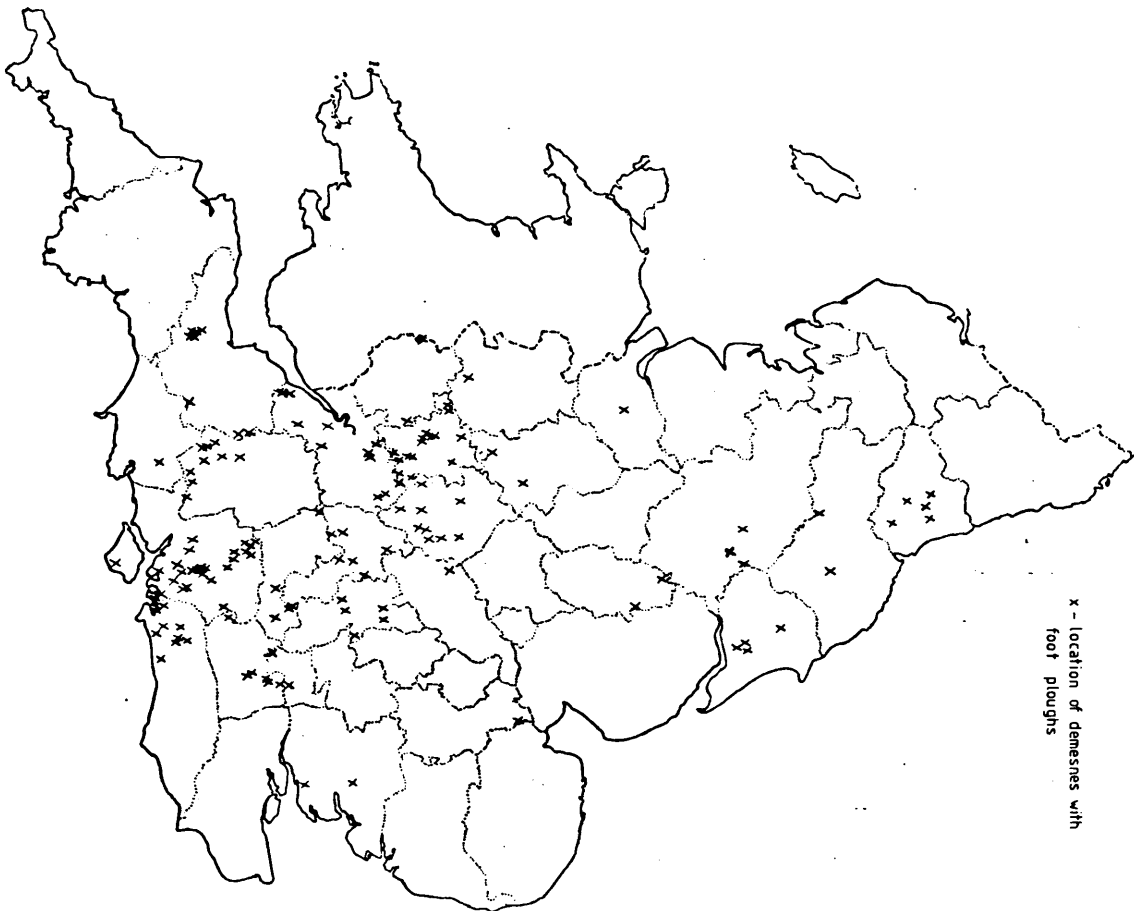
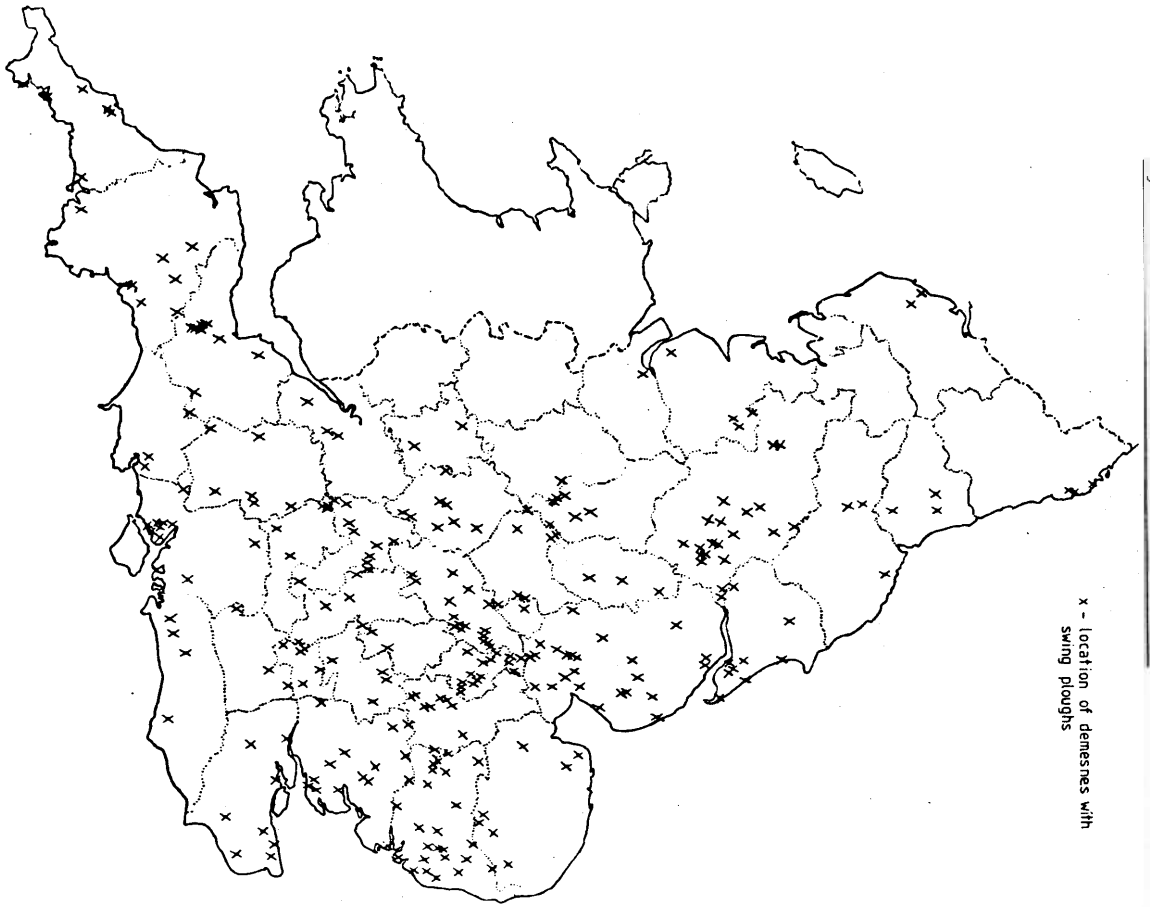
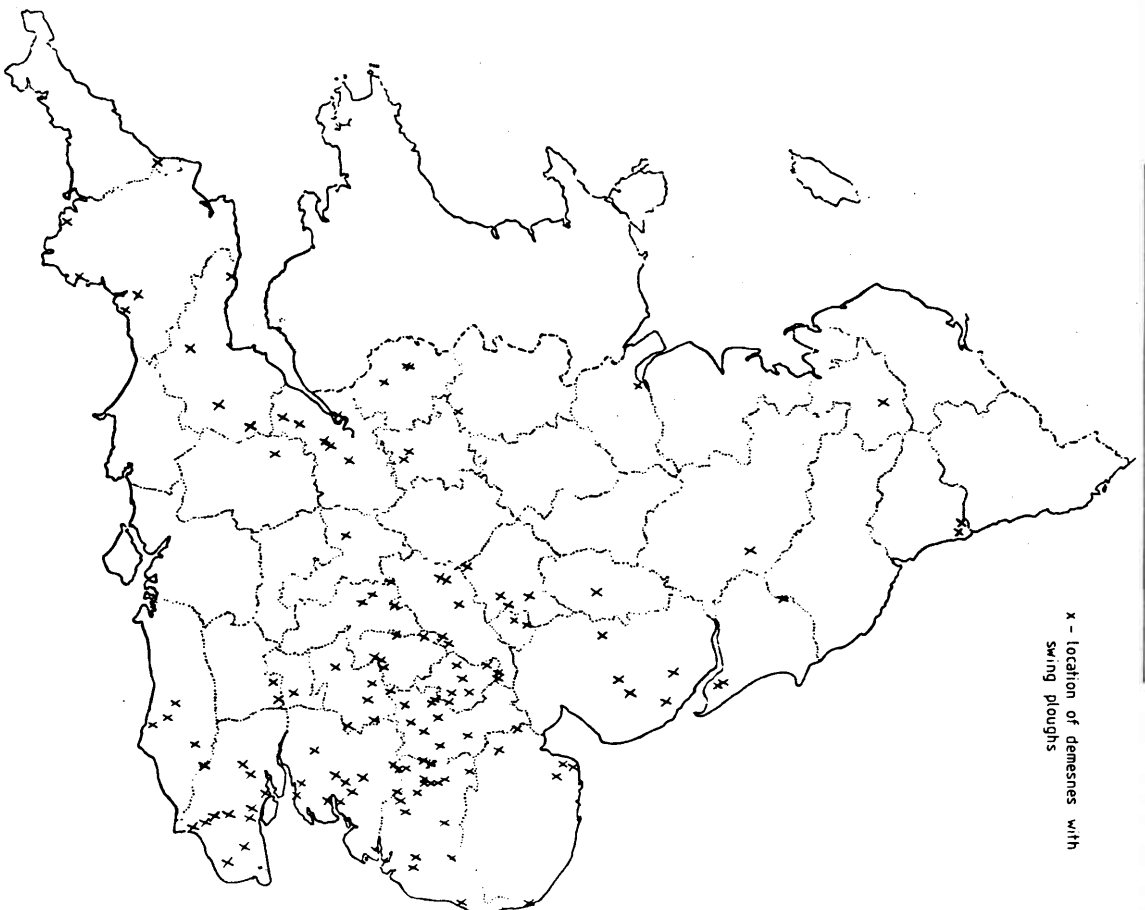


Figure 3.13: DEMESNE FOOT PLOUGHS (SAMPLE B: 1350 - 1420)



x - location of demesnes with swing ploughs

Figure 314. DEMESNE SWING PLOUGHS (SAMPLE A: 1250 - 1320)



x - location of demesnes with swing ploughs

Figure 315. DEMESNE SWING PLOUGHS (SAMPLE B: 1350 - 1420)

but occasional wheeled ploughs are also seen at Jarrow, Durham in 1381-2 and probably at Finchale in the same county in 1397, 1408-9, and 1410-1.<sup>152</sup> These last are not included on Figure 3.11, however, because they occur in less than half of the accounts for these particular demesnes.

The main concentration of foot ploughs occurs in a region running from London in the east to the Bristol Channel in the west and from the Solent northwards to the West Midlands (see Figures 3.12 and 3.13). Outside this area foot ploughs can be seen extending in scattered frequency towards the north. In comparing the two samples, there seems to have been a withdrawal of foot ploughs from Hertfordshire, Bedfordshire, and Middlesex after the Black Death, perhaps because of the spread of wheeled ploughs into these areas, but advances in Hampshire, western Sussex, and probably the north, although in geographical terms these changes are marginal. Most of the increase in the proportion of foot ploughs, in fact, seems to have come in areas where they were already present in the first sample, raising the suspicion that they were better recorded in the second sample.

This is confirmed by the swing plough distributions. In the first sample (Figure 3.14) no definite regional pattern is discernible. Our presumed swing ploughs are found virtually everywhere, and it seems probable that in many cases our instances of swing ploughs are simply cases of unrecorded wheeled and especially foot ploughs. In the second sample (Figure 3.15) the situation is much clearer. The incidence of swing ploughs has shrunk away from areas dominated by foot and wheeled ploughs, indicating that the recording of plough wheels and feet is much more consistent now. From what remained, it appears that swing ploughs dominated in East Anglia and the East Midlands, particularly in that gap between the concentrations of wheeled ploughs in Norfolk and south-east England. The swing plough also seems to have competed with wheeled ploughs in Kent and east Sussex and with foot ploughs in the south-west and the north.

As has already been mentioned, some demesnes had more than one type of

plough. This is particularly the case with wheeled and foot ploughs, which seem to have been employed simultaneously on many demesnes, especially in the counties of Berkshire, Hampshire, Surrey, and Sussex, where this combination of plough type was steadily increasing.<sup>153</sup> It would seem the practice was to use the foot or unwheeled plough in the damper conditions of the winter months and to use wheeled ploughs during the drier ploughings in the summer;<sup>154</sup> indeed, ploughs specifically designated for the summer or winter are recorded on some demesnes.<sup>155</sup> A similar relationship may have existed between swing and wheeled ploughs or even swing and foot ploughs. For example, Kent with its mixture of wheeled and swing plough demesnes, even in the late fourteenth century, would indicate that both types of ploughs were being used simultaneously on some manors at least. In this case, the incidence of swing ploughs would actually be underestimated, since we are not counting them on demesnes where wheeled and foot ploughs already exist.

Nevertheless, although some non-recording of wheeled, foot, and even swing ploughs has undoubtedly occurred in our samples, the situation by the end of the fourteenth century is still relatively clear, with definite regional patterns appearing for all three types of plough: namely, that wheeled ploughs were prevalent in the south-east and eastern Norfolk, foot ploughs mainly in the south-west from Hampshire to the West Midlands, swing ploughs in East Anglia and the East Midlands, and swing and foot ploughs together in the north. Of these, wheeled ploughs seem to have been the least popular overall, and their use expanded very little during the period covered by the two samples. If any plough was gaining in popularity it was the foot plough, and this is consistent with the view that it was a fairly recent development.<sup>156</sup> This conclusion, however, is clouded by the suspicion that much of the apparent growth in the popularity of foot ploughs observed in Table 3.11 is based on the under-recording of the evidence for these ploughs in the earlier sample.

Harrows are mentioned frequently in the accounts, but it is difficult to discern much about their construction and appearance. English medieval illustrations generally show them to be rectangular in shape. Triangular and trapezoidal harrows became popular on the continent during this period,<sup>157</sup> but it is difficult to say how prevalent they were in England, since there is no sign of them in the material, documentary or iconographic, examined in this study. Wood was the universal material of construction for the body of the harrow, and the construction of the implement must have generally followed that portrayed in the Luttrell Psalter and described by Fitzherbert, with four, five, or six wooden "bulls" set with iron or wooden teeth and joined by a series of wooden cross-members.<sup>158</sup>

Sizes of harrows varied considerably, particularly between the horse and ox varieties. Thus an ox-harrow containing thirty iron teeth at Berkeley (Glos) in 1305-6 appears alongside a horse-harrow containing only twelve teeth. In comparison, the horse harrow in the Luttrell Psalter has sixteenth teeth, while the ox-harrow described by Fitzherbert had thirty-six. Another harrow with thirty teeth, probably drawn by oxen from its size, turns up at Billingbear (Berks) in 1381-2, while other, smaller harrows are recorded with ten, eighteen, and twenty-five teeth.<sup>159</sup>

As indicated by a recent study, the use of iron in harrows may have been a late thirteenth-century development.<sup>160</sup> Certainly by the fourteenth century some estates were employing almost nothing but harrows with iron teeth. A series of inventories for the East Sussex manors of the Earl of Arundel in 1397 lists sixteen harrows with iron teeth against only one with wooden teeth.<sup>161</sup> On the other hand, the use of harrows with wooden teeth continued on many demesnes well after the thirteenth century,<sup>162</sup> and Fitzherbert has indicated that they were preferable on stony ground, where iron wore away too quickly to be economical.<sup>163</sup>

The variety of vehicle types observed on English demesnes in the twelfth

century has already been discussed, and this variety continues to be evident on English demesnes for the next three hundred years. Again the accounts are very useful in naming the various vehicle types and in supplying clues as to what they actually looked like, since, in addition to a section for plough costs, each account generally has one for vehicle costs as well. By using these sections, vehicle type information has been obtained for 509 demesnes in Sample A and 340 demesnes in Sample B. The frequency with which each vehicle appears is given in Table 3.12, while distribution maps for the three most common types - carts (carectae), plaustra, and carrae - are shown in Figures 3.16 to 3.21.<sup>164</sup>

TABLE 3.12

The Frequency of Vehicle Types on English Demesnes,  
1250-1320 and 1350-1420

Type of Vehicle	Sample A (1250-1320)		Sample B (1350-1420)	
	a	b	a	b
Cart ( <u>carecta</u> )	453	89.0	269	79.1
<u>Plaustrum</u>	102	20.0	113	33.2
<u>Carra</u> , <u>Carrus</u> , or <u>Currus</u>	43	8.4	6	1.8
<u>Curtena</u> or <u>Cortena</u>	8	1.6	12	3.5
Tumbrel ( <u>tumberellus</u> )	7	1.4	6	1.8
<u>Biga</u>	6	1.2	2	0.6
<u>Quadriga</u>	2	0.4	-	-
<u>Curta</u> , <u>Courta</u> , or <u>Corta</u>	2	0.4	3	0.9
"Courtspot"	-	-	12	3.5
"Dungpot"	-	-	1	0.3
"Coupwayn"	-	-	2	0.6
"Coup"	-	-	1	0.3
"Draght"	-	-	1	0.3

It was a fairly common practice to have more than one type of vehicle on a demesne, and so the total number of vehicle references in Table 3.12

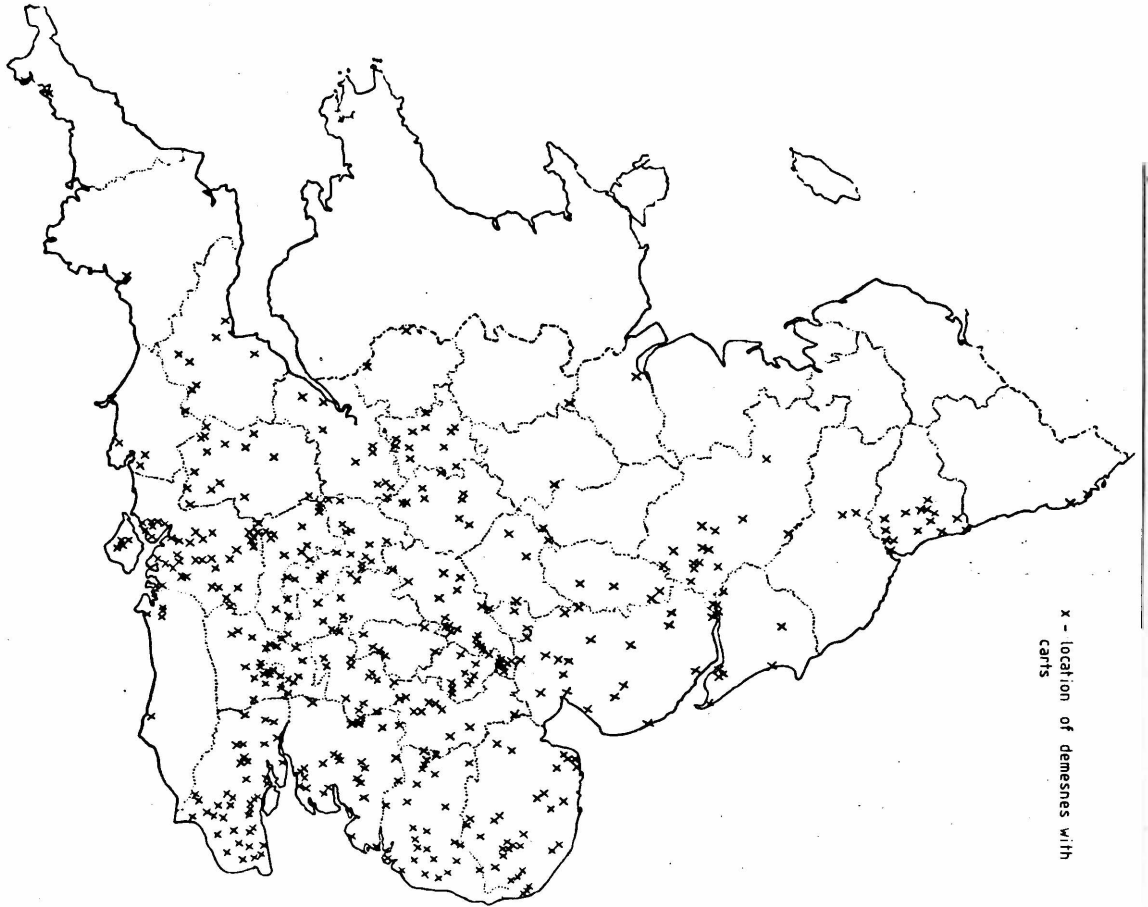


Figure 3.16: DEMESNE CARTS (SAMPLE A: 1250 - 1320)

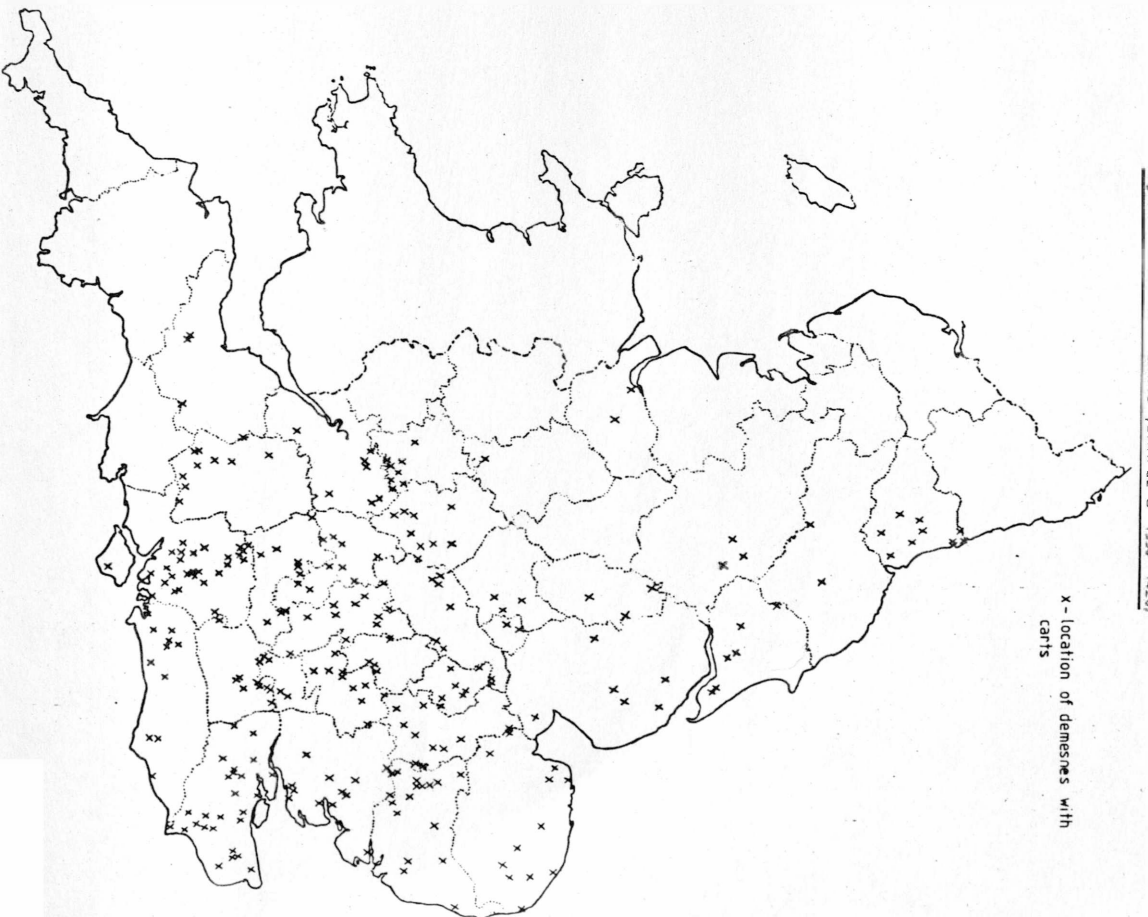


Figure 3.17: DEMESNE CARTS (SAMPLE B: 1350 - 1420)



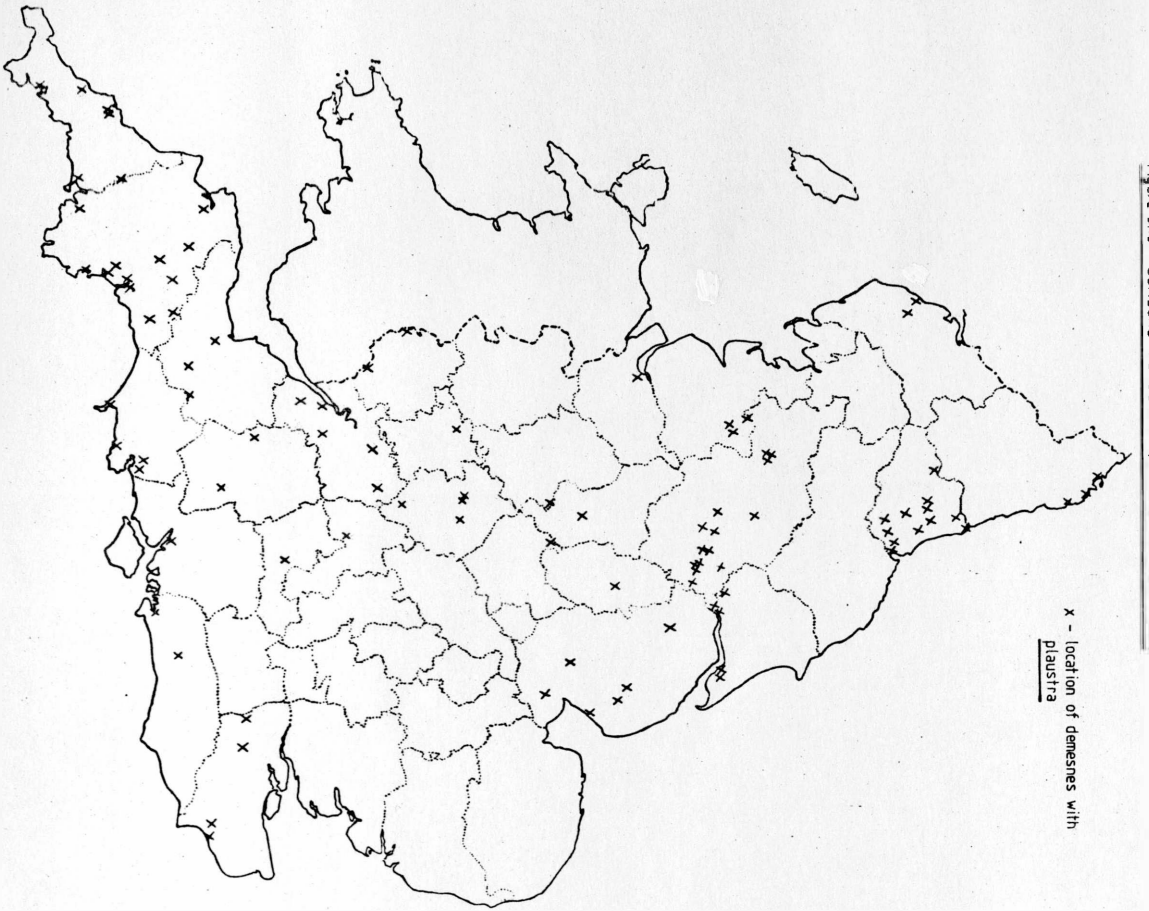


Figure 3.18: DEMESNE PLAUSTRRA (SAMPLE A: 1250 - 1320)

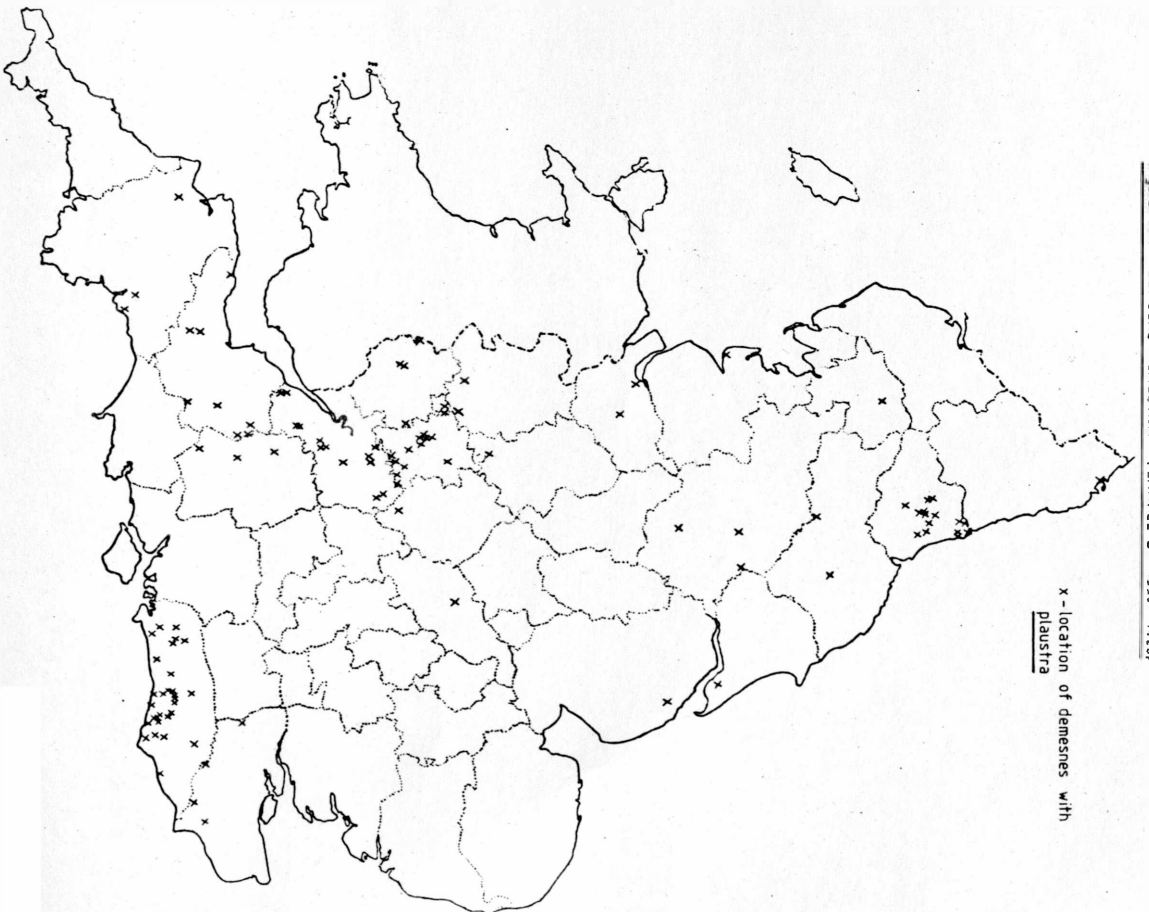
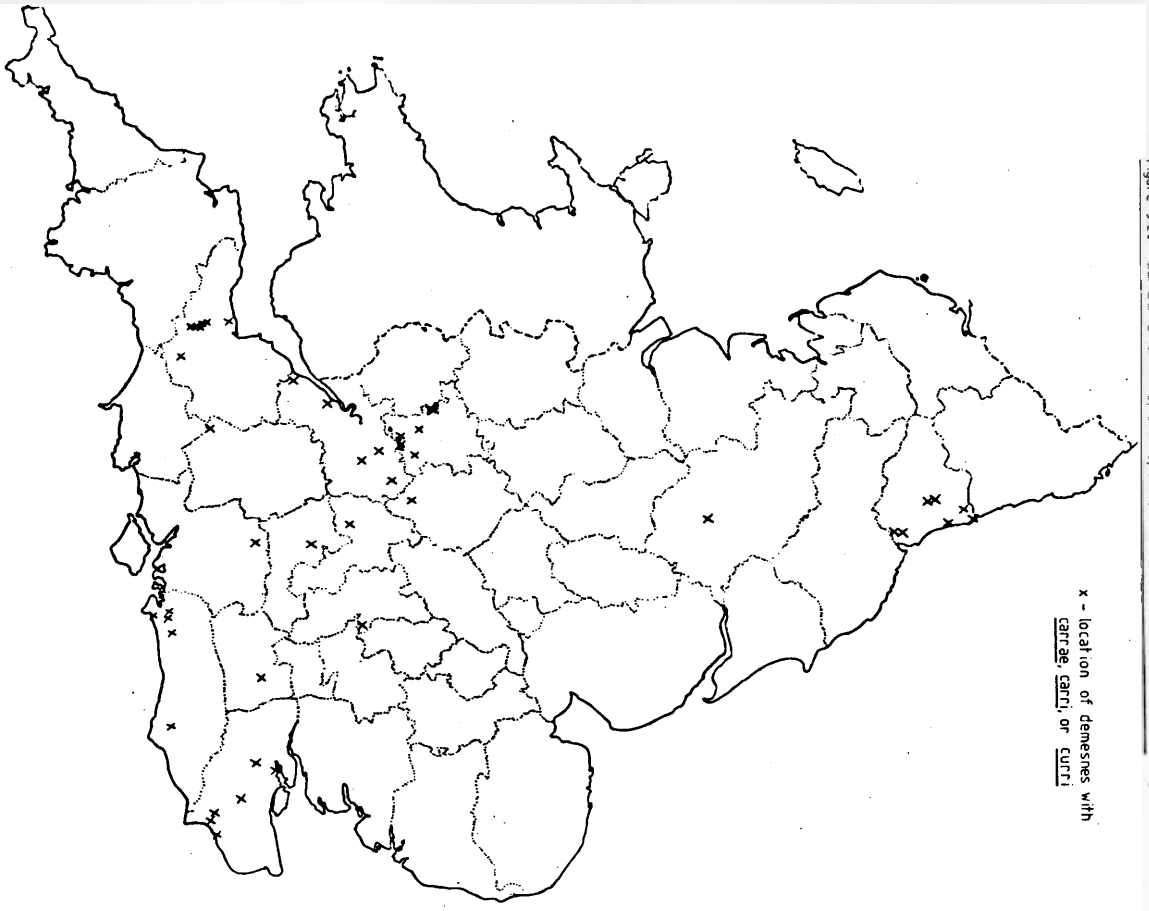


Figure 3.19: DEMESNE PLAUSTRRA (SAMPLE B: 1350 - 1420)



x - location of demesnes with  
cartae, curri, or curril

Figure 320: DEMESNE (CARRAE, CARRI, OR CURRI) (SAMPLE A: 1250 - 1320)



x - location of demesnes with  
cartae, curri, or curril

Figure 321: DEMESNE (CARRAE, CARRI, OR CURRI) (SAMPLE B: 1350 - 1420)

exceeds the number of demesnes for both samples (and hence the percentages add up to more than 100). Without doubt, the most popular type of vehicle was the cart, being found on nearly 90 per cent of demesnes with definite vehicle references in Sample A and nearly 80 per cent of demesnes with vehicle references in Sample B. Figures 3.16 and 3.17 show their distribution to have been virtually countrywide for both samples. There was a tendency for them to become less frequent towards the north and west, as they were supplemented or replaced by other vehicles, especially the plaustrum, although this is exaggerated on Figures 3.16 and 3.17 because of the relative scarcity of data in these areas. As we have already indicated, carts appear to have been solely horse-hauled, as evidenced by the numerous references to halters and traces in cart costs sections, the ubiquitous "cart-horse", and so on. It seems they were invariably two-wheeled,<sup>165</sup> although this does not mean they were uniform in size, since both long and short varieties were evident.<sup>166</sup> In general, though, we should see carts as small vehicles, often of simple construction, as at Glatton (Hunts) in 1313-4, where the body of a cart could be bought for 18d. and wheels of two felloes and four spokes made for 8d. each.

The second most popular vehicle was the plaustrum. As seen in Figures 3.18 and 3.19, it had a much more northerly and westerly distribution, with the exception of a notable concentration of the vehicles in Sussex and southern Kent, especially in the post-1350 sample. Up till now, it has been most commonly interpreted by historians as being a four-wheeled wagon,<sup>167</sup> although in fact the accounts strongly suggest that it was a two-wheeled vehicle, as indicated by the following selection of references:

- 1) "Et in j pare rotarum & j corpore ad plaustrum cum toto atillio"  
(Little Humber, Yorkshire, 1285-6)
- 2) "j par rotarum pro j carecta, ij pares rotarum pro ij<sup>bs</sup> plaustris"  
(Holy Island, Northumberland, 1362)
- 3) "In uno plaustro novo et in j pare rotarum pro plaustro" (Jarrow,

Durham, 1364)

- 4) "In j pare rotarum empto pro j novo plastro" (Wellow, Somerset, 1365-6)
- 5) "In j pare rotarum empto pro plastro" (Barnhorn Manor, Bexhill, Sussex, 1385-6)

There are numerous other references of a similar sort, but none of the type, ij pares rotarum pro j plastro, which one would expect had the plastrum been a four-wheeled vehicle. It has been suggested that the word "pair" should be interpreted here as meaning "set",<sup>168</sup> but this interpretation is contradicted by several other references where the actual number of wheels is given, as follows:

- 1) "In factura ij novarum rotarum ad plastrum" (Knowle, Warwickshire, 1293-4)
- 2) "Item ij rote pro plastro de novo Jugendo & carpentendo" (Elvethall, Durham, 1318)
- 3) "Et in xij carucis emptis cum ij rotis pro j plastro" (Jarrow, Durham, 1363-4)

Axle costs bear out the same contention. For example, at Porlock (Somerset) in 1424-5 a cost is recorded for "j axtre de novo facto pro j plastro".<sup>169</sup> Even more significant is a comparison of costs for fitting axles to both carts and plaustra at Pittington (Durham) in 1376-7. Here two carts were "axled" (axacione) for 6d. and four plaustra for 12d., an identical cost of 3d. per vehicle for both carts and plaustra. Presumably such an equality of cost would be impossible unless both vehicles had the same number of axles and wheels. Hence, there is a strong implication that both vehicles were two-wheeled, particularly as the Pittington account also notes the making of a single pair of wheels "pro plastr".

Nevertheless, although plaustra were two-wheeled, they were not the same vehicles as carts. First, as we have already discussed, they were ox-hauled. Second, they were considerably larger. Thus, for example, seventy-

one plaustrum-loads of hay bought for the archbishopric of York manors of Sherburn, 'Couhous', Cawood, Skidby, and South Burton (Yorks) in 1373-4 cost an average of just over 35d. per load, while thirty-two cart-loads of hay bought for Beverley (Yorks) and Scrooby (Notts) on the same estate in the same year were only 18d. per load. This two-to-one ratio between plaustrum-loads and cart-loads is also evident from survey material, where, for the purposes of carrying services, one plaustrum was considered equal to two carts.<sup>170</sup> To maintain stability with these heavier loads, plaustra were probably wider than carts, with heavy solidly-built wheels. Thus, at Knowle (Warks) in 1293-4 a pair of wheels made for a plaustrum cost 20d. to make, while a pair for a cart cost only 8d.<sup>171</sup>

If the plaustrum was neither wagon nor cart, what was it then? It seems, in fact, that it was the medieval equivalent of the sixteenth-century wain, which was also a two-wheeled, ox-drawn vehicle.<sup>172</sup> This shows up most clearly in later accounts. Thus at Elvethall (Durham) in 1446-7 it is stated that there are four plaustra, "vnde ij long' & ij cowpwaynes". Similarly at Hewell Grange (Worcs) in 1432-3 there is recorded among the expenses: "xj Wayneclowtes emptis pro plaustris".<sup>173</sup> The inclusion of pieces of equipment with some connection to wains occurs in the plaustra costs of various other accounts as well.<sup>174</sup>

The third most common type of demesne vehicle was the carra, carrus, or carrus. It appears most frequently in Sample A and tails off considerably in Sample B. Its distribution, as indicated by Figures 3.20 and 3.21, is similar to that of the plaustrum, although with a more southerly emphasis. Altogether it is the most difficult vehicle to categorise, mainly because the term carra or carrus may have covered two distinctly different classes of vehicle. The first of these seems to have been a four-wheeled wagon for household use. For example, among the effects of the recently deceased Bishop of Exeter in 1310 was found "j carro cum iij rotis" worth ten pounds. Seven years previously, among the effects of the Bishop of London, there

appears "uno carro cum apparatu pro quinque equis".<sup>175</sup> The conjunction of these two references indicates a four-wheeled, five-horse-hauled ceremonial wagon of the type seen in the Luttrell Psalter.<sup>176</sup> Even better in this regard is a reference taken from a 1452/3 inventory of William Druffield, canon residentiary of York, Southwell, and Beverley, who at his death owned a four-wheeled, covered currus, worth over six pounds, which was drawn by five horses decked in black trappings.<sup>177</sup>

These carri or curri are clearly not farm vehicles but showy household conveyances. On the other hand, when carrae, carri, or curri are found in a farm setting, as they are in all the cases given in Samples A and B, the impression of them changes substantially. Thus, at Stogursey (Somerset) in 1300-1, we have a purchase of "vno pari rotarum ad vnum carrum" for 4s. 10d. Here we have what appears to be a two-wheeled vehicle, and one which could be ox-hauled, since yokes relating to the equipping of carrae are found at West Hatch (Somerset) in 1356-7 and possibly Houghall (Durham) in 1301-2, not to mention the numerous references to ox-hauled peasant carri given in the surveys.<sup>178</sup> These carrae or carri also seem to have had double the carrying capacity of a cart, as at Northwick with Whitstones and Hartlebury (Worcs) in 1299, where again one carra-load was considered equal to two cart-loads in the performance of carrying services.<sup>179</sup> This similarity to plaustra is probably more than just coincidence, since in many cases the terms carra and plaustrum are used interchangeably, seemingly to describe the same vehicle. Thus, it is not uncommon to find carrae or carri mentioned in the heading of a vehicle costs section, yet with nothing but plaustra mentioned within the section itself.<sup>180</sup> In this case, the rise in plaustra and fall in carrae noted in the transition from Samples A to B may simply be the result of a change in terminology.<sup>181</sup>

Bigae and quadrigae figure in the accounts as well, although the number of quadrigae, in particular, is well down from the twelfth century. It would appear that this latter was an antiquated term, gradually fading from use.

As a result, the post-1200 documentation does not provide much information as to what the vehicle actually looked like, and what little there is is often confusing or contradictory, as we shall see later.<sup>182</sup> The term biga, on the other hand, survived for a longer period, and it appears from the accounts that the vehicle it represented was ~~at least~~ a close relative of the cart.<sup>183</sup>

The other types of vehicles listed in Table 3.12 will be dealt with briefly, since in general they are found on no more than a few demesnes. The curtena (or occasionally cortena) is a vehicle found almost solely in Kent, although isolated cases occur in Sussex, Essex, and Lincolnshire.<sup>184</sup> There is virtually no indication in the accounts as to its use, but survey material indicates that it was ox-hauled and perhaps specifically used for hauling dung.<sup>185</sup> The curta, courta, or certa found elsewhere may have been the same vehicle or perhaps a small cart. Tumbrels were another class of small vehicle. Although found only occasionally, their distribution was very scattered.<sup>186</sup> There is little in the accounts to describe them, beyond the mention of their existence, but presumably they were the ancestors of latter-day tumbrels, that is, small tip-carts.<sup>187</sup> "Courtspots" in this study were found exclusively on the Sussex estates of the Earl of Arundel in 1397 and were possibly also small tip-carts.<sup>188</sup> "Dungspots" were probably very similar and perhaps even connected in some fashion to the back of a larger vehicle.<sup>189</sup> All these were probably horse-hauled vehicles, but smaller ox-hauled vehicles also existed, as indicated by the "coupwaynes" and possibly also the "coups".<sup>190</sup> Finally, a "draght" was mentioned at Cleobury Barnes (Salop) in 1372-3; presumably this was a sled or perhaps even a "drag" (that is, a harrow).<sup>191</sup>

The variety of farm vehicles on medieval English demesnes is impressive, yet it seems that two main types dominated. Both were two-wheeled. The first, the cart, was light and horse-hauled. The second, the plaustrum

(and perhaps the carra) was heavy and seemingly pulled by oxen. Often both types operated side by side in the fields.<sup>192</sup> The necessity of using oxen to pull two-wheeled plaustra may seem paradoxical when horses have shown themselves perfectly capable of hauling potentially heavier four-wheeled vehicles,<sup>193</sup> but there is a very logical reason for it. Two-wheeled vehicles have all their load resting on two points only, whereas wagons and the like have it distributed over four. As a result, the wheels of the latter are normally lighter and more finely made than those of their two-wheeled counterparts,<sup>194</sup> and hence much less bothered by obstructions to the wheels, such as stones or mud. On the other hand, the heavy wheels of the plaustrum, with the positioning of the load directly over them, meant that these vehicles were that much more susceptible to bogging down in muddy or obstacle-ridden ground. It seems likely that medieval horses were incapable of pulling the vehicle through in such cases, much in the same way as they often had difficulties with ploughs.

The seemingly obvious solution, of course, when heavier loads were desirable, was to use four-wheeled vehicles, but the fixed nature of the front wheels made this impossible, as some measure of manoeuvrability was essential in field work. Recent research has indicated that the moveable forecarriage or pivoted front axle for wagons was introduced to western Europe during the fourteenth century and possibly earlier.<sup>195</sup> However, even with moveable forecarriages, several additional design features of some sophistication, such as dished, outward-slanting wheels or small front wheels cutting under the bodies of the vehicles, were needed before wagons had sufficient locks or turning arcs to be practicable for normal farm work.<sup>196</sup> These conditions were not to be fulfilled for some time.<sup>197</sup> Meanwhile medieval farmers, both demesne and peasant, were limited to using two-wheeled vehicles. With oxen being the only animals able to pull the larger varieties of these vehicles, it provided a considerable incentive for continuing to use them for such duties. Despite this, horses still became the



much preferred hauling animal during the later Middle Ages, even though they were physically limited to the lighter vehicles. Many demesne managers did employ oxen for hauling, as indicated by the number of plaustra about, but only by using the existing oxen in the plough-team. Thus levels of oxen in the accounts seem to have been only those necessary to pull the existing ploughs, never more. And when references to oxen hauling do arise, more often than not it is specified that the animals did ploughing as well.<sup>198</sup> Presumably much of this had to do with how plentiful horses were. On demesnes with all-ox plough-teams, for instance, the relative shortage of horses must have made demesne managers susceptible to using oxen for some hauling at least, particularly during the harvest, when a break in the ploughing was usually taken anyway. On the other hand, where mixed plough-teams were the norm, the level of horses must have been such that oxen were not really needed for hauling at any time during the year. As a result, it is noticeable in comparing Figures 3.18 and 3.19 with Figures 3.5 and 3.6 that the areas where plaustra were found were very much different from those where mixed teams predominated.

It would be wrong, though, to suggest that the only reason plaustra were found on demesnes was to provide effective employment for the oxen in between ploughing sessions. Indeed, in some cases, local conditions made the plaustrum almost essential. This is particularly the case in the north-east, where the mining of coal began to give the region a marked industrial character. The need for vehicles capable of holding large, heavy loads must have been of prime importance, and consequently hauling with oxen seems to have quickened markedly in the area during the fifteenth century. Thus at Finchale (Durham) there is a dramatic increase in the number of references to oxen in relation to plaustra from the late 1440s to the late 1470s.<sup>199</sup> At the same time references to horses carting drop away completely.<sup>200</sup> It seems that on this demesne oxen were valued as much, if not more, for their hauling as for their ploughing abilities. At Finchale this may well have

had a lot to do with coal-mining, since it is notable that the era of the greatest concentration of references to oxen hauling coincides with a sustained period of high coal production from the priory mines.<sup>201</sup> The larger capacity of the plaustrum must have been very valuable here, if only to carry the coal needed by the priory itself. Eighty chaldrons (about eighty-eight tons) were apparently consumed by the household in 1457-8.<sup>202</sup> The accounts of other Durham demesnes - for example, Jarrow, Monkwearmouth, and Elvethall - show that the experience at Finchale was not an untypical one, since they all demonstrate a striking lack of carts and horses for carting in the later fifteenth century, in contrast to the horses and carts evident on these demesnes a half-century or so earlier.<sup>203</sup>

The purpose of the above discussion has been to show how intimately the use of horses and oxen dovetailed with the types of farm vehicles available, and how the technical backwardness of four-wheeled vehicles could provide an impetus for a reversion to oxen. It is difficult to assess how important this reversion was, since most of it took place after the periods covered by the data in Samples A and B, but we must presume that it contributed to the growing polarisation in the use of horses and oxen<sup>evident</sup> during the fifteenth century.<sup>204</sup> Certainly, considering the distribution of vehicles in Samples A and B, it does seem that the spread of carts reached its peak at the end of the thirteenth century. The increase in carts, especially when compared to the twelfth century, when the vehicles were very much in a minority, gives testimony not only to the spread of carts, but also to the spread of horse hauling. After the Black Death, however, there seems to have been a definite switch from carts to plaustra, with the proportion of the latter increasing by over a half. This, however, assumes that the plaustra and carrae in the accounts are different vehicles. If in fact they were the same, then the rise is a much more modest one, the two vehicles together being found on 27.1 per cent of demesnes with vehicles in

Sample A, increasing to 34.1 per cent of demesnes with vehicles in Sample B.<sup>205</sup> It would seem from this that we must be careful in postulating a significant reversion to ox-hauled vehicles. The drop in carts from Samples A to B of about 10 per cent of all demesnes with vehicles suggests that some of this reversion was happening, but that it was marginal, at least to the beginning of the fifteenth century. Certainly, in terms of the average demesne horse level across the country, it was not enough to offset changes in the other direction, such as the creation of all-horse farms.

e) The Role of Horses and Oxen in Demesne Management, 1200-1500

So far in this study we have shown that the introduction of the work-horse to medieval demesnes could not be called a spectacular one. By the end of the fourteenth century the overall level of demesne horses had barely reached 30 per cent of all demesne draught animals, and it is debatable how much <sup>this</sup> increased ~~much~~ during the fifteenth century. The purpose of this section is to investigate why this advance was so slow on medieval demesnes and to examine some of the problems affecting demesne decision-making as a whole regarding the use of draught horses and oxen.

The employment of horses versus oxen was a subject much discussed among medieval contemporaries. Walter of Henley, for instance, devoted a significant portion of his thirteenth-century treatise, Husbandry, to a discussion of the problem. Walter was an ardent advocate for the use of oxen, particularly for ploughing. Like Fitzherbert after him, he made the point that horses were susceptible to breaking down when ploughing on hard or heavy soils and were really only useful - he claimed - when ploughing stony land where oxen had trouble with their footing.<sup>206</sup>

The main force of Walter's argument, however, was that horses were simply more expensive to keep than oxen. To prove his point he drew up a crude comparison of costs, as itemised in Table 3.13. According to Walter, horses cost four times more per year to keep than oxen. But how accurate

TABLE 3.13

Walter of Henley's Horse/Ox Cost Comparison (per animal)<sup>207</sup>

	<u>Horses</u>	<u>Oxen</u>
Oats (in winter)	8s. 2d.	2s. 4d.
Pasture (in summer)	1s.	1s.
Shoeing	4s. 4d.	---
Total (per year)	13s. 6d.	3s. 4d.

were his figures? To answer this a set of average costs for both horses and oxen were worked out from a selection of accounts for over a hundred demesnes, including a number of costs which Walter omitted, such as hay, straw, and depreciation.<sup>208</sup> The results are shown in Table 3.14. As can be seen, the horses have been divided into cart-horses (equi carectarii or occasionally just equi in the accounts) and plough-horses (affri, stotti, and jumenta). As we have already indicated, this type of classification is by no means a completely accurate one, since there could be an extensive overlapping of function between the two groups. But in the main the classification works well, as seen by the clear-cut difference in costs between the two. Cart-horses, in particular, at 23s. 8½d. per animal per year, were very expensive to maintain. Plough-horses, to which Walter's figure apply, cost considerably less, just over 10s. per year each, and in fact were only some 3s. per year (or 40 per cent) more expensive to keep than oxen, which is similar to modern experience.<sup>209</sup> The key discrepancy between these figures and Walter's concerns the cost of hay and straw, which oxen mainly consumed and which Walter ignored. When these are omitted from the account figures, the difference in costs between plough-horses and oxen (that is, 8s. 1½d. versus 2s. 7½d.) does approach that four to one ratio postulated by Walter. It is difficult to understand why Walter, and indeed the accounts themselves, consistently omitted to detail hay and straw costs. I have speculated elsewhere<sup>210</sup> that, because of transportation costs, the market for hay and straw was so weak that there was a tendency among manorial

TABLE 3.14

"Operating" Costs of Horses and Oxen in Medieval England<sup>211</sup>

	<u>Cart-horses</u> (cost/animal/yr.)	<u>Plough-horses</u> (cost/animal/yr.)	<u>Oxen</u> (cost/animal/yr.)
a) <u>Feeding</u>			
Oats	15s. 9½d.	4s. 9½d.	9½d.
Hay and Straw	3s. 11½d.	2s. 7d.	4s. 7½d.
Pasture	1s.	1s.	1s.
Total	20s. 9d.	7s. 10½d.	6s. 5d.
b) <u>Maintenance</u>			
Shoeing	1s. 2d.	9d.	---
Other Costs	6d.	6d.	6d.
Total	1s. 8d.	1s. 3d.	6d.
c) <u>Depreciation</u>			
	1s. 3½d.	1s. 7d.	3½d.
GRAND TOTAL	23s. 8½d.	10s. 2d.	7s. 2½d.
Grand Total excl. hay & straw	19s. 9d.	8s. 1½d.	2s. 7½d.
Walter of Henley's figures	-----	(13s. 6d.)	(3s. 4d.)

officials to think of them as being virtually without value and so suitable as a "free" source of food for the draught animals. This, of course, conveniently ignored the cost of hay-making and straw collection, but even here much of this may have been taken care of by labour services, particularly in the thirteenth century, and hence would not be a direct drain on manorial cash reserves. Walter also grossly overestimated the cost of shoeing, which he put at 4s. 4d. per year for each horse. The figures from the accounts, however, only indicate an average shoeing charge of 14d. per year for cart-horses and 9d. per year for plough-horses.<sup>212</sup> Perhaps, as has been suggested,<sup>213</sup> Walter intended these figures to include depreciation as well, although, even when depreciation is added to the shoeing costs derived from the accounts, it still does not make up half the shoeing figure quoted by Walter.

In short, the difference in costs between plough-horses and oxen was nowhere as marked as Walter would have his readers believe. This was not

deception on Walter's part. He and his manorial colleagues simply felt that some costs could legitimately be ignored, despite the expenditure of labour, because they involved relatively little cash outflow. In real terms, however, the situation was very different, and we must presume that in many cases manorial and demesne officials must have been very aware of these "ignored" costs, such as those for hay and straw, the omission of which gave such a bias towards the use of oxen. Demesnes where there was little recourse to labour services, for instance, either because they were already commuted for cash or because they had never been available in any great amount to begin with, must have seemed very expensive to farm from the point of view of such costs as hay-making, and consequently the transition to horses for ploughing and hauling would have been easier to make here. It must be noted, however, that the figures contained in Table 3.14 are averaged figures for the country as a whole, and as a result they hide a great deal of regional variation, particularly in the matter of feed for the animals. Oxen, for instance, had a reputation for faring better on rough pasture than horses,<sup>214</sup> and where this was<sup>usually</sup> in plentiful supply, as in the north and west, the ox was in a very advantageous position. It was here, too, that the physical limitations of the horse tended to weigh most heavily, as the combination of obdurate soils, such as the strong clays of the Midlands, and a wetter climate conspired to create conditions where, in ploughing especially, the horse repeatedly broke down. On the other hand, in areas where relatively little pasture was available, particularly in the east, draught animals inevitably received a greater proportion of grains in their feed.<sup>215</sup> This suited horses better, as they benefited more from a high grain diet than did oxen.<sup>216</sup> Similarly, it was these areas in the east that often had the conditions of lighter soils, more even terrain, and drier climate, in which horses performed best.

Altogether these environmental considerations made attempts to judge the relative merits of horses and oxen on a strict economic basis somewhat

impractical. Nonetheless the question of expense was undoubtedly uppermost in the minds of officials, and there is no doubt that horses cost more to keep than oxen, even with the most unbiased of calculations. Against this disadvantage of cost, what did the horse have to offer? The two advantages most quoted for the animal are those of speed and stamina.<sup>217</sup> The most obvious of these is speed, and it has been widely asserted that, when exerting the same pull, the horse can do so 50 per cent faster than the ox,<sup>218</sup> although this is a claim that ignores not only the variation from task to task but also from region to region.

In fact, it<sup>is</sup> very difficult to assess how much speed advantage the horse gave over oxen during the Middle Ages. Dealing with ploughing first, the best set of demesne ploughing speed figures comes from a series of extents, dated c.1290, for the lands of the bishop of Worcester.<sup>219</sup> Ploughing speeds here ranged from a third of an acre at Hanbury (Worcs) in the summer to one acre a day at Fladbury in the same county,<sup>220</sup> the average ploughing speed over the whole estate being a little over a half acre per day. All these demesnes seemingly had all-ox plough-teams with the exception of Bibury (Glos), where a mixed team may have been the norm.<sup>221</sup> Significantly the ploughing speed at Bibury, at three-quarters of an acre per day, was one of the highest on the estate. Certainly mixed plough-teams in the east ploughed much ~~fast~~ faster than the majority of those on the bishopric of Worcester manors. Thus at Bocking, Essex, in 1309, it is recorded that a mixed team of four horses and two oxen could plough an acre a day, while at Borley in the same county in 1308 another mixed team of four horses and four oxen was supposedly able to plough an acre a day and sometimes more.<sup>222</sup> Discussing the subject in more general terms, Walter of Henley indicated that an ox in a plough-team could easily cover a standard acre a day, although again it seems he was talking in terms of a mixed team.<sup>223</sup> Unfortunately no direct evidence about the ploughing speeds of all-horse teams in the Middle Ages has been found in this study,<sup>224</sup>

but the presence of the animal in mixed teams does seem to have provided a definite improvement in ploughing speed over those teams comprised solely of oxen. Not knowing the type of acre, the ploughing depth, or furrow width in each of the examples given, however, makes it difficult for us to be precise about this,<sup>225</sup> but the difference would seem large enough to be significant.

The improvement in medieval hauling speeds upon the introduction of horses is equally difficult to determine. It has been conjectured that the introduction of horse traction may have increased the speed of transport by as much as ten-fold: that is, from two miles per hour for heavy ox-transport to twenty miles per hour for light, horse-hauled chariots.<sup>226</sup> But these figures are hardly comparable, since the loads and circumstances of hauling are patently not the same. The best medieval evidence that allows some comparison to be made applies not to Europe but to Asia. Here a Florentine manual giving instructions on the route to China in the first half of the fourteenth century records that it took twenty-five days to travel from Tana<sup>(now Aqcv)</sup> to Astrakhan by ox wagon but only ten to twelve days by horse wagon. Significantly the normal loads for these wagons are also specified, the ox wagon containing 2,500 Genoese pounds and the horse wagon 1,625 Genoese pounds. In both cases the wagons were to be hauled by one animal apiece.<sup>227</sup> The indication here is that, although horse hauling was patently quicker, it did not have much advantage over ox-transport in terms of hauling efficiency, the ox being able to make up for much of its slow speed by its ability to carry a heavier load. A similar situation seems to have existed in medieval England, as indicated by the two-to-one load ratio already noted between the ox-hauled plaustra and carri and the horse-hauled carectae. Nevertheless, for small loads, the introduction of horse hauling must have been a boon, and it is likely that in these cases a carrying rate for horses of at least twice that for oxen was the normal occurrence. In view of the large amounts of money



demesne managers were willing to spend on cart-horses, anything less would seem a poor return.

There is virtually no information with which to make an estimate of harrowing speeds. A reference to labour services at Hutton (Essex) in 1388-9 seems to indicate that tenants there were responsible for harrowing two acres a day "with one man and one horse".<sup>228</sup> It is impossible, however, to say how this compared to harrowing with oxen, although later evidence suggests that a horse could harrow over twice as much as an ox in a day.<sup>229</sup> We can only surmise that, whatever the speed advantage was in medieval times, it was enough to ensure that harrowing with horses was the much preferred practice.

The other major advantage claimed for the horse is that of stamina. As Lynn White, Jr., writes, "a horse has more endurance than an ox, and can work one or two hours longer a day."<sup>230</sup> In most cases, though, this endurance or stamina was not reflected in longer working hours for the horse, but rather in its use in smaller teams, particularly for ploughing or hauling. This may seem to cast doubt on the premise that oxen can exert the same pull as horses, but in fact a single ox can draw a load equal to that drawn by a horse, but for a much shorter distance or period of time. Thus it was noted of East African farming during the first part of this century that "the common single-row horse-hoe is pulled by one horse, but requires two oxen; one ox can pull it, but does less than half an acre a day, as against 2½ acres with two oxen..."<sup>231</sup> Consequently more oxen than horses were needed to fulfil a task over the whole day, a phenomenon seen repeatedly in post-medieval England.<sup>232</sup>

The same occurred in medieval times. The consistently smaller all-horse plough-teams when compared to mixed or all-ox teams have already been observed, and this reduction in team size is also encountered on individual demesnes, as we shall see shortly. The switch to horses exclusively not only had the effect of reducing the number of animals in the

plough-team, but also the number of men needed to run the plough, if the reduction in team size was severe enough.<sup>233</sup> In this regard, it is interesting to note again that there was virtually no drop in team size when proceeding from all-ox to mixed plough-teams. We must presume that the partial introduction of the horse in this case was done solely for reasons of speed, as in fact the limited data for medieval ploughing speeds given above seem to indicate. Only in the second stage of switching from mixed to all-horse plough-teams did demesne managers capitalise on the stamina of the horse in allowing the use of smaller teams.

As we can see, then, speed and stamina were the two vital factors favouring the use of horses. Against these were ranged the disadvantages that horses tended to break down in certain hauling and ploughing conditions and, more important, that they cost more to keep. In the main, it was the balance between these opposing sets of factors that determined whether horses or oxen were used for a certain type of work. For harrowing and hauling the horse obviously came out on top, as reflected by the animal's overwhelming adoption for both these tasks. But for ploughing the situation was less clear, and in fact most demesne managers were reluctant to employ horses for ploughing, except perhaps in a mixed team.

When demesne officials did decide to go completely to horses for all jobs, including ploughing, it was clearly a decision that needed some thought, as Walter of Henley's reflections on the subject indicate. To form some idea as to the considerations that might have gone into such a decision and the mechanisms by which it occurred, it would be instructive to consider the case of a demesne that did make the change. One such demesne was that for the manor of West Wycombe (Bucks), held by the bishop of Winchester. The incomparable series of accounts held in the bishopric's pipe rolls makes it an ideal demesne to study. Table 3.15 contains a summary of the data taken from a selection of these accounts,

TABLE 3.15

Pipe Roll Account Data for West Wycombe, Bucks<sup>234</sup>

Account- year	No. of Draught Animals at end of Account-year			No. of Ploughs in Use	Equipment Bought for Ploughs	
	Cart-horses	Affers	Oxen		Wheels	Ferra Pedalia
1210-1	-	9	31	4	yes	no sign
1231-2	-	15	32	4	no sign	no sign
1256-7	2	12	12	3 <sup>235</sup>	no sign	no sign
1286-7	2	12	10	3	no sign	no sign
1300-1	2	12	14	3	no sign	no sign
1309-10	2	12	10	3	no sign	no sign
1313-4	2	12	12	3	no sign	yes
1315-6	2	12	1 <sup>236</sup>	3/2/1 <sup>237</sup>	yes	yes
1316-7	2	12	4	2	no sign	yes
1317-8	2	13	1	2	no sign	yes
1318-9	2	13	5	2	no sign	no sign
1319-20	2	12	-	2	no sign	yes
1320-1	2	18	-	2 <sup>238</sup>	yes	yes
1325-6	2	18	-	3	yes	yes
1340-1	2	20	-	3	yes	yes
1360-1	4	18	-	3	yes	yes
1381-2	6	17	-	3	yes	no sign
1406-7	4	13	-	2	yes	no sign

concentrating especially on the years 1315-21, when the switch to all-horse farming was made. What stands out immediately is that the change coincides with the agrarian crisis of these years, and this suggests a direct connection between the two. In fact, the situation is rather more complicated than this and involves two events totally unconnected with the crisis, that is, the deaths of the bishops Henry of Marwell and John of Sandale. The sequence of events seems to have been as follows. First, the famine years of 1315-7, beginning with the disastrous harvest of 1315, affected West Wycombe as much as any other place. It appears that the manor was so badly struck that it had difficulty finding enough seed to sow the following year's crop, a condition probably aggravated by the temptation to sell as

much grain as they could at high famine prices. Consequently the sown acreage dropped from 255½ acres in 1313-4 to 239½ acres in 1315-6 and to 171 acres in 1316-7.<sup>239</sup> This reduced the number of ploughs in operation from three to two and - briefly - even to one. It was at this juncture that Walter of Marwell died on the 28th or 29th of June, 1316. The first thing his executors seem to have done was to sell off much of the demesne stock, including most of the oxen. Significantly an "ox-plough" was recorded as being idle after the feast of Sts Peter and Paul (June 29) in 1316. Presumably the oxen were no longer essential because of the reduced ploughing and hence were considered fair game for the depredations of executors or escheaters. As a result, the demesne managers were forced to carry on with horses only. The small numbers of oxen evident in the 1316-7, 1317-8, and 1318-9 accounts may indicate that they were trying to rebuild the level of the animals up to the pre-1315 mark, but in fact these new oxen, added from young stock, were - as often as not - quickly sold again. In any event, any ideas of returning to a situation where oxen once again played a key role in performing draught work on the demesne at West Wycombe were quickly dashed by two almost concurrent events. The first was the death of another bishop, John of Sandale, in November, 1319, with yet another purge of the demesne livestock; it seems that only the cart-horses, affers or plough-horses, and a few pigs were left behind. The second was the great cattle plague of 1319-21, which, for a few years at least, made the obtaining of oxen difficult, as well as a risky investment. By 1320-1 the bishop's officials had accepted the situation at West Wycombe as being permanent, and from then on only horses were used for draught on the demesne there. Presumably the experience of the previous five years, as a somewhat enforced trial period, had convinced them that horses alone were a viable alternative to a mixture of horses and oxen. It has been suggested elsewhere that the cattle plague was the primary cause for the conversion to all-horse farming at West Wycombe,<sup>240</sup> but in fact, as we can see, it only

set the seal on a train of events which had begun some years earlier and which had a combination of natural and man-made causes.

Interesting as these initial causes are, however, they do not answer the vital question of what made the bishop's officials persist in the practice of all-horse farming at West Wycombe. Unless the exclusive use of horses offered real advantages, it seems inevitable that they would have drifted back to the former practice of using horses and oxen together once the cattle plague had eased, as, in fact, many other demesnes did in similar circumstances.<sup>241</sup> That this did not happen at West Wycombe suggests that all-horse farming was perceived as a definite improvement here. In what way though? As we have already indicated, the two main attractions for employing the horse instead of the ox was the former animal's speed and endurance. Hauling and harrowing at West Wycombe were already catered for by horses before the change occurred, so only ploughing was affected. Improvements to the speed of ploughing, however, seem to have entered little into the calculations of the demesne officials. The primary advantage of increasing ploughing speed is that fewer ploughs are needed to cultivate a given area of land, and it is true that the number of ploughing teams at West Wycombe were reduced by a third during the period 1315-20, but then again so was the area under cultivation.<sup>242</sup> More significantly, when the area under crops returned to "normal" - the sown acreages in the 1325-6 and 1340-1 accounts, for instance, were 238½ and 233½ acres respectively - the number of ploughs rose again to three, despite the fact that the total (sown) acreage was still less than it had been in the pre-1315 era. Obviously any increase in speed attributable to the all-horse teams had little effect on the number of ploughs.

On the other hand, there was a definite reduction in team size. To go back a little to the early thirteenth century, it appears that each plough at West Wycombe then consisted of eight oxen apiece, or even possibly of eight oxen with two horses. By the middle of the century, however,

mixed teams definitely prevailed, as in 1256-7, when twelve affers and twelve oxen were all specified as being ad caruc'. The most likely combination here is that each of the demesne's three ploughs was made up of four horses and four oxen.<sup>243</sup> After 1315, with the oxen gone or going, the level of affers to ploughs indicates that the team composition had shifted to six horses. In other words, the four oxen previously in each plough had been replaced by a further two horses, resulting in a net reduction of two animals per plough.

What does this mean in terms of cost? The same two ploughmen per plough were still in use at West Wycombe after the transition to all-horse teams, but the reduction in animals was a definite savings. West Wycombe was not one of the manors for which cost data were taken, but some idea of the magnitude of these savings can be gleaned by using the averaged figures in Table 3.14. For example, if we assume that, as appears to have been the case, the normal plough-team at West Wycombe in the period immediately before 1315 was one of four horses and four oxen, then the yearly cost of that team, at 10s. 2d. per plough-horse and 7s. 2½d. per ox, would be 69s. 7d. On the other hand, the team of six horses evident after 1315 would cost 61s. yearly, at the same 10s. 2d. per horse. Thus the changeover from the mixed to the smaller all-horse team would result in a yearly savings of 8s. 7d., or just over 12 per cent. Seen against the total cost of the team, this is a marginal, perhaps even unnoticeable savings; but, since manorial officials were very cost conscious, they may have detected it. On the other hand, this calculation assumes that the demesne officials were aware of the true cost of hay and straw (not to mention depreciation). If, however, they followed what seems to have been the common policy of ignoring hay and straw as real costs, then the picture changes markedly. Now a mixed team of four horses and four oxen, at 8s. 1½d. per horse and 2s. 7½d. per ox, would cost 42s. 11d. annually. A team of six horses, on the other hand, would cost 48s. 7½d. annually, or over 13 per cent more

than the mixed team. In either case, the range of benefit or loss is fairly narrow and must have favoured the existing state of affairs. It is to be noted that the change to all-horse farming at West Wycombe depended to a large degree on accident, and that the decision to follow the practice unreservedly only came after several years of what was probably an unintentional test run. In this case, any planning was clearly retrospective. Significantly West Wycombe, being a Chiltern manor, lay in a region which already had a reputation for all-horse farming (see p. 134 above), and the influence of local experience more than anything else may have swayed the demesne managers to their final decision. It is also possible that other considerations, such as using the speed of horses to increase the number of fallow ploughings in order to keep down weeds, may have played a part.<sup>244</sup>

In the case of West Wycombe, then, we can see how finely balanced the choice often was to employ more horses on demesne farms, depending, among other things, on how demesne officials viewed the various costs that affected the problem. In other cases, the decision was more clear-cut. This was particularly true of some of the Norfolk demesnes, where the change to all-horse farming was made in the 1340s by simply dropping off the oxen from the existing mixed plough-teams and continuing on without adding any extra horses at all!<sup>245</sup> It is difficult to understand why this was not done earlier, since the reduction in costs must have been of the order of 30 per cent or more in real terms.<sup>246</sup> Perhaps some sort of technical adjustment was necessary first, which may have added an additional cost. It is interesting to note from Table 3.15 that the West Wycombe transition to all-horse farming was accompanied by a marked increase in expenditure for plough wheels and ferra pedalia. Possibly a similar sort of thing occurred on the Norfolk demesnes, although most of them seem to have been using wheeled ploughs at least already.

In general, demesne decision making was a difficult and complex matter, as indeed are business decisions of any age. What seems to have characterised the medieval demesne manager, whether he be reeve, bailiff, steward, or even the lord and his advisors,<sup>247</sup> was the degree played by accident rather than assessment in his decision making.<sup>248</sup> The awareness of the possible benefits of change, such as replacing oxen by horses, was obviously there, but the accounting equipment with which to accurately analyse the situation was often lacking. The omission of hay and straw as a fodder cost is only one symptom of the unclear thinking that made it difficult for demesne managers to commit themselves to new techniques. The advent of more progressive, profit-and-loss type accounting, as at Norwich Cathedral Priory, was a considerable improvement here, where such things as labour services, meadow, and pasture began to be considered as valuable assets not to be expended freely without some sort of accountability.<sup>249</sup> Perhaps the reason why the Priory monks dropped their demesne oxen from so many of their Norfolk manors during the 1340s was because they were beginning to realise how much in real terms the animals were costing them.<sup>250</sup>

In conclusion, then, we have shown that the trend to using horses continued on English demesnes throughout the later Middle Ages, such that by the beginning of the fifteenth century some 30 per cent of the demesne draught force in England was comprised of horses. As in the twelfth century, the south and east of the country led the way, such that many counties were now employing more horses than oxen. Even so, over England as a whole, oxen still dominated on English demesnes at a ratio of two to three of the animals to every horse.

Of all the tasks assumed by demesne horses, hauling was the one in which they created the greatest change, easily pushing ox-hauling into a secondary role. The horse's adoption into demesne ploughing was less



spectacular. Mixed teams continued to gain in popularity and some all-horse farms surfaced, particularly in East Anglia and the Home Counties; but in general the all-ox plough-team was still the dominant form for most of the country's demesnes. It was the oxen contained in these all-ox and mixed teams that gave the animals their overall superiority in numbers.

Despite smaller all-horse teams, demesne plough-team size in general remained high at eight animals or so per plough and demonstrated a surprising consistency right across the country. On the other hand, plough and vehicle types on the demesne had developed definite regional patterns, and some of these displayed an intimate connection with the use of horses and oxen. This was particularly the case with the horse-hauled cart and the ox-hauled plaustrum.

Finally, this chapter has raised some interesting points about technical innovation on demesnes in general. As in the twelfth century, most innovation spread from the east to the west of the country. Little arose spontaneously elsewhere, indicating that demesne innovation in England was imitative rather than inventive and that most of it originated in the east, perhaps because of the special conditions existing there or because of its proximity to the Continent.<sup>251</sup>

In general, the pace of demesne innovation was slow. Even as simple a technique as ox-shoeing could take nearly a century to travel fifty or a hundred miles (see Appendix D). Change when it came, however, could be rapid on demesnes, as the West Wycombe example has shown, although it would seem there was often a large element of accident to it. The cold-blooded planning of technical change was possible, but it was always held back by faulty conceptions about cost and profitability. This must have encouraged indecision and the passing up of otherwise quite acceptable innovations. On the other hand, it should not be thought that the failure to follow up a promising innovation was always a result of faulty decision making. Demesne officials often had good sound reasons for failing to react to

a given technical change, reasons which are not always obvious to our eyes today, such as a reluctance to use plough-horses where soils are difficult and where there was plenty of lush grass suitable for oxen. To obtain a balanced picture of this particular aspect of demesne management, many more West Wycombe-like analyses of the process of technical change on demesnes should be undertaken. Unfortunately, because of the broad nature of this study, it was only possible to scratch the surface of this interesting and promising line of investigation.

#### FOOTNOTES

1. Harvey, 'English Inflation of 1180-1220', op. cit., pp. 58-9.
2. Miller and Hatcher, op. cit., p. 59.
3. These tended to occur in rather exceptional circumstances, such as when local industry sometimes kept farming prosperous enough to maintain seigneurial interest in it, or when lords were forced to return to direct demesne farming through the failure to find suitable lessees. Finally, it was the policy on some estates, even during the fifteenth and early sixteenth centuries, to keep one or two demesnes in direct cultivation, either to provision the main household or because the demesne was close enough to the central authority to ensure the efficient management needed to maintain profits in more difficult times. For examples of all these, see J.N. Hare, 'The Demesne Lessees of Fifteenth-Century Wiltshire', AHR, xxix (1981), p. 2; K.C. Newton, The Manor of Writtle, London and Chichester (1970), pp. 76-7; R.A. Lomas, 'The Priory of Durham and its Demesnes in the Fourteenth and Fifteenth Centuries', EcHR, 2nd series, xxxi (1978), pp. 349-53; Finberg, Tavistock Abbey, op. cit., pp. 256-8.
4. "Lord" here is used in the feudal sense - that is, someone who has seigneurial and jurisdictional rights over a group of free and customary tenants, generally living within the bounds of the manor. Even this broad definition has its exceptions, though. For example, monastic granges and glebe-demesnes often lacked such bodies of tenants. However, due to the exclusive nature of the proprietorial rights that these monks and rectors had over the lands that they farmed, I have considered them as demesnes for the creation of the various maps and tables in this chapter, although - strictly speaking - they should not be classified as such (e.g., see T.A.M.

Bishop, 'The Distribution of Manorial Demesne in the Vale of Yorkshire', EHR, xlix (1934), p. 388).

5. There were exceptions, of course. Some demesnes were very small, as at Catton (Norfolk) in 1312-3, where the total acreage of the demesne could not have been much above thirty acres, since only twenty or so were sown. NNRO Ref. No. R234D.

6. For examples of each type of demesne layout, see Orwin and Orwin, *op. cit.*, p. 76, and P.D.A. Harvey, A Medieval Oxfordshire Village: Cuxham 1240-1400, Oxford (1965), pp. 20-2.

7. Supervisory staff, such as bailiffs, reeves, and haywards, often came into this category as well.

8. For example, see M.M. Postan, 'The Famulus: The Estate Labourer in the Twelfth and Thirteenth Century', EcHR Supplement No. 2 (1954), pp. 2-3.

9. Miller and Hatcher, pp. 122-3.

10. *Ibid*, p. 53.

11. "Farm" manors tended to be near the administrative headquarters of the estate; "revenue" manors were more outlying. See R.A.L. Smith, Canterbury Cathedral Priory, Cambridge (1943), pp. 132-3; E. Miller, The Abbey and Bishopric of Ely, Cambridge (1951), p. 76; Miller and Hatcher, p. 183.

12. Most accounts covered the period from Michaelmas of one year to Michaelmas of the next.

13. In each case, the median year was calculated by taking the closing date from the median account for each demesne, and then taking the median of all these.

14. Thus account keeping in the north in particular often seems to have been rudimentary. For example, see the accounts for Finchale, Durham (The Priory of Finchale, ed. J. Raine (SS, vi, 1837), pp. *iff.*), which are very short and lacking in detail compared to those in the south. The rudimentary nature of early accounts in the north is also indicated by R.B. Pugh, 'Ministers' Accounts of Northamptonshire and Islandshire, 1261-2', Northern History, xi (1975), pp. 17-26.

15. As on the Cornish manors of the Earldom of Cornwall. J. Hatcher, Rural Economy and Society in the Duchy of Cornwall, 1300-1500, Cambridge (1970), p. 80.

16. We should not, however, exaggerate this last point. Devon, for instance, had more plough-teams than any other county in 1086 (Darby, Domesday England, *op. cit.*, p. 336), and it is unlikely that the high arable content thus indicated would have changed before the Black Death at least.

17. There is, of course, the possibility that young stock was occasionally used for draught purposes, particularly during the breaking-in process. From the general silence of the accounts on the matter, however, it does not appear to have contributed much to the total draught on demesnes. In any case, it seems as often as not that demesne draught stock was bought fully grown rather than being raised from young stock (e.g., see p. 354 below). Finally, as it applied to horses and oxen alike, it is unlikely to have markedly affected the proportions between the two.

18. Cows were also occasionally used for draught on demesnes (e.g., see D. Postles, 'Problems in the Administration of Small Manors: Three Oxfordshire Glebe-demesnes, 1278-1345', Midland History, iv (1977), p. 9). None, however, are listed as being employed for such in the accounts used for Samples A and B. It has also been assumed that all the oxen recorded in the sample accounts were draught animals, although it is perhaps possible some were "fat" oxen, that is, intended solely for meat rather than work. However, references to ox-yokes, bows, ox-shoeing, and so on in the accounts indicate that the vast majority of them were used for work. This is particularly the case when they are found in numbers of more than one or two, since there was little point in keeping these adult male animals any longer than necessary, unless they were employed for draught. Here it is noticeable how quickly the oxen on a demesne disappeared once the decision not to use them for draught anymore was made, as in the case of West Wycombe below (pp. 190-4).

19. As in the twelfth-century material, horse studs are evident, but they are infrequent. Altogether only six demesnes had studs in Sample A and only four in Sample B, containing a total of 124 adult animals with followers in Sample A and 58 adult animals with followers in Sample B.

20. Or some form of these.

21. Altogether fourteen mules and five donkeys are included in the draught animal totals for Sample A and only one mule in Sample B.

21a. At least 162 of the demesnes were common to both samples. The proportion of work-horses on these common demesnes came to 29.8 per cent for Sample A and 32.6 per cent for Sample B. These are pitched somewhat higher than the overall percentages in Table 3.1, but this is due to a greater concentration of common demesnes in the south and east. When corrected by the Domesday and 1377 poll tax methods below they give results much closer to the overall percentages in Table 3.1.

22. For the counties making up each region, see Chapter 2, note 51.

23. When the percentage of work-horses is calculated for each individual

demesne, we obtain 95 per cent confidence levels of  $\pm 1.9$  per cent around the mean percentage horse level for Sample A and  $\pm 2.7$  per cent around the mean percentage horse level for Sample B. For the method of calculation, see R. Floud, An Introduction to Quantitative Methods for Historians, London (1975), pp. 167-8.

24. The demesnes analysed were those at Crawley (Hants), Birdbrook (Essex), Westerham (Kent), Knightsbridge (M'sex), and Bourton-on-the-Hill (Glos). For references, see Appendix C, part 1 and part 2 (for Crawley only). The standard deviations for the work-horse levels on these demesnes varied from 2.8 per cent (Westerham) to 6.7 per cent (Knightsbridge). To obtain the 95 per cent probability levels, the standard deviations are multiplied by two.

25. There were only four certain cases of demesnes making the transition to or away from all-horse farming in Sample A and only two in Sample B. There were, however, a number of cases falling in the 1320-1350 gap between the two samples, particularly the 1340s. See pp. 133-7 below.

26. See pp. 139-42 below; also the West Wycombe example (pp. 193-4).

27. That is, from the increase in the number of cart-horses; see pp. 128-9.

28. Such as the almost universal prevalence of horse-drawn carts even by the time of Sample A; see pp. 171-5.

29. For the six counties studied, the percentage of demesne land ranged from 28-36 per cent. E.A. Kosminsky, Studies in the Agrarian History of England in the Thirteenth Century, Oxford (1956), pp. 90-1.

30. The Domesday method is an exact repeat of that in Table 2.12, with the regional work-horse levels from Table 3.2 inserted. The poll tax method was similarly carried out using Russell's 1377 taxed population figures with some corrections for the missing counties of Cheshire and Durham (British Medieval Population, op. cit., pp. 132-3, 144).

31. See Chapter 4, esp. pp. 250-7; also the similar conclusions of R.H. Britnell, 'Minor Landlords in England and Medieval Agrarian Capitalism', P & P, no. 89 (1980), esp. pp. 21-2.

32. E.g., B. Waites, Moorland and Vale-land Farming in North-east Yorkshire, Borthwick Papers, no. 32, York (1967), esp. pp. 33-5; R.A.L. Smith, op. cit., ch. xi; C. Platt, The Monastic Grange in Medieval England, London (1969), pp. 13-4.

33. B.M.S. Campbell, for instance, has shown how poorly the grain yields of the lay estates of Roger Bigod showed up against the much better yields on the nearby lands of Norwich Cathedral Priory on almost identical types

of soil. 'Field Systems in Eastern Norfolk during the Middle Ages: A Study with Particular Reference to the Demographic and Agrarian Changes of the Fourteenth Century' (Univ. of Cambridge PhD thesis, 1975), pp. 352-3.

34. E.g., see M. Mate, 'Profit and Productivity on the Estates of Isabella de Forz (1260-92)', EcHR, 2nd series, xxxiii (1980), pp. 327-333.

35. For the counties making up each region, see Chapter 2, note 51.

36. Including demesnes where the county was unknown.

37. Kosminsky's work on the Hundred Rolls shows that the proportion of lay to ecclesiastical manors in the six counties he studied was about three to one. Even allowing for the possibility that churchmen indulged to a greater degree than laymen in direct demesne cultivation, it would almost certainly still leave a heavy preponderance of demesne lands in lay possession. Kosminsky, *op. cit.*, pp. 108-9.

38. See Appendix C.

39. Certainly if the lay and ecclesiastical components of Sample A were true random samples of the country as a whole, then the difference noted would be very significant indeed, being equal to about two and a half standard errors. This is equivalent to a probability of well over 95 per cent that the observed difference was not due simply to chances of sampling.

40. Sources as follows: The Pipe Roll of the Bishopric of Winchester, 1210-1211, ed. N.R. Holt, Manchester (1964); HRO Eccles. 2 159308 (1286-7); HRO Eccles. 2 159388 (1381-2).

41. Twyford, Marwell, Crawley, Mardon, Bishopstoke, Bentley, Overton, North Waltham, High Clere, Burghclere, Fareham, Bishop's Waltham, East Meon Manor, East Meon Church, Hambledon, Cheriton, Beauworth, Old Alresford, and Wield, (Hants); Downton, Bishopstone, Knoyle, and Upton Knoyle (Wilts); Brightwell, Harwell, Wargrave, Waltham St Lawrence, and Culham (Berks); Witney and Adderbury (Oxon); West Wycombe (Bucks); Farnham (Surrey); Taunton and Rimpton (Somerset). Although they are recorded separately in the 1286-7 and 1381-2 rolls, the various demesnes in the Taunton group of manors - Poundsford, Holway, Staplegrove, etc. - are counted as one here.

42. See p. 74 above.

43. As at Bosham (Sussex): "Et in prebenda vj affrorum euntum ad carectas carucas & ad hercias" (1368-9; reference as in Appendix C). A great many more examples could be given.

44. E.g., J. Hatcher, Plague, Population and the English Economy 1348-1530, London (1977), pp. 11-20, 31-6.

45. See Table 3.14 below.

46. Fitzherbert (ed. Skeat), op. cit., p. 15.

47. Two samples of 100 demesnes each taken from Samples A and B show that the average sown acreage per demesne for the 1250-1320 period was 218.4 acres compared to 147.0 acres for the period 1350-1420.

48. Including those in transition; see pp. 133-4, 136.

49. When the figures are analysed by region, for instance, the trend still exists, but it is weaker.

50. For instance, if the percentage of work-horses is calculated for each demesne, the means for both samples are 3.3 percentage points apart. This is equivalent to almost exactly two standard errors, which signifies that there is a 95 per cent probability that the 3.3 per cent difference is due to more than just sampling chance. For the method of calculation, see Floud, op. cit., pp. 168-71.

51. Demesnes, account-years, and sources as follows: Waterston (in Puddletown), Dorset, 1434-5 and 1446-7, PRO SC6 835/24,36; Finchale, Durham, 1439-41 and 1441-2, SS, vi, pp. ccxxxiii, ccxxxvi; Jarrow, Durham, 1424-5, 1436-7, and 1491, SS, xxix, pp. 96, 105, 127; Monkwearmouth, Durham, 1427-8, 1428-9, 1446-7, and 1488-9, *ibid*, pp. 197 (bis), 203, 220; Elvethall (near Durham), Durham, 1422-3, 1424-5, 1461-2, and 1472-3, DCD Hostillar's Accounts; Pittington, Durham, 1446, 1450-1, SS, ii, pp. 95-6, DCD Bursar's Accounts; Ferryhill, Durham, 1446-7, DCD Bursar's Accounts; Westoe, Durham, 1446, SS, ii, p. 95; Fulwell, Durham, 1446, *ibid*; Bewley, Durham, 1446, *ibid*, p. 96; Wivenhoe, Essex, 1425-6, ERO T/B 122 (Wivenhoe Records); Taverham, Norfolk, 1420-1, NNRO Ref. No. R232A; Hindringham, Norfolk, 1422-3, NNRO Ref. No. R233C; Sedgeford, Norfolk, 1423-4, NNRO Ref. No. R233D; Holy Island, Northumberland, 1421-2, 1429-30, 1437, 1480-1, and 1493-4, DCD; Porlock, Somerset, 1424-5, PRO SC6 973/26; Budbrooke, Warwickshire, 1421-2, 1422-3, 1424-5, and 1428-9, WaRO CR 895 8/11, 12, 13, 16; Snitterfield, Warwickshire, 1430-1, BL Egerton Roll 8624; Chippenham, Wiltshire, 1428-9, t. Hen. VI, and 1460-1, WiRO 192/29B, 29C, 29D; Overbury Manor, Worcestershire, 1422-3, WCL C721; Leigh, Worcestershire, 1423-4, PRO SC6 1089/11; Hewell Grange, Worcestershire, 1424-5, 1426-7, 1432-3, 1434-5, 1442-3, 1449-50, and 1458-9, PRO SC6 1068/11, 12, 14, 15, 16, 18, 19; York, Yorkshire, 1423, SS, xlv, pp. 80-1; Methley, Yorkshire, 1435-6, SL MX Archives, no. 10. I am indebted to Dr. C. Dyer for supplying me with a microfilm and transcripts of the Wivenhoe, Budbrooke, Snitterfield, and Overbury material.

52. See pp. 181-2 below; also Chapter 4, pp. 271-4.

53. The following leased demesnes had recorded work-horse levels that were more or less the same as those that had existed under direct cultiv-

ation, or at least were in line with demesne experience in the immediate area: Langley Marish, Bucks, 1372-3, PRO SC6 762/13; Morton, Bucks, 1381-2, HRO Eccles. 2 159388, fo. 16v; Southcot, Berks, 1385-6, PRO SC6 750/20; Shellingford Newbury, Berks, 1440-1, Accounts of the Obedientaries of Abingdon Abbey, ed. R.E.G. Kirk (Camden New Series, li, 1892), p. 159; Downham, Cambs, 1429-30, CUL Ely Dioc. Rec. D10/3/1; Steeple and Creech, Dorset, 1378-9, PRO SC6 833/7; Claret, Essex, 1369-70, PRO SC6 839/5; Borley, Essex, 1409-10, CCL Bedels Rolls; Crawley, Hants, 1448-9, Gras and Gras, op. cit., p. 482; Wellow, Somerset, 1437-8, PRO SC6 976/10; Lawshall, Suffolk, 1384-5, PRO SC6 1002/3; Kingston Deverill, Wilts, 1421-2, W1RO 192/33/xix.

54. WAM 27719, 27720. Cf. under Knowle in Appendix C, part 2.

55. Raftis, Ramsey Abbey Estates, op. cit., p. 135; the 1450-1 account (PRO SC6 880/4), examined by the author personally, specifies that these horses were "cart-horses", but presumably, in view of their large number, some were used for ploughing as well.

56. That is, West Wycombe and Beamond (in Little Missenden), Bucks; Soberton and East Meon Church, Hants; Wheathampstead, Berkhamsted, Ashwell, and Kingsbourne (in Harpenden), Herts; Agney and Orgarswick, Appledore, Ebony, Copton (in Preston), Bishopsbourne, Westgate, and Petham, Kent; Catton, Thornham, Sedgeford, Hindringham, North Elmham, Gnatingdon (in Sedgeford), Deopham, Brancaster, and Bircham, Norfolk; Kirtlington, Watlington, and Checkendon, Oxon; Farleigh, Surrey. References as in Appendix C, part 1.

57. Beamond, Soberton, Kingsbourne, and Bishopsbourne.

58. The demesne at West Wycombe became all-horse after 1315 (see pp. 190-5 below); that at Catton (Norfolk) sometime between 1272-3 and 1301-2; and that at Hindringham (Norfolk) sometime between 1263-4 and 1295-6. At Ebony there were no permanent oxen in 1285-6 (although two were received from Appledore, then sold). By 1304-5 at least one or two oxen had been installed, and this increased to four in 1323-4 and eight in 1343-4 (CCL Bedels Rolls).

59. Fitzherbert, op. cit., pp. 15-6.

60. Walter of Henley, op. cit., p. 319, c. 36.

61. A. Smith, 'Regional Differences in Crop Production in Medieval Kent', Archaeologia Cantiana, lxxviii (1963), p. 151; R.A.L. Smith, Ganterbury Cathedral Priory, op. cit., pp. 177-8.

62. Upper Culham and Didcot, Berks; West Wycombe, Bucks; Uphall with Hinton and Burwell, Cambs; Milton Hall, Eastwood, and Lawling, Essex; East



Meon Church, Hants; Wheathampstead, Great Gaddesdon, Knebworth, Ashwell, and Kingsbourne, Herts; Agney and Orgarswick, Elverton (in Stone nr. Faversham), Peckham, Copton, Dengemarsh, and Bekesbourne, Kent; Thornham, Sedgeford, Plumstead, Hindolveston, Taverham, Scratby, Trowse Newton, Tunstead, Gimingham, and Bircham, Norfolk; Oakham, Rutland; Exning, Lakenheath, and Lackford, Suffolk; Farleigh, Surrey; Wetwang and Market Weighton ('Wighton'), Yorks. References as in Appendix C, part 2.

63. Although Brancaster paradoxically seems to have reverted to oxen during the interval from Sample A.

64. M.L. Ryder, in his analysis of bone finds at the deserted medieval village of Wharram Percy, only a few miles from Wetwang, has commented on the high proportion of horse bones found there. 'Livestock Remains from Four Medieval Sites in Yorkshire', AHR, ix (1961), pp. 106, 109.

65. R.A.L. Smith, op. cit., pp. 136-7. For the soil stiffening characteristics of marl, see G.E. Mingay, The Agricultural Revolution, London (1977), p. 35.

66. West Wycombe, Bucks; Milton Hall and Lawling, Essex; Peckham and Elverton, Kent; Plumstead, Hindolveston, Taverham, Scratby, and Trowse Newton, Norfolk; Oakham, Rutland; Lakenheath, Suffolk.

67. As at Plumstead, Norfolk, where five oxen, a bull, and eight horses were being worked in 1342-3, but only six horses in 1349-50 and eight horses only in 1353-4 (NNRO Ref. No. R233D). The Norfolk demesnes of Martham, Taverham, and Eaton (ibid, R232A, R233A) also seem to have converted to all-horse farming in the 1340s, as did the demesne at Oakham in Rutland, where two oxen were still being employed in 1339-40 (WAM 20255) but none by 1342 (WAM 20257) and after.

68. At least according to the accounts. Barbara Harvey indicates that Oakham was "in demesne at all times" from 1231 to 1535; presumably this includes the times when the demesne was leased. Westminster Abbey and its Estates in the Middle Ages, Oxford (1977), p. 357.

69. E.g., at Beauworth: "In ij affris ferrandis trahentis ante boues, iiijd."; HRO Eccles. 2 159308, fo. 31v; see also fos. 18, 30v for Fareham and Cheriton.

70. "ij Aratra cum toto apparatu tam ligneo quam ferreo pro xij bobus et iiij equis". Wills and Inventories...of the Northern Counties of England, ed. J. Raine (SS, ii, 1835), p. 95.

71. "Et in ferrura ij affrorum trahentorum ad caruc' domini xijd." (Portbury; similar for Bedminster; PRO SC6 974/1).

72. "Et in ferura ij equorum pro caret' super omnes pedes & ij equorum pro caruc' super pedes anteriores"; PRO SC6 1084/7.

73. In a few cases, the procedure does give what is almost certainly an erroneous result. Thus at 'Thurlby' (Lincs) in 1362-3 there were two oxen and six horses at the end of the account-year. In normal circumstances this would almost certainly indicate a mixed team (or even an all-horse one); but in this case the horses were listed under the heading of "cart-horses". Using this procedure, we are forced to subtract these six horses, leaving only the two oxen as our ploughing stock and thus indicating an all-ox plough-team, wrongly it would appear since it seems probable from other indications in the account that the "cart-horses" helped out with the ploughing as well. Fortunately such blatantly questionable results only occur in a handful of cases and have little effect. In general, they tend to underestimate slightly the number of demesnes with mixed teams.

74. E.g., at Ashmansworth (Hants): "In ferramento ij carucarum bouum & j caruce affrorum per totum annum"; HRO Eccles. 2 159308, fo. 11. Similar references segregating ox- and horse-ploughs are also recorded at Mardon, Overton, Twyford with Marwell, and East Meon Manor (Hants), and Downton (Wilts). Ibid, fos. 8v, 10, 14, 27v, 7.

75. Cart. Mon. Glos., iii, pp. 183, 187. A temporary separate horse-plough was also evident at Bourton-on-the-Hill (Glos), where a horse-plough was brought into service in 1361-2, possibly to replace eight oxen sent to Sutton-under-Brailes. I am indebted to Dr. C. Dyer for this reference.

76. Six ox-ploughs and five horse-ploughs were in operation in 1286-7 and five ox-ploughs and three horse-ploughs in 1381-2. HRO Eccles. 2 159308, fo. 27v; *ibid*, 159388, fo. 29v.

77. Several of the manors above, such as East Meon and Cottingham, were situated on terrain of this sort (according to Bartholomew's Survey Atlas of England and Wales (1939)).

78. BL Cott. MS Claudius xi.

79. Harvey, Med. Ox. Vil., *op. cit.*, pp. 58-9.

80. As at Holywell (Hunts) in 1392-3: "In ferro empto pro ferramento iij carucarum per annum vnde j levatio de equis carectariis"; PRO SC6 877/22. The same formulation also occurs in the Sample B accounts for Elton, Houghton, Abbots Ripton, Upwood, and Wistow (Hunts), and at Shillington and Cranfield (Beds); see also Raftis, Ramsey Abbey Estates, *op. cit.*, p. 130.

81. Extra ploughs raised from the cart-horses for the winter and/or spring seedings are also recorded for Combe, Berks in 1306-7 and 1307-8; Cheriton, Hants (1286-7); Hundon, Suffolk (1374-5); Reydon, Suffolk (1391-2); and Erbury, Suffolk (1385-6). One caruca jumenta was also created for both seedings at Edington (Wilts) in 1413-4, while a plough of "horses" (equi) was raised for the spring planting at Petworth (Sussex) in 1348. (Petworth

reference, WSussRO Add. MS 12238; the rest as in Appendix C).

82. Unless there are mixed teams already available.

83. "In j affro masculo empto ad herciandum, viijs."; reference as in Appendix C, part 1.

84. As at Great Chart (Kent) in 1273-4; Croydon with Cheam (Surrey) in 1273-4; West Derby (Lancs) in 1256-7; Hemyock (Devon) in 1286-7; Horton (Glos) in 1386-7; and so on.

85. "In prebenda 2 avrorum, qui araverunt, et hericiaverunt, et marlaverunt per annum, 10 quarteria (of oats)". Holt, op. cit., p. 7. Many more examples could be given.

86. E.g.: "Et in prebenda ij equorum caretariorum euntum in herciis per xliij septimanas tempore utrusque seminis, vj qr. j b." (Holywell (in Caresby), Lincs, 1294-5). Similar references are given for Exminster, Devon (1286-7); Bishop's Sutton, Hants (1286-7); Stretton, Rutland (1294-5); Long Bennington, Lincs (1294-5); Boreham, Essex (1378-9); Bibury, Glos (1388-9); Blockley, Glos (1383-4); Malden, Surrey (1379-80). Many other examples could be cited.

87. Wages for these dual-purpose servants are recorded at Great Chart, Kent (1272-3); Lyminge and Boughton-under-Blean, Kent (1273-4); Pagham (with other communities), East Lavant, and Slindon, Sussex (1273-4); and Howden, Yorks (1296-7).

88. As at Newport (Essex) in 1296-7: "In prebenda 1 equi euntis ad herciam ad semen quadragesimale". Earldom of Cornwall, 1, pp. 51-2.

89. Histoire de la France Rurale, ii, op. cit., p. 153. Two-horse harrows are also implied in the story of Piers Plowman, where Piers's four horses harrowed "Wyth two harwes that thei hadde. an olde & a newe", The Vision of William concerning Piers the Plowman, ed. W.W. Skeat, London (1869), p. 356.

90. Harvey, Man. Records, p. 362. Fitzherbert also emphasised how important it was to keep harrowing horses "well kepte and shodde, or elles they wyll soone be tyred." (Op. cit., p. 25).

91. Ibid, p. 24.

92. As at Newport, Essex (1296-7); Berkeley, Glos (1305-6); Maudelyns, Durham (1345); Beverley, Yorks (1373-4); Ham, Glos (1375-6); Sutton-under-Brailles, Warks (1379-80); Monkwearmouth, Durham (1362, 1370, 1378-9); Stivichall, Warks (c.1445); Jarrow, Durham (1491); references to Maudelyns, Stivichall, and Jarrow; SS, xciv, p. 206; SBT DR 10 2448; SS, xxix, p. 127. I am grateful to Dr. C. Dyer for providing me with a transcript of the Stivichall material.

93. SS, xxix, pp. 159, 164, 172.

94. For example, see J.F. Willard, 'The Use of Carts in the Fourteenth Century', History, xvii (1932), p. 247; idem, 'Inland <sup>Transportation</sup> ~~Transport~~ in England during the Fourteenth Century', Speculum, i (1926), p. 367.

95. See pp. 174-5 and Table 3.14 below.

96. Awre reference, GRO D421/M4; Huntingdon reference as in Appendix C, part 2.

97. The one certain exception being the seven yokes bought or made for a carra or carrae at West Hatch, Somerset, in 1356-7. Ox-hauled carrae and curtanae also occur in the survey material discussed in the next chapter.

98. At least not in the medieval period. There are a few instances of oxen pulling "carts" in the sixteenth century: e.g., "Item a carte & too payre of yokkes of Oxen y<sup>e</sup> price of all - x s." (LJRO; inventory of Agnes Holme of Chesterfield, Derbyshire, in 1535).

99. Only two were pre-1350: that is, at Awre mentioned above, plus a reference to oxen hauling at Petworth, Sussex in 1347-8 (WSussRO Add. MS 12239; oats section).

100. Two-horse cart-teams are indicated at Orsett and Rayne, Essex, in 1303; at Glatton, Hunts, in 1313-4; and at Combe, Berks, in 1307-8. Three-horse cart-teams are recorded at Cuxham, Oxon, in 1305, 1318, and 1349-50 (Harvey, Med. Ox. Vil., p. 103, and Man. Records, pp. 151, 344); at Tickhill, Yorks, in 1315-6; and at Witton, Durham, in 1353-4. Four-horse cart-teams occur at Cuxham in 1353-4 (Man. Records, pp. 537-8) and at Bewley, Durham, in 1446 (SS, ii, p. 96). Five horses and a cart, however, were needed to haul a tun of wine at Combe (Berks) in 1307-8.

Rather less information exists in the accounts for ox-hauling teams, but j plaustrum ferratum cum iiii bobus is mentioned for Coldingham in Scotland in 1371 (The Priory of Coldingham, ed. J. Raine (SS, xii, 1841), p. lxxv), although this is followed immediately in 1372 with the contradictory unum plaustrum cum uno bove (ibid, p. lxxvii). The two yokes for the plaustrum at Henbury mentioned above also suggest a four-ox team. When road transport was involved, the hauling team could be considerably larger, such as the ten-ox team required to carry tents and provisions on a military campaign to Scotland in 1333 (Willard, 'Inland Transportation', op. cit., p. 363). Peasant ox-hauling teams of up to eight animals are discussed in the following chapter.

Unless otherwise indicated, references as in Appendix C.

101. 'The Use of Carts in the Fourteenth Century', op. cit.

102. M.E. Seebohm, op. cit., p. 220. In fact, 200-240 lbs. was more likely (David Hey, Packmen, Carriers and Packhorse Roads, Leicester (1980),

pp. 90-1; A.C. Leighton, op. cit., p. 104, quoting Clive Day's A History of Commerce, puts it at 220-330 lbs.).

103. An illuminating example is provided by a late fourteenth-century court roll for Writtle in Essex, in which one tenant of the manor sued another over the sale of a horse which the vendor had falsely claimed could pull a cart and five quarters of wheat. At the modern conversion of about 63 lbs. per bushel of wheat, this works out to a load of 2,520 lbs., excluding the cart. Even allowing for the inflated claim of the man selling the horse (Hey, op. cit., p. 90, indicates that <sup>at least</sup> two horses would have been needed to haul such a load in early modern times), this still represents a considerable improvement over the amount that could be carried by a pack-horse (ERO D/DP M189). I am greatly indebted to Dr. C. Dyer for providing me with this reference; the 63 lb. conversion rate for a bushel of wheat was supplied (through C. Dyer) by Mr. A.M.A. Woods, agricultural correspondent for the Stratford-upon-Avon Herald.

104. Leighton, op. cit., pp. 41-2.

105. See p. 286 below.

106. E.g., see J. Crofts, Packhorse, Waggon and Post, London (1967), pp. 5-6, dealing with early modern experience.

107. E.g., at Finchale (Durham) in 1307, 1363, 1367, and 1397; Jarrow (Durham) in 1341, 1351-2, and 1382; Holy Island (Northumberland) in 1308 and 1362; Lytham (Lancs) in 1354-5, 1417-8, and 1418-9; Elvethall (Durham) in 1302-3, 1342, and 1405-6; York in 1423 (inventory of the farm of Henry Bowet, Archbishop of York; SS, lxxv, pp. 80-1).

108. Where the carrying of gravel and dung seems to have been done by pack-animals rather than carts. Especially noticeable in this account is the presence of an "affreman" rather than a carter among the famuli. H.P.R. Finberg also comments on the prevalence of pack-animals in Devon at this time. Tavistock Abbey, op. cit., p. 132.

109. Even on demesnes where pack-horses (summarii) are found, they are usually mentioned in a minority of accounts, such that there was only an equivalence of three pack-horses in the stock totals for Samples A and B together.

111. See pp. 285-7 below.

112. That is, at Westgate (Kent) in 1273-4; Stepney (M'sex) in 1303; Old Alresford and Brockhampton (Hants) in 1381-2; Bromsgrove (Worcs) in 1385-6; Pershore (Worcs) in 1386-7; and Wick Episcopi (Worcs) c.1290 (extent; RBW, i, p. 57). Horse mills are also mentioned at Widnes, Lancs (1295-6; Lyons, p. 51); at Wells, Wisbech, and Horningsea, Cambs (1251; BL Cott. MS

Claud. C. xi, fos. 24v, 73, 113v); and at Riccall, Yorks (c.1295; Prebends of York, pp. 1-2).

113. The Bishop of Durham had a molendinum equorum at Oxenhall (Durham) in that year. Boldon Buke, p. 17.

114. 'The Advent and Triumph of the Watermill', in Land and Work in Medieval Europe, trans. J.E. Anderson, London (1967), p. 149.

115. For example, the horse mill at Riccall (note 112 above), along with a windmill, seems to have replaced a water-mill that was previously there.

116. For example, "full-land" customary tenants at Wisbech (Cambs) in 1251, each holding thirty-four acres, were excused suit of mill if they had their own horse mills: "Et debet sectam molendini nisi habeat molendinum equorum proprium" (BL Cott. MS Claud. C. xi, fo. 80v).

117. Excluding the survey material, the number of mill-horses in Samples A and B together amounted to no more than ten animals.

118. "Quelibet de sex bobus et duobus stottis"; BL Cott. MS Claud. C. xi, fo. 34.

119. References as follows. Cambs: BL Cott. MS Claud. C. xi, fos. 61, 72v (1251); Durham: SS, vi, p. xvi (1335); Gos: Cart. Mon. Gos., iii, pp. 183, 187, 55 (c.1266-7), RBW, iii, pp. 313, 322 (c.1290; for the date of these extents, see note 219 below), Cart. Mon. Gos., iii, pp. 183, 61, 64 (c.1266-7), RBW, iv, 403 (bis) (c.1290); Norfolk: BL Cott. MS Claud. C. xi, fos. 182, 192v, 199v (1251); Warks: RBW, iii, pp. 258, 275, 292 (c.1290); Worcs: RBW, i, pp. 30, 57, 82, 90, RBW, ii, pp. 142, 166, 231, 237, 144 (c.1290).

A number of these references simply stated that so many oxen were available for so many ploughs (e.g., at Northwick and Whitstones (Worcs), where it was stated that there were "xl boves ad quinque carucas"; RBW, i, p. 30). To obtain the number of animals in a team, the oxen were simply divided by the number of ploughs, the assumption being that all the ploughs were of the same size.

The quarter plough for Gloucestershire (from Northleach) was designated as such because it was only used from Christmas to Easter (Cart. Mon. Gos., iii, p. 183).

Finally, data for Bredon, Hanbury, and Hartlebury (Worcs) and for Bishop's Cleeve and Withington (Gos) were not taken, since, in these cases, the division of the number of ploughs into the number of oxen did not yield a practical number (RBW, i, p. 108; ii, pp. 185, 251; iv, pp. 350, 366). This was either because extra oxen had seemingly been included in the figures (e.g., compare the case of Hanbury ("xliiii boves ad iiii carucas"; RBW, ii, p. 185) with that of Buckland (Gos), where there were also forty-

four oxen for four ploughs, but the entry made it clear that four of these oxen were extras and that each plough was in fact of ten animals (Cart. Mon. Glos., iii, p. 64)), or, as in the case of Bredon, a likely error in transcription was made. Also excluded for similar reasons, although a team of such a size did occur in the twelfth-century material, was a reference to a seven-ox plough-team at Haswell, Durham, in 1303 (SS, ii, p. i: "De bobus xxj pro ij carucis").

120. References as follows. Cambs: BL Cott. MS Claud. C. xi, fos. 127v, 115v, 132, 24, 34, 38v, 43v, 49, 53, 111, 145-145v, 149 (1251); Essex: *ibid*, fos. 168, 171 (1251), Dom. St Paul, pp. 64-5, 69 (1222), G.F. Beaumont, 'The Manor of Borley, A.D. 1308', Trans. of the Essex Arch. Soc., new series, xviii (1928), pp. 262-3 (1308), BL Cott. MS Claud. C. xi, fo. 176v (1251), Dom. St Paul, pp. 48, 85-6 (1222); Glos: RBW, iv, p. 376 (Bibury; c.1290); Herts: BL Cott. MS Claud. C. xi, fos. 152, 155v, 163v (1251), Dom. St Paul, p. 13 (1222), BL Cott. MS Claud. C. xi, fo. 162 (1251); Hunts: *ibid*, fo. 97 (1251); Norfolk: *ibid*, fos. 254, 221v, 234v-235, 258v, 248v, 209v (1251); Suffolk: *ibid*, fos. 307v-308, 263, 276v, 284, 292, 314, 270v, 299v (1251); Surrey: Dom. St Paul, pp. 103-4.

Although the number of demesne ploughs at Borley, Essex, was not given in the extent for the manor (Beaumont, *op. cit.*), two have been estimated from the demesne acreages.

The mixed teams at Bibury (Glos) were given as "iiii affri et xlii boves ad ii carucas", with two cart-horses also being mentioned. This apparently uncontroversial reference to mixed teams, however, is at odds with later accounts for Bibury, which refer to the horses on the demesne solely as "cart-horses". Nevertheless, the fact that some of these horses were shod on the front feet only, as in the 1393-4 and 1394-5 accounts (WoRO Ref. 009:1 BA 2636 159 92049 and 160 92061), indicates they were probably used for ploughing as well.

Finally, although this information arrived too late to be included in Table 3.7, Dr. Bruce Campbell has sent me details concerning ~~XXXXXXXXXX~~ plough-teams of two horses and two oxen each at Reedham and Lound in Norfolk in 1291 (as in his forthcoming article, 'Agricultural Progress in Medieval England: Some Evidence from Eastern Norfolk', to be published in the Economic History Review (1983); I am indebted to Dr. Campbell for providing me with a typescript copy).

121. References as follows. Cambs: BL Cott. MS Claud. C. xi, fo. 24 (1251); Glos: Cart. Mon. Glos., iii, pp. 183, 187 (c.1266-7); Hants: HRO Eccles. 2 159308, fo. 31 (Cheriton; 1286-7); Herts: Dom. St Paul, p. 13

(1222); Hunts: BL Cott. MS Claud. C. xi, fo. 97 (1251).

The five affers at Aldsworth (Glos) are assumed to be in the demesne's fifth plough, although the entry is slightly ambiguous (Cart. Mon. Glos., iii, p. 187).

122. References as follows. Berks: PRO SC12, Portfolio 18/22 (late 13th c.); Dorset: *ibid*; Essex: Dom. St Pauls, pp. 33, 73, 28, 38, 74-5 (1222); Glos: PRO SC12, Portfolio 18/22 (quater) (late 13th c.); Kent: F.R.H. Du Boulay, The Lordship of Canterbury, London (1966), p. 213 (Bexley; 1285); M'sex: Dom. St Paul, p. 99 (1222); Wilts: PRO SC12, Portfolio 18/22 (late 13th c.).

123. SS, vi, p. lxii; SS, ii, p. 96 (bis); DCD Hostillar's Accounts (bis); SS, xxix, p. 91; *ibid*, pp. 44, 53, 58, 63; SS, ii, p. 95 (ter); SS, v, p. 45.

124. Hindringham (Norfolk) in Sample A and Knebworth (Herts) in Sample B have been counted twice to accommodate the switch from mixed to all-horse plough-teams that occurred on both manors.

126. Where there was more than one account available for a particular demesne, averaging the number of ploughs in these accounts sometimes resulted in fractions.

127. Rounded off to the nearest whole number.

128. As at Thornham (Norfolk), where only two horses were kept for the demesne plough (NNRO Ref. No. R232B; e.g., the 1265-6, 1277-8, 1309-10, and 1351-2 accounts).

129. The average plough-team size from the Essex accounts was 9.5 animals for Sample A and 9.2 animals for Sample B. In contrast, the average plough-team size from the Norfolk accounts was 6.6 animals for Sample A and - when all-horse demesnes began to dominate after the Black Death - 4.9 animals in Sample B.

130. "Possunt esse ibidem ii equi carectarii, ii equi ad molendum et ad herciandum, et viii boves ad carucam." RBW, i, p. 57. For similar survey and extent references to separate cart- and harrowing animals, see *ibid*, i, pp. 30, 57, 82, 90, etc.: Dom. St Paul, pp. 28, 52-3, 69, 74-5, 85-6; BL Cott. MS Claud. C. xi, fos. 182, 192v, 199v, 209v, 221v, 235, 248v, 254, 258v, 276v, 284, 292, 308.

131. "In prebenda duorum equorum carectariorum & ii j affrorum eis adiunctorum ad j carucam equinam tempore seminis ad tremeys qui araverunt ante prandium & post"; HRO Eccles. 2 159308, fo. 31. See also Harvey, Med. Ox. Vil., p. 59, for a similar example at Cuxham in 1311.

132. See Chapter 2, note 127.

133. Many accounts, for instance, will simply say that a new plough



was "made", without any detailing of the wooden parts.

134. Such as the three "moldebredes" bought at Pittington, Durham, in 1376-7 and the "moldibrod" or "moldebrede clutes" at Bewley and Dalton (Durham) in 1304-5 and 1305-6 respectively. Also in this category is the "shildebred" mentioned at Pershore (Worcs) in 1351-2 and the "shelbredes" bought for 2d. at Longdon in the same county in 1347-8. The two "reestes" bought at Henbury-in-Salt-Marsh (Glos) in 1376-7 were possibly also mould-boards (see the Revised Medieval Latin Word-list, ed. Latham, op. cit., p. 405). Longdon reference, WAM 21028; the rest as in Appendix C.

135. E.g., see especially SS, ii, pp. 95-6, where carucae of eight oxen at Bewley and Ferryhill (Durham) in 1446 are listed alongside aratra of eight and twelve oxen at Westoe and Pittington. The word aratrum first appears in the accounts of Finchale in 1397, at Monkwearmouth in 1396-7, and at Jarrow in 1415-6, after which it quickly gains in popularity. SS, vi, pp. ccixff.; SS, xxix, pp. 184ff.; *ibid*, pp. 89ff.

136. DCD Bursar's Accounts.

137. Fitzherbert, pp. 9-11.

138. In particular, the turn-wrest plough of Kent. Despite their distinctive feature of turning furrows all in the same direction, however, they were still wheeled ploughs (or at least they tended to be in England).

139. As indicated by F.G. Payne, 'The British Plough: Some Stages in its Development', AHR, v (1957), p. 83.

140. Such at least were the results of dynamometer trials in the nineteenth century (P. Pusey, 'Experimental on Draught in Ploughing', JRAS, i (1840), p. 224; H. Handley, 'On Wheel and Swing Ploughs', JRAS, i (1840), p. 144). It is difficult, though, to know how much this applied to medieval ploughs.

141. Pusey, op. cit., p. 226.

142. For example, see Handley, op. cit., pp. 144-6.

143. Kerridge, Agricultural Revolution, op. cit., p. 33; The Agrarian History of England and Wales, iv, ed. J. Thirsk, Cambridge (1967), p. 164.

144. Harvey, Man. Records, pp. 163-606; Farr, pp. 31-185.

145. Also included, since it almost certainly indicates a wheeled plough was a reference to fitting axles to a plough or ploughs at Pyrford (Surrey) in 1394-5: "In axocione caruc', *ijd*."

146. There is some confusion as to what exactly was meant by the ferrum pedale or pedale. Thorold Rogers (A History of Agriculture and Prices in England, i, 1259-1400, Oxford (1866), pp. 537-8) felt, after some consideration, that they were indeed plough feet, following Markham's description

of the same. Canon J.L. Fisher also took the same view (A Medieval Farming Glossary of Latin and English Words, London (1968), p. 26). On the other hand, Colonel J.S. Drew, drawing upon a wealth of account material from the south of the country, eventually came to the conclusion that the ferrum pedale was a plough-iron or sole-plate to protect the bottom of the plough (from unpublished notes in the care of the committee for the Dictionary of Medieval Latin from British Sources at the Bodleian Library in Oxford; I am indebted to the editor, Dr. David Howlett, for allowing me to consult these notes), and it is this interpretation that has been adopted by the Revised Medieval Latin Word-list (op. cit., pp. 189, 338). Drew's main argument to this effect was that there are often signs that the ferrum pedale was fixed with nails to the plough, instead of being adjustable as in a "true" plough foot.

Nevertheless, it is very unlikely that this interpretation is the correct one, since, whatever it was, the characteristic of a pedale was important enough for it to be classified as a type of plough. Thus at Aldenham (Herts) in 1352 it is stated that four ploughs were made from the lord's wood, unde ij caruce pedales et ij caruce rotabiles (as quoted in the Dictionary of Medieval Latin from British Sources, fascicule II, ed. R.E. Latham, London (1981), p. 289, under 2 carruca). In this case the reference to foot ploughs would seem to be unmistakable, particularly as it parallels so closely to references to "foot ploughs" in later documents (e.g.: "Item j fote plow & one whele plowe w<sup>t</sup> theire furnyture"; from the 1573 inventory of the goods of John Wyghte of Isleworth, Middlesex; PRO Probate 2, 396). Foot ploughs are also indicated by the words themselves, which would seem to point conclusively to the plough foot or at least some part of it. It may be that the ferrum pedale was a piece of iron attached to the bottom of the plough foot rather than the foot itself, which would reconcile Drew's point about it being fixed to the plough. On balance, despite Drew's caveat, the evidence does seem to suggest quite strongly that whenever a pedale or ferrum pedale is mentioned it signifies the presence of a foot plough, and we have considered it as such in this study. The distinctive distribution of demesnes displaying these terms, particularly in relation to those with wheeled ploughs, as shown below, would appear to bear this out.

147. Drew, op. cit., gives evidence that suggests that the ferrum longum at least was identical to the ferrum pedale.

148. There were little more than ten references altogether for both samples, most of these being longa ferra found on the estates of Peter-

borough Abbey in 1309-10: e.g., as at Scotter, Walcot, and Fiskerton (Lincs); Boroughbury, Walton, and Werrington (Northants); Collingham (Notts); and Tinwell (Rutland).

149. For example, the "j strako ad carucam" bought for 2d. at Thornham, Norfolk, in 1309-10.

150. Abbey of Bec, p. 188. Drew draws essentially the same conclusion.

151. William Marshall, The Rural Economy of Norfolk, 2nd ed., London (1795), 1, pp. 11-3.

152. SS, xxix, p. 70; SS, vi, pp. cxix, cxliii, clix. Axle-trees are also recorded in relation to ploughs at Elvethall (Durham) in 1318 and at Methley (Yorks) in 1435-6 (DCD Hostillar's Accounts; SL MX Archives, no. 10).

153. See the demesnes with the W/F symbol in Appendix C.

154. As in nineteenth-century Buckinghamshire: "In working the land it is found necessary to use two different descriptions of ploughs; one an old-fashioned wooden plough for winter, and the other a more modern iron-wheel plough for summer. The wheel plough comes into use 'with the cuckoo,' the ground being so soft in winter that the wheels will not then work." James Caird, English Agriculture in 1850-1, London (1852), p. 10.

155. E.g.: "...in caruca yemali et alia estivali reparandis de maeremio domini..."; from a 1325 Pershore (Worcs) account, as quoted in the Dictionary of Medieval Latin from British Sources, op. cit., fascicule II, p. 289.

156. Foot ploughs only begin to appear in medieval illustrations in the thirteenth century. Haudricourt and Delamarre, op. cit., p. 363.

157. Singer et al, ii, p. 94; Histoire de la France Rurale, ii, p. 98; E. Blum and P. Laver, Le Miniature Française aux xv<sup>e</sup> et xvi<sup>e</sup> Siècles, Paris and Brussels (1930), plate 6.

158. Millar, op. cit., fo. 171; Fitzherbert, p. 24.

159. That is, at Mere (Wilts) in 1296-7, Budbrooke (Warks) in 1433-4, and Hanley Castle (Worcs) in 1326-7. Budbrooke and Hanley Castle references, WaRO CR 895 8/18 and PRO SC6 1068/7; the Mere reference as in Appendix C. I am indebted to Dr. C. Dyer for supplying me with transcripts of the Budbrooke and Hanley Castle accounts.

160. Mate, op. cit., pp. 329-30.

161. There were also five harrows where the type of teeth was not specified. L.F. Salzman, 'The Property of the Earl of Arundel, 1397', Suss. Arch. Coll., xci (1953), pp. 41-2.

162. Thus four harrows at West Wycombe (Bucks) in 1340-1 all had wooden rather than iron teeth, while at East Meon Manor (Hants) in 1381-2 there were eight harrows, but only two with iron teeth (HRO Eccles. 2 159351, fo. 27

and 159388, fo. 30).

163. Fitzherbert, p. 25.

164. As with plough type, only those vehicles mentioned in half or more of the accounts for a particular demesne have been included. Similarly section headings have not been used as indicators, since these headings could become stereotyped from year to year. For example, a vehicle costs section could be headed "Custus Carrorum" and yet have only plaustra mentioned in the section itself. As a result, only definite references to vehicles within sections have been accepted.

165. As, for example, at Sevenhampton (Wilts) in 1281-2: "In j pari rotarum j sella ad carectam" (Farr, p. 129). See also the Holy Island example immediately below.

166. Thus a "long cart" and a "short cart" are found among the household effects of both the Abbot of Westminster in 1289-90 and the Bishop of London in 1303 (Documents Illustrating the Rule of Walter of Wenlok, Abbot of Westminster, 1283-1307, ed. B.F. Harvey (Camden Soc., Fourth Series, ii, 1965), p. 185; Hale and Ellacombe, p. 59).

167. E.g., Revised Medieval Latin Word-list, p. 355.

168. Salzman, 'Property of the Earl of Arundel', op. cit., p. 43.

169. PRO SC6 973/26.

170. Thus at Tillingham (Essex) in 1222 customary tenants had to haul between hundreds "unum plaustrum vel duas carectas de busco".<sup>Dem. St. Paul, p. 62.</sup> For other examples, see Chapter 4, note 312. Thorold Rogers, on the other hand, felt that, in relation to the hauling of hay at least, a cart-load was the same as a plaustrum-load, although his reasons for thinking so were seemingly based on very little evidence. A Hist. of Agric. and Prices, i, op. cit., p. 250; also his data in vol. ii, Oxford (1862), pp. 391-2, where plaustra-loads are only represented twice and hardly allow a valid comparison between them and cart-loads.

171. "In factura ij novarum rotarum ad plaustrum de meremio domini ad tascham...Et in factura ij parum rotarum ad carectas de meremio domini ad tascham ijs."; WAM 27693.

172. Kerridge, op. cit., pp. 35-6; Probate Inventories and Manorial Excepts of Chetnole, Leigh and Yetminster, ed. R. Machin, Bristol (1976), p. 13.

173. DCD Hostillar's Accounts; PRO SC6 1068/14.

174. As at Pitlington (Durham) in 1376-7; DCD Bursar's Accounts.

175. Hale and Ellacombe, pp. 12, 59. The London carrus, however, was worth only 53s. 4d.

176. Millar, op. cit., fos. 181b-182.

177. "j karr cum iiij rotis et v fallaris de nigro, pro v equis, ad trahendum hujusmodi currum, et j seredclothe ad cooperiendum eundum currum vjli. xiijs. iiijd." (Testamenta Eboracensia, ed. J. Raine, Jr., (SS, xlv, 1864), p. 137).

178. See Chapter 4, p. 306 and note 311.

179. Thus at Northwick with Whitstones, Agnes Albon (and other half-virgate tenants) "debet cariare feni de Dudleye per i diem cum carro suo vel cum ii carrectas", while at Hartlebury each virgate holder "debet cariare fenum de la Wymedwe, scilicet i carratum vel ii carectatas". RBW, i, p. 14; ii, p. 194. See also Chapter 4, note 312.

180. As at Horsley (Glos) in 1292-3 and Hawkesbury (Glos) in 1373-4.

181. See also p. 306 below.

182. P. 308 below.

183. Although not necessarily the same. At Monkwearmouth (Durham) in 1344 and Finchale (Durham) in 1376-7, 1377-8, and 1379-80, for instance, carts and bigae are seen as separate vehicles. At Farleigh (Surrey) in 1278-9, on the other hand, they seem to have been synonomous. Monkwearmouth reference, SS, xxix, p. 144; the rest as in Appendix C.

184. That is, at Glynde, Sussex (1368-9), Lawling, Essex (1380-1), and Fulstow, Lincs (1384-5).

185. See p. 308 below.

186. In this study they were found in Berkshire, Hampshire, Hertfordshire, Kent, Oxfordshire, Suffolk, Warwickshire, Wiltshire, Worcestershire, and Yorkshire (see Appendix C). They also occurred in occasional accounts for demesnes in Buckinghamshire and Durham, but these have not been recorded in Appendix C because the references occurred in less than half the accounts for these particular demesnes.

187. See, for example, J. Arnold, Farm Waggons and Carts, Newton Abbot (1977), pp. 118ff.

188. Salzman, op. cit., pp. 43-4, however, surmised that they were wheel-barrows.

189. For example, there is a mention in the 1385-6 Henbury (Glos) account to the making of "j Dongpot pro plaustro pro fimis", indicating that the dungpot was perhaps connected to the plaustrum in some fashion.

190. Ox-hauled "coops" were a feature of ~~early~~ eighteenth-century Yorkshire. W. Marshall, The Rural Economy of Yorkshire, 2nd ed., London (1796), i, p. 252.

191. Two "drawtes", along with two tumbrels, were also made at Bredon

(Worcs) in 1392-3 (not recorded in Appendix C); the earlier 1375-6 account for the same manor also records a pair of "draghttes" for the carts, but here the "draghttes" would seem to be referring to a set of harness of chains.

192. As at Little Humber (Yorks) in 1285-6: "In stipendiis homini onerant (sic) plaustra & carectas in campis cum bladis tassandis in grangia".

193. E.g., see pp. 177-8 above. For hauling the same load, wagons generally needed more power than carts. J. Vince, Discovering Carts and Wagons, Shire Publications, Aylesbury (1978), p. 8.

194. P. Deffontaines, 'Sur la Répartition géographique des Voitures à deux Roues et à quatre Roues', Travaux du Ier Congrès International de Folklore, Paris, 1937, Tours (1938), p. 118.

195. M.N. Boyer, 'Medieval Pivoted Axles', Technology and Culture, 1 (1959-60), pp. 128-138; A.R. Hall, 'More on Medieval Pivoted Axles', Technology and Culture, ii (1961), pp. 17-22; C.A. McNeill, 'Technological Developments in Wheeled Vehieles in Europe, from Prehistory to the Sixteenth Century' (Univ. of Edinburgh PhD thesis, 1979), pp. 83-7.

196. For some of the problems involving the design of moveable fore-carriages, see James Arnold, 'Waggons of Mystery', Countryman, lxxxiv (1979), p. 186.

197. Until the end of the sixteenth century at least. Stowe writes that coaches and long wagons were first introduced to London in the 1560s, and at least one early seventeenth-century proclamation complains about the road damage caused by the recent increase in four-wheeled traffic (J.G. Jenkins, The English Farm Wagon, Reading (1961), esp. pp. 18-9, n. 15). Certainly wagons do not appear in any number in probate inventories until the seventeenth century (based upon the personal examination of some two thousand inventories by the author).

198. E.g., see pp. 146-7 above.

199. SS, vi, pp. ccxlix, ccliii, cclxviii, cclxxii, cclxxvi, cclxxxii, ccxcvii, ccciii, cccvii, cccxiv, cccxviii, cccxxviii, and cccxxxviii. The references sometimes take the form of so many oxen "pro plastro (or plaustris) et aratro", but most often simply "pro plastro".

200. In fact, the last reference to horses specifically for carting at Finchale occurs in 1363 (ibid, p. lxi), although carts, presumably horse-hauled, are still evident as late as 1379-80 (p. ci). Afterwards horses "pro carag'" or "pro caracione" appear in the 1397 and 1411 accounts (pp. cxviii, clvii), but these may have been pack- or riding animals.

201. Coal production from the priory mines, as evidenced by cash receipts, began as early as the 1350s at Softley, reaching a very high rate in

the early 1370s, after which it declined. It began again in the 1410s and 20s, slumped in the 1430s, but recovered once more in the 1450s, reaching a peak in the 1470s, after which it slowly declined to the sixteenth century. In the last half of the century virtually all the mining took place at Morehouseclose. Ibid, pp. xliiff.

202. "Sed respondet de x<sup>l</sup>. receptis de minera carbonum de Morehouseclose, ultra iij<sup>xx</sup> celdras liberatas ad expensas hospicii hoc anno". Ibid, p. cclxvi. J.U. Nef estimates that a chaldron of Newcastle coal weighed 22 cwt. in the late 1450s. The Rise of the British Coal Industry, London (1932), ii, p. 369.

203. The last (horse-hauled) carts appear at Jarrow in 1416-7 and at Monkwearmouth in 1408-9. SS, xxix, pp. 91, 190. After that, apparently only oxen were used for hauling, as indicated at Monkwearmouth in 1446-7: "Et in ix bobus emptis pro plaustris et carucis" (ibid, p. 203). Curiously, though, horses may still have been used for ploughing at Monkwearmouth, as indicated by, among other things, the five "equi pro aratro" found there in 1505-6 (ibid, p. 228). Similarly at Elvethall the carts and affers for carting evident there in 1424-5 are no longer recorded in the 1461-2, 1472-3, and 1505-6 accounts, although some horses (for harrowing?) were still there. DCD Hostillar's Accounts.

204. See pp. 131-2 above.

205. Demesnes having both plaustra and carrae have only been counted once.

206. Walter of Henley, op. cit., p. 319, c. 37; see also Fitzherbert, p. 15.

207. As taken from my article, 'Economics of Horses and Oxen', op. cit., p. 31.

208. Although he was clearly aware of them; see Walter of Henley, p. 319, cc. 39, 41.

209. White, op. cit., p. 62.

210. 'Horses and Oxen', op. cit., p. 37.

211. As taken from 'Horses and Oxen', p. 37. The methods by which these costs were obtained are outlined in detail in my article. The sources for the oats and horse-shoeing costs, which for reasons of space I was forced to omit from the article (see notes 11 and 22 in same), can be found in Appendix C, part 1.

212. The difference in cost between the two categories of horses reflects the general medieval practice of shoeing cart-horses on all four feet while plough-horses were usually shod on the front feet only; e.g., see note 72 above.

213. Walter of Henley, p. 163.

214. Fitzherbert, p. 15.

215. See, for example, the oats consumption table in Langdon, 'Horses and Oxen', op. cit., p. 33, where the highest consumptions occur in East Anglia and the Home Counties.

216. E.g., see White, op. cit., pp. 72-3; J.A. Perkins, The Ox, the Horse, and English Farming, 1750-1850, unpublished working paper in economic history, University of New South Wales, Australia (1975), p. 8; The Complete Grazier, 13th edition, by William Fream, London (1893), p. 1053; A.L. Anderson, Introductory Animal Husbandry, New York (1943), pp. 714-7.

217. E.g., see White, p. 62; R.J. Forbes, Studies in Ancient Technology, ii, Leiden (1955), pp. 83-5; N. Harvey, 'Walter of Henley and the Old Farming', Agriculture, lix (1953), p. 491. Another advantage, cited by Oschinsky (Walter of Henley, p. 162), is that of the supposedly longer working life that horses had, but this in fact seems to have had little effect in medieval times, since the average stay on demesnes (probably similar to working life) appears to have been little greater for horses than oxen; Langdon, op. cit., pp. 35-6.

218. E.g., White, p. 62. Most historians have obtained this figure from Rankine's Useful Rules and Tables (e.g., see the sixth edition, London (1883), p. 251), which is purported to have derived from trials using dynamometers (A.P. Usher, A History of Mechanical Invention, 2nd edition, Harvard (1954), p. 156).

219. For twenty-two demesnes altogether; RBW, i, pp. 30, 57, 82, 90, 108; ii, pp. 142, 144, 166, 185, 205, 231, 237; iii, 259, 275, 292, 313, 322; iv, 350, 366, 376, 403, 405; most of these are also summarised in Lloyd, 'Ploughing Services on the Demesnes of the Bishop of Worcester', op. cit., p. 196. Hollings, in her edition of the RBW, dates these extents to the year 1282, but more recently C. Dyer, citing internal evidence, feels that they were compiled c.1290 (Lords and Peasants, op. cit., pp. 3-4).

220. Although the Fladbury case may be inaccurate, since the high number of demesne ploughs for the amount of land under cultivation implies a much slower ploughing speed than that given.

221. See note 120 above.

222. Vinogradoff, Villainage in England, op. cit., p. 315; Beaumont, op. cit., pp. 262-3. At Borley the acre used would seem to be a standard one, as a 16½ foot perch was specified in the extent.

223. Walter of Henley, p. 315, cc. 28-9; the mixed team is indicated in c. 36 (p. 319).

224. Later evidence suggests that the horse on its own could in fact



plough up to 50 per cent faster than oxen. Thus in Cornwall during the last century a pair of horses could plough a customary acre a day while four oxen could barely manage three-quarters of this; W.F. Karkeek, 'On the Farming of Cornwall', JRAS, vi (1845), p. 457. Similarly Gervase Markham stated that oxen in his time (the seventeenth century) could only plough an acre a day while horses could manage  $1\frac{1}{4}$ - $1\frac{1}{2}$  acres (Farewell to Husbandry, London, 1631 ed., p. 147). On some occasions, however, it was not unknown for oxen to plough every bit as fast as horses; e.g., Caird, op. cit., p. 168; B. Almack, 'On the Agriculture of Norfolk', JRAS, v (1844), p. 381; J. Cowie, 'An Essay in the Comparative Advantages in the Employment of Horses and Oxen in Farm Work', JRAS, v (1844), p. 55.

225. All of these could have a dramatic effect on ploughing speed as measured in acres per day. For instance, a man ploughing a foot-wide furrow will plough an acre significantly faster than one who used, say, a nine-inch furrow. Ploughing depth has a similar effect in speeding up or slowing down the cultivation of an acre. Finally we have the problem of deciding what kind of acre is being employed - measured (or standard), conventional (or customary), fiscal, or local (for a discussion of all these, see A. Jones, 'Land Measurement in England', AHR, xxvii (1979), pp. 10-8). Apparent changes in ploughing speed or the acreage cultivated per year can occur simply by the clerks changing from one type of acre to another.

226. S. Piggott, '"The First Wagons and Carts": twenty-five years later', Bulletin of the Institute of Archaeology, xvi (1979), p. 11.

227. R.S. Lopez and J.W. Raymond, Medieval Trade in the Mediterranean World: Illustrative Documents, London (1955), pp. 355-8.

228. "Et de herciatura ix acrarum terre domini ad semen quadragesimale proventa de consuetudine xvj customariis quorum ij utrique inveniet (sic) j hominem & j equum ad terram domini herciendam per j diem ad semen quadragesimale a mane vsque ad horam nonam... & estimatur opus eorum ij acras."

229. As in nineteenth-century Cornwall, where a pair of horses could harrow eight acres per day (i.e., four acres per animal), while four oxen could only manage six (i.e., an acre and a half per animal). Karkeek, op. cit., p. 457.

230. Op. cit., p. 62.

231. Huntingford, op. cit., p. 458.

232. Thus Arthur Young noted in 1776 that both teams of six oxen and teams of four horses could do an acre a day at Benthall in Shropshire, while again at Bowood, near Calne (Wilts), a few years later he found of the farmers there that "6 oxen they find to do as much work as 4 horses." Arthur Young, Tours of England and Wales, London School of Economics and Political Science,

Reprint No. 14, London (1932), pp. 147, 34.

233. For example, on the Norfolk manor of Thornham, where two-horse demesne ploughs seem to have been the norm, it appears (in the 1309-10 and 1351-2 accounts at least) that only one "tenator caruc" was hired; seemingly no fugator was required. NNRO Ref. No. R232B. Teams of over two animals, though, generally required a driver (based on the experience of other demesnes and of farms in the post-medieval period).

234. Sources in order as in table: Holt, op. cit., pp. 78-82; HRO Eccles. 2 159282, 159292, 159308, 159319, 159325, 159328, 159330-3, 159335, 159334, 159338, 159351, 159371, 159388, 159410.

235. Plus one plough "per j terminium".

236. There were thirteen oxen at the start of the account, to which one was added from young stock. Of these, one died and twelve were sold.

237. Three ploughs were in operation from Michaelmas (Sept. 29) to the Saturday before the feast of St Gregory (March 6), two ploughs from then to the feasts of Sts Peter and Paul (June 29), and only one plough from Sts Peter and Paul to the following Michaelmas, at which time the demesnes seems to have returned to two-plough operation.

238. A third plough was mentioned in the plough costs section and three were mentioned among the Utensilia at the bottom of the account. It appears that the demesne was in the process of bringing the third plough back into permanent operation this year.

239. The sown acreage continued to drop, reaching a low of 141 acres in 1317-8 and only climbing to 164 acres in 1318-9 (all acreages are standard). A few bushels of peas and vetches, unmeasured in acres, were also sown in some of the accounts.

240. I. Kershaw, 'The Great Famine and Agrarian Crisis in England 1315-1322', in Peasants, Knights and Heretics, ed. R.H. Hilton, Cambridge (1976), p. 108.

241. E.g., loc. cit.; also idem, Bolton Priory, Oxford (1973), pp. 96-7.

242. The average sown acreage for the 1309-10, 1313-4, and 1315-6 accounts was 247 acres, while that for the 1316-7, 1317-8, and 1319-20 accounts was 159 acres, a reduction of over a third.

243. Although the reference to the "ox-plough" in the 1315-6 account above indicates that at least one separate all-ox plough-team may have existed on the demesne. In this case it is difficult to see how the teams could have been organised: one team of eight oxen and two teams of six horses and two oxen? Perhaps the mention of the "ox-plough" was just a short-hand way of saying that the equivalence, although not the actuality,

of a plough-team of oxen had been removed from operation.

244. Frequent fallow ploughings were a marked feature of farming in eastern Norfolk at this time; see Campbell, forthcoming article, *op. cit.*

245. As at Plumstead; see note 67 above. The same sloughing off of oxen with little immediate change in the number of horses, ploughs, or acres sown is also seen on the priory's demesnes of Taverham, Scratby, Trowse Newton, Martham, and Eaton. NNRO Ref. Nos. R232A, R233D, R233A.

246. For example, assuming the same cost figures as in Table 3.14, the eight horses and six oxen at Plumstead in 1342-3 would cost 124s. 8½d., while the eight horses in 1354-5 would cost only 81s. 4d., a reduction in expenses of 34.8 per cent. If hay and straw were ignored, however, the reduction would only be 19.5 per cent.

247. It is perhaps most natural to think of the demesne manager as the reeve, bailiff, or sergeant who actually supervised the running of the demesne on site; but, in terms of decision making, the concept of demesne management should be broadened to include members of the central administration, particularly the steward. In fact, it is difficult to say at what level most of the decisions regarding changes to the operation of the demesne were made. Smaller matters, such as the decision to use the cart-horses for ploughing in the spring or to shoe oxen, were obviously undertaken at the demesne level by the reeve or bailiff, as indicated by the occasional statement justifying their actions to those above them in the hierarchy (see, for example, Appendix D, note 11). But these justifications imply that even minor changes ought ideally to have been approved beforehand, and thus we should see most decisions, especially those involving long-term changes, as inevitably being done in consultation with the steward and perhaps even the lord and his advisors. The agricultural treatises do not always provide help in this matter, their emphasis being on the continuity of practice rather than its improvement, but some idea of the various decision-making relationships between lords, stewards, bailiffs, reeves, etc., can be gained from them, particularly Seneschaucy and Bishop Grosseteste's Rules (Walter of Henley, pp. 265ff, 389ff).

248. Although this is not to say that some hard-headed assessment could not be made at times, particularly in the calculation of whether to continue farming a demesne directly or to lease it out. E.g., see R.A.L. Smith, Canterbury Cathedral Priory, *op. cit.*, pp. 191-4.

249. E. Stone, 'Profit-and-Loss Accountancy at Norwich Cathedral Priory', Trans. Royal Hist. Soc., 5th series, xii (1962), pp. 34-5.

250. Profit-and-loss accountancy on the priory estates, however, had

already been in existence for nearly fifty years by this time, and in fact had just been discontinued when the switch to all-horse farming was made on their eastern Norfolk demesnes; so the connection between the two is not as direct as it could be! Ibid, p. 39.

251. E.g., see p. 72 above; also pp. 354-5 below, discussing these factors in relation to the introduction of the work-horse.

## CHAPTER 4

### The Peasantry: 1200-1500

During the interval covered by this chapter peasant farmers found themselves subject to much the same forces that had influenced demesne farming. Here the advent of the plague in 1348-9 neatly divided the period into two phases. The first was a period of population growth and pressure that lasted effectively until the middle of the fourteenth century (although there are signs that the rate of demographic increase slowed drastically and perhaps even went into reverse sometime before this, particularly during the famine years of 1315-7).<sup>1</sup> This phase of relatively high population was intimately connected with a number of economic and social conditions that had a marked effect upon the peasantry and peasant farming. Some of the more obvious of these were high food prices (especially for grains); falling real wages; a state of relative land shortage and perhaps even land abuse as some soils were farmed more intensively than they should have been; high rents and entry fines to land; an emphasis on arable rather than pastoral farming; increasing levels of landlessness and deprivation among the peasantry; and, finally, the fragmentation of holdings into smaller agricultural units, particularly through inheritance. Altogether these conditions conspired to make this a time of increasing hardship for most of the peasantry, although, for the economy as a whole, the period was one of expansion, as we have indicated in the last chapter.<sup>2</sup> The remaining 150 years after the middle of the fourteenth century, however, saw a dramatic decline in population, with all the above trends set firmly in reverse. Thus grain prices

stabilised and even fell; real wages rose; land became more available and could be obtained for lower rents and entry fines; there was a strong swing to pastoral farming; the proportion of landless and smallholding peasants declined; and the average size of the peasant holding increased markedly, including the creation of a class of wealthy peasant farmers, whom we might almost classify as "capitalist". Also, although definite improvements in peasant living standards can be discerned, the economy in general seems to have been in retraction.<sup>3</sup>

Changes in the peasant use of horses and oxen, then, must be seen against the background of these two contrasting periods, one of population increase and general market expansion, and the other of population decline and (it appears on balance) of economic recession. Nonetheless, although peasant farming was to see many changes over the period in response to these economic and demographic conditions, many of its basic characteristics tended to remain the same, particularly when compared to demesne farming. First of all, in contrast to demesne farming, peasant farming was on a much smaller scale. Whereas a farm of fifty acres was a tiny operation for a demesne, it would rank as an unusually large farm by peasant standards, even in the late fourteenth and fifteenth centuries. Indeed, before the Black Death, the median peasant holding was unlikely to have been much more than fifteen acres,<sup>4</sup> and even this would be large in some parts of the country.<sup>5</sup>

A second characteristic that distinguished peasant from demesne farms was that they were largely family-run enterprises, with relatively low levels of hired help.<sup>6</sup> This may seem to lend a certain homogeneity to peasant farming, but this would be misleading. Not only were peasants socially and economically differentiated, but also technically. Thus, the extents and surveys in particular show a sharp division between those holdings that were expected to perform all the agricultural processes and those that were not. In other words, a certain size of holding was thought necessary

before the purchase and maintenance of a full set of cultivating tools and animals was feasible. Judging from the surveys, it would appear a minimum of ten acres was needed.<sup>7</sup> Peasants with holdings smaller than this seem to have done much of their cultivation by hand or to have relied upon equipment and animals borrowed or hired from others.<sup>8</sup> In practice, however, this division was less sharp than the surveys would indicate, and there was in fact an in-between group which had animals for some of the lighter chores, such as harrowing, but not for the heavier ones, such as ploughing. As we shall see, it was this group that often had a marked effect on the number of horses found in a village.<sup>9</sup>

Because of the family-oriented nature of the peasant holding, labour arrangements were of necessity different from those on the demesne, as we have already indicated. Very seldom did a tenant command sufficient labour so that he could carry out several chores at once. Rather, when such things as ploughing needed to be done, everything else was dropped. This was particularly the case for young families, where a man and his wife would often be the only source of labour for a holding.<sup>10</sup> As a result, most activities - ploughing, harrowing, going to market, threshing, hay-making, harvesting, and so on - had to be done in sequence, rather than doing some at the same time as happened on the demesne. This led to certain inefficiencies. Draught animals, in particular, were often without work. For instance, unless it was being used for harrowing, a man's cart-horse would be idle while his plough-beasts worked. Similarly the plough-beasts would be idle when he went to market. Sometimes both would be idle, as when the man was threshing. It obviously helped if a peasant combined his ploughing and carting beast in one animal, but even here there must have been long periods when the animal was not used, as has already been surmised in Chapter 2. This was not entirely a bad thing for the peasant. It is true that long spells of idleness for the draught animals were wasteful, but at the same time he could put the animals on a low cost feed of hay, straw, or

pasture. As we shall see, this approach to the use of draught animals had a marked effect on the decision to employ horses and oxen on peasant farms.

Finally, it seems that most peasant farms were geared for subsistence rather than for the market, although it is difficult to be categorical about this. For smallholders in particular, most of the grain produced by the peasant must have been consumed by him and his family.<sup>11</sup> On the other hand, payments that the peasant had to make to the lord in rents and other dues almost certainly forced him into some involvement with the market at least, an involvement that heightened as labour services began to be commuted for money payments over the course of the Middle Ages. Cash payments of this type could equal as much as half the cash value of a peasant's crop.<sup>12</sup> Despite the depression in the rural economy in the later fourteenth and into the fifteenth century, cash outlays by peasants to pay for labour services more and more frequently commuted to money payments must have meant an increasing involvement of these peasants in the market in order to raise this cash. The rate of increase of this involvement should not be exaggerated, however, since even before the Black Death, money rents were predominant over labour rents for most manors.<sup>13</sup> Nonetheless peasant needs for cash were considerable, especially for those larger holdings with heavy seigneurial demands upon them. Trips to the market must have been frequent, making carting or carrying animals a virtual necessity.

Because of this and other features of peasant farming, there are strong reasons why peasants might have been attracted to using horses rather than oxen for draught. Not only was the speed of the horse useful for ploughing and hauling to market or to some far-flung strip in the open fields, it was also the more versatile animal, able to do a much greater range of tasks than the ox, from ploughing through to harrowing, carting, carrying by pack, and riding. These advantages, plus a few others which we shall discuss later, meant that they were an attractive proposition for peasants. Just how much this was reflected in the number of horses found on peasant farms



will be considered next.

a) The Number of Horses and Oxen on Peasant Farms, 1200-1500

The main difficulty here is obtaining suitable sources for statistical analysis. Unlike the accounts, which provide a comprehensive and accurate source for the numbers of demesne draught animals, there is no one source as appropriate for the peasant case. The most promising from the standpoint of accuracy are peasant inventories. These crop up occasionally in court rolls, inquisitions, and even accounts, often in relation to cases where a peasant's goods have been confiscated for some reason. For example, at Earnwood (in Kinlet), Shropshire in 1388-9, the goods of three tenants were confiscated because they were alleged to be felons. The most substantial of these men was Walter de Morhall, whose goods included one horse, (equus), six oxen, one cow, two heifers, one bullock, six sheep, two pigs, a wain (plaustrum), and various other goods. His colleague and perhaps partner in crime, John Bulkere, was less well-off, having only a horse (equus), a cow, and a sow with followers. The third man, John Turnor, had no stock at all and left only two blankets and two linen sheets.<sup>14</sup> We have in this set of three inventories a useful indication of livestock holdings right across a village society, from a wealthy tenant (Walter de Morhall) through to perhaps a smallholder in the case of John Bulkere and possibly a landless labourer in the case of John Turnor. Such inventories, were they available in large number, would seem more than sufficient for the purposes of this study. However, apart from the fact that they are relatively few in number, inventories are not always reliable. This is particularly the case for those inventories taken upon the death of a tenant, where the heriot or mortuary animals may already have been removed by the lord or rector.<sup>15</sup> The situation is similar for those entries in the court rolls which refer to the passing on of stock to the next tenant. Thus, in the Durham Priory halmote rolls, it is stated in a case relating to Bill-

ingham (Durham) in 1296 that Agnes, the widow of Roger Staf, entered into her late husband's customary holding (bondagium), which she took complete with one horse (equus), two oxen, and nineteen acres of sown crops.<sup>16</sup> Here the arrangement is very similar to a stock-and-land lease, with a supposedly working level of livestock being handed on to the incoming tenant. The amount of stock handed back to Agnes, though, is unlikely to have been the same as that held by her husband. At the very least, the lord would have taken an animal as heriot; indeed, from the total lack of other stock, it seems the holding was stripped of all but the bare requirements of draught animals. In order to operate the holding in the manner of her husband, Agnes would presumably have had to buy more stock, including - probably - draught animals. Altogether it would seem that those inventories listing the confiscated stock of convicted peasants were the most reliable, since the goods seem to have been transferred in toto into the lord's or king's possession.<sup>17</sup> But even here care must be taken. The transference of goods from felon to lord or king was not always as smooth as it sometimes appears. For instance, there must have been a great temptation on the part of the man's relatives and neighbours to take as much of his goods as they could before the bailiff or escheator seized them, and such an occurrence is indicated in several cases.<sup>18</sup>

With these qualifications in mind, a sample of 52 inventories is contained in Table 4.1. Only the draught animals from each inventory are listed, and altogether these totalled 56 horses<sup>19</sup> and 116 oxen, a proportion of horses of 32.6 per cent. Taken by themselves, these inventories indicate a level of horses only marginally higher than that on demesnes overall, and this must also be qualified by the fact that many of the horses noted may have been riding rather than work animals. When these animals are taken into consideration it would seem that, on the basis of this sample, the level of work-horses on peasant farms was virtually equal to that on the demesnes and may even have been lower. There are,

TABLE 4.1

Peasant Inventories, 1200-1500<sup>20</sup>

C - Known Customary Tenant  
F - Known Free Tenant

<u>Place</u>	<u>Name of Peasant</u>	<u>Date</u>	<u>Draught Animals</u>	<u>Size of Holding</u>	<u>Circumstances</u>
1. Harwell, Berks	John Bonde (F?)	1403	6 horses	17 $\frac{3}{4}$ sown acres	Outlawed for debt
2. Helstone-In-Triggshire, Cornwall	Richard de Fentenwansant (C)	1342	2 oxen	?	Goods ceded to the Duchy of Cornwall upon death
3. "	Matthew de Trevegan (C)	1351	6 oxen	?	" "
4. Liskeard Manor, Cornwall	Walter (C)	1358	1 horse, 4 oxen	?	" "
5. "	? (C)	1404	2 oxen	?	" "
6. 'Holstorne', Devon	Richard Holstorne (C?)	1397	2 horses, 8 oxen	?	Suicide
7. Stokeinteignhead, Devon	John Croft	1416	1 horse	a ferling	Outlawed
8. Metcombe, Devon	Richard Bishop	1417	2 oxen	?	" "
9. Ashprington, Devon	Thomas Canon	1417	3 oxen	a messuage worth 10s. yearly	" "
10. 'Sudden' (Sutton?), Devon	John Soden	1417	2 oxen	a carucate worth 26s. 8d. yearly	" "
11. Billingham, Durham	Agnes, wife of Roger Staf (C)	1296	1 horse, 2 oxen	at least 19 sown acres	Stock given along with holding

TABLE 4.1 (continued)

	<u>Place</u>	<u>Name of Peasant</u>	<u>Date</u>	<u>Draught Animals</u>	<u>Size of Holding</u>	<u>Circumstances</u>
12.	Cowpen Bewley, Durham	Ralph del Neuton (C)	1297	1 horse, 2 oxen	?	Stock given along with holding
13.	Monkton, Durham	William, son of John (C)	1297	1 horse, 2 oxen	?	" "
14.	Ferryhill, Durham	John de Bicheburn (C)	1366	1 horse, 2 oxen	?	" "
15.	Cowpen Bewley, Durham	Margaret, wife of Gilbert son of John (C)	1369	1 horse, 2 oxen	at least 20 sown acres	" "
16.	Newton Ketton, Durham	William Fuller	1370	2 oxen	2 bovates	" "
17.	Cowpen Bewley, Durham	Robert Lane (C)	1370	1 horse, 2 oxen	at least 20 sown acres	" "
18.	Hesleden, Durham	Isabel, wife of Richard Watson (C)	1378	4 oxen	?	Delapidation of holding
19.	Willington, Durham	John, son of John Paulyn	1378	2 horses	46 acres	Stock given along with holding?
20.	Harton, Durham	Thomas Page (C?)	1379	2 horses, 3 oxen	?	Goods taken upon death
21.	Moorsley, Durham	Robert de Suthwyk	1379	2 horses, 2 oxen	?	?
22.	Billingham, Durham	Margaret, widow of John Wydow	1379	2 horses, 2 oxen	at least 10 sown acres	Stock given along with holding
23.	Hesleden, Durham	Gilbert, son of William Curtour (C)	1379	2 oxen	at least 6½ sown acres	" "
24.	" "	Thomas Marshall (C)	1380	1 horse, 2 oxen	at least 21½ acres	" "

TABLE 4.1 (continued)

<u>Place</u>	<u>Name of Peasant</u>	<u>Date</u>	<u>Draught Animals</u>	<u>Size of Holding</u>	<u>Circumstances</u>
25. East Merrington, Durham	Thomas Bullock & John Smith (C)	1383	3 oxen	?	Stock given along with holding
26. Hesleden, Durham	John de Raynton	1381	2 horses	?	Stock upon death?
27. Westoe, Durham	Alice, widow of William Maymond	1383	3 oxen	12 acres	Stock given along with holding?
28. Standon, Essex	John Richevale	1359	1 horse	?	Confiscated because of felony
29. Abbots Langley, Herts	? (F)	1348	1 horse, 2 oxen	a ferling	Wardship
30. Bridge, Kent	William Baker (F?)	1372	5 horses	at least 18 acres	Suicide
31. Beaufield, or Whitfield, Kent	Thomas Pyrham	1382	1 horse	at least 18 sown acres	1381 rebel?
32. Coltishall, Norfolk	Richard Colllys	1384	2 horses	7 acres	?
33. Earnwood, Salop	Walter de Morhall	1388-9	1 horse, 6 oxen	?	Confiscated because of felony
34. " "	John Bulkere	"	1 horse	?	" "
35. Alrewas, Staffs	?	1338	1 horse	a virgate	Inventory taken at death
36. ?, Staffs	Henry Love	1414	3 horses	?	Felon
37. ?, Staffs	William Heytle	1414	1 horse	?	"
38. Weston-under-Lizard, Staffs	John Blakemere	1414	1 horse	?	"

TABLE 4.1 (continued)

<u>Place</u>	<u>Name of Peasant</u>	<u>Date</u>	<u>Draught Animals</u>	<u>Size of Holding</u>	<u>Circumstances</u>
39. Pendeford, Staffs	Thomas Byle	1414	1 horse	?	Felon
40. Keele, Staffs	John Round	1414	1 horse	?	"
41. Chobham, Surrey	William de Brok (C)	1332	4 oxen	?	Dereliction of holding
42. " "	Gilbert Olaf	1340	2 horses, 6 oxen <sup>21</sup>	?	Stock given in marriage settlement
43. Halesowen, Worcs	Walter le Archer	1271	5 oxen	?	Goods held because of violent quarrel
44. " "	Nicholas de Farle	"	3 oxen	?	" "
45. Longdon, Worcs	Andrew Eylott (C?)	1349	2 horses, 1 ox	?	Goods taken upon death
46. Ombersley, Worcs	John Mashon	1414	2 oxen	at least 19½ sown acres	Confiscated because of felony
47. Hanbury, Worcs	John Best	1433	3 horses, 6 oxen	3 messuages plus land	" "
48. Kempsey, Worcs	Thomas Charlecote (F)	1447	11 oxen	1 yardland	" "
49. Whitstones, Worcs	John Reynolds (C)	1462	3 oxen	¼ yardland	?
50. Eccleshill, Yorks	Robert the Milner	1286	1 horse	?	Confiscated because of felony
51. Rastrick, Yorks	Thomas, son of Quenyld	1286	1 horse, 2 oxen	?	Goods held for Thomas in his minority
52. " "	Thomas, son of Richard de Tothill	1296	1 ox	?	" "

however, three important points to be made. First, there is a decided bias in the sample towards the western and northern counties. Forty-four of the 52 inventories come from the South-west, West Midlands, and the North, all areas where, as we have seen from the demesne material, oxen tended to be found much more readily than elsewhere. Second, there is a marked over-representation of substantial tenants. Smallholders, that is, those with, say, less than ten acres of land overall, are poorly represented. This may be because they had no draught animals, but it does also seem that the peasants for whom it was thought worthwhile to make up an inventory were larger rather than smaller tenants. As a result, 31 of the 52 inventories had three draught animals or more, a group which is in a substantial minority in the lay subsidy returns, but are in a definite majority here. It is also this group that, as we shall see, tended to use more oxen than those who had smaller draught stock holdings, a feature that can easily be seen in these inventories by simply comparing the draught stock holding of Walter de Morhall of Earnwood with that of his fellow villager, John Bulkere.<sup>22</sup> Third, the inventories cover a span of almost two hundred years. While not necessarily distorting the proportion of peasant work-horses in either direction, it does mean that some inventories, particularly those in the fifteenth century, were taken in markedly different social and economic conditions than others. It becomes questionable, then, whether they can be meaningfully grouped together as in Table 4.1.<sup>23</sup>

To obtain a more representative picture of peasant draught stock holdings, we obviously need more information. The most promising body of documents in this regard is lay subsidy returns. Subsidies, lay and clerical, were the traditional royal tax in the Middle Ages, the first known example of the type occurring in 1188.<sup>24</sup> Subsidies were levied on moveables, that is, those goods that a man could move from place to place. Strictly speaking, this only exempted land, buildings, and fixed appurtenances such as

wells, fences, etc. There were, however, other exemptions, particularly those thought necessary for the well-being of the realm. Thus it was officially recorded that the armour and war-horses of the gentry were exempt, as well as their jewels, clothes, and other valuables.<sup>25</sup> Unlike the goods belonging to the aristocracy, the exemptions for peasants seem to have been guided more by customary principles than by formally recorded ones.<sup>26</sup> Thus essential farming equipment, such as ploughs, harrows, forks, and spades, were almost totally exempt, perhaps in regard to the principle of "wainage" (i.e., the inviolability of a man's right to his means of cultivation); only carts were occasionally taxed. Also exempt (less understandably) were household goods, such as bedding, clothes, cooking vessels, eating utensils, and so on.<sup>27</sup> Some corn was taxed, but the amounts were usually so small that it has been suggested that only corn for sale was actually assessed.<sup>28</sup>

The item most comprehensively taxed was livestock, including the draught animals, despite their being essential to cultivation. Only smaller animals, such as poultry, were consistently exempt. There were some variations, though. For example, a writ addressed to the tax collectors of Nottinghamshire and Derbyshire for the 1225 subsidy stated that the riding horses, cart-horses, and pack-horses of all the archbishops, abbots, priors, earls, barons, knights, and freemen who were not merchants were to be exempt.<sup>29</sup> As a result, freemen and demesne holders were in many cases allowed to exempt all their work-horses during this particular subsidy.<sup>30</sup> This ruling, however, was amended in 1232, when it was stated that all the corn, plough-teams (carucis), sheep, cows, pigs, stud-horses (haracis), and cart-horses engaged in the farm work of lords and peasants alike were liable to tax.<sup>31</sup> This more rigorous set of conditions seems to have been followed thereafter, such that there were no obvious exemptions in the working animals for either peasant or demesne after this period.

In the Middle Ages the collection of the tax fell into two main phases.



In the first phase, from 1188 to 1334, the goods of each taxpayer were individually recorded and their value assessed, from which the tax owed was then calculated. Because of the growing problem of evasion, however, a new system was devised in 1334, whereby the community was assessed rather than the individual. The amount of tax levied was arrived at through a process of bargaining between each community and the royal tax collectors. Once it was agreed, the community's new levy acquired the status of a rateable value, which quickly became standardised and remained unchanged from subsidy to subsidy.<sup>32</sup>

It is only the first phase of individual assessment that we are concerned with in this study, since after 1334, with very few exceptions, only the community and the tax owed appears in the records. Up to 1334, however, the levying of tax upon individuals is clearly recorded in the documents. The general procedure followed by the local tax collectors was this. First, they would draw up a list of each taxpayer's relevant moveables. Sometimes, if the total value of a peasant's goods failed to reach a certain minimum, usually about ten shillings,<sup>33</sup> he would be excused the tax altogether and in fact would not appear in the assessment. In the end, the local collectors would have a document, called, historically, a local assessment roll,<sup>34</sup> which resembled a series of inventories. For example, the first name appearing on a roll for Barford Hundred in Bedfordshire in 1297 is that of William Joye of Chawston with Colesden. William had one mare, one calf, one piglet, one quarter of wheat, a half-quarter of rye, a half-quarter of dredge, one quarter of oats, and 8d. worth of hay and forage. The total value of his goods came to 12s., and, being taxed at a ninth, he ended up owing 16d. After William there were listed 34 other taxpayers for the community, including the local lords, William de Kyrkeby and the Prior of Caldwell. Each had their goods listed, valued, and taxed, as in the case of the first William.<sup>35</sup> Altogether seventeen such villages or hamlets appeared on the roll.

The Barford roll is typical of other surviving local assessment rolls containing lists for several villages, often, as in this case, covering an entire hundred, and rolls covering single villages also occur.<sup>36</sup> If these local assessment rolls had been the only documents used in the taxation process, then we would likely have had a veritable mountain of information dealing with peasant goods and livestock. Unfortunately the rolls only proceeded as far as the chief taxer for the county. Here a new roll was made up, listing the names of the villagers and the tax that they owed, but expunging all the detailed information about livestock and goods contained in the local rolls. This new county roll, summarising all the information from the local rolls, was made in duplicate.<sup>37</sup> One of the duplicate rolls was sent to the exchequer, and it is these rolls that have largely survived instead of the local rolls. Occasionally, though, local rolls were also sent to the exchequer, probably as a check on the county roll.<sup>38</sup> A few local assessment rolls have also turned up in manorial collections.<sup>39</sup> As a result, local rolls for at least fifteen counties have survived, most of which have been used in this study.<sup>40</sup> These rolls cover a period from 1225 to 1332, although they are most frequent after 1280. Altogether the taxpayers covered by the rolls come to a considerable number, some 7,000 in the rolls examined in this study (see p. 244 below).

Thus, despite the problems of document survival, the amount of information supplied by the local assessment rolls is fairly abundant. Indeed, if these 7,000 taxpayers were spread uniformly over the country they would form a very reasonably sized sample. Unfortunately, as with the inventories, they are crowded into a few select areas, the best represented being the south and east. Relatively few rolls survive for the north and west, and regions like the West Midlands and the South-west have hardly any at all. Even counties fortunate enough to have local assessment rolls may not be adequately represented by them. Leicestershire and Oxfordshire, for instance, are only represented by rolls covering single villages, hardly an

adequate sample with which to assess the performance of an entire county. Even where counties have local rolls covering several communities, they are often crowded into a single hundred, as, for example, in the 1283 roll for the hundred of Blackbourne in Suffolk.<sup>41</sup> In a county such as Suffolk, where farming practices, especially those relating to the use of draught animals, were fairly consistent, this is not much of a problem; but in counties where conditions were more varied, as in Kent, the information relating to a single village or even a group of villages in a single area must be treated with some qualification.

Even more serious is the question as to just how reliably do the local rolls reflect the amount of a peasant's goods, particularly - as regards this study - his draught livestock. The problem of underassessment immediately comes to mind here. Peasant and demesne taxpayers had every incentive to try to have their assessments pitched as low as possible. This could be done in several ways,<sup>42</sup> but the most destructive from our point of view is the tendency to devalue the numbers of livestock. Young animals seem, in many cases, to have been especially underrepresented,<sup>43</sup> and doubts must also be raised about the adult animals. A.T. Gaydon, in comparing the numbers of livestock recorded on demesnes in the 1297 Bedfordshire lay subsidy with those given in contemporary account material, found a significant level of evasion, the underassessment in draught animals often being of the order of 20-50 per cent for the larger demesnes.<sup>44</sup> These underassessments were obviously arranged in collusion with the tax collectors, and indeed the accounts for Cuxham (Oxon) record bribes to the collectors of up to 10s., "so that they might be lenient in their assessment."<sup>45</sup> Not having the financial resources of the demesne, we might expect that the peasantry were less successful in escaping the tax, but in fact they may even have fared better. Thus Cuxham tenants were only assessed one affer apiece in 1304, as far as draught animals went, even though trespasses recorded in the court rolls for the manor indicate they had at least two

apiece.<sup>46</sup> It may be that here each peasant was allowed one horse as a riding animal.

In addition to this deliberate underassessment in numbers, there are other problems as well. We have already indicated that the value of a peasant's goods had to reach a certain level before he was taxed. These taxable minima were generally set at amounts that would allow the purchase of one or even two draught animals at the values given in the subsidies, and we must wonder how many draught animals escaped the tax net in this way. We must also consider richer peasants and lords who managed to use their influence to avoid the tax net altogether. In this regard it is to be noted that jurors and collectors themselves were often exempt or at least able to set their own level of tax without recourse to a formal assessment.<sup>47</sup> These cases of total exemption, whether for reasons of poverty, influence, or services rendered, may have added up to a half or more of the peasants in any given village.<sup>48</sup> While not necessarily affecting the value of the results obtained from examining the goods and livestock of their tax-paying neighbours, these cases of omission may seriously distort any analysis that tries to relate assessed livestock to the economic or social cross-section of the community.

It was difficulties like these that made one commentator despair of ever being able to use this sort of taxation document in a meaningful way.<sup>49</sup> Such a verdict would seem unnecessarily gloomy. The degree of reliability in the local assessments rolls varied tremendously from subsidy to subsidy. As a general rule, the earliest rolls were the best, probably because subsidies then were relatively infrequent.<sup>50</sup> The pattern changed in the 1290s with the outbreak of war with Wales, Scotland, and France. Urgent demands for cash to cover the expenses of these wars meant that the subsidies became more frequent; between the years 1294 and 1297, they were levied annually. The revenues from them, however, immediately began to decline, and soon were only a half or a third of what they used to be.<sup>51</sup>

The causes behind this steady diminution of tax are not absolutely clear. Besides evasion, there may have been a gradual depletion of capital in the country because of the war demands. Evasion, however, remains the most likely answer, since, although there was a modest increase in the level of revenues collected from the subsidies in the early fourteenth century, they in no way recovered to the levels of the early 1290s and before. It would seem, as J.F. Willard has commented, that methods of evasion, once learned and carried out successfully, continued to be practised thereafter.<sup>52</sup>

As a rough rule, then, the subsidies before 1294 - the point at which the tax revenues started to drop - are likely to have had a much lower scale of evasion than those after. How reliable does this make them? M.M. Postan, in a well-known article, examined three of these early local assessments rolls: one for parts of south Wiltshire in 1225; one for the hundred of Blackbourne, Suffolk, in 1283 (mentioned above); and one for the banlieu of Ramsey Abbey in Huntingdonshire in 1290. His conclusions were that almost all the eligible taxpayers in the villages concerned were in fact recorded in the rolls and that the numbers of livestock listed for them also seem to have been accurate.<sup>53</sup> In some cases, however, Postan would appear to have been overly optimistic in his assessment. The 1283 subsidy roll for Blackbourne Hundred, for instance, seems to have under-assessed the number of draught animals, in particular horses, on peasant farms by as much as 15 per cent or even more; and the number of taxpayers in some villages at least may have been up to 30-35 per cent short of the number of heads of households actually living there.<sup>54</sup> Some of these last may have been exempt because of poverty or some other reason, but even so the discrepancy would seem suspiciously large. It should be pointed out, however, that the Blackbourne Hundred tax list is probably the worst of the early assessments in regard to reliability. On the other hand, within their terms of reference, the south Wiltshire and Ramsey Abbey banlieu rolls seem

to have been very accurate.<sup>55</sup> Indeed, the 1225 tax collectors were accused of being so zealous as to exact the fifteenth from the trinkets of poor women.<sup>56</sup> Such protestations should of course be taken with a large grain of salt, but it does indicate that the degree of corruption or slackness among these early taxors was far removed from what it would come to be.

In short, it is unlikely that the under-representation in draught animals was much greater than 25 per cent in any of the early assessments. This would seem an acceptable level of accuracy in the circumstances. In contrast, the assessments after 1294 deteriorated quickly in reliability, as indicated by the loss of revenues. Thus at Caddington (Beds) in 1297 only twelve people were taxed, despite the fact that a survey for the same year indicated that 104 free and villein tenants lived in the village.<sup>57</sup> A more extreme case occurs in the assessment roll for Spelhoe Hundred (Northants), again in 1297, where only twenty-five taxpayers for ten communities were listed.<sup>58</sup> Examples like these could be cited ad nauseum,<sup>59</sup> but it is sufficient to note here that the later assessments contain only a fraction of the potential taxpayers, probably a half or less in most cases. It seems, too, that a similar situation occurred with the number of animals listed for those taxpayers who did appear. We have already considered the case of Cuxham (pp. 239-40 above), where one horse per tenant was the norm according to the tax assessment there in 1304, but where in fact, according to other manorial records, two horses per tenant was more likely. The scarcity of sources with which to compare animal listings makes it difficult to assess the reliability of any other of these later assessments, but suspicion as to their accuracy is often raised by the stereotyped nature of the entries, with the same number of animals being repeated from taxpayer to taxpayer. The danger here is that the taxors omitted so many animals from their count that the actual detailed assessment became little more than a convenient fiction (and often a poorly contrived one) to present to their superiors. This is particularly the

case with the 1332 Sussex assessment, where, for example, the taxpayers of the hundred of Holmstrow are presented as having no horses at all, but rather - in most cases - the unnaturally consistent holding of one ox apiece, while in the same subsidy the peasants of Rotherbridge Hundred seem to have had a remarkable affinity for only one horse apiece.<sup>60</sup> Other later assessments, while not being stereotyped to such an exaggerated degree, often show, say, an unusually high number of taxpayers with no draught animals at all.<sup>61</sup>

To sum up, we have two main periods to consider. The first, up to about 1294, was one where the local tax assessment rolls reflected the number of taxpayers and draught animals in villages reasonably well. After 1294, however, massive underassessment in both the numbers of taxpayers and in the goods of those who did pay seriously impair these later subsidies as evidence. Nevertheless, even for these later assessments, the situation is not irretrievable. We have at least one good period where the evidence is sound, and if we have sizeable doubts about the later evidence, we can at least compare it with the earlier material before we cast it away as totally useless. There is, as well, one further reason to take an optimistic view. Because of the nature of this study, we are more interested in the relative proportions of horses and oxen than in their absolute numbers. Thus even massive underassessment in the subsidy stock listings need not be fatal. Indeed, if we assume that the horses and oxen are underassessed to the same degree, then that underassessment need not affect our study at all. For example, we have already indicated that there was an under-representation of at least 15 per cent in the number of draught animals, especially horses, listed for the taxpayers of Blackbourne Hundred in 1283; nevertheless the proportion of peasant horses versus oxen given in the assessment (83.3 per cent) still agrees very closely with that given for the villein tenants of Rickinghall Inferior and Coney Weston in the same hundred a number of years later.<sup>62</sup> Similarly at Cuxham, where we know that

the peasant draught animals were underassessed by at least a half in the 1304 subsidy when compared with evidence from the Cuxham court rolls, the proportion of horses in both cases was still 100 per cent.<sup>63</sup> Seen in this light, even the later assessments may have some value in determining the proportion of horses in peasant draught stock, particularly as cases where the proportion of horses was under-represented in the assessments may well be cancelled out by those where the animal was over-represented. We must wait until we see the evidence that actually derives from the subsidies before we make our final judgement.

This rather involved discussion has attempted to outline some of the problems associated with handling lay subsidy data. The data themselves are contained in Table 4.2. The format for the table has been to divide the assessments into two groups: those before 1294, representing the more reliable assessments, and those after, representing the less reliable ones. Besides listing the totals of horses and oxen for each assessment, the data are further broken down into their peasant and demesne constituents. Determining whether a particular taxpayer was a demesne-holding lord or just a peasant was not always easy to do. In the end, it was decided to accept a list of animals and goods as belonging to a demesne only in those cases where the taxpayer could definitely be established as a lord or at least as a tenant holding a knight's fee (or some portion of one).<sup>64</sup> Inevitably some demesnes will have slipped through the net and thus have been counted as peasant farms, but the number of cases where this actually occurred is probably small and should have little effect upon the results.<sup>65</sup> Altogether the five assessments before 1294 covered 72 villages and 2,744 taxpayers, while those after 1294 covered at least 263 villages and 4,288 taxpayers, a total of over 7,000 individual assessments for all the subsidies, early and late, of which 344 were for demesne lands.<sup>66</sup> As with the accounts, there were a great number of terms used to signify horses: affri, stotti,



TABLE 4.2

The Proportion of Work-horses on Demesne and Peasant Farms

According to Lay Subsidy Local Assessment Rolls

a) Subsidies before 1294<sup>67</sup>

a - No. of Taxpayers  
 b - No. of Oxen  
 c - No. of Horses  
 d - % Horses

Place (Year of Subsidy)	No. of Villages	Demesnes				Peasant Farms				All Farms			
		a	b	c	d	a	b	c	d	a	b	c	d
Stathern, Leics (1225)	1	1	0	0	-	23	31	24	43.6	24	31	24	43.6
Ten Lincolnshire Villages (1225)	10 <sup>68</sup>	12	129	35	21.3	164	147	124	45.8	176	276	159	36.6
South Wilts (1225)	23	19	353	0	0.0	954	1117	505	31.1	973	1470	505	25.6
Blackbourne Hundred, Suffolk (1283)	33	45	183	200	52.2	1345	204	1020	83.3	1390	387	1220	75.9
Ramsey Abbey Banlleu, Hunts (1290)	5 <sup>69</sup>	4	58	36	38.3	177	138	195	58.6	181	196	231	54.1

b) Subsidies after 1294<sup>70</sup>

Three Bedfordshire Hundreds (1297)	71	44	77	331	212	39.0	1048	102	777	88.4	1125	433	989	69.5
Spelhoe Hundred, Northants (1297)		10	-	-	-	-	25	3	17	85.0	25	3	17	85.0
West Riding, Yorks (1297)	72	121	74	317	96	23.2	951	760	638	45.6	1025	1077	734	40.5

TABLE 4.2 (continued)

b) Subsidies after 1294 (continued)

a - No. of Taxpayers  
b - No. of Oxen  
c - No. of Horses  
d - % Horses

Place (Year of Subsidy)	No. of Villages	Demesnes				Peasant Farms				All Farms			
		a	b	c	d	a	b	c	d	a	b	c	d
Shillington, Beds (1301)	1	1	8	4	33.3	49	2	20	90.9	50	10	24	70.6
Ruxley Hundred, Kent (1301)	18	26	94	106	53.0	503	166	302	64.5	529	260	408	61.1
Somerden Hundred, Kent (1301)	73	5	16	6	27.3	100	63	71	53.0	105	79	77	49.4
Curham, Oxon (1304)	1	1	12	4	25.0	16	0	13	100.0	17	12	17	58.6
Wendon, Essex (1307)	1	2	2	8	80.0	22	0	5	100.0	24	2	13	86.7
Mazeing, Essex (1309)	1	-	-	-	-	26	9	19	67.9	26	9	19	67.9
Minety, Wilts (1312)	1	-	-	-	-	44	56	41	42.3	44	56	41	42.3
Buckinghamshire (1327) <sup>74</sup>	11	10	17	22	56.4	217	81	182	69.2	227	98	204	67.5
Buckinghamshire (1332) <sup>74</sup>	38	51	120	130	52.0	805	236	703	74.9	856	356	833	70.1
Three Sussex Hundreds (1332) <sup>75</sup>	16	16	83	27	24.5	219	84	93	52.3	235	167	120	41.8

jumenta, and so on. The same criteria as given in Appendix E were used for determining whether a certain term meant a horse or not. Similarly donkeys were considered as horses for the compilation of the statistics, but in fact only five were found, all in the village of South Kirkby, Yorks.<sup>76</sup> No mules were listed anywhere.

The most obvious conclusion to be drawn from Table 4.2 is that the level of horses on peasant farms was much higher than on demesnes. In fact, only in the three 1225 assessments and the later ones for Minety (Wilts) and the West Riding of Yorkshire did the level of horses on peasant farms come to less than 50 per cent of the total draught stock. It is notable, too, that the three 1225 assessments were in a period when the transition to the use of horses was still taking place in a major way.<sup>77</sup> It is also significant that the two later assessments with relatively low levels of horses were found in the west and north of the country, confirming the trend noted for the demesne.<sup>78</sup> In other counties, however, such as Bedfordshire and Suffolk, horses dominated almost completely among the peasantry. It was in these counties that the dichotomy between demesne and peasant farms in the use of horses was at its most extreme, but all counties showed it to some degree. In general, the incidence in the use of horses on peasant farms was almost double that on demesnes.

Although some of the assessments are decidedly untrustworthy,<sup>79</sup> the results for the demesne from the lay subsidy data often compare favourably with those from the accounts, as shown in Table 4.3 for the larger assessment rolls. As might be expected, the agreement between the lay subsidy assessments and the accounts is best for those assessments before 1294. Only that for Wiltshire is patently out of step, because of the 1225 exemption for the horses of nobles and freemen already noted (p. 236 above), which seems to have been in effect here. For some of the assessments, however, the agreement is somewhat illusory. For example, the percentage of horses on the demesne in the 1225 Lincolnshire assessment does agree very

TABLE 4.3

Demesne Horse Levels from Lay Subsidies and Accounts

<u>Lay Subsidy</u>	% Horses on Demesnes According to Subsidy	% Horses on Demesnes According to the Accounts	
		Sample A (1250-1320)	Sample B (1350-1420)
Lincolnshire (1225)	21.3	22.0	39.4
South Wilts (1225)	0.0	12.5	15.1
Blackbourne Hd. (1283)	52.2	45.0	51.7
Ramsey Banlieu (1290)	38.3	37.8	39.0
Beds Hundreds (1297)	39.0	30.4	38.5
Yorks West Riding (1297)	23.2	15.1	18.2
Ruxley Hd., Kent (1301)	53.0	48.7	49.6
Somerden Hd., Kent (1301)	27.3	48.7	49.6
Buckinghamshire (1327)	56.4	33.1	31.6
Buckinghamshire (1332)	52.0	33.1	31.6
Sussex Hundreds (1332)	24.5	11.3	18.4

N.B.: The account figures are those for the county in which the subsidy concerned is found, as taken from Table 3.1.

closely with that given for the county in the Sample A accounts, but there is something like a half-century gap between the two. As we have seen in the case of the bishopric of Winchester estates, the first part of the thirteenth century was very much a period of change as far as the introduction of the horse was concerned (pp. 127-8 above). If the Lincolnshire experience followed that of the bishopric of Winchester, then we should have expected the level of horses to be somewhat lower than that indicated for the county in Sample A. Similarly the level of horses in the 1283 Blackbourne Hundred (Suffolk) assessment also agrees more with the account levels of a century later than those contemporary with the subsidy. Part of this is probably due to the inclusion in the assessments of small demesnes, or even of cases where the demesne was leased out and the lord was left with only one or two animals, usually horses. Thus, for example, the average number of draught animals per demesne in the 1283 Blackbourne Hundred

assessment was 8.5 compared to 17.0 draught animals per demesne for Suffolk in the Sample A accounts and 18.5 animals per demesne in Sample B. Since, as we have seen (pp. 130-1 above), these smaller demesnes tended to use a higher proportion of horses than larger demesnes, it is not surprising that relatively more horses turn up in the lay subsidy material than in the accounts, although it is unlikely that it explains all the difference.<sup>80</sup> This bias towards horses is even more marked in the post-1294 subsidies, particularly those for Buckinghamshire in 1327 and 1332, where the levels of horses in the assessments are a full 20 per cent above those indicated by the accounts. Again, some of this discrepancy may be due to the greater incidence of smaller demesnes in the subsidies, but it is more likely that the severe underassessment in animals that obviously occurred in the Buckinghamshire subsidies<sup>81</sup> also had a decidedly distorting effect on the level of horses indicated there. In other cases, though, the discrepancy can be accounted for by the fact that the surviving assessments only covered small parts of counties. Thus, it is interesting to compare the subsidy results of Ruxley Hundred in Kent, which agrees quite well with the results for the county in our two account samples, and those for Somerden Hundred, which do not. Clearly regional variation is significant here and consequently makes comparison with the account material that much more difficult. In general, however, although the discrepancy between the lay subsidy and account material is perhaps no greater than might be expected in the circumstances, there does seem to be some bias towards horses in the former as far as demesnes are concerned. We may suspect the same applied to the peasant draught animals, but just how much this bias affects our overall estimate as to the level of horses among these same peasant draught animals is difficult to tell without recourse to other data, such as heriots (discussed below). For now, it is enough to note that horses were used substantially more by the peasantry than by demesnes.

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The distinction between "peasant" and "demesne" farms is, in a way, very artificial and even misleading. In fact, it would be better to analyse the use of horses on an economic rather than a social or legal basis; that is, to judge the use of horses on the basis of the size of farms rather than on the status of their owners or proprietors. In dealing with the lay subsidies, it would be extremely useful to know the acreage of the farm held by each taxpayer and to use this as the foundation for our analysis; but in fact, some demesnes aside,<sup>82</sup> we are very rarely able to do this with much satisfaction, particularly for the peasantry. Even where an extent or other document may give contemporary information as to the land holding of a particular peasant taxpayer, we cannot be certain that this was the amount of land he actually farmed, since unrecorded leasing between peasants often distorts this connection. As a result, the draught stock holding of a peasant often makes no sense compared to the amount of land he nominally held.<sup>83</sup>

If land holding is thus eliminated as a suitable parameter with which to classify the lay subsidy material, what other choices do we have? One is wealth, since most of the individual assessments also give the total value of the man's taxed goods. However, the connection between a taxpayer's draught stock and the total value of his moveables is not direct, since the assessment normally contained much other stock and grain. Some tenants, for instance, had considerable holdings in sheep,<sup>84</sup> indicating that arable farming and hence the use of draught animals formed only a small part of their activities. In the end, the best method would seem to be that adopted in Chapter 3 (p. 130) of simply classifying each taxpayer by the number of draught animals he had. Table 4.4 contains the results of such an analysis on the lay subsidies listed in Table 4.2, the taxpayers being divided in five categories: those with no draught animals, those with 1 or 2 draught animals, those with 3-5, those with 6-10, and those with over 10. The classification might be seen as corresponding roughly to the economic

TABLE 4.4

Lay Subsidy Assessments Arranged by Number of Draught Animals

a) Subsidies before 1294 84a

a - No. of Taxpayers  
b - % Horses in Draught Stock

Place (Year of Subsidy)	No. of Taxpayers w <sup>+</sup> No Draught Animals	Taxpayers w <sup>+</sup> 1 or 2 Draught Animals		Taxpayers w <sup>+</sup> 3-5 Draught Animals		Taxpayers w <sup>+</sup> 6-10 Draught Animals		Taxpayers w <sup>+</sup> Over 10 Draught Animals			
		a	b	a	b	a	b	a	b		
Stathern, Leics (1225)	1. All	5	9	9	45.8	9	45.5	1	33.3	-	-
	2. Demesne	1	-	-	-	-	-	-	-	-	-
	3. Peasant	4	9	9	45.8	9	45.5	1	33.3	-	-
Ten Lincolnshire Villages (1225)	1. All	50	76	66.7	33	35.5	10	21.8	7	21.3	
	2. Demesne	-	2	50.0	-	-	3	16.7	7	21.3	
	3. Peasant	50	74	67.3	33	35.5	7	24.1	-	-	
South Wilts (1225)	1. All	315	367	56.0	225	25.1	50	6.9	16	0.0	
	2. Demesne	-	-	-	-	-	4	0.0	15	0.0	
	3. Peasant	315	367	56.0	225	25.1	46	7.7	1	0.0	
Blackbourne Hundred, Suffolk (1283)	1. All	587	673	96.1	91	57.5	25	48.6	14	52.8	
	2. Demesne	4	6	81.8	7	53.3	15	47.2	13	53.0	
	3. Peasant	583	667	96.3	84	57.9	10	50.1	1	50.0	
Ramsey Abbey Banlieu, Hunts (1290)	1. All	77	33	84.9	55	56.4	13	45.1	3	38.6	
	2. Demesne	-	-	-	-	-	1	33.3	3	38.6	
	3. Peasant	77	33	84.9	55	56.4	12	46.1	-	-	

TABLE 4.4 (continued)

Place (Year of Subsidy)	1. All 2. Demesne 3. Peasant	No. of Taxpayers w <sup>t</sup>		Taxpayers w <sup>t</sup> 1 or 2		Taxpayers w <sup>t</sup> 3-5		Taxpayers w <sup>t</sup> 6-10		Taxpayers w <sup>t</sup> Over 10	
		No Draught Animals	Draught Animals	Draught Animals	Draught Animals	Draught Animals	Draught Animals	Draught Animals	Draught Animals	Draught Animals	Draught Animals
		a	b	a	b	a	b	a	b	a	b
Three Bedfordshire Hundreds (1297)	1. All	311	730	42	46.5	26	35.9	16	35.8		
	2. Demesne	4	11	22	44.7	24	36.5	16	35.8		
	3. Peasant	307	719	20	48.6	2	28.6				
Spelthoe Hundred, Northants (1297)	1. All	8	17	-	-	-	-	-	-	-	-
	2. Demesne	-	-	-	-	-	-	-	-	-	-
	3. Peasant	8	17	-	-	-	-	-	-	-	-
West Riding, Yorks (1297)	1. All	232	566	184	34.0	38	25.9	5	14.3		
	2. Demesne	5	3	30	23.4	31	25.7	5	14.3		
	3. Peasant	227	563	154	36.7	7	26.7				
Shillington, Beds (1301)	1. All	32	12	-	-	-	-	1	33.3		
	2. Demesne	-	-	-	-	-	-	1	33.3		
	3. Peasant	32	12	-	-	-	-				
Ruxley Hundred, Kent (1301)	1. All	262	190	48	46.4	22	42.7	7	57.0		
	2. Demesne	2	3	5	71.4	9	39.7	7	57.0		
	3. Peasant	260	187	43	42.9	13	44.9				

a - No. of Taxpayers  
b - % Horses in Draught Stock



TABLE 4.4 (continued)

b) Subsidies after 1294 (continued)

a - No. of Taxpayers  
b - % Horses in Draught Stock

Place (Year of Subsidy)	No. of Taxpayers w <sup>t</sup> No Draught Animals	Taxpayers w <sup>t</sup> 1 or 2 Draught Animals		Taxpayers w <sup>t</sup> 3-5 Draught Animals		Taxpayers w <sup>t</sup> 6-10 Draught Animals		Taxpayers w <sup>t</sup> Over 10 Draught Animals	
		a	b	a	b	a	b	a	b
Somerden Hundred, Kent (1301)	1. All	44	35	16	40.4	10	35.3	-	-
	2. Demesne	1	-	1	0.0	3	33.3	-	-
	3. Peasant	43	35	15	43.4	7	33.3	-	-
Cuxham, Oxon (1304)	1. All	3	13	-	-	-	-	1	25.0
	2. Demesne	-	-	-	-	-	-	-	-
	3. Peasant	3	13	-	-	-	-	-	-
Wendon, Essex (1307)	1. All	18	4	1	100.0	1	71.4	-	-
	2. Demesne	-	-	1	100.0	1	71.4	-	-
	3. Peasant	18	4	-	-	-	-	-	-
Nazelng, Essex (1309)	1. All	11	12	2	66.7	1	50.0	-	-
	2. Demesne	-	-	-	-	-	-	-	-
	3. Peasant	11	12	2	66.7	1	50.0	-	-
Minety, Wilts (1312)	1. All	4	20	17	30.9	3	16.7	-	-
	2. Demesne	-	-	-	-	-	-	-	-
	3. Peasant	4	20	17	30.9	3	16.7	-	-

TABLE 4.4 (continued)

b) Subsidies after 1294 (continued)

a - No. of Taxpayers  
b - % Horses in Draught Stock

Place (Year of Subsidy)	1. All	2. Demesne	3. Peasant	No. of Taxpayers with No Draught Animals		Taxpayers with 1 or 2 Draught Animals		Taxpayers with 3-5 Draught Animals		Taxpayers with 6-10 Draught Animals		Taxpayers with Over 10 Draught Animals	
				a	b	a	b	a	b	a	b	a	b
Buckinghamshire (1327)	1. All	57	148	18	49.2	3	55.6	1	33.3				
	2. Demesne	1	4	2	44.4	2	66.7	1	33.3				
	3. Peasant	56	144	16	50.0	1	33.3						
Buckinghamshire (1332)	1. All	209	562	57	58.7	25	41.8	3	36.8				
	2. Demesne	3	12	16	56.9	17	48.1						
	3. Peasant	206	550	41	59.4	8	25.0						
Three Sussex Hundreds (1332)	1. All	104	104	14	29.6	12	28.1	1	16.0				
	2. Demesne	2	1	4	11.1	8	29.2	1	16.0				
	3. Peasant	102	103	10	38.9	4	25.0						

stratification in a village, the first two categories corresponding with the landless, smallholding, or even middling tenants; the third category (3-5 draught animals) corresponding to more substantial tenants holding, say, a virgate apiece; the 6-10 draught animal category equating to small demesnes and that select group of free and customary tenants with, say, two virgates or more each; and finally the last category equating to large demesnes and perhaps the very wealthiest of peasants (although, in fact, almost all the cases with over 10 draught animals were known demesnes). As before, the subsidies have been separated into those before 1294 and those after, and have been further broken down into their "peasant" and "demesne" constituents.

Examining the results, the number of tenants having no draught animals varied from subsidy to subsidy, ranging from 9.1 per cent of all taxpayers at Minety (Wilts) to 75.0 per cent at Wendon (Essex). It is difficult to find any definite trend here, partly because of the complicating factor of each subsidy having its own exemption limit. Broadly speaking, though, eastern counties, such as Essex, Kent, and Suffolk, tended to have a higher percentage of taxpayers with no draught animals than those in the west and north, not unexpected given the greater degree of holding fragmentation in the former counties, although deliberate underassessment may also have played a part in some of these cases.<sup>85</sup> For those taxpayers that did have draught animals, the situation is much clearer. The fewer draught animals a farm had, the more likely it was that those beasts would be horses. This was a rule that applied both to peasant holdings and demesnes. Oxen by and large were the preserve of larger farms. But here "larger" must be used advisedly, since it appears it was only on the very smallest of farms - that is, those having only one or two draught animals - that horses were used to a markedly greater degree than elsewhere. In contrast, the proportion of horses employed in the 3-5 draught animal grouping was much reduced, even in supposedly horse-oriented country, such as Blackbourne

Hundred in Suffolk. The indication is that, at the time of the subsidies, the farm size threshold for the substantial use of oxen was low, perhaps equivalent to a virgate or even a half-virgate. On the other hand, the decline in the proportion of horses from the 3-5 level to the 6-10 and over 10 draught animal levels was much more moderate, and indeed the 6-10 grouping often had fewer horses proportionally than the over 10 grouping.

The conclusions to be drawn from this set of observations are these. First, horses were especially favoured on small holdings. A typical situation for this type of farmer would be one where the peasant (or lord) had enough land to justify the use of some draught animals for hauling and harrowing, but not enough to justify the possession of his own plough and team; rather he either borrowed or hired a plough-team from someone else, or he dug up his plot by hand. That such an arrangement existed is indicated by the occasional reference in surveys and extents to tenants who were required to do harrowing and carrying services, but not ploughing, as their more substantial neighbours were obliged to do.<sup>86</sup> As carrying and harrowing were very much horse-oriented activities, we would naturally expect this group of tenants to have more horses proportionally than their more affluent neighbours. It may be that these same tenants also ploughed with their horses, since we have seen that two-horse ploughing teams were by no means unknown to the demesne at this time,<sup>87</sup> and the same was probably true of peasant farms.<sup>88</sup>

Since this group holding only one or two draught animals was most often the largest from the point of view of draught-animal-owning taxpayers and very often from the number of animals involved, it is hardly surprising that it raised the level of horses among the peasantry as a whole significantly. However, this horse-oriented experience was only typical of this particular group. From then on, the experience of those taxpayers holding more than two draught animals rapidly approached that of the demesne. Here, though, the unreliability of the later assessments in particular creates some prob-

lems. If, say, the underassessment of draught animals in these later subsidies was of the order of 50 per cent, as in the Cuxham case (pp. 239-40 above), then many of the taxpayers in the 1 or 2 draught animal group should in fact be in the 3-5 grouping, while many of those now in the 3-5 group should be in the 6-10 group, and so on. This may seem to cast doubt upon our findings, but, in fact, even in the much more reliable early subsidies the same trend of a peasantry that rapidly increases its holdings in oxen once more than one or two draught animals are owned is evident. In some communities the substantial use of horses by the peasantry did go beyond the smallholding level, but this tended to happen only in areas where the demesnes were also using horses alone for draught, such as in the Chilterns.<sup>89</sup> In this regard, it is noticeable how similar demesne and peasant experience was, when compared solely in terms of the number of draught animals each had. The fundamental difference between peasant and demesne farms thus dissolves when looked at in this light, the demesne simply being a large farm that would be cultivated in the same way, at least in terms of the proportion of horses<sup>involved</sup>, whether it was managed by lord or peasant. From the lay subsidy assessments, it seems that this was a phenomenon that occurred regardless of region, since the tendency of small farms to employ proportionally more horses than large ones was as evident for Yorkshire and Wiltshire as it was for Bedfordshire and Suffolk, even though one area may have used far fewer horses overall than the other.

So far, the evidence cited as to the number of horses employed as draught animals by the peasantry has been contradictory. The inventories show a much lower level of horses among the peasantry than do the lay subsidy assessments. Some of this can be reconciled by the fact that the inventories are dealing mostly with substantial tenants in the more ox-oriented north and west, while the subsidies dealt much more with smallholders in the horse-oriented south and east; but there is still enough of

a difference to create doubt. A third source of information would thus be very useful. One such source is those numerous references in accounts and court rolls to animals given to the lord as heriots (or, occasionally, mortuaries) upon the death of a tenant. These heriots are often useful as an indication of the work animals a peasant had. Their use, however, does present several problems. **For example, a heriot, or even a heriot and a mortuary together, hardly represents all the stock a peasant had.** It is therefore difficult to draw conclusions about a peasant's total stock, or even just his draught stock, on the basis of these one or two animals. Nevertheless, some inferences can be made. Heriots were generally chosen on the basis of value. Sometimes it is specified what this animal should be, whether horse, ox, or otherwise;<sup>90</sup> but such provisions are rare, and generally any animal would do provided it was the best beast the peasant had (or second-best in the case of mortuary). As a result, animal heriots from peasants ranged from poultry and pigs to cattle and horses, although in most cases the heriot was a major animal, either an ox, horse, or cow. Consequently draught animals frequently figure as heriots and thus provide a potentially valuable source for the study of working beasts. Heriots, however, are not distributed evenly across the country, but tend to be more common in some areas than in others; East Anglia, for instance, is a region where the exaction of heriots was much less frequent than, say, in the West Midlands and the South. Heriots also tend to occur only in dribs and drabs. A court roll or yearly account will often have only one heriot recorded, if any, and often this is not an ox or horse, but a cow, sheep, or some other animal. As a result, a great number of accounts and court rolls are needed before a modest number of draught animal heriots can be found. Nonetheless, there are some exceptions. As the number of heriots is directly linked to mortality, years of plague and famine yield rich harvests of heriots. In particular, the Black Death year of 1348-9 provided heriots in substantial number. Accordingly, a number of accounts and

court rolls for that year, involving eighty-one manors, plus an account for Whaddon (Bucks) in the plague year of 1360-1, were examined. Altogether they provided draught animal heriots for fifteen counties, as shown in Table 4.5. Added to these are the heriots from a small number of manors where the accounts or court rolls contained enough data to provide a representative sample. These are contained in Table 4.6. As before, the horses have been divided into "cart-horses" (equi carectarii or just equi) and the inferior affri, stotti, and jumenta.

Both the Black Death heriots and those from the series of accounts and court rolls show horses in a slight majority over oxen. There was, in fact, a surprising agreement overall between the two groups of heriots, although there were considerably more cart-horses proportionally in the series of accounts and court rolls than in the plague year heriots. Many of these "cart-horses", however, were obviously riding animals, or even military ones, since in at least one case the horse came complete with saddle, harness, sword, boots, and other appurtenances.<sup>91</sup> It seems in a few cases, as at Jarrow and Monkwearmouth, that the lords went out specifically to secure this type of animal,<sup>92</sup> but in general the mix of oxen and horses encountered, especially in the plague year heriots, indicates that any animal was acceptable, as long as it was the most valuable the peasant had. Occasionally a half-animal was mentioned, perhaps shared with the mortuary, but these cases were relatively rare.

As indicated in Table 4.6, the proportions of oxen to horses in the heriots varied greatly from manor to manor. This is not immediately obvious from the Black Death heriots, where the percentages of horses from county to county was often very consistent, but within counties the variation was marked. For instance, the level of horses found among the heriots of the six Buckinghamshire manors during the plague years fluctuated from 100.0 per cent at West Wycombe to only 16.7 per cent at Whaddon. In a county such as Buckinghamshire, with its widely differing types of soil and terrain,

TABLE 4.5

Black Death Draught Animal Heriots (1348-9 and 1360-1)<sup>93</sup>

<u>County</u>	<u>Manors</u>	<u>Cart-horses</u>	<u>Affers, Stotts, or Jumenta</u>	<u>Oxen</u>	<u>% Horses</u>
Berks	6	3	46	32	60.5
Bucks	6	-	32	50	39.0
Cambs	1	-	2	1	66.7
Essex	3	-	12	7	63.2
Hants	29	57	275	323½	50.6
Herts	4	4	24	16	63.6
Kent	4	4	59	33	65.6
Leics	1	2	7	5	64.3
M'sex	6	2	28	19	61.2
Oxon	4	8	35	35½	54.8
Somerset	7	-	68	121	36.0
Suffolk	2	-	19	2	90.5
Surrey	2	2	18	56	26.3
Wilts	5	-	55	37	59.8
Worcs	2	22	4	28	48.1
Total	82	104	684	766	
Overall % Horses					50.7

TABLE 4.6

Draught Animal Heriots from Series of Accounts or Court Rolls<sup>94</sup>

<u>Manor (Years Covered)</u>	<u>Cart- horses</u>	<u>Affers, Stotts, or Jumenta</u>	<u>Oxen</u>	<u>% Horses</u>
Sevenhampton, Wilts (1269-1288)	1	6	17	29.2
Bourton-on-the-Hill, Glos (1287-1308)	1	3	10	28.6
Knightsbridge, M'sex (1289-1313)	1	2	-	100.0
Birdbrook, Essex (1295-1319)	-	3	-	100.0
Westerham, Kent (1296-1306)	2	9	14	44.0
Cuxham, Oxon (1298-1349)	2	13	-	100.0
Various Surrey and Berkshire Manors of Chertsey Abbey (1327-1347)	45	50	86	52.5
Jarrow, Durham (1350-1453)	3	-	1	75.0
Monkwearmouth, Durham (1367-1394)	19	3	7	75.9
Henbury-in-Salt-Marsh, Glos (1363-1394)	-	-	3	0.0
Stoke Bishop, Glos (1369-1390)	1	-	9	10.0
Bibury, Glos (1371-1388)	6	-	4	60.0
Hampton Lucy, Warks (1371-1390)	1	-	4	20.0
Total				
Overall % Horses	82	89	155	52.5



such variation is perhaps not surprising; but the degree of change found in other counties is not so easily explained in these terms.<sup>95</sup> Across the country as a whole, some trends are evident, with counties in the south-west and the West Midlands having more oxen as heriots than, say, those in East Anglia or the Home Counties, but there are some curious anomalies. For example, Wiltshire holds a much greater percentage of horses in its Black Death heriots than the account and lay subsidy data for the same county would suggest. The same thing can be said in reverse for Buckinghamshire, where the level of horses in the heriots was considerably lower than in the lay subsidy assessments for the same county. There were, as well, a small but significant number of manors that seem to have been almost totally horse-oriented as far as the peasantry were concerned.<sup>96</sup> These, however, were very scattered and did not form any definite regional trend, although the relative lack of evidence in some areas, such as East Anglia and the East Midlands, makes it difficult to be certain of this.

Turning away from these general observations, the essential problem we face is this: what exactly does an animal heriot or mortuary tell us? Well, essentially only that the animal was likely to be the most valuable or second most valuable beast that the peasant owned. As a general picture of a peasant's draught stock holding it is patently unreliable. For instance, if a recently deceased peasant had an expensive horse and four less expensive oxen, the horse would be chosen as heriot. On this basis, we might then conjecture that the peasant had only horses for draught, but nothing would be further from the truth. If, as the Black Death data indicates, draught animal heriots at the time of the plague were split about evenly between horses and oxen, all we can say is that half of these peasants had at least one horse and half had at least one oxen. When peasants pay more than one heriot, e.g., for several holdings, we can sometimes build up a better picture - for instance, the estate of Robert atte Hurne of Coulsdon, Surrey, in 1334 rendered as heriots to the lord one horse and

two oxen for a half-virgate of land and two cottages<sup>97</sup> - but in the main such cases are relatively rare.

Nevertheless some valuable insights can be gained from the heriot and mortuary data. In the Robert atte Hurne example just given, the horse was the most valuable of the three animals. In fact, the most normal course of events was for horses to be the least valuable of the draught stock. Part of this can be inferred from demesne livestock prices. These show that, although the purchase prices of horses at the start of their demesne careers were often comparable with those for oxen and cows, the selling prices at the end of their demesne careers were often far less than those for the adult cattle, because of their much greater depreciation. This was particularly the case with lower quality horses, such as affers, stotts, and jumenta. An example will help to highlight this point. The bishop of Winchester's demesne at Bishop's Waltham had a particularly abundant harvest of heriots during the account year of Michaelmas to Michaelmas, 1348-9; altogether 5 cart-horses, 44 affers, 24 oxen, 40½ cows, and various other stock were received, many of which were sold immediately upon receipt. Those sold included 7 of the oxen, 1 being sold for 3s., 1 for 4s., 1 for 10s. 4d., and 4 for 12s. apiece, an average of 9s. 4d. per ox. Of the cows, 8½ were sold, 2 for 2s. each, 2 for 2s. 6d. each, 2 for 3s. each, 1 for 4s., 1 for 8s., and the half cow for 20d., an average of 3s. 4½d. per cow. In comparison, 1 of the cart-horses was sold for 2s. 6d., 1 for 6s., 2 for 10s. each, and 1 for 11s., an average of 7s. 10½d. per cart-horse. Finally, of the 44 affers, 32 were sold. Except in one case - a female sold to Bitterne for 6s. - individual prices for these affers were not given, but instead it was stated that they were all sold for 4 li. "at various prices", an average price per offer of 2s. 6d.<sup>98</sup> As we can see, the average selling price for oxen was significantly higher than that for the cart-horses and considerably above that for the affers. In fact, the female offer sent to Bitterne, which we may surmise was one of the very best affers sold, was

superior in price to only two of the seven oxen sold. Even cows were on average priced higher than affers, and also some of the lesser beasts on occasion; a boar, for instance, was sold for 4s. and 8 other pigs for 3s. apiece. It may be that the low price of affers here was an exceptional case, but other similar examples could be given.<sup>99</sup> From all this, we can state with a fairly high degree of probability that if a peasant surrendered an affer, stott, or jumentum as a heriot, then it is highly likely that he had only horses for draught. The situation is not as clear for cart-horses taken as heriots, but it does seem that in a good number of cases, probably more than half, the same likelihood can be stated for them as well.

Returning to Tables 4.5 and 4.6, affers, stotts, and jumenta comprised 44.0 per cent of the Black Death draught animal heriots and 27.3 per cent of those taken from the series of accounts and court rolls. Thus, it seems that a good third of the draught animal owning peasantry had only horses for draught. This, of course, does not take into account the possibility that the affer, stott, or jumentum was the second or third heriot following oxen already given, but this minority of cases would be more than balanced by that proportion of the cart-horse heriots taken from holdings where again horses were the only draught animals. This body of tenants using only horses for draught would seem to equate with the large horse-owning group of small and middling holders noted in the lay subsidy returns. This helps to explain the haphazard distribution of those manors with a large preponderance of horse heriots. In this case, it would seem that the high level of horses in the heriots of a particular manor reflects not so much a strong predisposition towards horses because of soil and terrain but rather a large proportion of tenants with relatively little land.<sup>100</sup> Even where horses were the normal draught animal heriot in an area, however, this does not mean that they necessarily dominated. Thus a county like Wiltshire, where fairly large all-ox plough-teams seem to have been the norm even for the peasantry,<sup>101</sup> may still have used substantial numbers of oxen even though the heriots (in Table 4.5)

suggest a majority of peasants owning horses only for draught. Such a situation, in fact, would be quite consistent with the growth in the number of smallholders known to have taken place in some parts of this region at least.<sup>102</sup> The evidence suggests that these smallholders generally only had one horse each,<sup>103</sup> which was probably sufficient for the small-scale hauling and harrowing that they did. On the other hand, if a peasant did plough in medieval Wiltshire, it appears he needed a team of at least two animals and probably many more. Thus, a typical draught stock holding for more substantial tenants here was something like one horse and two oxen, one horse and four oxen, and even one horse and six oxen.<sup>104</sup> Consequently even if these substantial tenants were outnumbered by their horse-owning, smallholding contemporaries, oxen could still dominate overall.<sup>105</sup> The point confirms that already noted for the demesne (pp. 196-7) that horses cannot really come to dominate as draught animals in a region until they are used for ploughing. Where this happened and did not happen for the peasantry will be discussed in the next section, but for the moment it is enough to repeat that the heriots do confirm the existence of a substantial sector of the peasantry - mostly small and middling holders - using nothing but horses for draught.

Finally, the heriots help us in another way. One of the problems with the lay subsidies and also with the inventories is that we cannot easily compare one period with another. To a certain extent, we can do this with heriots. For example, Table 4.7 compares the draught animal heriots recorded in four of the bishopric of Winchester pipe rolls over a period of 170 years. There are some changes in the manors covered from roll to roll, but in the main they include much the same area and yield enough heriots for a valid comparison to be made.

The pipe rolls show clearly that there was a definite and continued rise in the level of horses found in the heriots. In the first three instances, up to the Black Death, this is consistent with, among other

TABLE 4.7

Comparison of Draught Animal Heriots Over  
Time (from Winchester Pipe Rolls)<sup>106</sup>

<u>Year</u>	<u>No. of Cart-horses</u> <sup>107</sup>	<u>No. of Avers, Affers, or Jumenta</u>	<u>No. of Oxen</u>	<u>% Horses</u>	<u>% Horses excluding Cart-horses</u>
1210-1	2	6	30	21.1	16.7
1286-7	3	19	28	44.0	40.4
1348-9	60	494	528½	51.2	48.3
1381-2	9	15	21	53.3	41.7

things, the growth in smallholdings taking place during this period. But the rise in the percentage of horses after the Black Death is much more curious in that it indicates a rise in the number of horses as heriots despite the decline in the smallholding class known to have occurred in this period.<sup>108</sup> Part of this may be due to the proportional increase in cart-horses. This implies two things. First, as suggested earlier in this chapter, peasants were becoming more market-oriented and thus using more carting horses. Second, many of the cart-horses probably concealed less expensive oxen that the peasant had. When, in fact, the cart-horses are excluded and only the lowly affers, etc., are considered, the level of horses in the draught animal heriots is 41.7 per cent, a fall compared to that on the eve of the Black Death. Nevertheless this decline is probably much less than the degree to which smallholdings dried up after the plague, and there is also the consideration that some of the cart-horses did not necessarily conceal less expensive oxen. The general impression is that, despite the drop in smallholders which may in turn have reduced the proportion of horses employed by the peasantry as a whole, this to a large extent was being counterbalanced by an increase in the range of uses to which horses were being subjected, particularly hauling. The employment of horses may also have been increasing among more substantial tenants, a trend we shall investigate shortly with later material.

Summarising the evidence examined so far, the inventories, lay subsidy assessments, and heriots provide a composite, but nonetheless consistent picture regarding the degree to which horses were employed as draught animals among the peasantry. The inventories show a much lower percentage of peasant draught horses than do the other sources, but much of this is due to the fact that most of the inventories are found in the more ox-oriented west and north of the country. They are also biased towards the major peasant land-holders, perhaps because the lord was interested in keeping a greater degree of surveillance on these larger holdings than on smaller ones. On the other hand, small and middling land-holders figure much more prominently in the lay subsidy material, and it was this group which gave the subsidy material its relatively high level of draught horses.<sup>109</sup> Although this high proportion of horses may be somewhat exaggerated in the subsidies, it is to a large degree reinforced by draught animal heriots, which show a substantial proportion of horses, again due probably to the presence of large numbers of relatively small land-holders. The overall picture one has, then, is of a peasantry where horses for draught were most popular at the low end of the social and economic scale, but much less so among more substantial tenants, a phenomenon seen even in East Anglia. It is difficult to be precise about where the dividing line was between these two groups of tenants, but a holding size of 10-15 acres would seem a likely threshold beyond which oxen tended to be used much more frequently.<sup>110</sup> In any case, the failure of the horse to penetrate the substantial tenant substratum more completely than it did indicates that, technically, the animal was valued no more by the peasantry than by the demesne and that - probably to the end of the fourteenth century at least - its popularity was based mainly upon its versatility in the hands of small-holders and the like.

What does all this mean in terms of numbers? Using the information supplied by Tables 4.1, 4.2, 4.5, and 4.6, the percentages of horses among

peasant draught animal at about the year 1300 were estimated by region, as shown in Table 4.8.

TABLE 4.8

Estimated Levels of Horses among Peasant  
Draught Animals (by Region), c.1300

<u>Region</u>	<u>% Horses</u>
East Anglia	75
Home Counties	55
The South	45
South-west	20
East Midlands	50
West Midlands	30
The North	40
Overall	45

It must be emphasised that these figures are only estimates, relying heavily, in many cases, on assumption or even guesswork.<sup>111</sup> For this reason, the figures have been rounded off to the nearest 5 per cent. Altogether they show a trend similar to that for the demesne, with the level of peasant draught horses being highest in the south and east and tailing off markedly towards the north and west, the overall figure for the country as a whole being some 15-20 per cent above that for the demesne (cf. Table 3.1). Indeed, if the figures in Table 4.8 are even roughly correct, it indicates that the overall level of horses in demesne and peasant draught stock together would be of the order of 40 per cent at the end of the thirteenth century.<sup>112</sup>

This, however, still leaves the question of what happened afterwards. With the exception of a few of the inventories, none of the materials looked at so far covers a period later than the end of the fourteenth century. We are left with a gap of a century or more when the available document-

ation fails us almost completely, due to the well-known decline in the quality of manorial records as evidence that occurred from the end of the fourteenth century.<sup>113</sup> In order to determine what happened in this period regarding the growth or decline in the peasant use of horses and oxen, we are to a great extent forced to look at later material. This brings with it the danger of making late medieval farming seem more advanced than it really was; but, used with care, early modern evidence can shed much light on medieval conditions. In particular, the tremendous growth in probate material that characterises the documentation of the sixteenth century is of great help here. Most useful in this regard are probate inventories, which listed all the moveable goods of deceased persons. They acted essentially as addenda to wills, their purpose being to ensure that all the goods left by the deceased made their way intact to the rightful heir or heirs. The inventories were usually drawn up by four of the deceased person's friends and neighbours, acting as disinterested parties, and included a wide range of household and farming effects, including all the livestock. Table 4.9 contains the data relating to draught animals for seventy-six of these inventories, covering the period from 1534 to 1598.<sup>114</sup> These inventories were specially chosen because in each case we are also given some indication of farm size, or at least of its arable component, in the form of sown acres. In this regard, only inventories taken in the months of April, May, June, and July could be considered; otherwise the sown acreages given in the inventories were most likely to be incomplete, either because some of the crops had already been harvested (if the inventory was taken in August or September) or had not yet been sown (if taken earlier in the farming year than April).

Altogether horses outnumbered oxen in the sample by a ratio of about 6 to 4 (the percentage of horses was actually 62.1), a considerable advance in the level of horses since the medieval period. However, this result should be qualified in several ways. First, seventy-six inventories can



TABLE 4.9

Draught Horses and Oxen from Probate Inventories, 1574-1598 <sup>115</sup>

County	No. of Inventories	No. of Adult Horses	No. of Oxen	No. of All-horse Farms	Avg. Size of Farm (sown acres)	Range of Farm Sizes (sown acres)	Range of Dates for Inventories
Bedfordshire	2	13	2	1	39.0	36-42	1556, 1575
Berkshire	1	3	6	1	22.0	22	1579
Cambridgeshire	1	4	-	1	17.0	17	1576
Cornwall	1	2	8	1	7.5	7 $\frac{1}{2}$	1579
Dorset	7	22	2	6	22.6	4-50	1575-1579
Durham	3	6	36	-	44.3	20-85	1557(b1s), 1565
Hampshire	2	15	-	2	132.5	36-229	1559, 1563
Hertfordshire	3	10	-	3	14.6	9-20	1545, 1548(b1s)
Lincolnshire	11	64	55	4	30.6	6-160	1553-1598
Norfolk	7	31	-	7	20.2	9-34	1554-1595
Northamptonshire	2	8	-	2	23.3	9-37 $\frac{1}{2}$	1573, 1598
Nottinghamshire	8	48	15	4	24.2	10-50	1542-1592
Oxfordshire	8	26	-	8	31.9	11 $\frac{1}{2}$ -55	1550-1587
Suffolk	7	39	-	7	13.9	4-32	1576-1587
Surrey	1	2	2	-	8.0	8	1559
Warwickshire	1	9	1	2	28.7	14-38	1534-1562
Wiltshire	3	15	10	2	72.9	25-142	1560-1576
Yorkshire	4	14	68	2	41.0	35-44	1559-1569
County Unknown	1	5	-	1	36.0	36	1587
Total	76	336	116	50	117	118	
Overall Average			205		31.3		

hardly be called a representative sample for the country as a whole. The fact that many counties are not represented at all is a difficulty, particularly as many of these missing counties, such as Worcestershire, come from traditionally ox-oriented areas.<sup>119</sup> Second, all the inventories in Table 4.9 listed at least one plough (in fact, they were chosen as such in order to give some idea as to the equipment status of the farm). This means that we are necessarily concentrating on self-sufficient farmers, that is, those not having to count on others to help them with their farming.<sup>120</sup> This is not an entirely satisfactory situation, because it leaves out that potentially substantial body of farmers who had part of the equipment and stock needed to cultivate their land, but not all, a deficiency they made up by borrowing, hiring, or cooperating with neighbours. But this type of farmer is very unevenly represented in the inventories, and for consistency's sake it was decided to concentrate on his self-supporting neighbour. Third, as with the medieval peasant inventories, there are some problems with heriots, which may have been excluded from some at least of the probate inventories. It is difficult to assess the effect this had, since the prevailing trend, through much of the later medieval period at least, was to commute these heriots to money payments.<sup>121</sup> Nevertheless, mentions of draught animals taken as heriots do crop up occasionally in sixteenth-century wills and inventories.<sup>122</sup> Fourth, although the great majority of horses in Table 4.9 were obviously working animals, a few may have been solely for riding.<sup>123</sup> Finally, not so much of a problem but still worthy of mention, is the fact that many of the inventories may have represented rundown holdings, since many, if not most, of the deceased were old men and women, not having the ability or the compulsion to carry on farming at the level of their prime.<sup>124</sup> This may have affected the proportions of draught animals on the farm, possibly in the favour of horses, since riding and carrying animals would probably have been the last to go.

Although most of these qualifications would seem to indicate a bias towards horses in the sample, they are more than balanced by the almost complete omission of the smallholding class, which contributed so much to the high level of horses in medieval times. Even in areas using oxen, the man having only a horse with a cart and harrows is a common enough sight in the probate inventories,<sup>125</sup> and this class could be quite large.<sup>126</sup> Another striking feature of Table 4.9 is the number of all-horse farms indicated. Altogether they comprise nearly two-thirds of the sample, and although this proportion may be inflated by the under-representation of ox-oriented areas, the number is still very significant. The geographical spread of these all-horse farms was also very wide ranging, being found as far west as Dorset and as far north as Nottinghamshire. The sheer number of these all-horse farms denotes a significant shift since medieval times. Since the average sown acreage for these sixteenth-century farms was 31.3 acres (and the median 25.4 acres), we are talking of a mean farm size probably approaching 50 acres with fallow included, somewhat in excess of the typical medieval virgate. In the lay subsidies, farms of this size (probably employing at least 3-5 draught animals; see Table 4.4) were - in the main - still employing significant levels of oxen, but, as we can see from the probate inventories, the majority of them were now using nothing but horses.<sup>127</sup> One is also aware from the inventories that there was a growing dichotomy between those areas converting solely to horses and those maintaining, and perhaps even intensifying, the use of oxen; all-horse farms were found more to the south and east, farms using oxen to the north and west. Much of this can already be seen from Table 4.9, but compare, for example, the two counties of Durham and Northamptonshire, for which rather larger samples than those contained in Table 4.9 have been made, as shown in Table 4.10.

Again only "self-sufficient" farms with ploughs or at least some indication of plough equipment have been taken. This puts the two samples on a

TABLE 4.10

Comparison of Durham and Northamptonshire Work-horse  
Levels in the Late Sixteenth Century<sup>128</sup>

	<u>No. of Invent- ories</u>	<u>No. of Horses</u>	<u>No. of Oxen</u>	<u>% Horses</u>	<u>Range of Dates</u>
Durham	34	129	410	23.9	1556-1599/1600
Northamptonshire	20	86	4	95.6	1563-1599/1600 <sup>129</sup>

roughly equivalent footing, although the Durham farms were patently much larger than the Northamptonshire ones.<sup>130</sup> The table shows that by the end of the sixteenth century farms in Northamptonshire had converted almost solely to horses, draught cattle being found on only one of the 20 farms. On the other hand, Durham farms were using virtually the same level of horses they had employed in medieval times, and perhaps even fewer.<sup>131</sup> Notably, all the Durham inventories had ox-hauled wains; very few had horse-hauled vehicles of any type.<sup>132</sup> In contrast, the Northamptonshire inventories had only carts.<sup>133</sup> We shall be examining this diversification in vehicle types in more detail later, but it is enough to notice here how it was reinforcing the growing polarisation between areas that were heavy horse users and those which employed oxen.

Much of this polarisation was obviously taking place during the period of the inventories,<sup>134</sup> but some must have occurred before. The problem again is proof. Probate inventories before the sixteenth century are a rare commodity for all but the most influential of men. Some do exist for more ordinary farmers in the late fifteenth century, though. Twenty-two of these, found in a collection of inventories from the Prerogative Court of Canterbury, are contained in Table 4.11, arranged in order of county.

Again all these farms had ploughs or at least an arable acreage large enough to require ploughs. The horses may have included a number of riding animals, but none were specified as such. Overall, it appears that horses

TABLE 4.11

Draught Horses and Oxen from Late Fifteenth-Century Inventories<sup>135</sup>

<u>Place</u>	<u>Name</u>	<u>Year of Inventory</u>	<u>No. of Adult Horses</u>	<u>No. of Oxen</u>
1. Barton-in-the-Clay, Beds	Jacob Woodward, maltman	1497	-	4
2. Buckland, Berks	Wm. Sclatter	1494	4	6
3. Bassingbourn, Cambs	Ric. Hychen, yeoman	1494/5	5	-
4. Newton St James (nr. Wisbech), Cambs	John Cooke	1499	4	-
5. Stalbridge, Dorset	John Davye	1496	8	6
6. Wormingford, Essex	Thomas Bowden <sup>136</sup>	1491	5	-
7. Kirby le Soken, Essex	John Sadler	1493	6	8
8. Chipping Campden, Glos	Wm. Bradway	1488	2	8
9. Kingsley, Hants	Henry at Lode	1494	15	2
10. Winchester, Hants	Edith Boland	1500	7	-
11. Long Marston, Herts	Wm. Puttenham	1492	5	13
12. Buntingford, Herts	Thom. Gooderyche	1500	6	-
13. East Peckham, Kent	Thom. Caysar, yeoman	1491	2	6
14. Watlington, Norfolk	Hugh Schuldham, esq.	1499	12	5
15. Alvescot, Oxon	John Bonde	1499	6	-
16. Boxford, Suffolk	Walter Coopar	1495	3	-
17. Slaugham, Sussex	Wm. Covert, gent.	1494	6	7
18. Welford and Wolfhamcote, Warks	Ric. Makrings	1474	7	6
19. Barton (on the Heath?), Warks	Roger Eritage	1495	6	16
20. Westbury, Wilts	Edmund Lerversege	1496	1	8
21. Southwark and Stepney, Surrey & M'sex	John Howell	1495	7	7
22. "Hawkyton", dioc. of Ely (Hauxton, Cambs?)	John Cosyn, husbandman	1498/9	7	-
Total			124 <sup>137</sup>	102 <sup>138</sup>

were once more in a majority (they comprised 54.9 per cent of the draught animals in the sample), even though most of the farms were very substantial ones<sup>139</sup> of the type that would have found it economical to use oxen in an earlier age.<sup>140</sup> Again a feature of the table is the number of farms that used horses only - eight in all - although the proportion, just over a third, was less than that noted for the sixteenth-century inventories. Some of these all-horse farms were found as far afield as Winchester in Hampshire or Alvescot in west Oxfordshire. The overall impression is of an intermediate stage, with many areas in the process of converting vig-

orously to horses. It should be mentioned, however, that all the inventories in Table 4.11 were drawn from the relatively horse-oriented south of the country, since the PCC courts did not normally prove wills in the north. This may have created a bias in favour of the level of all-horse farms and of horses overall in the sample.<sup>141</sup> Nevertheless, the impression of an intermediate stage is still strong and confirms the trend already noted for the demesne that there was a growing polarisation in the use of horses and oxen from region to region. It seems, in short, that the fifteenth century was a period of economic rationalisation, with some farms going completely to horses and others bolstering the use of oxen through a reversion to ox-hauling. This rationalisation continued into the sixteenth century, along with a slow spread in the use of horses overall,<sup>142</sup> which gradually put the beast in a solidly dominant position as far as draught work was concerned.

#### b) The Employment of Peasant Horses and Oxen, 1200-1500

We have, then, concerning the use of horses, two main periods of growth to consider in the period under discussion. The first, covering the thirteenth century and much of the fourteenth, was of a rather amorphous expansion in the employment of horses, for both peasant and demesne farmers.<sup>143</sup> This varied in degree from region to region but had much the same characteristic everywhere, in that the tendency to employ horses seems to have been strongest in the smallholding sector and weaker among more substantial tenants.<sup>144</sup> The second phase of growth - starting essentially in the fifteenth century - was of a more diverse nature - involving a much wider adoption of the horse among substantial farmers, or, failing that, a reorganisation based on a more intensive use of oxen. This difference in choice began to set up the regional variation between horse- and ox-using areas so notable in the sixteenth century and afterwards.

How does this picture square with what we know about practice over the

period, particularly as it applies to peasant farming? Again, we are faced with problems of documentation, the key one being that there is no one source that adequately covers the whole period. Surveys and extents, for instance, are excellent for supplying details about peasant farming practice, but they stop effectively in the fourteenth century and, in fact, are really only useful for the thirteenth. Otherwise, we have to make do with a combination of court rolls, accounts, and other miscellaneous records.

Nevertheless, some sort of picture can be built up. As we have just intimated, surveys and extents are the best for supplying comprehensive views as to how peasants employed their draught animals. These are revealed through the passages in the surveys relating to peasant labour services, which are often minutely detailed so that lord and peasant were under no illusion as to the amount and type of work actually owed. For example, Peter, son of Margaret, a virgate holder at Butleigh in Somerset, c.1235-40, is recorded as having to appear at the lord's plough-boons with as many oxen as he had, and also to harrow at the same boons with his horse; he had also to carry hay to Glastonbury by pack-horse, or by cart and horse if he had one; he had also to supply a load of hay in a carrus to the court at Butleigh, or with a cart and horse, or by pack-horse; and so on and so on.<sup>145</sup>

A study of even a small number of extents and surveys with these sorts of references can yield a substantial body of evidence. However, the surveys and extents have at least one serious limitation. Because they are dealing essentially with custom, it is not always evident that the details given are actually referring to contemporary practice. They may, for instance, be recalling a system of practice from an earlier survey,<sup>one</sup> which may have been long obsolete, particularly in those cases where a money payment was sought rather than the actual performance of the service itself.<sup>146</sup> As a result, terms used in the surveys are often more archaic than those found in other documents, such as accounts and court rolls, particularly, as we shall see,

in relation to vehicle types. Nevertheless, in most cases, it does appear that the practices referred to were those currently in use. An obvious example is recorded for Pilton in Somerset in 1260, where Robert Hostarius, a half-virgate holder, was charged with carrying hay and corn for six days "with a cart"; the custumal, however, goes on to comment that "the jurors say that Simon, Robert's predecessor, was accustomed to find three oxen and a half plaustrum", indicating that Robert had changed his mode of hauling.<sup>147</sup> Such a reference has a very contemporary ring to it and shows that lords were interested in keeping their surveys up-to-date. This is also reinforced by the fact that surveys in the thirteenth century, in particular, usually appear in a very much more detailed and expanded form than those in the twelfth century.<sup>148</sup> Much of this extra detail may have been new, particularly as many lords were increasing the burden of labour services on their tenants.<sup>149</sup>

Altogether the surveys and extents for over 330 manors were examined. These came from 31 different sources, most of them published.<sup>150</sup> The great majority of these surveys were from the thirteenth century, although some were from the fourteenth, usually the early part. Only two were from the fifteenth century,<sup>151</sup> both supplying very little useful information. There tended to be rather more surveys for the south than the north, and those for the former were also inclined to yield the better information; as a result the material gathered for the north was often meagre.<sup>152</sup>

Concerning the activity of ploughing, the animals in the peasants' teams were often specified. Only in the case of three villages in central and north-west Norfolk, however, was it indicated that peasants used only horses for ploughing.<sup>153</sup> On the other hand, references mentioning only oxen or at least draught cattle for ploughing - as in the case of Peter of Butleigh above - are much more numerous; altogether 36 manors displayed some sign of it.<sup>154</sup> Most of these references came from the south-west



and west of the country, although some of the more easterly counties - Berkshire, Cambridgeshire, and particularly Sussex - were also represented. On five manors - two in Norfolk and one each in Cambridgeshire, Berkshire, and Wiltshire - it is stated that peasants could use horses or oxen for ploughing or both,<sup>155</sup> and another two cases implied the same in Essex and Huntingdonshire.<sup>156</sup> Only in one case - Ditton (Cambs) - was a mixed team virtually certain; the other six were ambiguous and could indicate either mixed teams or separate teams of horses and oxen. These cases of uncertainty as to the type of animal the peasant was likely to have for his ploughing services are reinforced by the much more frequent instances where the surveys mention the peasant's plough-team but studiously avoid specifying the type of animal in it. In this case, the survey will say something like "he [the peasant] will plough with as many animals as he has in his plough (or plough-team)."<sup>158</sup> This kind of reference is found in surveys all over the country, but are especially a feature of those covering the south-east.<sup>159</sup> Although this may have been nothing more than a convention of the area, the implication is that the peasant use of both horses and oxen for ploughing was a common sight in the region, and the scribes were simply playing safe and using the more general form. That this interpretation is the correct one would seem probable in view of the fact that the scribes generally had no hesitation in specifying horses for harrowing, where the chance of contradiction was slight.<sup>160</sup>

To this survey material can be added a small amount of contemporary data from other sources. Thus the Wakefield court rolls show oxen or other ploughing cattle being employed in a number of Yorkshire villages in the late thirteenth and early fourteenth century,<sup>161</sup> while oxen were also recorded for ploughing at Chalgrave (Beds) in 1293 and an ox and a cow for the same in Kent in 1259.<sup>162</sup> On the other hand, there are at least two references to horses being seized from peasant plough-teams at 'Hussey' (Beds) and Hipperholme (Yorks) in 1262 and 1297,<sup>163</sup> and ploughing horses also

figure in disputes at Alton, Hants (1332) and Polstead, Suffolk (1292), perhaps as part of mixed teams or perhaps alone.<sup>164</sup> Some mixed teams at least were certainly evident. Thus, a team of two horses and four oxen was distrained from a well-to-do peasant at Thorpe Satchville (Leics) in 1284, while horses and oxen together in a plough-team are indicated in a tragic case from Bretby, Derbyshire in 1249, where a man accidentally killed his son while both of them were out ploughing in the fields.<sup>165</sup>

All these references date from the thirteenth or early fourteenth century. It seems, then, that the peasant use of horses and oxen for ploughing at this time had some similarities with that on the demesne. It is to be noted that the only region where horses were indicated as the sole ploughing animal on peasant farms, that is, Norfolk, was also one of the earliest all-horse areas for demesnes (vide Figure 3.3). On the other hand, the peasant use of oxen alone for ploughing would seem to be a feature of much of the south-west and west and probably the north, just as it was for the demesne. Further east, though, the situation becomes more unsettled, with peasants seemingly using horses and oxen together in mixed or as separate horse and ox plough-teams. From the surveys, it seems that this partial turnover of peasant ploughing to horses might well have had a distribution similar to that for demesne mixed teams (Figures 3.5 and 3.6). Thus, we should not be surprised when we find peasant plough oxen and plough-horses mentioned in conjunction as far west and north as Wiltshire and Derbyshire.

However, it should be pointed out that, with the survey material in particular, we are dealing <sup>mainly</sup> with more substantial tenants, that is, half-virgaters and above, since lesser tenants were much less likely to owe ploughing services.<sup>166</sup> In this regard, the survey material makes the same sort of conclusion already indicated by the lay subsidy returns, inventories, and heriots: namely that the introduction of the horse does not seem to have been any more advanced among the substantial tenantry than it was on

the demesne.<sup>167</sup> The prevalence of all-horse ploughing and all-ox ploughing seems to have been the same in both cases, as was the tendency to use a combination of horses and oxen, although in the case of the peasantry it is difficult to say whether this was predominantly in the form of mixed teams or not.

The situation as regards smallholders was probably very much different. The difficulties in keeping two types of draught animals on a small holding would have encouraged their peasant owners to plump entirely for one or the other, almost certainly horses because of their versatility and the fact that the costs for them need not have been substantially greater than those for oxen.<sup>168</sup> As a result, this group would have used only horses for ploughing. Although some hard evidence for this is supplied by studies like that for Cuxham,<sup>169</sup> the surveys comment very little on the ploughing potential of this smallholding group. The fact that many of them did plough with their horses can only be implied from the massive superiority of horses among the peasantry in such counties as Bedfordshire and Suffolk, where holding fragmentation was often known to be severe.

What about the latter part of our period? Specific references to the makeup of the peasant plough-team are meagre after the Black Death. Ploughs surrendered complete with yokes figure among the principalia listed for Worcestershire peasants in the late fourteenth and early fifteenth century,<sup>170</sup> indicating the continued use of oxen as ploughing animals there, a fact of little surprise since oxen were still the dominant draught animal in the county even in the sixteenth century.<sup>171</sup> An interesting case is cited in an account for Wetwang in the Yorkshire Wolds in 1373-4, where the customary tenantry showed up for a winter ploughing service with 52 horses and 13 ploughs.<sup>172</sup> The peasantry here were obviously accustomed to ploughing with four-horse teams, but it should also be noted that the demesne too used only horses.<sup>173</sup> More significant is the reference to a virgate of land being transferred in Wistow (Hunts) in 1429, complete with

a plough and "apparatus" for three horses.<sup>174</sup> The evidence of a three-horse peasant plough here contrasts with the demesne ploughs evident at Wistow, which used oxen well into the fifteenth century.<sup>175</sup> This seems to indicate that the "rationalisation" of going completely to horses occurred first among the peasantry here, although how recent the change was is difficult to judge. Although outnumbered by horses, oxen were amply evident among peasant goods in the 1290 lay subsidy assessment for the village, and Wistow virgate holders in 1252 needed to pay a fine to sell them.<sup>176</sup> It may be basing too much on one piece of evidence, but it does seem that Wistow villagers were making the changeover to all-horse farming by at least the beginning of the fifteenth century. Certainly, by the sixteenth century, Huntingdonshire was a county where horses dominated almost totally.<sup>177</sup>

Finally, one thing that is clear from the evidence looked at in this study is that peasants were not as choosy in their choice of plough animals as the demesne. Cows and even a heifer were mentioned as ploughing beasts,<sup>178</sup> while on two manors an averium bovinum was specified, indicating that not only oxen, but also bulls, cows, or even young steers and heifers, would be suitable.<sup>179</sup>

Peasants, however, do not seem to have applied this flexibility to harrowing, where horses were employed almost exclusively. Specific references to horses harrowing were found in almost every county covered by the extent and survey material.<sup>180</sup> References to ox-harrowing were very very few and far between. Only on one manor in Somerset may it have been at all commonplace, and even here the reference is ambiguous.<sup>181</sup> Otherwise, ox-harrowing was patently secondary to harrowing with horses. For example, among a series of principalia lists for Ombersley (Worcs) in the late fourteenth-early fifteenth century, 52 harrows are recorded in 85 lists. Of these 52 harrows, 39 were described as horse harrows, 12 simply as "har-

rows", and only one as an ox-harrow.<sup>182</sup> This last was found on the lands of a substantial tenant, holding over a virgate, who also had a horse harrow. Sixteenth-century inventories indicate a rather greater incidence of ox-harrows than this,<sup>183</sup> but at no time do they become a serious challenge to horse harrowing.

One thing evident from the surveys is that harrowing services were demanded by the lord every bit as often as ploughing services, and in fact harrowing as a service tended to reach further down into the social order than did ploughing. Thus it was not uncommon to find tenants who did not owe ploughing services, presumably because they did not have the necessary stock and equipment,<sup>but</sup> were still expected to harrow with their horses.<sup>184</sup> The same is even observed with more substantial tenants, because, if for some reason they had no ploughing stock, they were still expected to harrow with their horses.<sup>185</sup> The implication is that it was by no means uncommon for peasants to have horses for harrowing, but no other draught animals for ploughing.

The surveys most commonly indicate that only one horse pulled the harrow,<sup>186</sup> although occasionally it is mentioned that a peasant or peasants had to harrow with two horses.<sup>187</sup> Whether this meant a single harrow drawn by both animals or two separate harrows pulled by a single animal each is not clear, but the latter was probably more likely.

Peasant hauling seems to have taken on much the same characteristics as demesne hauling. The most salient feature, up to about 1300, was a substantial increase in horse hauling. Direct references to peasant horses engaged in hauling occurred on at least forty manors in the survey and extent material, a typical example being that at Crawley (Hants), c.1280, where among the services of Robert at Mere, a half-virgate tenant, it is stated that he ought to carry hay cum equo et carecta.<sup>188</sup> For all but one of these forty manors,<sup>189</sup> the horse hauling was associated with carts

(carectae), as indicated in the Crawley example. Some idea of the extent and spread of horse hauling can thus be indicated by the number of carts about. An analysis of vehicle terms in the surveys (see Table 4.13 below) indicates that on just over two-thirds of manors in the first half of the thirteenth century the peasants had carts, a figure rising to nearly 90 per cent in the second half of the century. The latter figure correlates almost exactly with that for the demesne for the same period (see Table 3.12 above, under Sample A).

The thirteenth century was clearly an important period for the rise of horse hauling. We have already indicated how horse hauling first became evident in England in the twelfth century,<sup>190</sup> and the survey evidence shows how these initial beginnings were consolidated in the following century; indeed horse hauling already seems to have been well-established in the very early part of the thirteenth century. Nevertheless, as on the demesne, ox-hauling among the peasantry was still retained in many areas. For example, at Doultling (Somerset), c.1235-40, the widow Sedburgha, holding one and three-quarter virgates, was required to find j carrum et vj boves to carry the lord's hay and corn,<sup>191</sup> and many other similar references could be cited.<sup>192</sup> These references, however, were very much circumscribed geographically, being limited - in the survey material - to Sussex and the western counties of Somerset, Dorset, Gloucestershire, and Wiltshire.<sup>193</sup> As with horse hauling, ox-hauling was very directly connected to certain types of vehicles, in particular, the plaustrum, carrus, and curtana.<sup>194</sup> Except for one ambiguous case,<sup>195</sup> these vehicles were always hauled by oxen in the surveys,<sup>196</sup> just as carts were always hauled by horses.<sup>197</sup> Altogether peasant plaustra, carri, and curtanae were found on just over 50 per cent of manors in the first half of the thirteenth century, declining to just over 20 per cent in the second half.<sup>198</sup> The latter figure is again similar to that found for these vehicles in 1250-1320 demesne account sample. Altogether it denotes a significant loss of popularity in ox-

hauling over the thirteenth century, which can be seen in individual cases, such as that for Robert Hostarius already mentioned (p. 276).

On the other hand, as with the demesne, horse hauling obviously reached very high levels among the peasantry in the later thirteenth century. Whether it declined after this - as it may have done on the demesne (see pp. 182-3 above) - is difficult to say given the unsatisfactory nature of the post-1350 survey material.<sup>199</sup> Court rolls for the late fourteenth century show ox-hauled plaustra in counties such as Durham and Worcestershire, but carts still dominated even here.<sup>200</sup> It is likely that, as with the demesne, any major reversion to ox-hauling did not occur until the fifteenth century, but that it did in some counties is almost certain, as has been noted for Durham (p. 272 above).

Concerning other details of practice, mixed hauling teams were noted at Denton (Sussex) in 1274 and at "Prinkehamme" in Limpsfield (Surrey) in 1312.<sup>201</sup> The Denton peasants were given the option of hauling dung for the lord with four oxen or with one horse and two oxen, while tenants holding forty acres at "Prinkehamme" were to find a horse and two oxen for half a currus; that is, they had to provide half the team for the vehicle. This last entry indicates that the normal hauling team for this currus at "Prinkehamme" was one of two horses and four oxen, and indeed such large teams were often a marked feature of such vehicles. The size of team indicated in the surveys for the various types of ox-hauled vehicles - carri, plaustra, etc. - ranged from two to eight oxen, the mean being about four.<sup>202</sup> For comparison, Gervase Markham in the early seventeenth century indicated that a wain required a hauling team of no less than six oxen, except perhaps at harvest, when four might do.<sup>203</sup> Because of the large size of many of these ox-hauling teams, co-hauling seems to have been a regular feature on some manors, as intimated for Robert Hostarius's predecessor above and the "Prinkehamme" tenants just mentioned. Even more explicit is the recital of carrying services on the Sussex manors

of the bishop of Chichester, where it is openly stated that two tenants, usually yardlanders, were expected to share ox-hauling services.<sup>204</sup> In some cases, the degree of cooperation may well have been greater than this, as indicated by the quarter-carrus and two oxen required of half-virgate tenants at Sturminster Newton (Dorset) for hauling the lord's hay and corn.<sup>205</sup>

That such large teams, often requiring the cooperation between many tenants to assemble them, are not just a fiction of the surveys, much in the way of the Domesday eight-ox plough-team, is indicated by other material. Thus, among forest pleas heard at Carlisle in 12 Edw I, a man from Penrith and his son were charged with cutting down an oak and attempting to carry it away with a plaustrum and eight oxen. Similar offences involving plaustra drawn by six oxen were also heard in the same pleas; and teams of six oxen (three times) or of four oxen (once), drawing the same vehicle, were involved in cases from the Forest of Pickering in 1334.<sup>206</sup>

On the other hand, peasant horse-hauling teams were very much smaller. Teams of two, three, and four horses are all encountered in the surveys, but the most common by far was that of only a single animal.<sup>207</sup> The size of the hauling team depended very much on the job in hand. Small teams of one or two horses were used for short hauling around the farm, while larger teams were used for road transport. A good example of both types is seen at East Dereham (Norfolk) in 1251, where Ralph de Humbeltoft and other virgate holders were required not only to carry dung and corn about the lord's demesne with a cart and two horses, but also to undertake an averagium longum with a cart and four horses to Norwich and other places about ten to twenty miles away.<sup>208</sup> References to co-hauling with horses were less frequent than those for oxen, but it did occur on occasion, and sometimes to such a degree that it may not have been totally necessary. Thus the averagium longum for Ralph de Humbeltoft and his colleagues was to be shared among five of them, presumably four supplying a horse each and



one the cart. The same arrangement was also evident for virgate holders at nearby Shipdham, while at Ely and Doddington (Cambs) co-hauling was considered possible for a single horse and cart!<sup>209</sup> As all the tenants involved held twelve acres or more, it is hard to put this degree of cooperation down to the needs of smallholders.

Finally, some of the carrying services done by horse and cart were, in fact, carried out by smallholders. Thus each of the cottagers at Colne in Somersham (Hunts), holding five acres apiece, were to perform carrying services "si habeat carectam et equum". It should be noted that, in addition, these tenants did a small amount of ploughing (three acres per year), although they were of such lowly status as tenants that they also owed carrying services on foot (averagium pedile).<sup>210</sup>

Carrying services by pack-horse (summagium or averagium cum equo et sacco) were something that a great number of peasants had to perform. They are prevalent in virtually all the surveys, although less in some than in others.<sup>211</sup> As with carting, the chores performed by pack-horse varied from those discharged on the manor itself to those involving long-distance trips. As examples of the first type, tenants at Berkhamsted (Herts) in 1356 were <sup>each</sup> required to take seed from the barn to the fields cum equo suo proprio et sacco, and the same was also required of the reeve at Pegsdon (Beds) in 1255.<sup>212</sup> But more often it was carrying outside the manor that was performed, and long trips "inside and outside" the hundred and county were often specified. As one example out of many, tenants at Longbridge Deverill (Wilts), c.1235-40, were required to supply pack-horse service when needed to any place within fifteen leagues (leucas) of the manor and even to Glastonbury on occasion.<sup>213</sup> Much of this pack-carrying involved taking the lord's corn to market, and here the amount to be carried was often specified, as at Chisenbury (Wilts), c.1230, where virgate holders were to carry to market one quarter of wheat or an equivalent load of other

grains.<sup>214</sup> At modern conversions, the wheat would weigh 504 lbs.<sup>215</sup> This is rather a lot for one horse,<sup>215a</sup> so more than one animal may have been involved. More realistic pack-horse loads for single animals are evident at other places, such as at Borley (Essex) in 1308, where the loads for horses carrying up to twelve leagues from the manor were limited to two bushels of salt, three bushels of wheat, rye, peas, or beans, or four bushels of oats.<sup>216</sup> These loads were obviously much less than those which could be carried by a cart or other type of vehicle, although this may have been compensated for to some degree by the greater speed of the pack-horses. In the end, the transportation of goods by pack-horse was thought, at best, to be only half as effective as, say, hauling by cart. At Longbridge Deverill, for instance, one day of work hauling wood by cart was thought equal to two days by pack-horse; similarly, at East Dereham (Norfolk), an averagium longum by cart was worth five works but only one by pack-horse (although here the question of speed does not enter into the calculations, as only one journey is seemingly being considered in both cases).<sup>217</sup>

The equipment for pack-horses was, in the main, very primitive. Most references simply refer to a "horse and sack",<sup>218</sup> and a similar arrangement appears in a Broughton (Hunts) court roll for 1258, where a substantial free tenant, holding one and a half hides, had to supply a horse, sumpter saddle, sack, and fastening pin for military service.<sup>219</sup> The more sophisticated crooks, pots, and panniers of a later period<sup>220</sup> are noticeably missing. As indicated by medieval illustrations, the normal method of packing may have been simply to tie the filled sack at the neck and throw it across the back of the animal, perhaps tying it down with ropes if necessary.<sup>221</sup>

It is not possible to say with any certainty whether pack-animal usage among the peasantry was increasing or decreasing in the Middle Ages or even at what level it was carried out. It would appear, though, that - in the absence of horse hauling - carrying by pack-horse was of considerable

importance at Domesday.<sup>222</sup> If so, then the general trend in the usage of pack-horses over the Middle Ages was presumably one of decline, since sixteenth- and seventeenth-century evidence indicates that vehicle hauling was by far the most dominant form of transport by this time, although pack-horses were still very prevalent in some areas.<sup>223</sup> At the intervening time of the surveys, however, the pack-horse was clearly still an important element of peasant transport, not only for the peasants themselves but also for the demesne, since, from the lack of pack-horses that they commanded (see p. 149 above), demesne officials were very dependent upon peasants for this quick, if less effective, form of carrying.

Finally, as with harrowing, there were some peasants who did not plough, but who were expected to do pack-horse services. In none of the surveys do they comprise a substantial body of tenants, but they are often found here and there.<sup>224</sup>

Horses were also useful to peasants in other ways. The possibility of peasant horse mills has already been indicated (p. 149). Another obvious use was that of riding. The multi-purpose nature of peasant horses in this regard can be seen at Burton (in Marnhull), Dorset, c.1235-40, where Robert Tac, a virgate holder, was required to ride to a hay-making service at Sturminster Newton on his offer (for which the animal was given fodder), as well as using it as a pack-horse and for harrowing at other times.<sup>225</sup> Pasture or stubble in the fields was also supplied to horses ridden by peasants of the tithing of Woodland in Taunton (Somerset), c.1245-52, when they attended harvest and hay-making services on the lord's demesne, presumably some distance away.<sup>226</sup> For freemen, services due to the lord that required riding horses might include message carrying or accompanying the lord's officials in some capacity.<sup>227</sup>

We shall conclude this section with a few general points. The most

obvious one is that the horse was a very versatile animal for the peasant. It was extremely handy for harrowing, hauling, pack-work, riding, and perhaps even milling. Only in the instance of ploughing were oxen likely to be better, and even here horses often took a part. In any case, ploughing animals were probably the last a peasant would have, since the surveys indicate that he was more likely to have animals for harrowing and pack-work or even riding and hauling first, mainly because one animal - that is, a horse - could do all these jobs, while ploughing required several. Thus it was entirely feasible to find a group of tenants on a manor who had horses for all the subsidiary tasks but stopped short of owning plough animals. This group would be comprised not only of smallholders but also of more substantial tenants who for one reason or another found themselves short of plough beasts. It is difficult to say how large this group was with its limited draught capacity. The lay subsidy and heriot material we have already examined indicates that it was quite sizeable, and thus it had a marked effect on the number of horses found in villages. On the other hand, the survey material, while at times indicating the group's presence, nonetheless tended to minimise it considerably. Much of this is due to the nature of the surveys themselves, which often adopted an "all or nothing" policy: that is, tenants were listed as performing the full battery of ploughing, harrowing, hauling, and pack-horse services, or not at all. The fact that a smallholder might have a horse to do some of these tasks was simply not catered for.<sup>228</sup> As a result, the surveys are ambiguous about this "limited draught capacity" group and can tell us little about its size except the fact that it existed in some areas at least. What is clear from the surveys is that, in the use of horses versus oxen, substantial tenants were to a large degree removed from this group and employed draught animals in ways very much closer to those used on the demesne.

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c) The Size of the Peasant Plough-team, 1200-1500

Direct evidence about the size of the peasant plough-team is unfortunately very scarce, and much must be derived from inference. Dealing with the early evidence first, that is, that before the Black Death, peasant plough-teams were often shown as being quite large. We have already mentioned the mixed team of two horses and four oxen found at Thorpe Satchville (Leics) in 1284, and the "horses and oxen" found in the plough-team of the Bretby peasant above (p. 278) indicate that the team was of some size, probably at least four animals. Large peasant plough-teams are also indicated in the surveys. For instance, it is specified in a 1299 extent for Henbury-in-Salt-Marsh (Glos) that virgate tenants should perform ploughing services with teams of six oxen, although these teams were still very much smaller than those of ten oxen apiece found on the demesne at Henbury ten or so years earlier. At nearby Shirehampton in the same extent half-virgate tenants were similarly instructed to plough with six oxen in winter and eight in summer, while at Sturminster Newton (Dorset), c.1235-40, every tenant holding two virgates was supposedly to plough with six, eight, or even ten oxen in a team, the acreage of the ploughing service required being proportional to the number of oxen he supplied.<sup>229</sup> Eight-ox teams were also requested of tenants at Ashbury (Berks), Nettleton (Wilts), and Pilton (Somerset), and a six-ox team of tenants at Walpole (Norfolk), although in all these cases, except Pilton, it was acknowledged that the tenant might have ploughed with less.<sup>230</sup> Only at Bugthorpe (Yorks) in 1295 was a significantly smaller number of ploughing animals implied. Here Simon, son of Geoffrey, holding one and a half bovates "in bondage", was required to find three "animals" and a harrowing horse for boon service at the winter and spring sowings. It is difficult to say, however, whether the three "animals" comprised a plough-team or not.<sup>231</sup>

It should be noted here that the generally large size of the plough-

team given in the surveys may not have reflected actual team sizes, but a notion in the minds of manorial officials as to what the size should be. Other more indirect references tend to indicate smaller teams. For example, jurors at Gransden (Cambs) in 1251 stated that Andrew le Wodeward, holding a virgate of eighteen acres in customary tenure, was allowed to have four oxen of his plough "at most" pastured along with the oxen of the bishop of Ely, his lord. However, the jurors go on to say that "if he yokes with fewer (oxen), then he will have less (oxen) in the aforesaid pasture."<sup>232</sup> The passage strongly implies that a plough-team of four oxen was the normal occurrence, although it could vary according to circumstances. Similarly at Stoke sub Hamdon (Somerset) in 1287, Walter Vox and others holding a half-virgate apiece in villeinage, were each to plough and harrow an acre in winter, called a "lesacre", for which each was allowed pasture for two oxen and a horse (affrus).<sup>233</sup> Since co-aration was not indicated for this particular boon (although it was for a later one), then the passage might imply that pasture was being allowed for a two-ox plough-team and a harrowing horse. On the other hand, at Warboys (Hunts) in 1251, it is stated that each person in the community was allowed pasture for six oxen and two horses in the woods, marshes, and other places in the manor "along with the plough-teams of the Abbot", which might imply very large plough-teams for the tenants of this particular village.<sup>234</sup>

The evidence after 1350, although scarcer, is more definite. Thus the three- and four-horse plough-teams already cited for Wistow and Wetwang above (pp. 279-80) seem fairly certain. The smaller nature of the all-horse teams here is hardly surprising after our study of such teams on the demesne, which could be as small as two horses in such areas as north-west Norfolk.<sup>235</sup> Presumably the same applied for the peasantry in these areas, and certainly two-horse plough-teams can be implied for such places as Cuxham in Oxfordshire.<sup>236</sup> All-ox plough-teams in the post-Black Death period might have been smaller for the peasantry as well. There is no

definite evidence for this, but it is notable that the ploughs in R.K. Field's principalia lists for Worcestershire in the late fourteenth and early fifteenth century have only one yoke apiece, implying that the ploughs were each drawn by only two oxen.<sup>237</sup>

Altogether we have a bewildering array of possibilities as to the size of the peasant plough-team. We have also to consider various items of literary evidence, such as the four-ox plough-teams indicated by the Piers Plowman legends,<sup>238</sup> not to mention the evidence from medieval illustrations, which also indicates small plough-teams, some of them probably representing peasant ploughs.<sup>239</sup> Is it possible, then, to make some sense out of this often conflicting material? A useful point of comparison may be to consider sixteenth-century material when evidence about plough-team size is at least a little more forth-coming. From an examination of a large body of probate wills and inventories, forty-five cases were found, covering the period from 1506 to 1590, where the size of the team was given or could be inferred with a reasonable degree of probability.<sup>240</sup> These are summarised by county in Table 4.12.

As might be expected, the table displays a great variety in plough-team size, from two horses to eight oxen. The mode team size for both the all-ox and all-horse plough-teams was four animals per plough, although the mean all-ox team size, at 5.2 animals per plough, was significantly larger than that for the all-horse teams (3.6 animals per plough). In both cases, these were over two animals per plough shorter than the average all-ox and all-horse plough-teams on the medieval demesne (see p. 150 above). Definite references to mixed plough-teams were entirely absent, but it would be surprising if there were none at all at this time, since documentary and iconographic evidence from the seventeenth century clearly indicates that they were fairly common in some parts of the country at least.<sup>241</sup> Nevertheless the absence of verifiable references to mixed plough-teams in the sixteenth-century material would seem to suggest a

TABLE 4.12

Distribution of Sixteenth-Century Plough-team Sizes<sup>242</sup>

a - No. of Cases  
b - No. of Teams

1. All-ox Teams

County	No. of Oxen in Team							
	2		4		6		8	
	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>
Berkshire	-	-	1	2	-	-	-	-
Buckinghamshire	-	-	-	-	1	1	-	-
Cornwall	-	-	1	2	-	-	-	-
Devon	-	-	1	1	-	-	-	-
Dorset	-	-	-	-	1	1	-	-
Gloucestershire	-	-	-	-	1	2	-	-
Hampshire	-	-	2	3	-	-	1	1
Kent	-	-	1	1	-	-	-	-
Lincolnshire	-	-	1	1	-	-	-	-
Oxfordshire	-	-	1	2	-	-	-	-
Staffordshire	-	-	-	-	1	1	-	-
Sussex	-	-	1	1	1	1	-	-
Warwickshire	1	1	-	-	-	-	-	-
Westmorland	-	-	-	-	-	-	1	3
Wiltshire	-	-	-	-	1	2	-	-
Yorkshire	-	-	1	1	1	1	1	1
Total	1	1	10	14	7	9	3	5
% (Cases)	4.8		47.6		33.3		14.3	
% (Teams)	3.4		48.3		31.0		17.2	

2. All-horse Teams

County	No. of Horses in Team									
	2		3		4		5		6	
	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>	<u>a</u>	<u>b</u>
Bedfordshire	-	-	1	1	-	-	-	-	1	1
Berkshire	-	-	1	1	-	-	-	-	-	-
Buckinghamshire	-	-	-	-	-	-	-	-	1	1
Dorset	-	-	-	-	-	-	1	1	-	-
Essex	-	-	-	-	-	-	-	-	1	1
Huntingdonshire	-	-	1	1 <sup>243</sup>	-	-	-	-	-	-
Kent	2	2	-	-	-	-	-	-	-	-
Norfolk	4	5	-	-	-	-	-	-	-	-
Northamptonshire	-	-	1	1	1	1	-	-	-	-
Suffolk	-	-	1	1	4	5	-	-	1	1
Warwickshire	-	-	-	-	1	1	-	-	-	-
Worcestershire	-	-	-	-	1	1	-	-	-	-
County Unknown	-	-	-	-	1	1	-	-	-	-
Total	6	7	5	5	8	9	1	1	4	4
% (Cases)	25.0		20.8		33.3		4.2		16.7	
% (Teams)	26.9		19.2		34.6		3.8		15.4	



falling-off of popularity in the use of such teams since the Middle Ages, as they were gradually replaced by all-horse teams.

The generally smaller teams noted in the sixteenth-century material suggests the possibility that such small teams already existed to a considerable degree in medieval times. The evidence also suggests that there was more than just a passing connection between farm size and the size of the plough-team. Thus the eight-ox plough-teams in Table 4.12 were only found on the very largest of farms. From the amount of stock involved, it would seem these farms were equivalent in size to medieval demesnes.<sup>244</sup> Lesser farms in the table clearly made do with lesser teams.<sup>245</sup> We should also remember that the wills and inventories used in Table 4.12 would tend to deal mainly with prosperous farms.<sup>246</sup> Thus, if the smallholding group had been better represented in the table we might have had a larger proportion of smaller teams.

The concept of a plough-team varying with holding size is an attractive one for explaining some of the paradoxes associated with the medieval plough-team. But does it have much basis in fact? We have seen from the patchy medieval evidence that there was some variety in the size of the peasant plough-team, and this variety in team size is also reflected in the sixteenth-century evidence. Unfortunately there are not enough data, even for the sixteenth century, to allow a detailed breakdown of plough-team versus holding size, and other more indirect methods must be employed. One way may be to consider co-aration again. It has long been maintained that the necessity of a large plough-team required the cooperation of peasant farmers. Thus, two, three, four, or even more peasants would need to club together to make up, say, an eight-ox team. If, however, peasants in the main managed to avoid having to participate in co-aration, then it would indicate a more flexible approach to ploughing, involving - presumably - smaller teams. We have already reviewed the twelfth-century evidence, which does indicate that peasants tended to plough separately

with the resulting probability of smaller plough-teams.<sup>247</sup> Does the post-1200 documentation tell us the same thing?

First, it must be said that references to co-aration occur with some frequency in the agrarian records of the thirteenth and fourteenth centuries, particularly in the extents and surveys.<sup>248</sup> This does not mean that the practice was predominant at the time, since, as we shall see, there are also numerous indications of peasants ploughing alone; but certainly the references to co-aration in the thirteenth century in particular represent a marked increase over those evident in the preceding century.<sup>249</sup> This is only what we should expect given the population growth of the period, as declining levels of land and livestock per person forced peasants to pool their resources. In a few cases, the surveys indicate that this degree of cooperation could be quite intense. Thus at Barton in the Clay (Beds) an inquest dated 39 Hen III stated that four or even eight men may have been joined at a plough, if circumstances made it necessary.<sup>250</sup> Similarly at Horningsea (in Ditton, Cambs) in 1251 Roger Holdeye, holding a half-virgate of fifteen acres, was to plough weekly for the lord in such a way that he and three of his companions would make a plough-team of eight animals (bestias).<sup>251</sup> Arrangements of such complexity as these begin to resemble the ploughing clauses of the Welsh Laws,<sup>252</sup> but to suggest that this was the normal case in England would be grossly misleading. In fact, the vast majority of references to co-aration indicates that it was very much a function of individual circumstances and by no means a ruling condition for the peasantry as a whole. One of the best examples of this is provided in the services recited for William le Neweman, holding a virgate of twenty-four acres in villeinage on the Ramsey Abbey manor of Ellington (Hunts), c.1250:

"Item if he (William) has ploughed alone (i.e, has been accustomed to ploughing alone), he will plough one-half acre each Friday during the year at ploughing time; and

if he has ploughed with another, or with others, all will perform together the same that he would have ploughed if alone."<sup>253</sup>

The clerks or monastic officials making up the extent have clearly recognised what is evidently a shifting situation. William may have had his own plough-team; equally he may not have, in which case he would have to cooperate with at least one other tenant to fulfill his ploughing services. Most other references to co-ration are similarly stated. Thus, as a few examples, at Ely (Cams) in 1251 customary tenants holding eighteen acres apiece were each required to attend a plough-boon if they had a whole plough-team, or if they ploughed with others, the amount to be ploughed - three roods - being the same in either case.<sup>254</sup> At Bromham (Wilts), t. Edw I, it is stated that if any of the "major yardlanders" did not have his own plough-team (carruca) the lord's sergent would provide him with a friend with whom he could join (to make up a plough), while at Monk Fryston (Yorks) in 1320 it is specified that if a tenant holding an oxgang did not have a whole team he was to join with a neighbour, and the value of his ploughing would be reduced by a half.<sup>255</sup>

The Ellington and other examples suggest that the land-holding threshold below which peasants generally had to practice co-ration was something less than a virgate. This "threshold" can be seen among the tenants of Swandrop in the large manor of Crodal (Hants) in 1287. John Chapellayne, for instance, holding a virgate containing twenty-four acres, was to plough three acres at the winter seeding and three at the Lenten seeding. Co-ration was not indicated in any way.<sup>256</sup> However, when we consider the half-virgate holding of Elvitha Sterclesdene, containing sixteen and a half<sup>acres</sup> (sic; the size of the virgate varied enormously on this manor, even within hamlets), the records changes slightly. Here it is stated that if Elvitha has her own plough or plough-team she will fulfill the same services as John Chapellayne.<sup>257</sup> The conditional clause, however, indicates that she might not

have her own plough-team. The situation becomes even more doubtful when we descend to the holding of Henry de la Lynch, containing a quarter-virgate of twelve acres. Now the record states: "if he (Henry) has his own full plough-team or a half (of a team), then he will plough, as his neighbours, three acres in winter and three acres in Lent."<sup>258</sup> Here only John Chapellayne was virtually certain to have his own plough-team. There was a good chance that the other two tenants did as well, but a certain level of doubt has crept in, particularly in the case of Henry de la Lynch, for whom co-aration was thought likely enough to add the qualifying "half plough". We might say, then, that co-aration in this community was only likely with holdings of less than twenty acres; indeed it was probably only common for those holdings of twelve acres or less.

Is it possible to dismiss the case of Swandrop as exceptional in its low level of co-aration? It would appear not. References in other surveys indicate even lower levels, with tenants having less than ten acres of land ploughing alone.<sup>259</sup> In fact, references to co-aration in general in the surveys are greatly outnumbered for almost all sectors of peasant society by those references which indicate individual ploughing or at least fail to mention co-aration altogether. As has already been suggested,<sup>260</sup> this may only mean that the people drawing up the surveys and extents simply considered co-aration as such a commonplace event that they failed to see the need to mention it. Nonetheless, many of the references are clear enough to indicate that individual ploughing by peasants was very common. Thus at Street in Somerset, c.1235-1240, Jordan de Legha, a customary virgate holder, was to come to the lord's plough-boons "with all his oxen joined to his plough".<sup>261</sup> Again at Gorton (Lancs) in 1320, Henry le Reve, holding a bovate in villeinage, ploughed for the lord "with his own plough (or plough-team)".<sup>262</sup> A reference of a different kind is evident at Frome Episcopi, Herefordshire, in the second half of the thirteenth century, where it is stated that five virgates of land ought to find five ploughs or plough-

teams on two occasions during the year, the implication being that each virgate ploughed individually.<sup>263</sup>

We have up till now been considering only the evidence from extents and surveys. These are generally statements of intent rather than a record of actual events, and thus they depict co-aration as the clerks conceived it to be, not necessarily as it was in day-to-day practice. It rests on other types of documents, such as accounts and court rolls, to show it in working operation. The main impression gained from this alternative material, however, is how few times co-aration is actually mentioned. References to the practice never appear in village by-laws and are only seldom found as a subject of dispute in court or in those sections of the accounts dealing with labour services.<sup>264</sup> Those<sup>references</sup> from the accounts, for instance, are particularly hard to find and generally only confirm the impression given by the surveys. Thus in the works section of an account for Tickhill (Yorks) in 1315-6 it is stated that each tenant residing in socage and "having a whole plough or joining with a friend" owed two ploughing services per year.<sup>265</sup> In 1370-1 an account for Longthorpe (Northants) recorded ploughing services for nine virgates and one rood of "Weynlond", the holders of which ploughed a day in winter and one in Lent, whether they had their own plough-teams or "joined" with others.<sup>266</sup> Both these references confirm the existence of some co-aration at least, although not the extent of it. In an account for Bourton-on-the-Hill (Glos), however, again in 1370-1, it is recorded that twenty-four out of ninety-four potential ploughing works were allowed to twelve tenants who joined together because they did not have whole plough-teams.<sup>267</sup> Depending on the degree of co-aration, these twelve tenants may have comprised more than half the tenants owing ploughing services.<sup>268</sup> This is a significant proportion, but it is difficult to say how typical it was, since other accounts indicate a complete absence of co-aration. Thus at Wisbech Barton (Cambs) in 1419 eighteen customary

tenants with eighteen plough-teams came to a winter plough-boon called a "benerth". Similarly the works section of a 1362-3 account for Knowle (Warks) states that nine customary tenants having nine plough-teams owed four days ploughing to the lord during the year.<sup>269</sup> These references seem to indicate fairly conclusively that the tenants involved in these services ploughed individually. They are of late date compared to the survey material, but the same individualism in ploughing can be observed in an earlier example from Cuxham in Oxfordshire, where eight half-virgate tenants showed up for a plough-boon, all with their own ploughs, in 1288-9.<sup>270</sup>

Altogether these few references from the accounts indicate that the amount of co-aration might have varied from place to place, but that, at best, it involved only a proportion of the peasantry, probably a small one in most cases.<sup>271</sup> More clues can be gained from those few disputes concerning co-aration that occurred in the manorial courts. These generally emphasise the small-scale and transitory nature of cooperative ploughing. Thus, from a court case in Thorner (Yorks) in 1365, one man accused another of defaulting on a ploughing partnership called a narrow, where each man was required to supply an equal number of animals to the plough each year.<sup>272</sup> Another case in Yorkshire from nearly a century earlier (1286), states that "Richard de Tothill was the companion of Roger de Bosco to plough jointly with his plough, and at the time of ploughing cast him off, so that his lands lie untilled."<sup>273</sup> Similarly, in Holderness in 1300, a Richard Wilmot complained that his neighbour, Herbert Bowman, unyoked his ox and led it away despite an agreement they had to plough jointly.<sup>274</sup> Yet again, in the Hundred Rolls (1275), a villager of Belton in Lincolnshire complained that he was unable "to find...a single neighbour who dared yoke an ox to a plough with him because of (the bailiff's) forbiddance and power."<sup>275</sup>

Co-aration is also indicated in a lengthy court entry for Chalgrave (Beds), where in 1313 John Gildulf, Robert le Reve, and William ate hall

were allowed to be quit of ploughing services simply by contributing their animals to other tenants' plough-teams. The case is interesting because Gildulf and Robert le Reve already had a history of non-fulfilment of ploughing services.<sup>276</sup> It seems here that the lord had finally acknowledged that these men were no longer capable of performing their ploughing services by themselves and thus allowed them to perform these services in league with others. A similar case in reverse is indicated at Rastrick (Yorks) in 1309, when a certain Henry Steven of Fixby was charged with concealing "a certain custom of ploughing". This "custom" required Henry to pay 4d. for a whole plough and 2d. for half a plough yearly in return for a holding of twelve acres; Henry, however, had "withheld the service for 10 years, namely as to  $\frac{1}{2}$  a plough for 8 years, and to a whole plough for 2 years, which amounts to 2s."<sup>277</sup> The passage clearly relates to a commuted ploughing service which has not been paid for some years. The court, however, still took note of Henry's ploughing situation; and, although co-aration is not specifically mentioned, it is implied from the record that Henry, with his half-plough, joined with another for eight years and ploughed on his own for two, perhaps in that order.

A few more examples of definite or implied co-aration could be given here,<sup>278</sup> but enough have been indicated to make some rough conclusions. First, from the evidence gathered, co-aration would seem to be a casual affair, with tenants dropping into and out of the practice virtually at will. In this case, it may have been no more significant than the cases of borrowing or hiring of ploughing facilities that also occur in the documents.<sup>279</sup> Nowhere does co-aration appear to have been a highly organised affair. Although the survey and extent material sometimes indicates the possibility of four or more tenants cooperating to do their ploughing, only two ever seem to be involved in court cases. It can again be suggested that this was because peasants cooperated to make up the large teams demanded by the lord for his ploughing services, but did so to a much lesser extent

on their own lands.<sup>280</sup> This may have been so in some cases,<sup>281</sup> but that it happened everywhere is belied by the account evidence given above and the fact that, as we shall discuss very shortly, there is so little evidence of co-aration in ploughing service violations. In fact, the predominant practice, particularly among major tenants, was probably to plough individually. Cases of bad ploughing during plough-boons, default of ploughing services, or trespasses while ploughing, were normally made against single defendants.<sup>282</sup> This may not signify much in the case of trespasses, since charges would probably only be brought against the man whose land was being ploughed, whether he was being helped by another tenant or not. But it is harder to explain in cases involving the default or poor performance of ploughing services, where it would seem to be in the lord's interest to charge all the peasants involved. Other evidence from the court rolls strongly indicating a lack of cooperation in ploughing is that supplied by the Worcestershire principalia lists already referred to. Of those published by R.K. Field, the interesting feature is that, excepting cottagers having less than a half-virgate of land, 90 per cent of the remaining tenants, that is, half-virgaters and above, had full sets of ploughing equipment.<sup>283</sup> If co-aration was being practised to any great degree in this area, there would seem to have been a remarkable excess of ploughs. It would appear from this that Worcestershire virgate and half-virgate tenants at this time (the late fourteenth and early fifteenth century) were well accustomed to individual ploughing, and we must presume from the other evidence given that such a situation was by no means uncommon in the rest of England as well.

What does all this tell us about the size of the peasant plough-team? Generally, the relative lack of co-aration indicated above supports the thesis of smaller peasant plough-teams. If eight-animal teams were the norm, as they were on the demesne, it would seem inconceivable that there



should have been so little cooperative ploughing, before or after the plague. From the evidence of the medieval peasant inventories and the the lay subsidies, only a very few tenants had the draught capacity to cope with demesne-sized teams. In short, plough-teams of the size shown for the sixteenth century in Table 4.12 were much more likely to have been the case for the medieval peasantry. This would then suggest a range of plough-team sizes for the peasantry from two to six animals, excluding the eight-ox teams as a preserve of only the largest of farms. Some at least of the evidence we have as to peasant plough-teams, especially that outside the surveys, also indicates teams grouped around the four-animal mark. But this and the sixteenth-century evidence are strongly biased towards more substantial tenants, and thus the proportion of very small plough-teams among the medieval peasantry may have been much higher than that indicated in, say, Table 4.12, especially as co-aration was not absolutely certain even among smallholders having less than ten acres.<sup>284</sup> Certainly there are signs that two-animal teams may have been very common among the peasantry, as at Cuxham.<sup>285</sup> Altogether the evidence points to a gradation of plough-team size, with demesnes and perhaps the very largest of peasant farms ploughing with teams centred around the eight-animal mark; middling or large peasant farmers, that is, those holding, say, a half-virgate to two virgates, employing middle-sized teams of up to four or even six animals; and smallholders ploughing with the smallest teams of all, possibly consisting of only two animals. The continual recurrence in the surveys of the statement that a peasant will plough "with as many animals as he has in his plough (or plough-team)" shows the uncertainty over the size of peasant plough-teams and the fact that it may have varied considerably even within the same manor.<sup>286</sup> The small plough-teams pictured in medieval illustrations thus become much more plausible when looked at in this light, and many of them may well have represented true peasant teams.<sup>287</sup> The picture, of course, is complicated by the factor of regional variations in soil and

terrain, which would have made small plough-teams more unlikely in some areas, such as on heavy clay lands, than in others, although even in these regions of difficult land some differences in plough-team size found on large versus small farms was seemingly evident, as at Henbury-in-Salt-Marsh above.<sup>288</sup>

As for the large demesne plough-team, far from being essential to all levels of farming, the evidence suggests that it was only needed for the largest of farms; here long ploughing seasons required substantial plough-teams to prevent the over-taxing of individual animals. In this regard, the large plough-teams are very unlikely to have been the forerunners of smaller teams, as Seebohm suggested,<sup>289</sup> but in fact may have been relatively recent creations to accommodate the cultivation of large estates in the particular farming conditions existing in north-west Europe. From the numbers of oxen in some of the French polyptyques and Anglo-Saxon stock-and-land leases, often neatly divisible by eight, these large plough-teams, however, were common by the ninth and tenth centuries at least.<sup>290</sup>

This interpretation of a large plough-team for large estates does contradict the Welsh Laws, which do apparently show a very complex system of co-aration between Welsh smallholders, involving an eight-ox team. Here, though, the creation of such a large team may be a special feature of a highly pastoral economy. It is to be noted that the amount of land involved was only twelve "acres".<sup>291</sup> Why such a large plough-team should be needed for such a small acreage is puzzling, especially as Giraldus Cambrensis indicates that plough-teams of four and even two oxen were well-known in twelfth-century Wales,<sup>292</sup> perhaps as much as two centuries after the Laws were codified. It may, however, have much to do with the extensive cultivation of temporary outfield, which seems to have been a feature of Welsh agriculture at this time.<sup>293</sup> Perhaps the potentially large acreage of this outfield and the difficulty in ploughing it encouraged the Welsh peasants to farm it in a demesne-like fashion. This, however,

is well outside the scope of this study and can only be offered as a possibility here.

What seems clear is that the large plough-team was never an essential part of English peasant farming. Thus the role of communal ploughing in the open-field system was apt to be a rather minor one. Most peasants, in fact, opted for a much more individualistic mode of cultivation, preferring to avoid the complications and inevitable frictions that accompanied co-aration. There is little reason to believe that the situation had changed markedly from the past. If we can believe ancient and medieval<sup>illustrations</sup> at all, they indicate that small plough-teams of no greater than four animals had a continuous history stretching back to Roman times and before, regardless of the type of plough in operation. It would seem pointless to discount this source entirely to accommodate the large demesne plough-team, when that team itself can be accounted for simply as an accessory for large-scale farming that in no way excludes the possibility of smaller teams for the peasantry.

#### d) Ploughs, Harrows, and Vehicles on Peasant Farms, 1200-1500

To a large extent, the preceding discussion on peasant plough-teams is related to the type of plough the peasant used. Unfortunately specific documentary evidence about peasant ploughs is virtually non-existent, and much of what we can discover about them must necessarily be inferred from other indicators, such as plough-team size.

The item of most crucial importance is whether peasants in medieval England used ards (or scratch ploughs) that generally only scored the surface of the ground, or the heavy mould-board ploughs that could turn a substantial furrow. The argument relating the heavy mould-board plough with the long, narrow strip is well-known from the writings of Marc Bloch,<sup>294</sup> and the lack of cross-ploughing in medieval England of the type normally associated with scratch ploughs<sup>295</sup> is a strong point in favour of the view

that peasants in both Europe and England used only mould-board ploughs. But arguments of this type often depend on the view that the normal peasant plough-team was one of about eight animals.<sup>296</sup> As we have seen, the evidence indicates that this was by no means the case; for the majority of peasants much smaller plough-teams were the normal occurrence. The question is: were these smaller teams also linked with smaller and lighter ploughs, possibly of the ard type? Unfortunately it is almost impossible to tell. According to F.G. Payne, the assymetric shares and coulter found as early as Romano-British times and before points to a long history for the mould-board plough in England.<sup>297</sup> On the other hand, coulters in particular could also be found on ards.<sup>298</sup> Linguistic evidence is equally ambivalent. The term carruca is used almost exclusively in the surveys when describing peasant ploughs or plough-teams;<sup>299</sup> this may indicate the mould-board plough, although, as we have already observed,<sup>300</sup> the distinction between the terms carruca and aratrum in the documents seems to bear little relationship to the type of ploughs in actual operation.<sup>301</sup> Medieval illustrations offer a little more help. What looks to be a peasant plough, because a woman is driving it, appears in a late fourteenth-century copy of Langland's Piers the Plowman.<sup>302</sup> The plough, drawn by two oxen, has a large and pronounced mould-board. If other English medieval illustrations showing small plough-teams can also be considered as likely peasant ploughs, then some of these have mould-boards as well.<sup>303</sup> Finally, Fitzherbert, writing virtually at the end of the medieval period, lists mould-boards as an essential part of ploughs at the time, although here he is probably concerned more with large farms than small ones.<sup>304</sup>

It would seem, on balance, that the English peasantry of the last three centuries of the Middle Ages used mould-board ploughs rather than ards, although substantial differences in the quality of these ploughs undoubtedly existed. Furthermore, if used sparingly, small plough-teams

could probably have pulled mould-board ploughs with comfort, as indicated in the Piers the Plowman illustration just mentioned. It was only for extended ploughing over long periods of time that larger teams would be needed.<sup>305</sup>

It is equally difficult to tell much about the other features of peasant plough design, such as whether they were wheeled, foot, or swing ploughs. The post-1200 illustrations - if we assume that some of them at least portray peasant ploughs - show mainly swing ploughs.<sup>306</sup> This seems to be a trend away from the wheeled ploughs of earlier illustrations.<sup>307</sup> There is, however, a reference to a peasant having to make plough wheels for the lord as a labour service at Limsfield (Surrey) in 1312,<sup>308</sup> and it is possible that this man also made plough wheels for his peasant neighbours.

If the evidence about peasant ploughs in medieval England is scanty, even less is known about peasant harrows. That peasants did harrow has already been discussed, and since they seem in general to have employed the same one-horse harrowing teams as on the demesne (see pp. 145, 281 above), we can perhaps surmise that peasant and demesne harrows were therefore similar and probably looked something like the Luttrell Psalter harrow or that described by Fitzherbert.<sup>309</sup> Some peasants at least had ox-harrows (see pp. 280-1 above), but again we have no real idea as to what they looked like, beyond presuming that they may have been similar to those on the demesne.<sup>310</sup>

Rather more information exists for peasant vehicles, mostly from the surveys and extents, where altogether seven different vehicle types or terms were specified - carecta (or cart), carrus (also carra or currus), plaustrum, curtana, quadriga, biga, and tumberellus (or tumbrel) - all in relation to hauling services (for example, see pp. 281-5 above). These

terms have all been encountered in previous chapters, but the survey material does add considerably to our knowledge about the vehicles that these terms represented, particularly for the thirteenth century. As an aid to analysis, all the manors for which peasant vehicle terms were given in the surveys have been arranged by county and the vehicle (or vehicles) indicated, as shown in Table 4.13. This exercise was only performed for the two halves of the thirteenth century, since there was not enough data after 1300 to allow a satisfactory analysis.

As with the account material examined for the demesne, the most common peasant vehicle indicated in the surveys was the cart (carecta). In the 1201-1250 period it was found on 69.0 per cent of manors for which peasant vehicle terms were given, rising to 89.4 per cent in the 1251-1300 period. As has already been indicated (pp. 281-2, 284), it was always horse-hauled and fairly light, since a single animal most normally drew it.

The second most popular vehicle in the surveys was the carrus (sometimes carra or currus). Its presence in the surveys, along with that of the plaustrum, declined markedly over the thirteenth century. In fact, the surveys indicate that the carrus and the plaustrum were virtually the same vehicle. Both were ox-hauled,<sup>311</sup> and both had double the capacity of carts.<sup>312</sup> In some cases the terms are used so interchangeably that it is almost certain that they signified the same vehicle. Thus at Thorpe-le-Soken (Essex) in 1222, tenants called hidarii had to find "one carrus with two men to carry hard corn and another to carry soft corn, and each plaustrum will have one sheaf."<sup>313</sup> It may be, as suggested in Chapter 3,<sup>314</sup> that the term carrus is the older of the two signifying the same vehicle; in this case, the more backward-looking surveys have kept it in currency longer than other more contemporary-minded documents, such as accounts.<sup>315</sup> Whether the same vehicles or not, carri and plaustra must have been very heavy, as six- and eight-ox teams were often needed to haul them.<sup>316</sup> Nowhere in the peasant material was there a reference to the covered, four-

TABLE 4.13

Peasant Vehicle Type Distribution<sup>317</sup>

C - cart ( <u>carecta</u> )	Q - <u>quadriga</u>
Ca - <u>carrus</u> , <u>carra</u> , or <u>currus</u>	B - <u>biga</u>
P - <u>plaustrum</u>	T - <u>tumbrel (tumberellus)</u>
Cu - <u>curtana</u>	

a) 1201-1250

## No. of Manors Having a Particular Peasant Vehicle

County	<u>C</u>	<u>Ca</u>	<u>P</u>	<u>Cu</u>	<u>Q</u>	<u>B</u>	<u>T</u>
Beds	2	-	-	-	-	-	-
Berks	1	-	-	-	-	-	-
Cambs	2	-	-	-	1	1	-
Dorset	-	2	2	-	-	-	-
Essex	1	3	8	-	-	-	-
Hants	1	-	-	-	2	-	-
Hunts	6	-	-	-	-	-	-
M'sex	3	-	2	-	-	-	-
Norfolk	2	1	1	-	1	-	-
Notts	6	1	-	-	-	-	-
Somerset	7	13	3	-	-	-	-
Sussex	-	1	-	-	-	-	-
Wilts	9	2	2	-	2	-	-
Total	40	23	18	-	6	1	-
% (from a total of 58 manors)	69.0	39.7	31.0	-	10.3	1.7	-

b) 1251-1300

Beds	1	-	-	-	-	-	-
Cambs	12	-	-	-	-	-	-
Essex	3	-	-	-	-	-	-
Glos	9	4	2	-	-	-	-
Hants	7	-	-	-	-	-	-
Herts	4	-	-	-	-	-	-
Hunts	8	-	-	-	-	-	-
Norfolk	10	-	-	-	-	-	2
Oxon	1	-	-	-	-	-	-
Somerset	5	2	2	-	-	-	-
Suffolk	6	-	-	-	-	-	2
Sussex	2	3	2	1	-	-	-
Warks	2	-	-	-	-	-	-
Wilts	1	1	-	1	-	-	-
Worcs	4	2	-	-	-	-	-
Yorks	1	-	-	-	-	-	-
Total	76	12	6	2	-	-	4
% (from a total of 85 manors)	89.4	14.1	7.1	2.4	-	-	4.7

wheeled carrus found in seigneurial households.<sup>318</sup>

The other certifiable ox-hauled vehicle was the curtana found on certain of the manors of Battle Abbey.<sup>319</sup> These may have been shorter versions of the carrus, also found on these manors, as the normal hauling teams for these curtanae were quite small, being no more than four oxen, and often only two, or even one.<sup>320</sup> The carri on the same manors, however, were also hauled by teams of only two to four animals,<sup>321</sup> and the difference may have been one of function rather than size. Thus, it is to be noted that the carri or carri-loads (cariati) were mentioned in relation to the hauling of all goods, that is, corn, hay, wood, dung, and so on, while the curtanae seem, here at least, to have been reserved solely for hauling dung. Perhaps they had some form of tipping action,<sup>322</sup> although to require teams of up to four oxen they still must have been of a fair size.

Quadrigae were found in a few cases in the early thirteenth-century extents, but the vehicle tends to fade out after that, confirming the impression gained from studying the demesne records that, as a term at least, it was becoming antiquated.<sup>323</sup> Information regarding the vehicle itself is contradictory. Ox-hauled quadrigae appear in Bishop Hatfield's survey for the see of Durham in the late fourteenth century,<sup>324</sup> but these are simply repetitions of the wine-hauling services already observed in the Boldon Buke two centuries earlier and possibly obsolete even then.<sup>325</sup> More contemporary references indicate a horse-hauled quadriga. Thus at Monxton (Hants), c.1230, William Becco, holding two virgates, was required to cut brushwood equivalent to "one quadriga-load of two horses".<sup>326</sup> In the same extent the term quadrigatas was replaced in a later copy by the term carretta.<sup>327</sup> Altogether this seems to point to some sort of horse-hauled cart, although, with the references to ox-hauled quadrigae above, this can by no means be certain.

The term biga only occurred once in the surveys and extents examined



for this chapter, so it is difficult to add much to what has already been said.<sup>328</sup> Presumably it was similar to a cart.

Tumbrels were mentioned on four manors. They were clearly distinct from carts, but similar in capacity. Thus, tenants at Walpole and Walton, Norfolk, in 1251 had to find carts or tumbrels (carectas vel tumberellos) to carry dung, for which the lord was to find them horses.<sup>329</sup>

Categorising the seven vehicle types, then, the terms carecta, tumbrellus, and probably biga represented horse-hauled vehicles, while ox-hauled vehicles were represented by the terms carrus, plaustrum, and curtana. Excluding the quadriga as being indeterminate, then the frequency of horse-hauled versus ox-hauled vehicles over the thirteenth century can be measured.<sup>330</sup> The results are shown in Table 4.14.

TABLE 4.14

Frequency of Peasant Horse-hauled and Ox-hauled Vehicles<sup>331</sup>

	% of Manors Where Found	
	<u>1201-1250</u>	<u>1251-1300</u>
Horse-hauled vehicles	69.0	89.4
Ox-hauled vehicles	51.7	21.2

The table clearly shows a rise in the level of peasant horse-hauled vehicles over the century at the expense of ox-hauled vehicles. Indeed it shows that horse-hauled vehicles were already well-established among the peasantry by the first half of the century, although at this time they were only slightly more common than ox-hauled vehicles. Table 4.13 reveals that by the end of the century peasant ox-hauled vehicles had largely retreated to the western counties and Sussex, a distribution similar to that found for ox-hauled vehicles in the demesne material (see Figures 3.18 to 3.21).<sup>332</sup> The survey material ~~then~~ peters out after the beginning of the fourteenth century, so it is difficult to tell whether there was a reversion back to

ox-hauled vehicles among the peasantry in the latter part of the Middle Ages as there appears to have been on the demesne. It would seem from the domination of ox-hauled wains in many parts of sixteenth-century England that there must have been,<sup>333</sup> although the high proportion of carts to plaustra among the court roll entries and principalia lists of Durham and Worcestershire, even at the end of the fourteenth and beginning of the fifteenth century,<sup>334</sup> indicates that this reversion did not gain any great momentum until well into the fifteenth century at least. In this regard, and - indeed - in regard to hauling as a whole, peasant experience seems to have followed quite closely that found on the demesne.

e) The Role of Horses and Oxen in Peasant Farm Management, 1200-1500

It is difficult to discuss with any accuracy the various policies and decisions that were involved in the running of medieval peasant farms. We have no accounts for peasant farms that allow us the sort of glimpse into the decision-making process that we have for the demesne. As a result, any conclusions here regarding peasant attitudes as to the use of draught animals must be inferred rather indirectly and as a consequence are somewhat conjectural.

First of all, it is to be presumed that the same arguments concerning the speed and stamina of the horse already considered in Chapter 3 (pp. 187-90) must also have applied to peasant horses. It may be said, though, that being of inferior stock - the lay subsidies, for instance, supply ample evidence of lame, blind, and generally decrepit horses among the peasantry<sup>335</sup> - peasant horses were of such poor quality that questions of increased speed and stamina were largely superfluous. The low values that these horses often had would tend to support this view.<sup>336</sup> However, the fact that peasant horses were seldom worth much does not necessarily mean that they were vastly inferior draught animals. In a number of cases, they were simply old horses without many years of life remaining (although these

last few years could be very useful indeed to the peasant). Part of the confusion over how useful horses were for peasants rests with their relatively low value in relation to oxen. It might be assumed that this price difference reflected the superior draught qualities of oxen, but this was not so. Much of the value of an ox was made up by its meat, a consideration that did not apply to horses, because of the medieval taboo against the eating of horse meat.<sup>337</sup> Thus the price of an ox in medieval times consisted of three value components: that is, meat + hide + draught potential; that for a horse was made up of only two components: hide + draught potential. The meat and hide components were relatively stable in value, but that for draught depreciated rapidly over time, not only because the animal gradually lost power as it got older,<sup>338</sup> but also because of the decrease in the expectation of useful work. If the meat and hide values were subtracted from both horses and oxen, then - judged solely from the point of view of draught - the value of each at the same age would be much more similar; indeed, horses, having the greater speed and stamina, might well have been more valuable.

The main objection to peasants using horses would seem to be that of day-to-day costs. Our analysis of demesne accounts shows that horses were 40 per cent more expensive to keep than oxen, even considering things like hay and straw which demesne officials tended to ignore.<sup>339</sup> These figures, however, were based on demesne working conditions. It has been a familiar refrain in this study that these conditions were very hard. Demesne ploughing was a day in, day out activity for most of the year; and, judging from the oats rations in the accounts, demesne carting animals were even under a heavier work load. As a result, higher energy feeds, such as oats, were in particular demand. This was especially the case for horses, which did not perform as well as oxen on hay and grass.

Because of the smaller size of demesne farms, however, the work load on draught animals was usually much less severe. Although a virgate hold-

ing with heavy ploughing services might have had up to 100 days work or more for its draught animals, most holdings needed considerably less than this.<sup>340</sup> We must presume that for much of the time peasant draught animals were standing idle. As a result, most peasants could get by with feeding their horses and oxen on a non-working diet of hay and grass, reserving high energy foods, such as oats or even vetches, only for the relatively short periods of peak activity. Because of this the oats or legume consumption by peasant animals was presumably very low, and thus the cost difference between horses and oxen inevitably narrowed. There is little doubt that horses would still cost a little more to keep than oxen, but now the other advantages held by horses over oxen became much more important.

One of these advantages was versatility. Whereas oxen were only employed for ploughing and perhaps a little hauling and harrowing, horses were used for all three, plus riding and pack-animal work, and generally they were quicker at them all. Not only were horses functionally more versatile, but also economically. Horses had a much greater price range and, not having value as meat, could often be bought at very low prices. This meant that, despite its relatively higher operating costs, the horse was a low-capital investment ideal for peasants. Furthermore, as we have seen in the demesne case, it was often possible to replace a given number of oxen with a smaller number of horses.<sup>341</sup> It is interesting to note that those lay subsidies where horses dominated as draught animals among the peasantry had significantly lower levels of draught animals per taxpayer than those where oxen were dominant.<sup>342</sup> Such potential reductions in the total numbers of draught animals needed on a holding would quickly undercut any cost disadvantage that still attached to horses. It also gave smallholders a much greater opportunity of participating in full-scale, self-sufficient farming, by providing them with an effective technology based on all-horse traction. The smaller plough-teams that the use of horses allowed played a special part in this.

Nevertheless their more substantial peasant neighbours - that is, those holding virgates or even half-virgates - continued to use some oxen at least, preferring - it seems - to follow the lead of the demesne, probably for the same economic reasons. Some of this may have been due to the presence of labour services which kept the animal work level on these more substantial holdings at such a pitch that it still made sense to use oxen. Once these labour services were commuted or dropped into disuse, the decline in animal work required may have had a part in encouraging the "rationalisation" observed in the fifteenth century of either going completely to all-horse farming or reverting to an increased use of oxen, both for the same reason of making more efficient use of animals now more lightly employed than before.

We have shown in this chapter that the peasantry used horses to a much greater degree than the demesne. By the end of the thirteenth century peasants across England were employing almost as many horses as oxen, and the trend towards horses continued afterwards, although it probably did not gain real momentum until well into the fifteenth century. Despite this, peasant and demesne experience was still very similar in many essentials. The timing for the large-scale introduction of the horse to farm hauling over the late twelfth and early thirteenth century seems to have been the same for both peasant and demesne, as was the period of "rationalisation" in the fifteenth century. In any case, the distinction between demesne and peasant farms was largely an irrelevant one as far as this study is concerned, particularly towards the end of our period when labour services became less of a complicating factor. What seemed to matter far more was farm size, no matter who held it. In this regard, the most interesting economic group were smallholders. The advantages that the horse held as a cheaply bought, all-purpose beast meant a disproportionate interest in the animal by this particular group, which in turn gave villages with

a large smallholding population a very horse-oriented appearance. But even in these villages, more substantial tenants continued to use oxen. It was only in the fifteenth century and later that the technical argument for using only horses began to conquer all levels of farming society over substantial areas of England. Even then, the transformation was only partial, since many areas elected to stick with oxen and, indeed, often intensified their use of them. Why this movement should have taken on such a complex pattern is a subject for the next chapter.

#### FOOTNOTES

1. For this and for what follows in this paragraph, many works could be cited. For recent and useful summaries, however, see Miller and Hatcher, *op. cit.*; Hatcher, Plague, Population and the English Economy, *op. cit.*

2. E.g., p. 129 above; see also Miller and Hatcher, esp. ch. 3.

3. P. 129 above; Hatcher, Plague, Population and the English Economy, pp. 11-20, 31-6.

4. Most studies show the median group of peasant farmers holding half or even quarter-virgates at this time (e.g., Kosminsky, *op. cit.*, pp. 216, 223; Postan, Medieval Economy and Society, *op. cit.*, pp. 143-5).

5. Peasant holdings in East Anglia, for instance, were extremely fragmented, as at Martham (Norfolk), where the average holding was well under five acres. B.M.S. Campbell, 'Population Change and the Genesis of Common-Field on a Norfolk Manor', ECHR, 2nd series, xxxiii (1980), p. 177.

6. At least compared to the demesne. The family run nature of peasant farming has been cited as a defining characteristic of the medieval peasantry by R.H. Hilton (The English Peasantry in the Later Middle Ages, Oxford (1975), p. 13), although the level of hired servants on these farms could sometimes be quite high (e.g., Dyer, Lords and Peasants, *op. cit.*, pp. 314-5).

7. Although exceptions occur (see Chapter 3, p. 285 and note 166 above), the surveys seldom show holdings of less than this size as owing the full set of ploughing, harrowing, hauling, and other services.

8. G.C. Homans, English Villagers of the Thirteenth Century, Harvard (1942), pp. 79-81.

9. See p. 288 below.

10. As graphically portrayed in Pierce the Ploughmans Crede, ed. W.W.

Skeat, London (1867), pp. 16-7), where a man and his wife are found struggling with a plough in winter.

11. E.g., Postan, Medieval Economy and Society, pp. 144-5.

12. As, for example, for half-virgate tenants at Churcham (Glos), c.1266-7, where, depending on the type of course rotation in effect, cash payments to the lord, king, and church could total from a third to a half of the value of a peasant's annual crop after tithes (estimated from data given in Cart. Mon. Glos., iii, pp. 137-8, and assuming normal crop yields and prices and that all labour services are commuted to cash payments; the calculation also includes an estimate for irregular payments such as merchets, court fines, etc.).

13. E.g., Kosminsky, p. 271.

14. PRO SC6 967/9.

15. Thus, in a court roll entry listing the goods and chattels of the recently deceased Thomas Page of Harton (Durham) in 1379, it is noted at the bottom of the entry that the Master of Jarrow had already taken a horse worth 18s. as mortuary. Durham Halmote Rolls, p. 151.

16. Ibid, p. 1.

17. In this study, the inventories of convicted felons taken from court rolls or accounts were mostly those of customary tenants whose goods found their way into the lord's hands, while those in the inquisitions were generally those of freemen.

18. For example, it is recorded in an inquisition held at Nottingham in 1292 that Thomas le Pynder and Robert le Vacher of Newbo (Lincs) and William, groom to the cellarer of Newbo Abbey, drove an ox and other stock belonging to the fugitive, James de Casthorp, to the house of John le Grant in Hawksworth (Notts). The detailed nature of the entry suggests that this was done without permission. Cal. Inq. Misc., p. 458. Cases where the goods of felons are recorded in the court roll or inquisition as being scattered among several people might imply the same thing. E.g., Hales Court Rolls, i, pp. 31-2.

19. Including equi, jumenta, affri, stotti, etc. As most of these inventories were taken from translations, it was not always possible to differentiate between the various types of horses. Foals and young horses, of course, were excluded. Some ambiguous cases were <sup>also</sup> excluded, such as when the translation gave "beasts", which may have been horses (i.e., affers) or some other animal.

18. Sources as they appear in the table: Cal. Inq. Misc., vii, p. 128; Hatcher, Duchy of Cornwall, op. cit., p. 255 (quater); Cal. Inq. Misc., vi, p. 94; vii, pp. 330, 332, 334 (bis); Durham Halmote Rolls, pp. 1, 8, 9, 55,

79, 95, 97, 144, 145, 151 (bis), 154, 159, 165, 167, 168, 178; Cal. Inq. Misc., iii, p. 109; A.E. Levett, Studies in Manorial History, Oxford (1938), p. 189; Cal. Inq. Misc., iii, p. 314; iv, p. 103; B.M.S. Campbell, 'Field Systems in Eastern Norfolk During the Middle Ages: A Study with Particular Reference to the Demographic and Agrarian Changes in the Fourteenth Century' (Univ. of Cambridge PhD thesis, 1975), p. 238; PRO SC6 967/9 (bis); J.R. Birrell, 'Medieval Agriculture', VCH Staffs, vi, Oxford (1979), p. 31; Cal. Inq. Misc., vii, p. 277 (quinquiens); Chertsey Court Rolls, i, p. 38; ii, pp. 112-3; Hales Court Rolls, i, p. 32 (bis); WAM 21020; Hilton, English Peasantry, op. cit., p. 42; WoRO Ref. 009:1 BA 2636/167, Ref. 705:4 BA 54, Ref. 009:1 BA 2636/175; Wakefield Court Rolls, iii, p. 171; i, pp. 232, 243. I am indebted to Dr. C. Dyer for supplying me with transcripts of the Worcestershire Record Office (WoRO) inventories.

21. Given as "bulls" in Toms's translation (Chertsey Court Rolls, ii, p. 113), but they were almost certainly oxen.

22. Altogether those inventories with only one or two draught animals (21 out of the total of 52 inventories) had 51.6 per cent horses; the rest, with three or more draught animals, had only 28.4 per cent horses.

23. Thus, when grouped according to century, the inventories show a gradually increasing proportion of peasant work-horses, as shown below. Individually, though, the samples for each century are too small and too restricted to specific areas to be of much significance.

	<u>No. of Inventories</u>	<u>% Work-horses</u>
13th century	8	22.7
14th century	29	33.3
15th century	15	35.4

24. Gaydon, p. vii.

25. J.F. Willard, Parliamentary Taxes on Personal Property 1290 to 1334, Cambridge, Massachusetts (1934), pp. 77-8. Later, "treasure" was added.

26. Ibid, pp. 79-80.

27. "Utensils" and "vessels", however, were taxed in the 1327 and 1332 Buckinghamshire lay subsidies. Chibnall, pp. 2ff.

28. Willard, Parliamentary Taxes, op. cit., pp. 84-5; Gaydon, pp. xix-xxii. The same also seems to have applied to hay and forage (Gaydon, pp. xxii-xxiii). Other items of human food, such as butter and cheese, were exempt (Willard, Parl. Taxes, pp. 77, 84).



29. Patent Rolls, 1216-1225, p. 560. The exemption does not seem to have applied to all counties though; e.g., Lincolnshire, where some horses at least were taxed on demesnes (see Table 4.2 below).

30. As in the lay subsidy assessment for south Wiltshire (see Table 4.2 and p. 247 below).

31. Close Rolls, 1231-1234, p. 155; see also S.K. Mitchell, Taxation in Medieval England, New Haven, Connecticut (1951), p. 143.

32. Until 1524. For a summary of this evolution in tax, see Surrey Taxation Returns, ed. H. Jenkinson, with an introduction by J.F. Willard (Surrey Record Society, no. 18, 1922), pp. v-vi.

33. These minima varied from nothing in 1225 and presumably before to 15s. in 1307. Willard, Parl. Taxes, p. 88; M.M. Postan, 'Village Livestock in the Thirteenth Century', ECHR, 2nd series, xv (1962), p. 220.

34. E.g., see Willard, Parl. Taxes, pp. 64-8.

35. Gaydon, pp. 1-3.

36. As at Cuxham (Oxon) in 1304. Harvey, Man. Records, pp. 712-4.

37. Willard, Parl. Taxes, p. 68.

38. Ibid, p. 67; Surrey Taxation Returns, op. cit., p. xii.

39. As at Cuxham; see note 36 above.

40. See Table 4.2 for the subsidies studied. A few rolls for obviously urban communities, such as Colchester, Dartford, and Shrewsbury, were omitted. Willard, Parl. Taxes, pp. 64-8, discusses many of these rolls.

41. See E. Powell, A Suffolk Hundred in the Year 1283, Cambridge (1910).

42. For example, by setting the assessed values of the goods as low as possible. The recorded values of the goods, especially livestock, in the lay subsidy returns were generally well below the prevailing market prices.

43. E.g., Gaydon, pp. xxiii-xxiv.

44. That is, for Flitton, Haynes, Renhold, and Barton; but the assessment for Sundon seems to have been about right. The inconsistency in accounts makes it difficult to be certain in the Shillington case. Gaydon, pp. xviii-xix. The same order of underassessment is also observed when comparing the draught livestock totals given in the 1304 Cuxham subsidy roll with the manorial account for the same year. Harvey, Man. Records, pp. 714, 752.

45. Harvey, Med. Ox. Vil., pp. 131, 174-5. The whole range of corrupt practices undertaken by the taxors and sub-taxors, including bribery and the concealment of funds, is considered by Willard, Parl. Taxes, pp. 210-9.

46. Harvey, Med. Ox. Vil., pp. 131, 174-5.

47. Thus at Cuxham John Green and Robert Beneyt, acting as assessing jurors for the collectors in 1304, fail to appear as taxpayers in the assessment and so were presumably exempt. Similarly the tax due from local collectors and jurors is often simply given at the bottom of the assessment without any formal listing of their goods. Harvey, Man. Records, pp. 712-4; Brown, pp. 47, 51, 53, 56, 63, etc. Willard (Parl. Taxes, pp. 207-9) also comments on the underassessment of taxors' goods.

48. E.g., see p. 242 below.

49. L.F. Salzman, 'Early Taxation in Sussex, Part II', Sussex Arch. Coll., xcix (1961), pp. 18-9.

50. There were, for instance, only four taxes levied on moveables during the reign of Henry III and only three during the early years of Edward I.

51. The decline started in earnest after the 1294 tax and never recovered after that; e.g., see Willard, Parl. Taxes, pp. 343-5.

52. Ibid, p. 345. A certain amount may also have been lost through simple concealment of funds, with the taxors handing into the exchequer less than they had actually received. Ibid, pp. 214-7.

53. Postan, 'Village Livestock', op. cit., pp. 220-8.

54. This can be ascertained by comparing the 1283 assessment with other contemporary documents, principally as published in Powell, op. cit., pp. 1-94. For example, the 1302 Recognitiones of the Abbey of Bury St Edmunds is very useful in that it provides a check on the livestock listings in the 1283 assessment. The Recognitiones, or dues paid by tenants in acknowledgement of the Abbot of St Edmunds's lordship, also seem to have been based on the value of moveables a peasant had, in particular livestock. Animals, however, are actually listed for only a few villages in the hundred, the best being Rickinghall Inferior and Coney Weston, where the lists show the full range of peasant animals; Coney Weston unfortunately does not appear in the 1283 assessment.

At first glance, there is little to choose between the animal lists given in the 1283 assessment and those in the Recognitiones. For example, the stock of seven Rickinghall villagers - Richard Aylmer, William Waryn, Thomas Waryn, Robert Othin, Henry le Brun, Walter Mercator, and Warren Sutor - are listed in both the 1283 subsidy and the 1302 Recognitiones, 83 animals being found for these seven peasants in 1283 and 96 in 1302. Given the interval between the two assessments, there seems little to choose between them. However, there is a much greater incidence of tenants in the Recognitiones having two horses than those in the 1283 subsidy, which

tend to have only one. For example, of the forty-eight tenants in the villages of Rickinghall Inferior and Coney Weston listed as having draught animals in 1302, one had two horses and three oxen, another had two horses and two oxen, one had four oxen,<sup>one had one horse and two oxen,</sup> three men had three horses each, eighteen had two horses, twenty had one horse, and three had a single ox - a proportion of horses of 83.3 per cent overall (Powell, pp. 78-80, 89). Altogether the data from the Recognitiones suggest that it was as likely for a man to have two horses than one. However, considering all thirty-three villages in the 1283 assessment, 501 peasant taxpayers had one horse, but only 142 had two horses. The implication is that the tax assessors may often have excused a peasant one of his horses, reminiscent of the Cuxham case above (pp. 239-40), although it does not seem that this happened in every case. If we assume that the real proportion of tenants having two horses as against those only having one was the same in 1283 as that indicated by the Recognitiones, then the underassessment in the number of horses would be about 15 per cent. It may even have been more if one considers the cases where peasants having no horses in the assessment might in actuality have had one, and so on.

Similarly it appears that the 1283 subsidy often significantly under-assessed the number of potential taxpayers, or at least the number of tenants, in villages. Taking again the example of Rickinghall, the 1283 subsidy records the village as having 57 taxpayers, excluding the Abbot of Bury St Edmunds, the lord of the manor. On the other hand, the Recognitiones lists 6 freemen and 45 nativi in 1302, a total of 51 tenants, which agrees quite well with the number of peasant taxpayers in the 1283 subsidy. Moreover, at least twenty of the people in the tax assessment also appear in the Recognitiones, and a further nine shared a common family name. The agreement between the two documents would thus appear to be very good, as Postan considered it to be ('Village Livestock', p. 223), especially in view of the lapse in time. However, they are contradicted by an extent for the village, also in 1302, which specifies that the non-demesne land was held by 32 free tenants, 45 "molmen", 4 customarii, and a small but unspecified number of cottagers (Powell, pp. 72-5). The molmen, customarii, and cottagers presumably equate to the nativi in the Recognitiones, so there is little disagreement here. The problem arises with the freemen, whose number in the extent (32) is seriously at odds with that in the Recognitiones (5), and presumably the 1283 tax assessment is equally short of freemen, since, of the 30 or more taxpayers who can be identified personally, through the Recognitiones or other documents, all but two are nativi. On the other hand, a return to land tenure of 1286, which relates

to freemen in Rickinghall, only lists ten such free tenants (Powell, pp. 25-6). The most likely explanation for this discrepancy of freemen between the 1302 extent and the other three documents is that the former included many free tenants who in fact lived elsewhere. For example, among the nine free tenants acting as jurors or witnesses for the 1302 extent are three whose main home is indicated as being elsewhere: Simon de Camera of Finningham, Robert Crestimasse of Westhorpe, and William Grym of Wattisfield (Powell, p. 72). Grym's goods were in fact taxed in Rickinghall rather than Wattisfield in 1283, but he may have moved since.

If we accept the 1302 extent at face value, however, then we have a tenancy of 81 people plus a small number of cottagers, a total of, say, 85 tenants. The 57 taxpayers in the 1283 assessment would then fall some 30-35 per cent short of this total. We can regard this as the maximum that the Rickinghall assessment is "out" on the basis of eligible taxpayers, although it is probable that the cottagers at least would be exempt from the tax (the exemption limit was 6s. 8d. worth of goods for this subsidy; Powell, p. xii). Excluding the freemen living outside the village may also have narrowed the discrepancy considerably.

At least one other village - Culford - when examined carefully gives a similar result of taxpayers in the 1283 subsidy as comprising only two-thirds of the total possible tenantry. Some of these tenants may have been exempt ~~FROM TAXATION~~ through poverty, but there is still a large enough discrepancy to allow the suspicion that other villagers may have been illegally dodging the tax. On the other hand, the tenantry of other villages, such as Hinderclay, seem to have been well represented in the subsidy (Postan, 'Village Livestock', p. 221). The ability or inclination of the taxors to ferret out potential taxpayers obviously varied from village to village; it would seem that in the case of this hundred the success rate was at least two-thirds or better.

55. The main point of difference arises over the south Wiltshire roll, where the exemption for horses granted to lords and freemen noted above (p. 236) seems to have operated in full. Otherwise, when compared to other contemporary documents, the rolls do seem to have included most, if not all, of the eligible taxpayers (e.g., see Postan, 'Village Livestock', pp. 225-8), and, where checks against animals can be made, the correlation between taxed animals and those actually present also seems good. Thus the demesne at Upwood (Hunts) is assessed at having 35 draught animals<sup>in 1290</sup>, which compares very favourably with the totals of 38, 31, and 35 draught animals found in accounts for the manor over the period 1247-52 and 35 animals found in 1316 (Raftis and Hogan, p. 38; Raftis, Ramsey Abbey, p. 132).

The smaller scale of the Ramsey assessment, being limited to a small area around the town of Ramsey itself and presumably supervised by the more rigorous administration of the Abbey may have contributed to its accuracy. Similarly Postan has noted that sheep levels in the 1225 south Wiltshire roll compares favourably with those indicated by tithe figures from East Meon ('Village Livestock', pp. 234-5). In the case of both rolls, one is also encouraged by the degree of variation in the assessments, with the numbers of livestock varying considerably from taxpayer to taxpayer. These give a certain realism to the figures, in marked contrast to the stereotyped stock holdings that characterise later assessments.

56. Patent Rolls, 1216-1225, pp. 572-3, as translated in Mitchell, op. cit., p. 142.

57. Gaydon, p. xxxiii.

58. PRO E179 238/119a. It may be that this was a "second time round" assessment, where the collectors were taxing villagers that they had missed in their first sweep.

59. L.F. Salzman, 'Early Taxation in Sussex, Part I', Sussex Arch. Coll., xcvi (1960), pp. 42-3, estimated that only two out of five potential taxpayers were actually taxed in the 1327 and 1332 Sussex assessments; see also Willard, Parl. Taxes, pp. 174-82; Postan, 'Village Livestock', p. 220.

60. Salzman, 'Early Taxation, II', op. cit., pp. 10-7.

61. For example, the 1301 Kent subsidy for Ruxley Hundred (PRO E179 123/5), where 50 per cent of the taxpayers had no draught animals. This may be a realistic proportion, but it seems high compared to the percentage of taxpayers not having draught animals in, say, Blackbourne Hundred in 1283 (42.2 per cent), where the fragmentation of holdings - due to partible inheritance - and hence the decrease in the number of peasants having draught animals was probably much more severe (H.E. Hallam, Rural England 1066-1348, Fontana Paperbacks (1981), pp. 72, 91-2).

62. In fact, the proportion of horses was identical in both cases; see note 54 above.

63. According to trespasses, one of the freemen residing at Cuxham did have some oxen, but he is not listed in the assessment. Harvey, Med. Ox. Vil., pp. 174-5.

64. This was accomplished using the various Victoria County Histories, the Book of Fees and Feudal Aids, and various antiquarian histories, such as Hasted's County of Kent.

65. For example, when the demesnes are separated out from the 1225

south Wiltshire assessment, the level of horses in the draught stock of the remaining taxpayers is 31.1 per cent. However, it is suspected that at least four of these remaining taxpayers were in fact local lords, because of the large amounts of stock that they held, although no definite proof was found to verify this. Nevertheless, even if these four were excluded along with the other demesnes, the level of horses among the remaining (presumably peasant) taxpayers' work animals would still only be 32.0 per cent.

66. These assessments cover the bulk of those known to exist for rural communities; see also note 40 above.

67. Sources: PRO SC11, Roll 531; E179 242/127; E179 242/47; Powell, op. cit.; Raftis and Hogan. Due to errors, Hogan's translation of the five banlieu village <sup>assessments</sup> was corrected using the original document, BL Add. Roll 34759. I am grateful to Professor R.H. Hilton for lending me a transcript of the Stathern assessment.

68. Evedon, Screddington, 'Bortona' (Burton, nr. Lincoln?), Mumby, 'Torp' (Thorpe, nr. Mablethorpe?), 'Kirkeby' (Kirkby, nr. Market Rasen?), Ingoldsby, Kelby, Heckington, and Authorpe (E179 242/127, ms. 2, 3, 5, 8, 9, 10, 12, 16, 18, and 22). This entire document was very fragmented and tattered. As a result, only ten of the membranes were thought worth transcribing. Even these ten were in very poor condition with, in many cases, several entries missing from the bottom of the membrane.

69. Wistow, Great Raveley, Upwood, Bury next to Ramsey cum Heighmongrove, Heighmongrove. The assessment for Ramsey, also included in the same roll, was omitted because of being a town.

70. Sources: Gaydon, pp. 1-73; PRO E179 238/119a; Brown; Gaydon, pp. 109-11; PRO E179 123/5 (Ruxley and Somerden Hundreds); Harvey, Man. Records, pp. 712-4; PRO E179 242/12 & 13; R.A. Fuller, 'The Tallage of 6 Edward II (Dec. 16, 1312) and the Bristol Rebellion', Trans. of the Bristol and Glos Arch. Soc., xix (1894-5), pp. 196-8; Chibnall; Salzman, 'Early Taxation, II', op. cit., pp. 10-7.

71. Barford, Biggleswade, and Flitt Hundreds.

72. Includes Ewcross, Strafford, and Agbrigg Wapentakes and the Liberty of Ripon.

73. The taxpayers were listed for this hundred without separating them into communities; several villages were obviously represented, though.

74. Includes a scattering of villages, covering more or less the whole county.

75. Rotherbridge, Holmstrow, and Henhurst Hundreds.

76. Where five onagri, varying in value from 18d. to 2s., appeared. Brown, p. 47.

77. See pp. 127-8 above and pp. 264-5 below.

78. See p. 118 above.

79. In particular, the Sussex assessments. When averaged together, the results from the Sussex Hundreds look quite reasonable, but this is illusory, as discussed above (pp. 242-3).

80. Thus in the Blackbourne Hundred assessment, even when demesnes having less than five animals are subtracted, the proportion of horses in the draught stock of the remaining demesnes is still higher (at 51.2 per cent) than that for Suffolk in the A sample of accounts.

81. The average number of draught animals per demesne in the 1327 assessment was 3.9, and for the 1332 assessment it was 4.9. This compares with 23.7 draught animals per demesne in the Sample A accounts and 29.1 draught animals per demesne in the Sample B accounts.

82. E.g., see Gaydon, pp. 105-7.

83. For example, Walter Osborne, a freeman of Walsham le Willows in Blackbourne Hundred, Suffolk, is listed in a 1286 return to tenure as having only one acre, yet his stock listing in the 1283 assessment consists of two horse, two cows, three calves, and five sheep; presumably, in view of such a large stock holding, he must have held land elsewhere. Powell, pp. 12, 91, table 33.

84. For example, Hervius Bude and others at Livermere Parva (Suffolk) in 1283. Powell, table 21.

84a. Sources as in note 67 above.

84b. Sources as in note 70 above.

85. As in Ruxley Hundred, Kent; see p. 243 and note 61 above.

86. See pp. 281, 287 below.

87. See p. 155 above.

88. As at Cuxham. Langdon, p. 38; see also p. 301 below.

89. For example, see the assessments for Medmenham and High Wycombe, Bucks, in 1332 (Chibnall, pp. 47-50; "beast" = affer in Chibnall's translation).

90. As on the bishop of Chichester's manor of Selsey (Sussex), where in the latter half of the thirteenth century it was specified that the heriot should be an ox or 2s. 6d. Similarly at Aldingbourne in the same county in 1256/7 tenants owed a horse and gear as heriot, while at Preston, again Sussex, in the latter half of the thirteenth century, the stipulated heriot was the peasant's best beast, save his horse. Chichester Customals, pp. 15, 38, 85.

91. As given by Alice Smewyne for her late husband's holding at White Waltham, Berkshire, in 1333. Chertsey Court Rolls, 1, p. 48.

92. Given the area, the proportion of horses collected as mortuaries for the monastic cells at Jarrow and Monkwearmouth was very high. It seems that the tenants involved were freemen, and indeed a horse with armour was collected as mortuary from the estate of Robert de Hilton, knight, in 1321 (SS, xxix, p. 141). Since Robert was obviously not a peasant, his mortuary was not included under Monkwearmouth in Table 4.6.

93. Sources as follows: HRO Eccles 2 159358 (Wargrave, Waltham St Lawrence, Culham, Warfield, Brightwell, and Harwell, Berks); *ibid*, WAM 7796 & 27744, PRO SC6 764/3 (Ivinghoe, West Wycombe, Morton, Turweston, Thornborough, and Whaddon, Bucks); PRO DL29 4717/288 (Soham, Cambs); WAM 25444 & 25665, CCL Bedels Rolls (Birdbrook, Feering, and Bocking, Essex); HRO Eccles. 2 159358, PRO SC6 986/14 & 16 (Twyford, Marwell, Bishopstoke, Crawley, Mardon, East Meon Manor, East Meon Church, Hambleton, Fareham, Brockhampton, Bishop's Sutton, Old Alresford, Avington, Wield, Beauworth, Bentley, 'Erberre' (?; presumed to be in Hampshire from position in roll), Bishop's Waltham, Droxford, Bitterne, High Clere, Burghclere, Ecchinswell, East Woodhay, Ashmansworth, North Waltham, Overton, Bowcombe (I.O.W.), Whitefield (I.O.W.), Hants); WAM 26090-1 & 8923, PRO SC6 867/7 & 869/9 (Aldenham, Wheathampstead, Meesdon, and Standon, Herts); WAM 26436, CCL Bedels Rolls (Westerham, Hollingbourne, Meopham, and Orpington, Kent); PRO SC6 908/35 (Nailstone, Leics); WAM 26733-4, 26904, 32562-3, 16430, 27136, 16872 (Ashford, Eye, Hendon, Knightsbridge, Laleham, and Yeoveney with Staines, M'sex); HRO Eccles. 2 159358, WAM 14796-7, Harvey, Med. Ox. Vil., p. 174 (Witney, Adderbury, Islip, and Cuxham, Oxon); HRO Eccles. 2 159358, PRO SC6 974/22 (Bishop's Hull, Poundsford, Nailbourne, Holway, Staplegrove, Rimpton, and Wellow, Somerset); PRO SC6 996/6, BL Add. Ch. 32934 (Erbury and Palgrave, Suffolk); HRO Eccles. 2 159358, WAM 27322 (Farnham and Morden, Surrey); HRO Eccles. 2 159358 (Downton, (East) Knoyle, Bishopstone ('Ebblesbourne'), Bishop's Fonthill, and Upton Knoyle, Wilts); WAM 21019-20, BRL 346320-2 (Longdon and Halesowen, Worcs).

94. Sources as follows: Farr, pp. 31-185 (Sevenhampton); WAM 8239-8256, 8230 (Bourton); WAM 16380-16402 (Knightsbridge); WAM 25398-25424 (Birdbrook); WAM 26389-26402 (Westerham); Harvey, Med. Ox. Vil., p. 175 (Cuxham); Chertsey Court Rolls, 1 & ii (Chertsey Abbey manors); SS, xxix, pp. 59-122 (Jarrow); *ibid*, pp. 161-181 (Monkwearmouth); as in Appendix C, part 2 (Henbury, Stoke Bishop, Bibury, and Hampton Lucy).

95. For example, Fareham in Hampshire had 60.5 per cent horses among its draught animal heriots compared to only 38.5 per cent for Brockhampton



(near Havant), and yet both manors were on the same sort of coastal gravels. HRO Eccles. 2 159358; for the soil characteristics of these two communities, see Cassell's Gazetteer of Great Britain and Ireland, London (1894-1898), ii, p. 397; iii, p. 194.

96. Thus, considering only ~~THOSE~~ manors which had a sample of five or more heriots, those with 80 per cent or more horses in their heriots were Brightwell and Harwell, Berks; West Wycombe, Bucks; Twyford, Crawley, Old Alresford, Beauworth, and Overton, Hants; Hollingbourne and Meopham, Kent; Yeoveney with Staines, M'sex; Cuxham and Adderbury, Oxon; and Palgrave, Suffolk.

97. Chertsey Court Rolls, 1, p. 65. The horse was worth 10s. and the two oxen 8s. apiece.

98. HRO Eccles. 2 159358, fo. 32v.

99. Thus at Brockhampton (also Hants) seven equi were taken as heriots during the plague year 1348-9. These were sold for an average 4s. 11½d. each, while a single affer taken as heriot was sold for 2s. 6d; in comparison three heriot oxen were sold for 12s. apiece and two cows for 4s. 6d. each. Ibid, fo. 17v.

100. The best printed example of this is Cuxham in Oxfordshire, where the nominal holdings of customary tenants there were small enough - at twelve acres or less - to encourage the use of horses only. At the same time, economic and environmental conditions at Cuxham still favoured the use of oxen on larger farms (that is, on the demesne and the freeholding of John Grene). Harvey, Med. Ox. Vil., pp. 174-5; Langdon, p. 38.

101. See p. 289 and the sixteenth-century plough-teams for the county in Table 4.12 below.

102. For example, J.Z. Titow has noted that the amount of land per person on the bishop of Winchester's Taunton group of manors in neighbouring Somerset had probably dwindled to 2.5 acres in 1311, a result of the population more than doubling in the thirteenth century. 'Some Differences between Manors and their Effects on the Condition of the Peasant in the Thirteenth Century', in Essays in Agrarian History, i, ed. W. Minchinton, Newton Abbot (1968), p. 42. This did not necessarily apply to the whole of the region, however, since extensive clearance of fen and wood was known to have occurred for both Wiltshire and Somerset during the thirteenth century. Hallam, op. cit., pp. 123-6.

103. E.g., only 3 out of the 177 peasants having only horses in the 1225 south Wiltshire assessment had more than one of the animals. PRO E179 242/47.

104. Such proportions are often indicated in the 1225 south Wiltshire assessment.

105. Thus if, say, 60 per cent of the draught animal owning peasantry had one horse, and the remaining 40 per cent was split between those<sup>tenants</sup> owning one horse and two oxen and those owning one horse and four oxen (a reasonable proportion according to the 1225 south Wiltshire assessment), then the level of oxen overall (at 54.5 per cent) would still be higher than that for horses (45.5 per cent).

106. Sources: Holt, op. cit., HRO Eccles. 2 159308, 159358, 159388.

107. As before, equi caretarii or just equi (some of these latter were females, i.e., equae).

108. E.g., Postan, Medieval Economy and Society, pp. 156-8.

109. To these should be added peasants for whom farming played a minor part in their income: that is, smiths, millers, carpenters, weavers, and the like, who would be more likely to have horses, for carrying purposes especially, than oxen.

110. As indicated by the Cuxham case above in note 100. It is noticeable, too, that ploughing services (often expressly involving oxen; see pp. 275-6 below) only tended to begin at the half-virgate and virgate level.

111. Thus, as an example, the data for East Anglia point to a strongly horse-oriented peasantry. The reasonably accurate Blackbourne Hundred subsidy assessment (see Table 4.2) indicates that the level of horse among the peasantry here was high - 83.3 per cent. The later and less reliable Essex assessments for Wendon and Nazeing (Table 4.2) suggest a similar level, as do the only inventories for the region at Standon, Essex and Coltishall, Norfolk (Table 4.1). The Black Death heriots for Suffolk (although based on only two manors) also imply a horse-oriented peasantry, but those for Cambridgeshire and Essex less so (Table 4.5). The overall impression is that the use of horses was very prevalent in Suffolk and probably Norfolk, but not quite so much in Cambridgeshire and Essex. On this basis, it was decided to downgrade the Suffolk lay subsidy data slightly and accept a figure of 75 per cent horses for the draught stock of the peasantry of East Anglia as a whole.

The percentages for the other regions were arrived at by a similar process. Where there was sufficient information, as for the Home Counties and the South, estimates were made for individual counties and the results weighted according to Russell's 1377 poll tax data (British Medieval Population, op. cit., pp. 132-3), using the same sort of method already applied to the demesne material (pp. 122-3 above). It was considered that this

should minimise any errors that individual pieces of information might introduce.

Altogether it is felt that the results of this estimation are most accurate for East Anglia, the Home Counties, the South, and the North. By far the most uncertain, because of lack of data, are those estimates for the West Midlands and the South-west, while that for the East Midlands would seem to have a reliability somewhere in between these two regions and the first four mentioned above.

The overall figure was calculated by taking all the regional estimates and weighting according to the poll tax method outlined above (pp. 122-3).

112. Assuming a 1:2 demesne to peasant draught stock ratio (more or less in line with the lay subsidies) and taking the overall level of horses for the peasantry as 45 per cent and for the demesne, 26.7 per cent (as in Table 3.1 under Sample A), the level of horses among all farming draught animals is:

$$((2 \times 45) + (1 \times 26.7))/3 = 38.9 \text{ per cent, or, rounding off, 40 per cent.}$$

If a 1:3 demesne to peasant draught stock ratio is assumed instead, then the overall level is 40.4 per cent, again rounding off to 40 per cent.

113. E.g., see R.H. Hilton, 'The Content and Sources of English Agrarian History before 1500', AHR, iii (1955), pp. 5-6, 14-8.

114. Inventories did not become a legal requirement until 21 Henry VIII and so are not truly abundant until the latter part of the century.

115. Sources: BEDS: PRO Probate 2, 263; Elizabethan Inventories, ed. C.E. Freeman (Beds Hist. Rec. Soc., xxxii, 1952), pp. 102-3; BERKS: WiRO Dean of Sarum Inventories, Richard Denne, 1579; CAMBS: WSuffRO IC 500/3/1/16; CORNWALL: CoRO Arch. Cornwall Probate, John Beale, 1579; DORSET: WiRO Dean of Sarum Inventories, Joan Meader, 1575; John Sherwin, 1575; John Tezer, 1575; Edward Hazard, 1576; Robert Squier, 1576; Thomas Marten, 1578; Robert Bartlett, 1579; DURHAM: SS, ii, pp. 158 (bis), 242-3; HANTS: PRO Probate 2, 352; WiRO Arch. Sarum, John Lannam, 1563; HERTS: HertsRO, ASA 25/7, 63, 77; LINCS: PRO probate 2, 277; LiRO Inventories, Box 22, nos. 4, 6, 19; Box 23, nos. 78, 91, 94; Box 54, no. 228; Box 89, nos. 8, 10, 19; NORFOLK: PRO Probate 2, 258a, 369; NNRO Inv./3, nos. 1, 27, 81; Inv./12, nos. 41, 252; NORTHANTS: Household and Farm Inventories in Oxfordshire, 1550-1590, ed. M.A. Havinden (Historical Manuscripts Commission, JP10, London, 1965), p. 61; NRO C Wills, no. 153; NOTTS: Nottinghamshire Household Inventories, ed. P.A. Kennedy (Thoroton Soc., Rec. Ser., xxii, 1963), pp. 33-4, 48-9, 100, 114-6, 126-8; NoRO PR SW 22/4b, 7b, 20b; OXON: PRO Probate

2, 289; Havinden (ed.), op. cit., pp. 42, 43-4, 89-90, 170-1, 186-7, 223-6, 228-9; SUFFOLK: NNRO Inv./3, nos. 24, 28, 37; ESuffRO FEI/1/59, 81, 82; WSuffRO IC 500/3/1/53; SURREY: GLRO DW/PA/5/1559; WARKS: LJRO Lichfield Probate Inventories B/C/11, William Hopkins, 1534; William Stille, 1562; WoRO Ref. 008:7, 1537-41, box 3a, 238; WILTS: WiRO Arch. Sarum, Thomas Hurle, 1560; John Martin, 1561; Dean of Sarum, Jerome Head, 1574; Thomas Brunsdon, 1576; YORKS: SS, xxvi, pp. 132-4, 134-6, 222 (bis); COUNTY UNKNOWN: NNRO Inv./3, no. 11 (Carleton, in Norfolk or Suffolk).

116. Includes some foals at Postwick, Norfolk (NNRO Inv./3, no. 1), but excludes an unspecified number of cart-horses at South Leigh, Oxfordshire (PRO Probate 2, 289).

117. Includes six "hagge" (haggard or old?) oxen at Kirklington, Yorks (SS, xxvi, pp. 134-6).

118. Two of these farms, at Haxey, Lincs (LiRO Inventories, Box 23, no. 94) and Walsoken, Norfolk (PRO Probate 2, 258a), however, had yokes.

119. Even in the sixteenth century oxen easily outnumbered horses on Worcestershire farms (e.g., WoRO Ref. 008:7, 1536-43, box 3b, nos. 323, 323a, 326, 327, 351, 362a, etc.).

120. Although some co-aration may have been practised even among these largely well-to-do farmers. Most of them, however, had sufficient numbers of working stock to fill the plough-teams normally encountered in sixteenth-century England; see pp. 291-3 below.

121. E.g., see Dyer, Lords and Peasants, op. cit., p. 286.

122. As, for example, in the c.1551 inventory of William Brokeman of Wylve (Wilts), who had three horses "whereoff on ys taken for the lorde" (WiRO Arch. Sarum inventories, Wm. Brokeman, 1551).

123. Most likely in the case of some of the geldings.

124. Although there were no obvious instances of this in the sample, inventories are often encountered with a high level of old and decrepit ploughing stock and equipment, as in the late fifteenth-century inventory of John Cosyn of 'Hawkyton' in the diocese of Ely (Hauxton, Cambs?), whose seven plough-horses were all described as "olde and feble". PRO Probate 2, 459.

125. For example, Walter Payge of North Piddle, Worcs (1545). WoRO Ref. 008:7, 1545, box 7a, no. 49.

126. Particularly in areas of some industrialisation, as in south Staffordshire in the late sixteenth century, where two-thirds of those who left inventories owned at least one horse while only 38 per cent owned oxen. Pauline Frost, 'Yeomen and Metalsmiths: Livestock in the Dual Economy in South Staffordshire 1560-1720', AHR, xxix (1981), p. 37.

127. Two of these all-horse farms, while not having oxen, did admittedly have some yokes; see note 118 above.

128. Sources: DURHAM: SS, ii, pp. 152, 158 (bis), 161-4, 170-1, 181-4, 186-7, 193-4, 199, 212, 240, 242-5, 266-8, 271, 271-2, 281-3, 318, 341, 341-2, 350, 417-20, 420-3, 428, 430, 438; SS, cxii, pp. 3, 43-4, 52-3, 54, 123, 133-4, 137-8, 139, 166-7; NORTHANTS: NRO C Wills, nos. 13, 149-51, 153-4, 156, 158, 161-2, 164-5, 171-2, 175, 177; D Wills, nos. 38, 70, 178, 179.

129. Mostly late 1590s.

130. The Durham sample has an average of 15.9 (potential) draught animals per inventory compared to only 4.5 draught animals per inventory in the Northamptonshire sample. This puts the Durham farms virtually on a demesne level. It seems that the editors of the Surtees Society volumes from which the sample is drawn deliberately sought out these larger farms.

131. Vide the Durham Halmote Roll inventories (Table 4.1, nos. 11-27), where the level of horses was 33.9 per cent altogether, some 10 per cent higher than that in the probate inventories; the level of horses on medieval demesnes in Durham, however, was somewhat lower (see Table 3.1) than on the sixteenth-century farms.

132. Only one inventory indicated a cart. Five others had "coups", probably ox-hauled; see Chapter 3, note 190.

133. A preliminary mapping from a much larger body of probate material that the author has collected shows that this polarisation between areas using wains and areas using carts was very marked indeed, with carts being found mainly in the south and east, wains in the north and west save for a small enclave in the Weald district of Sussex and southern Kent. The distribution of carts and wains here is in fact very similar to that found for carts versus plaustra in Chapter 3, Figures 3.16-3.19, although with carts being rather more pushed back to the south and east.

134. For example, while inventories for Bedfordshire in the early seventeenth century show the farmers of the county to be using only horses for draught (Jacobean Household Inventories, ed. F.G. Emmison (Beds Hist. Rec. Soc., xx, 1938), pp. 50ff.), wills from a century earlier show oxen to be still in use (e.g., see BRO ABP/R 3, will nos. 115 and 195 (taken from a typed transcript held in the Bedfordshire Record Office)).

135. Sources in order as in table: PRO Probate 2, 128, 455, 86, 161, 458, 45, 64, 21, 110, 168, 52, 709, 47, 159, 151, 94, 72, 693, 457, 110, 91, 459.

136. Katherine Bowden (Thomas's wife?) left a similar inventory in the following year (Probate 2, 54).

137. Includes some colts of Henry at Lode.

138. Includes 10 "lean" oxen, but excludes a "fatt ox" (belonging to Edmund Leverage).

139. The PCC courts generally only proved wills of people with land in more than one diocese, so in the main we are dealing with well-to-do farmers.

140. Cf. pp. 183-6, 250-7 above; Langdon, *op. cit.*, p. 40.

141. The inventories in Table 4.11 are also subject to all the qualifications about heriots and so on noted for the later inventories, although on balance the range of possible biases seems to have favoured the over-estimation of oxen as much as horses.

142. Generally more farms seem to have gone to all-horse farming rather than revert to oxen.

143. E.g., see pp. 118-20, 127-9, 264-5 above.

144. Pp. 250-7.

145. Glast. Cust., p. 7.

146. As for the ploughing, harrowing, and carrying services listed in a fifteenth cartulary for Bilsington Priory in Kent. The Cartulary and Terrier of the Priory of Bilsington, ed. N. Neilson (British Academy Records of Social and Economic History, viii, London, 1928), pp. 148, 152, 154, 159, etc.

147. Glast. Cust., p. 210.

148. See, for example, the surveys and extents over time for Ramsey Abbey and the bishopric of Worcester (Cart. Mon. Ram.; RBW)

149. E.g., see Miller and Hatcher, pp. 125-6.

150. For sources, see especially note 317 below.

151. That is, for Bilsington (Kent) and Ashton-under-Lyne (Lancs). Priory of Bilsington, *op. cit.*; Three Lancashire Documents, etc. (see p. 426 below).

152. As indicated, for example, in Table 4.13 below.

153. Gressenhall (1282), Binham (t. Edw II), and Brancaster (1239 & 1240). NNRO 21187; BL Cott. MS Claud. D. xiii, fos. 8, 8v, 9, etc.; Cart. Mon. Ram., i, p. 419. I am deeply indebted to Dr. J. Williamson for supplying me with transcripts of the Gressenhall and Binham material.

154. That is, as arranged by source: Upton, Berks, 1271 (Farr, pp. 19-20); Henbury-in-Salt-Marsh, Glos, 1299 (RBW, iv, p. 385); Shirehampton, Glos, 1299 (*ibid*, iv, p. 393); Holway, Somerset, prob. 13th c. (Taunton Cust., p. 3); Gransden, Cambs, 1251 (BL Cott. MS Claud. C. xi, fo. 150v); Preston and other communities, Sussex, latter half of 13th c. (Chichester Customals, pp. 79, 81); Bishopstone and other communities, Sussex, latter half of 13th c. (*ibid*, p. 89); Denton, Sussex, 1274 (*ibid*, p. 101); Ogbourne St

Andrew, Wilts, c.1230 (Abbey of Bec, p. 37); Combe, Berks, c.1230 (*ibid.*, p. 41); Stoke sub Hamdon, Somerset, 1251 (Beauchamps of Hatch, p. 3); Dundon, Somerset, 1287 (*ibid.*, p. 50); Marley (in Battle), Sussex, t. Edw I (Battle Abb. Cust., p. 15); Butleigh, Somerset, c.1235-40 (Glast. Cust., p. 7); Street, Somerset, 1238-9 (*ibid.*, p. 12); Berrow, Somerset, c.1235-40 (*ibid.*, p. 45); Ashbury, Berks, c.1235-40 (*ibid.*, p. 52); Badbury, Wilts, c.1235-40 (*ibid.*, p. 58); Winterbourne Monkton, Wilts, c.1235-40 (*ibid.*, p. 61); Grittleton, Wilts, c.1235-40 (*ibid.*, p. 65); Nettleton, Wilts, c.1235-40 (*ibid.*, p. 68); Wrington, Somerset, 1237-8 (*ibid.*, pp. 72, 74-5, 77, 78); Sturminster Newton, Dorset, c.1235-40 (*ibid.*, pp. 84, 94); Barton (Ash, in Marnhull?), Dorset, c.1235-40 (*ibid.*, pp. 96, 99-100); Glastonbury, Somerset, c.1235-40 & 1260 (*ibid.*, pp. 120-1, 124, 182-6, 189-91); East Pennard, Somerset, c.1235-40 (*ibid.*, p. 125); Doultling, Somerset, c.1235-40 (*ibid.*, pp. 129, 132); Shapwick, Somerset, c.1235-40 (*ibid.*, p. 149); Ashcot, Somerset, c.1235-40 (*ibid.*, pp. 152-3); Walton, Somerset, c.1235-40 (*ibid.*, pp. 156-8); High Ham, Somerset, c.1235-40 (*ibid.*, p. 163); Edmiston, Wilts, c.1235-40 (*ibid.*, p. 166); Baltonsborough, Somerset, 1260 (*ibid.*, p. 197); Meare, Somerset, 1260 (*ibid.*, p. 204); Pilton, Somerset, 1260 (*ibid.*, pp. 210, 212); Mells, Somerset, 1260 (*ibid.*, pp. 220, 225).

155. Ditton, Cambs, 1251 (BL Cott. MS Claud. C. xi, fo. 116); Walpole, Norfolk, 1251 (*ibid.*, fos. 193v, 194v); Walton, Norfolk, 1251 (*ibid.*, fos. 200, 201); Brightwalton, Berks, 1283-4 (Battle Abb. Cust., p. 60); Bromham, Wilts, t. Edw I (*ibid.*, p. 78).

156. That is, at Chingford, Essex, in 1222, where each half-virgate tenant owed harrowing services if he had a horse outside the plough-team ("...si equum habeat extra carucam"; Dom. St Paul, p. 87). Similarly at Broughton (Hunts) in 1252 tenants owed charity bread according to how many animals they had in their plough-teams, excepting their horses. Cart. Mon. Ram., i, p. 331.

158. This could take several forms: e.g., "Et debet ii precarias ad semen hyemale ad custum proprium cum animalibus quot habuerit in caruca sua propria" (Kempsey, Worcs, 1299; RBW, i, p. 65), or "Arabit ter per annum, secundum quot habet averia ad carucam." (Crawley, Beds, prob. c. 1240; Cart. Mon. Ram., i, p. 441).

159. For example in the bishopric of Ely survey of 1251 (BL Cott. MS Claud. C. xi, fos. 116-116v, 117v, 171, 172, 178, etc.); see also Cart. Mon. Ram., i, pp. 282, 322, 335, 343, 365, 366, 368, etc.; Abbey of Bec, pp. 69, 70, 71, 92, 93, 95, 100, 119.

160. See p. 280 below.

161. That is, at Sowerby, Rastrick, and Fixby. Wakefield Court Rolls, i, p. 284; ii, p. 7; iii, p. 72; iv, p. xlii.
162. Chalgrave Court Roll, p. 31; Richardson, op. cit., p. 290n.
163. Richardson, p. 290n; Wakefield Court Rolls, i, p. 297.
164. Thus, at Alton, a peasant was accused of not supplying three horses for a colleague's plough as specified under an agreement of co-aration, while at Polstead a man borrowing or hiring a horse for his plough was charged with mistreating it. Homans, English Villagers, pp. 78, 79.
165. R.H. Hilton, 'Medieval Agrarian History', in VCH Leics, ii, London (1954), p. 167; Cal. Inq. Misc., i, p. 553.
166. Although there were some exceptions. For example, tenants holding five acres of arable land at Wrington and High Ham, Somerset, were expected to attend ploughing boons with their oxen. Glast. Cust., pp. 78, 163; see also p. 285 below.
167. I.e., see p. 266 above.
168. Langdon, pp. 37-40.
169. Ibid.
170. R.K. Field, 'Worcestershire Peasant Buildings, Household Goods and Farming Equipment in the Later Middle Ages', Medieval Archaeology, ix (1965), pp. 141-5.
171. See note 119 above.
172. "Et in sustentatione .liij. equorum customariorum euntum ad .xliij. carucas in yemale..."; PRO SC6 1144/10.
173. See p. 136 above.
174. J.A. Raftis, Tenure and Mobility, Toronto (1964), pp. 73, 237. The virgate at Wistow apparently contained thirty acres (Cart. Mon. Ram., iii, p. 208).
175. That is, as late as 1466. Raftis, Ramsey Abbey, p. 133.
176. Raftis and Hogan, pp. 31-4; Cart. Mon. Ram., i, p. 358.
177. As indicated by wills; e.g., see HuRO Archdeaconry Court of Huntingdon Reg. Copy Wills, vi, 1538-1541, fos. 95v, 185v, 205, 234v, 241 (all good examples of all-horse farms).
178. Cows as peasant plough animals are indicated at Upton and Bright-walton, Berks, in 1271 and 1283-4 respectively and in Kent in 1259, while a heifer was harnessed to a plough in Rastrick (Yorks) in 1297. Farr, pp. 19-20; Battle Abb. Cust., p. 60; Richardson, p. 290n; Wakefield Court Rolls, ii, p. 7.
179. That is, at Ogbourne St Andrew (Wilts) and Combe (Berks). Abbey of Bec, pp. 37, 41.



180. E.g., Dom. St Paul, pp. 48, 51, 56; Abbey of Bec, pp. 46, 58, 69, 93, 97, 110; Cart. Mon. Ram., i, p. 369; ii, pp. 28, 38; BL Cott. MS Claud. C. xi, fos. 83v, 98v, 153v, 157, 158, 159, 159v, 161, 162v, 178, etc.; Battle Abb. Cust., pp. 19-20, 39, 53, 66, 150; RBW, ii, pp. 158, 176; iii, p. 265; iv, p. 358; Glast. Cust., pp. 7, 12, 13, 14, 37, 45, 81, 97, 104, 108, etc.; Chichester Customals, pp. 28, 35, 46, 64, 75-6, 76, 84, 101, etc.; Bishop Hatfield's Survey, ed. W. Greenwell (SS, xxxii, 1856), pp. 8, 161. Many more references could be given, covering manors from East Anglia to the far west and north.

181. That is, at Stoke sub Hamdon in 1287, where it is stated that each customary half-virgate tenant must harrow after his ploughing services "if he has oxen". The mention of oxen here, however, may have been referring to the ploughing. Beauchamps of Hatch, p. 15.

182. From unpublished work on the Ombersley court rolls in the Worcestershire Record Office (Ref. 705:56 BA 3910) by Gabriele Scardellato, to whom the author is greatly indebted for permission to quote these findings.

183. E.g., see the 1544 Worcestershire inventories of Thomas Browne of Worcester, Thomas Pardo of Shrawley, and Geoffrey Edgecock of Feckenham, who, along with their horse harrows, also had one or two harrows. WoRO Ref. 008:7, 1545, box 7a, nos. 25, 40, 47. Ox-harrows were also prevalent in the north in the sixteenth century: e.g., see SS, ii, pp. 162, 240, 281, 341, 350, 365, 436; SS, xxvi, p. 101. See also Fitzherbert, p. 24, for more on ox-harrowing in general.

184. For example, David Tayle of Street (Somerset) in 1238-9 held ten acres of arable and was expected to harrow if he had a horse, for which he was quit of two handworks (handaynis). Similarly William le Frensh of Rackham (Sussex), in the latter half of the thirteenth century, held only three acres of arable and one of meadow, for which he was required, in the first instance, to do as work anything that he was bid, save that requiring horse (caballus) or ox. Nevertheless, it is later stated that if he did have a horse he was required to harrow at the lord's plough-boon. Glast. Cust., p. 14; Chichester Customals, p. 64.

185. Thus at Shapwick, in Somerset (c.1235-40), it is specified that virgate holders ought to harrow whether they had oxen (for the plough) or not. Glast. Cust., p. 148. Similar conditions occur with some frequency in other surveys: e.g., *ibid*, p. 45; BL Cott. MS Claud. C. xi, fos. 83v, 161, 162v; A Terrier of Fleet Lincolnshire, ed. N. Neilson (British Academy Records of Social and Economic History, iv, London, 1920), pp. 7, 13.

186. For example, at Walpole (Norfolk) in 1251 it was specified of a number of tenants that, when performing ploughing services, each was to have his plough followed by a single horse and harrow ("...et unusquisque habebit equum suum cum hercia et homine ad herciandum immediate post carucam suam dum aret."; BL Cott. MS Claud. C. xi, fo. 193v; see also fo. 194v).

187. Ibid, fo. 279 (Rattlesden, Suffolk, 1251); Battle Abb. Cust., p. 53 (Appledram, Sussex, t. Edw I).

188. Gras and Gras, p. 232. Other references to horses hauling are as follows: Cart. Mon. Ram., i, pp. 289-90, 324, 335, 371-2, 488; BL Cott. MS Claud. C. xi, fos. 32, 36v, 39v, 45v, 47v, 56, 57v, 66v, 83, 100, 112, 112v, 122, 122v-123, 146, 146v, 150, 152v, 153, 169v, 172v, 178, 193v, 195 (bis), 195v, 200, 201v (ter), 211, 211v, 215v, 229 (bis), 245, 256; BL Cott. MS Claud. D. xiii, fos. 8vff. (I am indebted to J. Williamson for these references); Cart. Mon. Glos., iii, pp. 116, 124, 159-60, 167; Prebends of York, p. 38; Abbey of Bec, p. 47. Although the majority of manors to which these references relate are found in the south and east of the country, some are located further west and north, the numbers of manors by county being Cambs (11), Essex (2), Glos (4), Hants (2), Herts (2), Hunts (6), Norfolk (8), Somerset (3), Wilts (1), and Yorks (1); see also the vehicle type analysis on pp. 305-10 below.

189. I.e., Monxton, Hants (Abbey of Bec, p. 47; see also p. 308 below).

190. Pp. 73-6 above.

191. Glast. Cust., p. 129.

192. Representing twenty-one manors in all (excluding Doulting): Abbey of Bec, p. 85; Battle Abb. Cust., pp. 4-6, 14, 20, 28-9; Glast. Cust., pp. 77, 82, 86, 140, 210, 216, 220-1; Chichester Customals, pp. 8, 16-7, 47, 57, 61, 88, 101, 107, 111; Beauchamps of Hatch, pp. 5, 8, 16; Cart. Mon. Glos, iii, p. 143; Taunton Cust., pp. 4, 17-8, 22; Customals of the Sussex Manors of the Archbishops of Canterbury, ed. B.C. Redwood and A.E. Wilson (Sussex Rec. Soc., lvii, 1958), p. 89.

193. Number of manors by county: Sussex (11), Somerset (8), Dorset (1), Glos (1), Wilts (1).

194. See pp. 306-8 below.

195. At Sturminster Newton (Dorset), c.1235-40, Robert de la Rode, holding a virgate, was to summagiare cum equo suo et carro suo; it is unclear here whether the horse is involved as a pack-animal (summagiare) or in hauling the carrus. Glast. Cust., p. 85.

196. Thus, see Abbey of Bec, p. 75; Battle Abb. Cust., pp. 4-6, 14, etc.; Glast. Cust., pp. 82, 86, 129, 140, 210, 216; Cart. Mon. Glos., iii,

p. 143; and so on.

197. That is, where the original Latin is available. Some of the English translations of the surveys show "carts" as being hauled by oxen (e.g., Arch. of Cant. Suss. Manors, op. cit., p. 89), but it is likely that in most cases this is a mistranslation of carrus or carra.

198. See Table 4.14 below.

199. There is, however, the contradictory evidence of the rising level of cart-horses among the heriots of the bishopric of Winchester (p. 265 above). A rise in the proportion of cart-horses on those manors where horse hauling was practised is not necessarily inconsistent with a decline in the number of manors where horse-hauled vehicles were found. It may simply indicate that the practice was contracting from certain areas, while at the same time becoming more vigorous in the regions where it was still in use, another reflection of the polarising effect in the employment of horses and oxen increasingly evident in the later Middle Ages.

200. The Durham halmote rolls for the late fourteenth century mention carts (carectae) eight times and plaustra three times (Durham Halmote Rolls, pp. 33, 87, 151 (ter), 165, 168 (bis), 174, 178, 179). Similarly Field's principalia lists for Worcestershire peasants in the late fourteenth-early fifteenth century mention carts fourteen times and plaustra nine times (Field, op. cit., pp. 137-45; Field translates plaustrum as "wagon").

201. Chichester Customals, p. 101; Battle Abb. Cust., p. 156.

202. A two-ox team is evident at West Preston, Sussex (Abbey of Bec, p. 85). Peasant hauling teams of two and four oxen are also observed at Marley, Barnhorn, and Alciston, Sussex (Battle Abb. Cust., pp. 4-6, 20, 28), while a single-ox team, possibly an oddity or only part of a team, appears for tenants holding a quarter wiste (or virgate) at Marley (ibid, p. 14). Teams of two and four oxen also seem to have been popular on the Sussex manors of the bishop of Chichester (Chichester Customals, pp. 17, 46-7, 57, 61, 88, 101, 107) and also at Stoke sub Hamdon in Somerset (Beauchamps of Hatch, p.8; another team of at least four oxen is indicated on p. 5). Teams of six oxen are observed at Doultling, Somerset and, taking into consideration co-hauling, also at Pilton in the same county (Glast. Cust., pp. 129, 210). Another six-ox team appears at Brookthorpe, Glos (Cart. Mon. Glos, iii, p. 143), while eight-ox teams are indicated at Pilton, Somerset and Longbridge Deverill, Wilts and again, considering co-hauling, at Sturminster Newton, Dorset (Glast. Cust., pp. 216, 146, 82, and 86). With one exception (Chichester Customals, p. 107; late fourteenth century), all these references date from the thirteenth or early fourteenth centuries.

203. Farewell to Husbandry, op. cit., p. 147. Markham also cited teams of four or five oxen for hauling "carts" (loc. cit.).

204. Chichester Customals, pp. 47, 57, 61, 101, 107.

205. c.1235-40. Glast. Cust., p. 86.

206. PRO E 32/5, fo. 25; <sup>The</sup> Honour and Forest of Pickering,<sup>iii,</sup> ed. R.B. Turton (North Riding Record Society, new series, iii, 1896), pp. 36-8. I am indebted to Jean Birrell for supplying me with these references.

207. Altogether the surveys yielded references to at least 43 one-horse cart teams, 11 two-horse cart teams, 2 three-horse cart teams, and 2 four-horse cart teams. Cart. Mon. Ram., i, pp. 289, 290, 335, 372; BL Cott. MS Claud. C. xi, fos. 32, 36v, 39v, 45v, 47v, 56, 57v, 66v, 82v, 83, 100, 106, 112v, 122, 122v-123, 146, 146v, 150, 152v, 169v, 172, 172v, 173v, 178, 184, 184v, 193v (bis), 195, 195v, 200, 201v (ter), 211, 211v, 229 (bis), 229v, 245, 256; Glast. Cust., pp. 7, 64, 140, 148, 225; BL Cott. MS Claud. B. xiii, fos. 8v, 9 (other references on following folios, but not listed here); Cart. Mon. Glos., iii, pp. 116, 124, 159, 167; Prebends of York, p. 38; Beaumont, 'Manor of Borley', op. cit., p. 264.

208. BL Cott. MS Claud. C. xi, fos. 229-229v.

209. Ibid, fos. 229v, 245, 32, 66v.

210. Ibid, fo. 100; see also fo. 106.

211. For example, pack-horse services seem to occur much less frequently in the 1222 survey of the manors of St Paul's in London than, say, in the c.1235-40 Glastonbury extents, where they are included among the services for virtually every major tenant. Dom. St Paul, pp. 1-107; Glast. Cust., pp. 1-167.

212. PRO SC11, roll 271; Cart. Mon. Ram., i, p. 467.

213. Although here the steward was to supply the "necessaries" (presumably food for horse and man) to make the trip (Glast. Cust., p. 136; c.1235-40). For other good examples of the range of these pack-horse trips, sometimes involving journeys over difficult terrain (such as the fens around Wisbech), see BL Cott. MS Claud. C. xi, fos. 195, 200; Cart. Mon. Ram., i, pp. 300, 310; Beaumont, p. 265.

214. "Item averare debet et summagium portare ad vicina mercata blada domini...scilicet unum quarterium frumenti, etc.". Abbey of Bec, p. 54.

215. See chapter 3, note 103.

215a. See p. 148 above.

216. Beaumont, p. 265. See also Chichester Customals, pp. 96, 111; Glast. Cust., p. 62; Abbey of Bec, p. 30, for references to pack-horse services involving loads of corn ranging from three to seven bushels.

217. Glast. Cust., pp. 145-6 (c.1235-40); BL Cott. MS Claud. C. xi,

fo. 229v (1251). In comparison, the cost of transportation by wagon in 1758 was thought to be about half that for pack-horses (i.e., 7s. 6d. per pack versus 14s.; Hey, Packmen, etc., op. cit., p. 98).

218. E.g., BL Cott. MS Claud. C. xi, fos. 143v, 149v, 195, 201v, etc.; RBW, iii, p. 309; Chichester Customals, p. 96.

219. Select Pleas, p. 62.

220. Devon Inventories of the Sixteenth and Seventeenth Centuries, ed. M. Cash (Devon and Cornwall Record Society, new series, xi, 1966), esp. p. 43.

221. E.g., see English Rural Life in the Later Middle Ages, Bodleian Picture Book no. 14, Oxford (1975), plates 2b and 6b; the second illustration comes from the early modern rather than the medieval period.

222. See p. 65 above.

223. A preliminary survey of sixteenth- and early seventeenth-century inventories indicates that the main concentration of pack-horses and pack-horse equipment was found in the south-west (e.g., Cash (ed.), op. cit.), with occasional references in the north and East Anglia; elsewhere, vehicle hauling dominated almost totally.

224. As, for example, William Comes de Poteria and other cotsetlanders in Longbridge Deverill (Wilts), c.1235-40, who were expected to do both summagium and harrowing, but not ploughing. Glast. Cust., p. 142.

225. *Ibid*, pp. 96-7.

226. Taunton Cust., pp. 7-8 (c.1245-52).

227. As indicated for the freemen of Bishop's Cleeve (Glos) in 1299. RBW, iv, pp. 329-30.

228. E.g., the bishopric of Worcester surveys, where the labour services for the customary tenants followed this rigid policy; labour services for freemen were much more flexible. *Ibid*, i-iv.

229. *Ibid*, iv, pp. 385, 393; Glast. Cust., p. 84. For the Henbury demesne teams, see RBW, iv, p. 403.

230. Glast. Cust., pp. 52, 68 (c.1235-40); *ibid*, p. 210 (1260); BL Cott. MS Claud. C. xi, fos. 193-193v (1251).

231. Prebends of York, p. 12.

232. "Et iuratores dicunt quod quatuor boues caruce sue ad plus ibunt cum bobus domini in pastura episcopi. Et si de paucioribus iungat, tunc pauciores habeat in predicta pastura." BL Cott. MS Claud. C. xi, fo. 150v.

233. Beauchamps of Hatch, p. 15.

234. Cart. Mon. Ram., i, p. 306. Many more pasture arrangements of this type could be cited to support contentions of both large and small teams.

235. See Chapter 3, p. 155 and note 128.

236. Langdon, p. 38.

237. See especially the lists of Thomas Mody, John Ondrow, John atte Wall, John More, and Nicholas atte Wall. Field, op. cit., pp. 140-5.

238. The Vision of William concerning Piers the Plowman, op. cit., pp. 355-6; Pierce the Ploughmans Crede, op. cit., pp. 16-7. "Rothers" rather than oxen are mentioned in the second case, but presumably they were draught cattle of some kind.

239. For example, an illustration from a fourteenth-century copy of Langland's Piers the Plowman, showing a two-ox team pulling a heavy mould-board plough is almost certainly a peasant plough, because the team is being driven by a woman, a thing almost unheard-of for a demesne plough (where the names of the drivers given in the accounts are always men). Steensberg, 'North West European Plough-types', op. cit., fig. 14 (p. 271); for women driving ploughs or ploughing, see Hilton, English Peasantry, op. cit., p. 101; Christopher Middleton, 'The Sexual Division of Labour in Feudal England', New Left Review, nos. 113-4 (1979), p. 153.

240. The following are a few examples, listed from strongest to weakest certainty:

- 1) "Item one plowe and gere for viij oxen" (St Nicholas, nr. Richmond, Yorks, 1562; SS, xxvi, p. 164).
- 2) "a plough with 3 horses and all gear" (Houghton Regis, Beds, 1521; BRO ABP/R 2, no. 92, from a modern English transcription at the BRO, p. 97).
- 3) "a plowe ij yowkes ij chaynes and all thyng to the plowe aperteynyng" (indicating a four-ox team; Birdham, Sussex, 1544; WSussRO, Archd. of Chichester Wills, v, 1544-7, fos. 62v-63v).
- 4) "Item a shod Cartte iij payer of Cartt trayes one plough iijj payer of plough trayes iijj Collers & all other thinges belonging to the plough & Cartt" (indicating a four-horse plough-team; Sutton, Suffolk, 1583; ESuffRO FEI/1/8).
- 5) "a plowe...iijj payer of plowe trayse" (indicating a four-horse team; Sibton, Suffolk, 1583; *ibid* FEI/1/29).

References of the last kind were only included if they matched up fairly closely with the number of horses or oxen on the farm or with other plough-teams in the area.

241. Reginald Lennard, 'English Agriculture under Charles II: The Evidence of the Royal Society's "Enquiries"', in Essays in Agrarian History, 1, ed. W.E. Minchinton, Newton Abbot (1968), p. 170; Orwin and Orwin, op. cit., plate 22 (opp. p. 140).

242. Sources: BEDS: BRO ABP/R 2, no. 92; 3, no. 146; BERKS: W1RO Dean of Sarum, William Keylling, 1579; *ibid*, Thomas Lawrence, 1574;

BUCKS: BuRO D/A/We/4/79; *ibid*, D/A/Wf/4/329; CORNWALL: CoRO Archd. of Cornwall Probate, John Beale, 1579; DEVON: PRO Probate 2, 405; DORSET: WiRO Dean of Sarum, Edith Southaye, 1579; Thomas Marten, 1578; ESSEX: ERO D/A MR 2, fo. 55; GLOS: PRO Probate 2, 498; HANTS: HRO Bishopric Wills, 1545, no. 91; 1549, no. 136; 1550, no. 30; HUNTS: HuntsRO Archd. of Huntingdon Wills, vi, 1538-1541, fo. 241; KENT: KAO PRC 10/1, fos. 17v-18v, 26-7, 103-4; LINGS: LiRO Box 22, no. 21; NORFOLK: NNRO Inv./3, nos. 33, 68, 77, 107; NORTHANTS: NRO Archd. of Northants Wills, E, fos. 181, 200v; OXON: Havinden (ed.), *op. cit.*, p. 48; STAFFS: LJRO Lichfield Probate Records B/C/11, Thomas Hylman, 1535; SUFFOLK: PRO Probate 2, 180; NNRO Inv./3, no. 37; ESuffRO FEI/1/8, 29, 79; WSuffRO IC 500/3/1/80; SUSSEX: WSussRO Archd. of Chichester Wills, v, 1544-7, fos. 62v-63v; ESussRO Archd. of Lewes Wills W/A/3, 1550-9, fo. 48; WARKS: WoRO ref. 008:7, 1551, box 11a, no. 19; LJRO Lichfield Probate Records B/C/11, Richard Coke, 1538; WESTMORLAND: SS, xxvi, p. 218; WILTS: WiRO Archd. of Sarum, Thomas Hulberd, 1561; WORCS: WoRO Ref. 008:7, 1590, box 94b, no. 26; YORKS: SS, xxvi, pp. 164, 247; BI Preb. Court of Fenton Wills, Miles Rawling, 1559; COUNTY UNKNOWN: NNRO Inv./3, no. 11 (Carleton, in Norfolk or Suffolk).

243. This may have been a four-horse plough: "Item to my said wiff a gelding and iij marys to her plough" (Fenton, in Somersham, Hunts, 1541; HuntsRO Archd. of Huntingdon Wills, vi, 1538-1541, fo. 241). As the gelding may have been a riding animal, only the mares were considered as plough beasts.

244. Even the smallest of them - that is, Walter Carter's farm at Romsey (Hants) in 1550 - was obviously a large affair, since Walter, besides the 8 oxen for his plough, also had 11 adult horses, 3 colts, 1 bull, 20 cows, 40 younger cattle, 80 sheep, and 24 pigs. HRO Bishopric Wills, 1550, no. 30; see also the farms of Johanna Wycliffe and Walter Strickland; SS, xxvi, pp. 164, 218.

245. For example, the two-ox team noted in Table 4.12 was found on the farm of Richard Coke of Stretton-on-Dunsmore (Warks) in 1538. From the amount of stock Richard had - 2 oxen, 2 colts, 2 cows, 4 calves, 7 sheep, and 9 pigs - his farm would seem to have been no larger than a good-sized peasant holding in the Middle Ages, even considering the fact that some of his stock may already have been removed as heriots (cf. the peasant draught stock levels in Table 4.1; also the average peasant livestock levels given in Postan, 'Village Livestock', Tables 1-3).

246. Probably approaching fifty acres in size on average, if the data in Table 4.9 are any guide (see pp. 269, 271 above).

247. See pp. 85-7 above.

248. Thus references to co-aration, including those given in the text below, occur in Cart. Mon. Ram., i, pp. 310, 317, 346, 461, 463, 493; ii, 23; Battle Abb. Cust., pp. 74, 76; BL Cott. MS Claud. C. xi, fos. 30-30v, 36, 44v, 58, 116v, 121v-122, 146, 154, 164, 176v-177, 178; Glast. Cust., p. 136; Dom. St Paul, p. 86; Extent of Monk Friston, 1320, ed. T.A.M. Bishop (Miscellanea, iv, YASRS, xciv, 1936), pp. 44, 54, 60, 63; The Crondal Records, ed. F.J. Baigent (Hampshire Rec. Soc., 1890), p. 102; Prebends of York, p. 11; NNRO 21187 (Gressenhall Extent; per J. Williamson); BL Cott. MS Claud. D. xiii, fo. 8 (Binham Priory Register; per J. Williamson). These are only the references in the surveys and extents; for those in the court rolls and other sources, see pp. 297-9 below.

249. Compare, for instance, the thirteenth-century extents of Ramsey Abbey, where at least seven references to co-aration exist (see note above) as against none in the twelfth-century extents (Cart. Mon. Ram., pp. 241-341).

250. "Licet vero bene quatuor hominibus vel octo si cogat necessitas inuicem associari ad carucam si sue facultates vterius non extendant..."; BL Add. Roll 24333; also quoted in Homans, English Villagers, pp. 77, 424.

251. BL Cott. MS Claud. C. xi, fos. 116-116v; also quoted in Homans, pp. 77, 424.

252. E.g., for a summary of the Welsh Laws as they pertain to co-aration, see Agrarian History of England and Wales, i, pt. 2, op. cit., pp. 352-3; H.D. Emanuel (The Latin Texts of the Welsh Laws, Cardiff (1967), p. 15) supplies the pertinent passage from one of the Latin tests of the Laws.

253. "Item si araverit solus, arabit dimidiam acram quolibet die Veneris tempore arurae per annum; et si cum alio, vel cum aliis araverit, idem facient omnes simul quod ipse solus si solus araverit." Cart. Mon. Ram., ii, p. 23; for the number of acres to a virgate at Ellington, see *ibid.*, iii, p. 210.

254. "Et preterea...arabit de beneerthe si habeat carucam integram tres rodas et habebit tres oboli. Et si iungat cum aliis ipse et illi cum quo iungit assidue arabunt tres rodas." BL Cott. MS Claud. C. xi, fo. 30.

255. Battle Abb. Cust., p. 74; Extent of Monk Friston, op. cit., p. 44; see also a case for Bugthorpe (Yorks), where the partner was called a "marra". Prebends of York, p. 11.

256. "Et ad semen hiemale arabit iij acras...Et similiter in quadrag-esimale arabit iij acras." Crondal Records, op. cit., p. 87.



257. "Et si habet carucam suam propriam, tunc arabit sicut Johannes Chappellayn." Ibid, p. 88.

258. "Et si habet carucam propriam integram vel dimidiam, tunc arabit sicut alii vicini sui tres acras hiemales et tres acras quadragesimales." Ibid, p. 89.

259. For example, no co-aration was indicated for the cottagers of Colne in Somersham, Hunts (p. 285 above). Similarly Roger, son of Walter, of Bridgham (Norfolk), holding six acres in 1251, was expected to plough with "a whole plough (or plough-team)" for three days; BL Cott. MS Claud. C. xi, fo. 249. On the other hand, Roger's fellow tenant, Agnes River, holding five acres, was only required to plough for a day with "half a plough", indicating that Agnes performed her ploughing in league with other tenants (ibid). It may be that the leasing of extra land, generally unrecorded in the surveys, increased the ploughing potential of some small-holders, like Roger, relative to others of their class. Leasing may also explain the rare cases of very substantial tenants practising co-aration, such as John Crikat of Rettendon (Essex). John held 100 acres in 1251 and owed ploughing services "if he has a whole plough-team or joins with others." Provisions were also made in the event he had no ploughing animals at all (ibid, fos. 176v-177). Presumably John may have leased much of his land or used it for other purposes than arable farming.

260. See p. 87 above.

261. "...cum omnibus bobus suis caruce sue junctis." The same was requested of three other virgate holders; Glast. Cust., pp. 12-3.

262. Mamecestre, ii, ed. J. Harland (Chetham Society Old Series, lvi, 1861), pp. 229, 311.

263. A Transcript of "The Red Book", ed. A.T. Bannister (Miscellany xv, Camden Third Series, xli, 1929), p. 15.

264. It has been claimed that part of this, particularly as it applies to by-laws, was due to the informal nature of co-aration, which occurred mostly between neighbours and friends and so did not require a regulating body of ordinances (e.g., see W.O. Ault, Open-Field Farming in Medieval England, London (1972), p. 21). Even so, the relative lack of court references is surprising if co-aration was at all common.

265. PRO SC6 1088/1.

266. NRO PDC AR/1/4.

267. Another twenty-one services were allowed to the reeve and six other tenants, in some cases perhaps because they had no ploughing animals at all. WAM 8299; I am indebted to Dr. C. Dyer for drawing my attention to this entry.

268. For instance, if the degree of co-aration was two tenants to a plough, then the lord would be losing half his ploughing services for these tenants. Since the loss in this instance was twenty-four ploughing works, the tenants would have owed forty-eight ploughing works in all, over half the total of ninety-four. If we assume we are talking about a group of tenants who each owed about the same number of services, this would indicate that over half of these tenants practised co-aration.

269. CUL Ely Dioc. Records D8/3/29; WAM 27705. I am indebted to Mr. Kyle Rae for drawing my attention to the Knowle reference.

270. Or so it appears; Langdon, op. cit., p. 38.

271. At least among those who owed ploughing services. Smallholders, who<sup>usually</sup> did not owe ploughing services and hence do not figure in the accounts as much in this regard, may have combined rather more in order to be able to plough with the few animals they had.

272. Bennett, Life on the English Manor, op. cit., p. 45.

273. Wakefield Court Rolls, iii, pp. 161-2; also quoted by Homans (English Villagers, p. 78) and Ault (Open-Field Farming, op. cit., p. 21).

274. Ault, op. cit., p. 21.

275. Ibid; Homans, English Villagers, pp. 78-9.

276. Chalgrave Court Roll, pp. 65-6, 62.

277. Wakefield Court Rolls, ii, p. 208.

278. Esp. Vinogradoff, op. cit., p. 253.

279. Homans, English Villagers, pp. 79-80.

280. See p. 86 above.

281. Particularly at Barton in the Clay and Horningsea above (p. 294), or on other manors where large plough-teams were required of tenants for their ploughing services (p. 289 above).

282. E.g., Select Pleas, pp. 12, 19-20, 20, 90, 93; Hales Court Rolls, i, pp. 36, 152, 200; ii, pp. 515-6; iii, p. 156; Chalgrave Court Roll, p. 11; Court Rolls of the Abbey of Ramsey and of the Honor of Clare, ed. W.O. Ault (Yale, 1928), pp. 194, 196, 210, 213, 224, 227 (bis), 233, 241; Durham Halmote Rolls, p. 5; Wakefield Court Rolls, iii, pp. 149-50; v, p. 149.

283. Field, op. cit., pp. 139-45. The "miscellaneous" tenants have been counted as major peasant land-holders, making twenty altogether. Of these, only two did not have full sets of ploughing equipment.

284. See note 259 above.

285. Langdon, p. 38; see also the two-ox teams implied by the Worcestershire principalia lists (p. 291 above).

286. E.g., see p. 277 and note 157 above.

287. Although this does not rule out the possibility of artistic

licence in some of these illustrations; see p. 82 above.

288. Cf. the peasant and demesne plough-teams found there in the late thirteenth century (p. 289 above).

289. English Village Community, op. cit., pp. 74-5.

290. Slicher van Bath, op. cit., p. 67; see also Table 2.1 above.

291. The acre here measured 360 feet by 36 feet. Agrarian History of England and Wales, 1, pt. 2, p. 352. It may be that it consisted only of "infield".

292. P. 87 above.

293. Agrarian History of England and Wales, 1, pt. 2, p. 351

294. Esp. Les Caractères Originaux de L'Histoire Rurale Française, 2nd edition, Paris (1955), pp. 49-57.

295. E.g., see Steensberg, 'North West European Plough-types', pp. 256, 279; Haudricourt and Delamarre, p. 330; also as in Ireland in the eighteenth century (A.H.R. Baker and R.A. Butlin (eds.), Studies of Field Systems in the British Isles, Cambridge (1973), p. 591).

296. E.C. Curwen, 'Prehistoric Agriculture in Britain', Antiquity, 1 (1927), pp. 280-2, 287-8; also for the role of the large plough-team in creating the curving reverse-S strip, see S.R. Eyre, 'The Curving Plough-Strip and its Historical Implications' AHR, 111 (1955), pp. 92-3.

297. Payne, 'The British Plough: Some Stages', op. cit., pp. 77-9; see also Agrarian History of England and Wales, 1, pt. 2, pp. 83-7.

298. E.g., see Steensberg's illustrations of fifteenth- and sixteenth-century Danish ards, all with coulter ('North West European Plough-types', figs. 15-9 (pp. 272-5)).

299. An exception being in the services listed for the peasants of Fleet (Lincs) in 9 Edw II, where aratrum is used in describing ploughing services. Terrier of Fleet, op. cit., pp. 7, 13, 17, 18.

300. See pp. 90-1, 160 above.

301. Curiously two references to aratra occur in the services of tenants (one a carpenter) who were required to make them, presumably for the demesne; Battle Abb. Cust., p. 29; Glast. Cust., p. 39. Does this imply that the term aratrum often referred specifically to demesne ploughs?

302. See note 239 above.

303. See Figure 1.12; also Singer et al, ii, fig. 55 (p. 90).

304. Fitzherbert, pp. 9-11; see also p. 160 above.

305. As discussed above, pp. 88-9.

306. Singer et al, ii, figs. 54, 55 (pp. 89-90); Steensberg, 'North West European Plough-types', fig. 14 (p. 271).

307. E.g., see Figures 2.1, 2.2, and 2.4.

308. Battle Abb. Cust., p. 146.

309. Millar, op. cit., fo. 171; Fitzherbert, p. 24.

310. See p. 170 above.

311. Thus, references to carri or carri-loads being ox-hauled are as follows: Abbey of Bec, p. 85; Battle Abb. Cust., pp. 4-5; Glast. Cust., pp. 82, 86, 129, 140; Beauchamps of Hatch, pp. 5, 8; also for carri or curri being hauled by mixed teams, see Battle Abb. Cust., p. 156. For plaustra or plaustra-loads being ox-hauled, see Glast. Cust., pp. 210, 216, 220, 221; Cart. Mon. Glos, iii, p. 143; ~~xxx~~ also Hales Court Rolls, ii, p. 551.

312. For a carrus or carrus-load being equal to two carts or cart-loads, see RBW, i, p. 14; ii, p. 194; Glast. Cust., pp. 65, 140; Cart. Mon. Glos, iii, p. 62. For a plaustrum or plaustrum-load being equal to two carts or cart-loads, see Dom. St Paul, pp. 62, 94; Glast. Cust., pp. 67, 68.

313. "...j carrum cum duobus hominibus ad portandum durum bladum & aliud ad portandum molle bladum & utrumque plaustrum habebit j garbam." Dom. St Paul, pp. 42-3. For similar references, see Glast. Cust., pp. 72, 82, 125-6.

314. See p. 178 above.

315. Thus, for example, the term carrus is very much more a feature of the Glastonbury custumal of Abbot Michael (c.1235-40; Glast. Cust., pp. 7, 12-3, 65, etc.), while the term plaustrum seems to crop up more often in the later custumal of Abbot Roger (1260; *ibid*, pp. 210, 211, 216, 220, 221). The term carrus, however, is found in surveys as late as the fifteenth century; Bilsington Priory, op. cit., pp. 148, 152, 154, etc.

316. E.g., pp. 282-4 and note 202 above.

317. Sources: BL Cott. MS Claud. C. xi; BL Cott. MS Claud. D. xiii; NNRO 21187; Battle Abb. Cust.; Chichester Custumals; Glast. Cust., Dom. St Paul; Cart. Mon. Glos, iii; Cart. Mon. Ram., i & ii; RBW; Beauchamps of Hatch; Abbey of Bec; Taunton Cust.; Prebends of York; Cronal Records, op. cit.; Arch. of Cant. Suss. Manors, op. cit.; Terrier of Fleet, op. cit.; Documents Relating to the Manor and Soke of Newark-on-Trent, ed. M.W. Barley (Thoroton Society, Record Series, xvi, 1955); Mamecestre, ii, op. cit.; Gras and Gras, pp. 229-38.

In treating the published surveys, extents, and custumals, only the vehicle terms given in Latin were used; English translations (e.g., "carts") were not included unless accompanied in the text by its Latin equivalent. In some cases, the vehicles were indicated by the load that they represented (e.g., cariati, careatae, etc. for carri-loads). Finally, the villages making up the large composite manors of Cronal and Newark-on-Trent were

counted as one "manor" each.

318. See pp. 177-8 above.

319. That is, Marley and Barnhorn (Sussex), Bromham (Wilts), and Limpsfield (Surrey); Battle Abb. Cust., pp. 5, 6, 14, 20, 74, 150. The Barnhorn and Limpsfield cases were not included in Table 4.13, however, as their extents were post-1300.

320. As at Marley and Barnhorn. *Ibid.*, pp. 5, 6, 20.

321. Again at Marley and Barnhorn. *Ibid.*, pp. 4, 5, 20.

322. They may also have been attached in some way to other vehicles. Thus at Bromham (Wilts) it is stated that each major yardlander ought to carry dung "namely he who has a cart with one curtana (scilicet qui habet carectam cum j curtanam; *ibid.*, p. 74)." This is reminiscent of the dung-pot for the plaustrum at Henbury-in-Salt-Marsh (Glos) in 1385-6 (see Chapter 3, note 189 above).

323. The term did survive for some time in the north, however; see Bishop Hatfield's Survey, ed. W. Greenwell (SS, xxxii, 1856), pp. 4, 7, 9, 10, 11, 14, 20, 23, etc.

324. *Ibid.*, pp. 9, 10, 29, 30, 34, 84, 119-20 (bis), 123, 145.

325. See p. 75 above.

326. For which he was to receive food ("...et si secaverit quadrigatam unam duorum equorum habebit fesculum."); Abbey of Bec, p. 47).

327. *Ibid.*

328. See pp. 94, 179 above.

329. BL Cott. MS Claud. C. xi, fos. 195v, 201v.

330. That is, by adding up the manors in Table 4.13 with horse-hauled vehicle terms (carecta, tumberellus, and biga) versus those with ox-hauled vehicle terms (carrus, plaustrum, and curtana). Manors with more than one type of horse-hauled or ox-hauled vehicle term were only counted once. Thus the percentage of manors with horse-hauled vehicles in both halves of the century is identical to that for carts alone, since the biga and the tumbrels were all found on manors that had carts already.

331. That is, considering only those manors where peasant vehicle terms were given.

332. With the exception of the north, which is poorly represented in the surveys.

333. E.g., see p. 272 above.

334. See note 200 above.

335. The most forthcoming of the lay subsidy assessments in this regard is that for south Wiltshire in 1225, where peasant horses ("avers" or jumenta) are indicated as being lame (claudus), blind (cecus), or weak

(debilis) with some frequency. PRO E179 242/47.

336. E.g., see the heriot prices for peasant affers above (pp. 262-3 and note 99); also the low average value given for these horses in the lay subsidies (e.g., Gaydon, p. 104; Brown, p. xxv).

337. For the effect of the taboo on the eating of horse flesh, see Chapter 5, p. 356 and note 47.

338. It has been estimated that a horse aged 15-20 years has only half the working capacity of its prime (5-11 years). E.J.T. Collins, 'Horses in Pre-Industrial and Industrialized Economies', unpublished paper delivered to the 8th International Economic History Congress, Budapest, 1982. I am indebted to Dr. Collins for permission to refer to this paper.

339. Pp. 183-6 above; Langdon, pp. 36-7.

340. See pp. 88-9 above.

341. Pp. 193-4, 195 above.

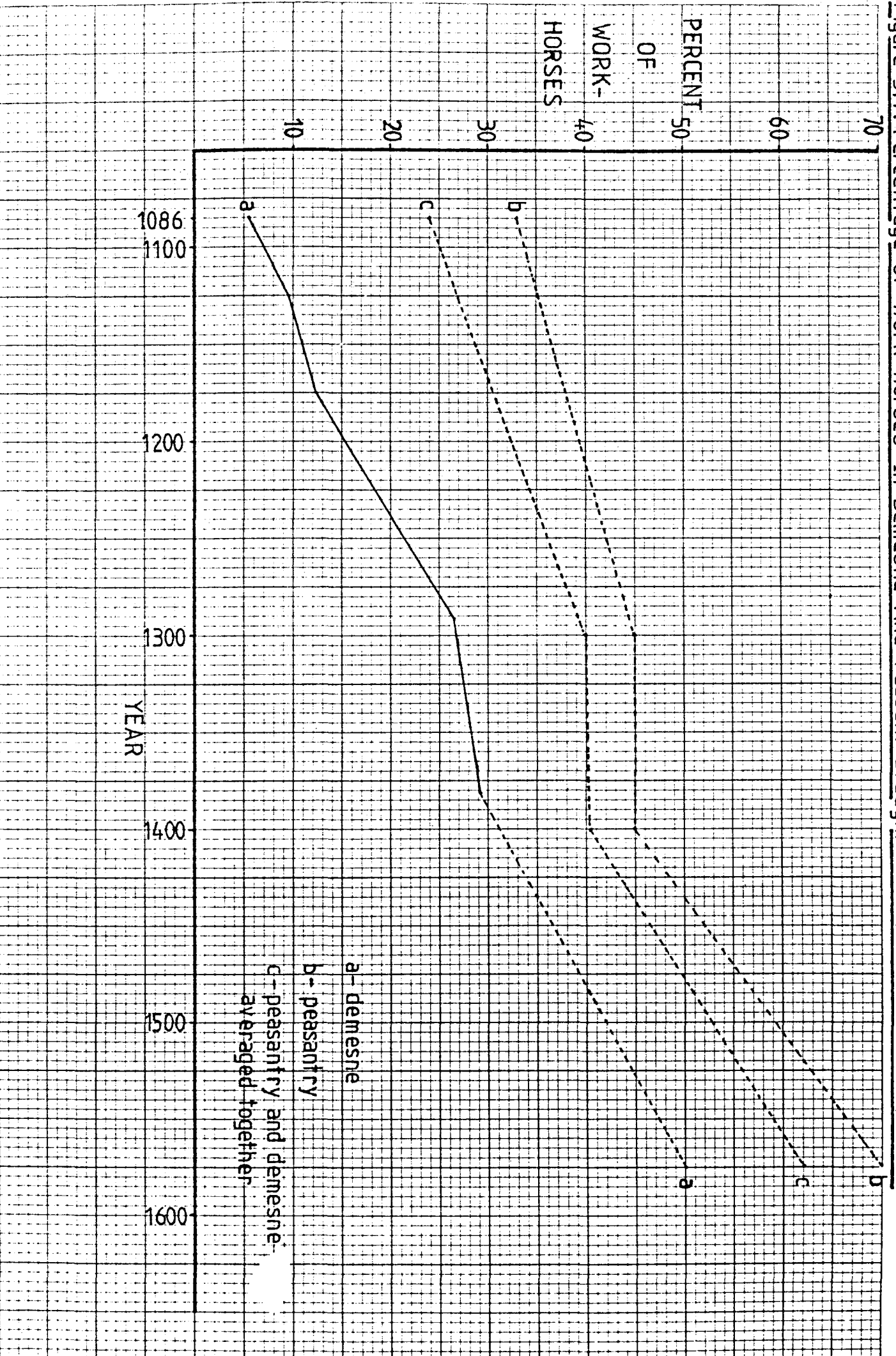
342. Thus, for example, there were only 0.9 draught animals per peasant taxpayer in the horse-oriented lay subsidy assessment for Blackbourne Hundred (Suffolk) in 1283, compared to 1.7 working animals per taxpayer for the ox-oriented 1225 south Wiltshire assessment. Powell; PRO E179 242/47.

## CHAPTER 5

### Conclusions

It has been the purpose of the previous three chapters to provide, as much as possible, a statistical base for assessing the significance of the introduction of the work-horse to English farming from 1066 to 1500. The difficulties in obtaining this base in the face of often inadequate data have already been outlined. Nevertheless some basic conclusions can be made. First of all, it is clear that the horse's influence in medieval agriculture steadily increased right through the period. Figure 5.1 shows this in graphical form for the country as a whole. The bottom solid line represents the fairly precise demesne experience up to the median point for the Sample B accounts (i.e. 1381); the dashed lines represent the much less certain experience for the peasantry, the demesne after the <sup>averaged</sup> fourteenth century, and the peasantry and demesne<sup>^</sup> together. Much of the figure is necessarily impressionistic,<sup>1</sup> since only the solid curve for the demesne in the three centuries after Domesday is based on abundant and reliable evidence. Nevertheless it does highlight the fact that there were two key periods for the increase in the use of horses during the Middle Ages, the first covering the twelfth and thirteenth centuries and the second beginning sometime in the fifteenth century<sup>2</sup> and continuing - it would appear - into the sixteenth. Of these two main phases, the second was the more complex, resulting in the polarising effect noted in the previous chapter. Here animals were introduced, or - in the case of oxen - reintroduced, to certain jobs with an eye to the total farm economy.<sup>3</sup> The

Figure 5.1: Percentage Of Work-horses In Demesne And Peasant Draught Stock From 1086 To 1574





end result, as is so evident in the sixteenth-century wills and inventories, was a patchwork of areas using horses only and others using mainly oxen. Indeed, as we have shown in the previous three chapters, the use of horses varied considerably from region to region right through our period. This regional variation, however, should not be regarded as arising strictly out of economic needs, since there were many other factors that led to one animal or the other being favoured in a particular area.

One of the more important of these factors was soil, which often directly determined whether horses or oxen were employed. Horses, for instance, had difficulties in ploughing or hauling through heavy clay lands and were much better on light, easily worked soils; on the other hand, because of hoof damage and a tendency to slip, stony soils were awkward for oxen.<sup>4</sup> We should then expect the distribution of horses and oxen in medieval England and afterwards to follow the distribution of the various soils in the country, and to some degree this was the case. Thus the thin, stony chalk-lands of the Chilterns or the Yorkshire Wolds and the light soils of Norfolk were areas where horses were used on their own from a very early period indeed. On the other hand, the much more predominantly clay lands of the Midlands tended to stick to oxen right to the end of the sixteenth century.<sup>5</sup> At the same time, however, there were often contradictions to this general rule of oxen for heavy soils, horses for light ones. For example, the use of horses in medieval Essex was surprisingly popular, given that it is a county which has its share of heavy soils.<sup>6</sup> On the other hand, areas like the West Midlands, also with a reputation for heavy soils, nonetheless had a variety of lighter ones as well, particularly where gravels and sands were intermixed with belts of heavier clays and marls;<sup>7</sup> yet oxen seem to have been used in almost all cases here. Clearly other factors were at work. Only in a few counties, such as Kent, was the distribution of horses and oxen variable enough to suggest that their distribution may have been following existing soil

patterns.<sup>8</sup>

Terrain also seems to have had a variable effect on the use of horses and oxen. Thus upland areas with their predisposition to thin, often stony soils were more favourable to horses than lowland areas, where heavier clays and loams were liable to be found.<sup>9</sup> In addition, it appears that oxen were suspect when cultivating slopes, where there was presumably a tendency for ploughs to slip at slow speeds.<sup>10</sup> Again, this pattern did not apply everywhere. The demesnes on the Cotswold Hills, for instance, continued to use oxen in great numbers and presumably the same applied to the peasantry.<sup>11</sup> Other areas of extremely broken country, such as Devon, also used oxen to a great degree.<sup>12</sup>

Rainfall appears to have been an important factor as well. The concentration of horses in the south and east of England in medieval times shows a marked correlation with the drier areas of the country shown on modern-day precipitation maps.<sup>13</sup> That rainfall was an important factor has a certain logic. Modern experiments indicate that excessive moisture increases the adhesion between plough and soil,<sup>14</sup> and very muddy soils certainly seem to have suited oxen better than horses.<sup>15</sup> Even here there are anomalies, however. The particularly ox-oriented region of the Weald, for instance, falls into the drier part of the country, and the relatively dry northern districts on the east coast, such as Durham, also remained strongly committed to using oxen.<sup>16</sup>

Turning to more ecological factors, the distribution of meadow and pasture also seems to have been an important factor in determining the use of horses and oxen, as stressed by Fitzherbert.<sup>17</sup> In general terms, pasture and meadow were more abundant towards the north and west, where oxen were more likely to be employed. Significantly, seemingly isolated ox-oriented areas, such as the Weald, were also areas where woodland pasture and meadow were abundant. Again, of course, there are anomalies. Regions such as south-east Worcestershire and the Feldon in Warwickshire, where

arable land clearly dominated at the expense of meadow and pasture as early as Domesday,<sup>18</sup> still continued to use oxen in considerable number.<sup>19</sup> In these cases, though, the importation of hay or the transhumance of stock to nearby pastoral parishes may have been easier than in the south-east.

As we have already seen, the character of land-holding also seems to have played a key role in determining whether horses or oxen were preferred in a particular area. Thus, in parts of eastern England, where the fragmentation of holdings had reached such a pitch that few tenants had more than ten acres, the use of the horse was almost universal.<sup>20</sup> Admittedly it is often hard here to distinguish between what may have been a bone fide preference for the horse technically rather than just as a result of being a smallholder, but there does seem to have been a definite relationship between holding size and the use of horses for draught. In this case, the use of horses must be seen as being more probable in areas of partible rather than impartible inheritance, since the fragmentation of holdings was often connected with the former,<sup>21</sup> although the question of Kent, with its partial allegiance to oxen while still being an area of partible inheritance (or gavelkind), complicates this somewhat.

The type of landlord may have had an effect on the use of horses as well. We have seen that in the early centuries after the Conquest there may have been a greater tendency for ecclesiastical landlords to use horses than for lay landlords, and part of this trend may have been passed on to their tenants, although we have little proof of it.<sup>22</sup> It has been suggested, too, that lords often exerted considerable control in the matter of field systems, particularly in the creation of systemised grazing arrangements, such as harvest and winter shack, full-year fallow grazing, and fold-course.<sup>23</sup> This careful husbanding of grazing resources may have encouraged the use of oxen instead of horses. Since the most systemised grazing arrangements occurred in the Midland system,<sup>24</sup> where oxen often predominated, a connection between the two may exist. There are, however, some

grave inconsistencies. Oxen, for instance, were also employed extensively in the far less regularised field systems of the south-west and north-west, while counties like Bedfordshire and Northamptonshire, which generally had regular commonfield systems, nevertheless displayed a very horse-oriented peasantry. We have also in the matter of lordship to consider the effect that certain feudal bans had in encouraging or discouraging the use of horses versus oxen, particularly the manorial restrictions in the selling of draught livestock. In the main these would appear to have been inconsequential since the fines or licences involved usually applied equally to horses and oxen, although occasionally one beast was discriminated against more than the other.<sup>25</sup>

The control that lords and indeed the village community as a whole had over the organisation of field systems was reflected not only in grazing arrangements but also those for cropping. In particular, it has been claimed that the transition from a two-course to a three-course rotation allowed farmers to obtain a much greater harvest of oats, which in turn encouraged the use of horses for agricultural work.<sup>26</sup> We should then expect a greater concentration of work-horses in areas of three-course or more intensive rotations than in those following only two-course rotations. Since, in the very broadest of terms three-course and more intensive rotations are found further south and especially east,<sup>27</sup> this might be seen as conveniently coinciding with the intensification in the use of horses towards the south-east. But the distribution of two- versus three-course rotations - let alone more intensive ones - across England in the Middle Ages was in fact a very complicated affair. Three-field systems, for instance, presumably with similar degrees of rotation, were found in considerable number as far west and north as Somerset, Staffordshire, and Yorkshire, often intermingled with two-field systems.<sup>28</sup> As a result, it is impossible at the moment to establish with any accuracy a correlation between the distribution of two- versus three-course rotations and the

relative use of horses and oxen. In any case, despite assertions by some writers to the contrary,<sup>29</sup> it was perfectly possible to grow considerable quantities of oats and other spring crops on two-course rotations, especially where soil and climate favoured their cultivation, thus undercutting the whole theoretical basis for the connection.<sup>30</sup> It might be argued that in this case the oats would be destined for human rather than animal consumption, but in some instances at least the crop would be surplus and thus favourable to the use of horses.

It is possible that enclosure encouraged the use of horses, in that the smaller teams in which horses were employed allowed them to plough more easily in the relatively confined and awkward areas of closes. Such a theory is attractive when taking stock of comparatively enclosed counties, such as Essex, Hertfordshire, and Kent, where horses generally outnumbered oxen,<sup>31</sup> but it fails when taking into account similar areas elsewhere, such as the Arden in Warwickshire, where significant levels of enclosure in the Middle Ages nonetheless went hand in hand with the continued use of oxen.<sup>32</sup> To a certain extent we have the same problem when considering scattered versus nucleated settlement. Lynn White, Jr., has made the point that when peasants live far away from their fields, as they are apt to do in nucleated villages, then the use of horses for ploughing becomes very handy, as they also act as a quick means of getting him to and from his place of work.<sup>33</sup> Thus, where hamlet settlement is the prevailing patterns, as in much of the west and south-west, the proximity of the fields in these instances makes the use of horses for the pre- and post-cultivation transport much less crucial. This factor was obviously not a dominating one, otherwise oxen would have been restricted to a much smaller area than they were, but it may have had a contributing effect in some instances.

A much more profound influence upon the distribution of horses and oxen may have been the increasing sophistication of market transactions,

coupled with the growing influence of urban communities. One of the problems with having only horses for draught is that you now have no use for that body of male cattle formerly employed as work animals. This problem must have been particularly acute for the peasantry, since, even in areas where these peasants used horses almost exclusively for draught, there is still ample evidence that they raised cattle; cows and their followers, for instance, figure prominently among the goods of these peasants in the lay subsidy returns.<sup>34</sup> Presuming that they kept young females as breeding and milking stock, we are forced to wonder what they did with the majority of the young males. They may have been slaughtered as meat for the peasants themselves, but from what we know of peasant diet, with its generally low emphasis on meat, especially before the Black Death,<sup>35</sup> this seems unlikely. They may well have been sold to larger tenants or demesnes still using oxen in the area. Demesne accounts, in particular, almost always show demesnes buying more oxen than they raised themselves.<sup>36</sup> Another likely outlet for these unwanted bullocks would be in supplying the meat demands of urban populations. This was of particular importance in the case of London, which had a voracious demand for meat that in the later Middle Ages drew cattle from as far away as the West Midlands and Wales.<sup>37</sup> This pull was undoubtedly strongest in the immediate vicinity of the city and may have encouraged farmers in the Home Counties and East Anglia to sell their ploughing and hauling oxen as meat cattle and to replace them with horses instead. This works best for Essex, which, on soil grounds, should probably have been employing much more in the way of oxen in the Middle Ages (see p. 349 above). On the other hand, this pull of London as a meat consuming centre had a much smaller effect on the counties immediately south, notably Surrey and Sussex, which on this basis should have been using many more horses for draught than they in fact did.<sup>38</sup>

Proximity to the Continent was also a likely factor, since the more

progressive attitude to farming found in Norfolk and coastal Sussex indicates a susceptibility to ideas from mainland Europe.<sup>39</sup> We have already commented upon this in relation to the use of the mixed plough-team in East Anglia during the twelfth century (p. 72), and this would seem to have had a continuing influence.

Finally we come to some of the more psychological reasons for choosing either horses or oxen for draught. Prime among these was resistance to change. The conservative and unadventurous nature of medieval farmers, large and small, has often been commented upon as being a barrier to agricultural improvement.<sup>40</sup> It has been claimed that such advances as there were arose not so much out of a spirit of technological enquiry as from a "slowly forming local tradition",<sup>41</sup> perhaps in the same way as dialect or other features of regional custom were formed. R.H. Britnell has commented on this in relation to crop rotations in Essex,<sup>42</sup> and this might also explain the demesne loyalty to mixed plough-teams in this same county, which seemingly cut across a great variety of soil experiences.<sup>43</sup> We have already indicated, too, that the decision of the demesne managers at West Wycombe to go completely to horses for draught was probably based on local experience, as much as anything else. Similarly the refusal of such areas as the Cotswolds to go more to horses, as other upland areas had, may have been due to a desire to remain in line with the traditions of the surrounding lowlands. Local plough and vehicle type must often have reinforced this attitude. We have already indicated the close connection that the use of the horse had with carts, and, to a certain extent at least, wheeled ploughs were also much more likely with horses.<sup>44</sup> On the other hand, ox-oriented areas tended to be those found with foot and swing ploughs and - particularly - wains or plaustra. Wheeled ploughs were generally more expensive than foot or swing ploughs,<sup>45</sup> and, as we have seen, wains were too large to be hauled by horses. Thus a peasant or demesne farmer in the west or north of the country might well hedge at introducing all-

horse draught if it meant not only the extra cost of employing horses but also that of changing over his ploughs and making his larger vehicles redundant.

Such conservatism at least had a rational basis. In some cases, though, the resistance to change might have arisen out of sheer obstinacy or even perversity, as indicated by Walter of Henley's complaint that the "malice" of the ploughman would not allow the horse-plough to go any faster than if it were drawn by oxen.<sup>46</sup> Also, the taboo on the eating of horse-flesh, which was followed with remarkable consistency in England,<sup>47</sup> seriously weakened the economic case for horses and perhaps explains why the animal was not adopted for farm work in England to the degree that it was in northern France and the Low Countries, where the taboo seems not to have been so rigorously enforced.<sup>48</sup> There is also the question of fashion, which could have worked in both directions. It may have been that, initially, horses were considered too grand to indulge in menial work,<sup>49</sup> which would have favoured the continued use of oxen; on the other hand, once they caught hold, it may have been a point of pride among some farmers to have a team of horses rather than oxen, a consideration which seems to have become important in later times.<sup>50</sup>

In summary, we are faced with a bewildering array of possible causes for the introduction and distribution of work-horses in medieval English farming.<sup>51</sup> Some of these were obviously very important. Thus, for the demesne, as we have already indicated in Chapter 3, the economic consideration that horses cost significantly more than oxen to keep patently played a crucial role in keeping oxen in work on these farms. For the peasantry, however, such a factor was of much less importance or at least could be countered by other considerations, such as the versatility of the horse. In this case, soils may have formed the final arbiter. Horses, no matter how useful they were to peasants in other ways, were just unable to perform on some types of ground, especially when ploughing. But we should



not see this as the only reason for peasants using oxen, any more than we would say the same for the demesne. Rather, in any one particular area, there would be a combination of factors working in concert. Thus, in areas where the ox continued to hold sway we would tend to find the complementary equipment of swing or foot ploughs and wains, the relative availability of pasture and meadow, large holdings and impartible inheritance, lowland terrain, wetter climate, heavy soils, highly regulated field systems, two-course rotation, and location away from London and the influence of the Continent. On the other hand, horses were more often found with wheeled ploughs and carts, scarcity of meadow and pasture, small fragmented holdings and partible inheritance, upland terrain, drier climate, light soils, less regulated field systems or even enclosure, three-course or better rotation, and location close to London and the Continent.<sup>52</sup> Not all these factors applied in every instance, and in any case the situation was often complicated by more irrational reasons such as the strength of local tradition and the tendency to resist change. Nonetheless all these considerations taken together generally meant that oxen were found more to the north and west (with the notable exception of the Weald) and horses to the south and particularly the east. We should point out, however, that even in those areas where oxen survived as draught animals, horses were still used for harrowing and pack-animal work, not to mention the possibility of hauling. There is also, in the first three centuries after Domesday, the phenomenon of the demesnes and more substantial peasants tending to use much more in the way of oxen than their smallholding colleagues, who used mainly horses. This makes it difficult to mark off with total precision "horse" areas from "ox" areas. However, as the concentration of tasks upon one animal or the other became more common, resulting in the polarising effect already noted, the boundaries between areas that used mainly oxen and those that used only horses, although complex, became much clearer, particularly in the sixteenth century. To a certain extent some

idea of these boundaries can be gained by looking at the distribution of mixed versus all-ox plough-teams in Figures 3.3 to 3.6, which seems to have had a strong similarity to the distribution of all-horse farms versus those with oxen in the sixteenth century.<sup>53</sup>

Having discussed the various factors that governed the adoption of the horse as a work animal in medieval England, we can now turn to the other side of the question: what effect did the horse have on the country's agriculture, society, and economy.

Dealing with agriculture first, the most important point to consider concerns the productivity of land. The dilemma facing medieval society as a whole, especially in the period leading up to the Black Death, was one of simply growing enough food to satisfy the hunger of the population at large. Did the introduction of the work-horse to English agriculture have any impact upon this at all? There are theoretical reasons for supposing that it could, particularly in relation to increasing crop yields. For instance, the faster ploughing and harrowing that the horse allowed - at least in theory - meant that these cultivating techniques could be done more often. This was particularly important for fallow ploughing, which killed off the weeds that would otherwise appear in the crop of the following year. In general, the more fallow ploughings the better. In medieval times, twice over was thought to be sufficient;<sup>54</sup> in comparison, at the time of the Agricultural Revolution, when yields were some two or three times better than in the medieval period,<sup>55</sup> there could be as many as eight fallow ploughings!<sup>56</sup> Second, shorter ploughing, harrowing, and other hauling times would free more labour for other activities, such as weeding, breaking down the clods still left after harrowing, digging in marl, lime, seaweed, or other additives, carting and spreading manure, beat-burning and so on. Weeds, in particular, are claimed to have played a very prominent role in keeping down medieval yields,<sup>57</sup> and certainly more weeding

would have helped. Also if extra land was available, then quicker ploughing and harrowing would also free more time to deal with this. It is perhaps no accident that the first significant upsurge in the use of horses during the twelfth and thirteenth centuries occurred during a period of known assarting (although the areas where the horses were introduced in greatest number did not always coincide with those where assarting was most extensive). Quicker ploughing may also have been useful in the post-Black Death period, when holding sizes became larger and presumably more prone to suffer from the labour shortages that were increasingly a feature of the time.<sup>58</sup> Finally, the efficiencies of traction, especially as regards ploughing, may have been improved by horses. Horses were able to plough a much neater furrow than oxen,<sup>59</sup> and, with the animal's greater stamina, perhaps ploughing depth was improved as well in some cases.

Most of these hypothetical aids to land productivity depend upon an assumed increase in speed when using horses instead of oxen. We have some indications that when mixed plough-teams were employed in place of all-ox plough-teams there was an increase in ploughing speed. However, when all-horse plough-teams were introduced the trend was to cut down on team size rather than capitalise on an increase in speed by using only horses.<sup>60</sup> Even if we assume there was some improvement in speed during the eventual transition from all-ox plough-teams to mixed or even all-horse plough-teams, was this reflected in, say, an increase in the number of fallow ploughings given to the land? The answer is probably not, especially in the long run, since the reduction of fallow ploughings was a common phenomenon on demesnes after 1350, where shortage of labour seems to have been more of a problem than draught.<sup>61</sup>

It is equally difficult to prove that time saved by using horses was invested in weeding or other yield-improving activities. For the demesne, Fleta calculates that out of a total cost of 25½d. per acre, exclusive of seed, needed to prepare and harvest a crop, only ½d. was spent on weeding,

less than 2 per cent of the total cost,<sup>62</sup> and it was unlikely to have been much greater in practice.<sup>63</sup> There was definitely some room for improvement, but without a detailed analysis of individual cases it is difficult to assess whether the degree of weeding did increase. Presumably, being labour intensive, it came under the same sort of pressure as fallow ploughing and probably decreased after 1350,<sup>64</sup> a situation that may have applied to peasant farms as well.<sup>65</sup>

It is equally difficult to assess whether the use of horses improved the efficiency of cultivation, perhaps most crucially ploughing depth. To a large extent, this depends on the type of plough employed. If a conversion to horses occasioned a change to a different type of plough, then we might expect some influence on ploughing efficiency, either for the better or worse. We have seen in the West Wycombe case that the conversion from mixed plough-teams to all-horse teams was accompanied, it appears, by a change from swing to foot and wheeled ploughs.<sup>66</sup> We have no reason to believe, however, that ploughing depth was affected; indeed the most likely result of the change, with wheeled ploughs in particular, was to improve the regulation of depth, which may have had a beneficial effect. On the peasant side, we have indicated that smaller plough-teams were the norm and that these teams were probably reduced further in size when horses were used. On the surface, this might seem to imply a significant reduction in the efficiency of cultivation, with peasants ploughing less deep than they did before, but, as we have seen, a small number of horses could do the work of a larger number of oxen.<sup>67</sup> Indeed, small two-horse peasant plough-teams may have been as effective as the eight-animal monsters on the demesne, which, in any case, do not seem to have been created so much for ploughing efficiency as to preserve the strength and well-being of animals worked over very long ploughing seasons. In this regard, we should not be looking so much at the plough-team permutations in which demesne and peasant farmers indulged as at the ploughs themselves. The evidence, such

as it is, indicates that heavy mould-board ploughs were used on both demesne and peasant land. Furthermore, as the analysis of demesne plough types suggests (pp. 161-9 above), plough construction and design was somewhat static and unlikely to have changed significantly over our period. On balance, if we are to blame traction for poor medieval yields, it should be levelled at the lack of it - for instance, in the number of fallow ploughings - than at its quality or efficiency.

The general conclusion here is that there is little to indicate that the introduction of the work-horse directly or indirectly improved crop yields. Indeed, judging from both demesne and peasant experience, the main concern was not to increase production, but rather to save on costs through a reduction in plough-team size or labour. Even when a strictly speed-increasing change was made, for example, to mixed teams, it is likely that the increase in speed was transformed into a reduction of teams rather than in more yield-efficient practices.<sup>68</sup> Thus, although the level of work-horses might increase on a farm, yields were as likely to go down as up, as on the estates of the bishop of Winchester.<sup>69</sup> Also, it is not totally clear whether medieval farmers were always successful in their cost-savings attempts, since the case of West Wycombe shows how difficult it was to be certain that cash was actually saved. In some cases, though, as in the Norfolk demesnes, savings would seem to have been unavoidable, and the same probably applies to peasants who replaced, say, four oxen with two horses. As a result of this reduction in cultivation costs the peasant or demesne owner was left with a greater cash surplus. If this extra cash was used as a capital investment, say for purchasing marl, lime, night soil, or other additives for the fields, then it would have some direct benefit for productivity. In the case of demesnes, however, given their owners' poor record in agricultural investment,<sup>70</sup> most of this extra cash would seem to have been channelled into other forms of lordly expenditure, such as high living and conspicuous display. In any case, the amount of extra

cash involved was generally very marginal compared to the total operational costs on the demesne. On the other hand, even a small input of extra cash may have made a considerable difference to the productivity of a peasant's farm, although this small input may have been soon eroded by the adjustment of grain prices to the new technical circumstances, or - even more probable - by an increase in the expropriation of his surplus by the lord in the shape of higher rents, entry fines, and so on. The peasant may even have used it to improve his own standard of living, particularly his diet. It must be said, though, that much of this tendency to minimise the role of the work-horse in improving agricultural production is due to the fact that virtually nothing has been done in the way of detailed studies on this subject, and it is possible that the link between the introduction of the horse and improvements<sup>in</sup> yield or agricultural production in general can be established in individual cases, particularly for the twelfth and thirteenth centuries. A close examination of the early Winchester pipe rolls, for instance, may be a help here.

Although attempts to establish a significant connection between the introduction of the work-horse and improvements in agricultural production have proved fruitless, this is not to say that the use of horses did not have substantial effects in other ways. Perhaps the most crucial of these was in relation to hauling. As we have seen, the horse worked a remarkable transformation in vehicle carrying in the two centuries following Domesday. From a position at the end of the eleventh century, where apparently only oxen were employed for carrying goods by vehicle, horses dominated by the end of the thirteenth, accounting for at least 70-80 per cent of farm hauling and probably more.<sup>71</sup> Indeed, horse-hauled carts were found on nearly 90 per cent of manors at this time for both demesne and peasant farms,<sup>72</sup> and it would appear that there was hardly a region that did not have some familiarity with them. Assessing the impact of this transition

to horse hauling, however, is somewhat difficult. This is especially the case on the farm itself, where the exact benefits of horse over ox hauling are not always easy to discern. In some cases, though, they seem clear enough. We have already indicated that having horses as plough animals also had the desired effect of getting the farmer and his equipment to and from his fields quicker at ploughing time. Similarly, the ability to haul a load of corn or hay swiftly from the fields or meadow may have been a factor of some importance, particularly at harvest, when time was usually short. This may have mattered more to the peasant than the lord, particularly in those cases, as at Cuxham, where the peasants' lands were not intermingled with the lord's but lay outside it at some distance from the village.<sup>73</sup> It is difficult, however, to know whether hauling of this sort would be more efficient using small horse-hauled carts or large, but slower, ox-hauled wains. A substantial farmer, clearing a large number of sheaves from a relatively consolidated holding, might find the two modes of transport roughly equivalent, since the speed of the one would be countered by the fewer trips the other would have to make. On the other hand, if the amount to be collected was comparatively modest and the holding scattered into many small strips, requiring a lot of travelling from one place to another, then the smaller, faster vehicle would be much better. At the very least, we can say that horse hauling was always competitive with ox hauling and very often a considerable improvement. In many cases, however, the savings in hauling time may only have been marginal, unless the fields were extremely distant. The same could be said for hauling the ploughs out to the field in preparation for a day's ploughing, and it is difficult to see the use of the horse in this regard making the sort of differences that Lynn White, Jr., claimed led to the wholesale desertion of hamlets, as peasants found they could now live further away from their fields.<sup>74</sup> Difficulties in choosing between horses and oxen for hauling also occurred for duties covering longer distances. This was particularly

the case for gathering wood, and it is interesting to note that peasants in the north at least seem to have favoured oxen, perhaps because of the potential heaviness of the loads.<sup>75</sup>

If hauling with horses around the manor provided only relatively minor advantages, why was it adopted so freely? The answer would seem to lie in <sup>and</sup> the much closer relationships that peasant<sup>4</sup>demesne farmers were beginning to forge with the market. In this regard, horse hauling was particularly useful in making their produce much more accessible to the outside world, by increasing both the speed and range over which goods of this sort could be taken. Again it is true that horses were limited to hauling relatively light loads, and this may have been inconvenient in some cases (e.g., the transportation of heavy goods like coal, lead, or mining ores, or bulky, low value materials like hay and straw), but it was still the best form of market transport for most farmers. If the Essex court roll reference can be believed, a single horse and cart could haul up to five quarters of wheat,<sup>76</sup> and the three- or four-horse carts mentioned for road haulage in the surveys may have been capable of carrying even more. In medieval times, five quarters of wheat would be the yield from about five or six acres, assuming an average harvest and subtracting seed and tithes.<sup>77</sup> Even in the case of a fairly well-off peasant, having, say, twenty acres of sown crops (that is, equivalent to a thirty-acre virgate farmed by a three-course rotation), only three or four trips would be needed to take his entire crop to market in a cart, although possibly a few more journeys might be needed if he grew higher yielding grains, such as barley. In reality, of course, it is highly unlikely that his whole crop would be sold in this way, but that much of it - perhaps a half or more - would be kept back for his own consumption, cutting down markedly on the amount he would have to haul to market. Furthermore, since the most sensible selling policy for the peasant was usually to hold on to his surplus grain as long as possible, in order to take advantage of higher prices later in the



harvest year,<sup>78</sup> he would, at any one time, probably only sell that amount of grain needed for immediate cash needs; it is unlikely that this would take up even a full cart-load. In other words, a horse-drawn cart, even though its capacity was much less than that of an ox-hauled wain, was more than adequate for all but the most exceptional of trips to market, a trifling disadvantage when considering that trips could now be made so much more quickly. What seems surprising is that demesne managers also opted so definitely for horse hauling, when the volume of goods they required carrying may have meant that there was little difference between horse or ox hauling. Presumably in this case they chose horses and carts simply because they were the more versatile form of carrying, generally suitable for all but the largest of loads.

Horse hauling thus seems to have had a considerable impact upon transportation in the twelfth and thirteenth centuries, particularly in filling in the gap between the heavy hauling by oxen and the light-weight carrying by pack-horses. In most places it seems to have destroyed ox hauling entirely, and altogether the velocity of vehicle transport, especially for small loads, must have increased substantially, perhaps as much as two-fold where horse hauling replaced that by oxen completely.<sup>79</sup> Pack-horses, too, being only half as efficient as horse-hauled carts, may also have declined in favour of the new mode of hauling. In this regard, it is interesting to note that the rise in horse hauling coincided with the well-known expansion of the English economy and its accompanying price inflation in the late twelfth and thirteenth centuries. Explanations for this price inflation have generally focused on the amount of money in circulation, especially silver coinage, or on the demands of an increasing population, which led to the rise of agricultural prices in particular.<sup>80</sup> Little attention has been paid to the velocity of circulation, either of money or commodities.<sup>81</sup> If, as we have suggested, however, the rise of horse hauling significantly increased the velocity of goods transportation

and hence money circulation, then this, too, would have directly stimulated the economy.<sup>82</sup> We have speculated that this increase in velocity may have been anything up to double that existing before, so it may well have been a major factor, although, since price inflation, even over the relatively narrow interval of 1180 to 1220, doubled or even trebled,<sup>83</sup> then clearly the trend to horse hauling can explain only a part of this rise. Nonetheless horse hauling should be seen as an important technical concomitant to the other monetary and demographic factors contributing to the expansion of the economy. It has been suggested that the proliferation of markets occurring at about this time was largely due to "an increase in local purchases by small households."<sup>84</sup> It was for just these small households that the benefits of horse hauling were most directly relevant.

Besides improving the peasant's contact with the market, the horse also increased the complexity of his involvement in it. The horse trade in pre-industrial England has been compared to the car trade of today, where huge price differentials allowed rich and poor alike to participate in the market. As Thirsk commented of the latter<sup>A</sup>: "...there is a car within the price of everyone; you can pay £20 or you can pay £10,000."<sup>85</sup> Thirsk felt that wide discrepancies of price created a similar situation in the horse trade of early modern England. But, in fact, as we have seen, such a wide variety of prices for horses also existed in the thirteenth century,<sup>86</sup> and it may even have had an earlier history.<sup>87</sup> In other words, the flexibility of the horse market was amply evident by the thirteenth century at least, and this flexibility made cheap draught animals as available to the peasantry as the "banger" trade in cars does in supplying private transport to less well-off people today. The importance of this in the medieval period should not be underestimated, as it must have had a tremendous liberating effect on smallholders in particular. We have already indicated how horses allowed them to participate more actively in cultivation,<sup>88</sup> and

it must also have given them a much greater degree of freedom in the matter of transport. The incidence of horse hauling among these smallholders must be seen as one reflection of this.<sup>89</sup>

Horse trading also added another dimension to peasant economics. It must now have been possible for some peasant entrepreneurs at least to actually make a modest amount of money out of it, as small car traders do today.<sup>90</sup> Just how active this trade was, however, is difficult to say. In areas such as East Anglia, where horses were very prevalent even in the thirteenth century, the trade must have been well developed, stimulated no doubt by the proximity of London and the horse markets there, particularly at Smithfield.<sup>91</sup> On the other hand, in areas removed from the chief centres of trade, the market for horses was considerably weaker. In this regard, a series of tolls collected for the sale of horses and oxen on the estates of the bishop of Worcester in 1302-3 are instructive. Out of 36 cases where the animal involved was specified, 31 were oxen and only 5 horses.<sup>92</sup> Although the sample is too small to draw definite conclusions, the horse trade here would seem to have been substantially inferior to that for cattle.<sup>93</sup>

Finally, the introduction of the work-horse also played an important part in establishing regional variations in agriculture. Regionalism, of course, exists in many forms, many of which were already evident in medieval times. These included variations in field systems, inheritance customs, arable versus pastoral economies, and so on.<sup>94</sup> Most people in the Middle Ages were clearly aware of these regional differences;<sup>95</sup> nonetheless they were, in many cases, not as distinct in medieval times as they later came to be. One of these was in regard to traction. Compared to the "monochrome" nature of draught work evident at Domesday, with ploughing and hauling being performed only by oxen and harrowing and pack-animal work by horses, the degree of regional variation a few cent-

uries later is quite marked. Even so, until the fifteenth and sixteenth centuries, differences in practice as regards traction were often more evident between the various economic sectors of medieval society than between regions. This was particularly true of the contrast between horse-using smallholders and the much more ox-oriented substantial tenants and demesnes. There were of course some geographical variations, for example, areas of mixed plough-teams versus those of all-ox teams, the use of more horses in the south and east than in the north and west, and so on. But the really dramatic ones, such as the complete transformation of the farm to all-horse draught, occurred only in a few rather circumscribed areas, such as Norfolk and the Chilterns. Demesne agriculture in particular was very uniform, with its loyalty to, among other things, the large plough-team, the continued use of oxen, and a long ploughing season. Much of this, of course, was a function of the common ideas circulating through the aristocratic community of the time, through the medium of a very stereotyped and widespread form of accounting and such agricultural works as those written by Bishop Grosseteste and Walter of Henley. But this consistency in the basic outlines of practice is also evident in the ranks of the more substantial tenants, where the use of horses, or the lack of it, seems to have had strong similarities to that on the demesne. It was only in the fifteenth century that this relative uniformity in draught animal practice among the more substantial sector of peasant and demesne farmers began to break up, resulting in the polarisation between horse- and ox-using areas so evident in the sixteenth century.

The overall conclusion, then, is that regional variation in traction formed slowly over the medieval period and in general remained somewhat shapeless until the fifteenth century, when it finally began to attain the complexity it would show a century later. What importance did this new aspect of regional variation have then? It may be said that it has a mild curiosity value only. But there is more to it than that. The development

of regional variation, whether in agriculture, industry, or commerce, reflects an increasing sophistication in the economy as a whole, and the same may be said of the narrower question of traction. Thus, regardless of its virtues and performance vis-à-vis the ox, the horse provided a new set of agricultural circumstances with which problems of farming traction could be attacked. Consequently some areas, such as the Chilterns, Norfolk, and the Yorkshire Wolds, were quick to use horses at both the demesne and peasant levels, because use of the animals was ideally suited to the conditions there. Equally there were areas, which for technical, economic, or other reasons, remained with oxen and tended to reinforce that decision through the use of specifically ox-drawn equipment, such as wains. The contrast which this eventually established between regions soon attracted to them other attributes beside the merely technical. Thus areas using horses have been characterised as being regions of progressive and intelligent farming, while farmers and farm-labourers in areas employing mainly oxen have been represented as dull and slow-witted, the attitudes to change and farming in general being supposedly reflected in the pace of the animals which they used.<sup>96</sup> Much of this was undoubtedly less than fair to regions using oxen; the employment of the animals did not necessarily reflect a backward technology but simply an alternative one in which oxen could be used in a particular area more efficiently or economically than horses. It is possibly true that this alternative ox-technology was a dead-end one, which, because of its high investment in stock and in equipment specifically for oxen, may have had the effect of discouraging more progressive methods when they were presented. Nevertheless the change-over from ox-farming of this type to all-horse farming could be made over a decade or so in an area, if necessary.<sup>97</sup> Furthermore, the two systems, ox-traction and horse-traction, could in fact be highly complementary, and a number of varieties mixing the two are evident in the sixteenth century. Thus we have areas where oxen were used for ploughing and horses for cart-

ing,<sup>98</sup> much as was the pattern for many medieval demesnes or substantial peasants, while there were even some localities where the situation seems to have been reversed, with horses being used for ploughing and oxen for hauling.<sup>99</sup> In short, regional variation in traction came to be both flexible and versatile and provided a valuable range of experience with which to approach the often widely differing problems of ploughing and hauling that faced medieval and early modern farmers.

As we have seen, the impact of the horse was felt in a variety of ways. Some of these influences were seemingly weak, as in the case of agricultural production, and some were strong, as in the case of the market economy and the involvement of farmers in it. What does all this tell us about the role of technology in general in medieval society? To answer this, we are here going to consider five major theories concerning the role of technology in society, particularly as it relates to the Middle Ages. The first of these is the neo-Malthusian argument developed by M.M. Postan and others.<sup>100</sup> The theory here suggests that by the end of the thirteenth century Europe had reached a state of virtual overpopulation, to the point where medieval society was beginning to outrun its food supply, a situation which was exacerbated by declining crop yields as land fertility became exhausted through the excessive demands made upon it. This in turn led to an increase in mortality and a stagnation and perhaps even a decline in population in the first half of the fourteenth century prior to the advent of the plague.<sup>101</sup> Historians following the precepts of Malthus do not claim that there was no technical advancement during the Middle Ages (although they come dangerously close to implying it at times<sup>102</sup>), but that the rate of this advance was not enough to prevent subsistence crises and left virtually unaltered the vital relationship between food production and population.

In certain respects, our study must endorse this view, since the

introduction of the horse to English farming seemingly failed to make any impression on such things as crop yields, particularly in the crucial period c.1250-1348. The prime reason for this is that any advantages gained by changes in traction were channelled into cost-savings rather than increasing production. Again, individual cases may supply exceptions to this rule, but in broad terms it would seem valid. Furthermore, any capital released by these cost-savings was not redirected back into attempts to improve production but rather, it seems, into satisfying consumer wants or "the general increase in the expenses of the political superstructure."<sup>103</sup> This was probably aggravated by the concurrent expansion of the market economy, aided, as we have suggested, by horse hauling, which must have greatly increased the opportunities and temptations for non-agricultural spending. On the other hand, the effect of this growing economy in raising grain prices should also have been an incentive to increase production, but this does not seem to have happened. Part of this may have been due to the uncertainties of the grain market, particularly towards the end of the thirteenth century and the beginning of the fourteenth,<sup>104</sup> but it would also seem that when a straight choice between agricultural investment versus consumer and other spending was presented to demesne owners and peasants the latter course usually won out.

This was not necessarily the story for the whole of our period, however. It would seem that this pattern of increased non-agricultural spending in the thirteenth century was preceded by a legitimate and massive effort to improve crop production through land clearance in the twelfth. Here the extra power and speed of horses may have had a genuine effect. Nevertheless, the fact that such changes towards the use of horses as are evident in the twelfth century - such as the conversion to mixed plough-teams - occurred in areas already well-populated at Domesday rather than in areas of woodland and marsh, where most of the assarting was carried on,<sup>105</sup> indicates that the connection between land clearance and the increased

use of horses was weak.

For the second period of substantial increase in the employment of horses, that is, the fifteenth and sixteenth centuries, connections with agricultural production may be more direct. The rise in the use of horses at this time does coincide with what looks to be a modest increase in crop yields.<sup>106</sup> There are, of course, a multitude of other factors that could equally have led to these increases in crop yields, and indeed were probably more likely to have done so, such as a better balance between arable and pasture, as in convertible husbandry.<sup>107</sup> The horse, however, may have played its part, although there is little in the way of suitable material, in the fifteenth century at least, with which to judge the matter. The point to be made here is that the relative lack of effect that the introduction of the work-horse seemingly had in late thirteenth- and early fourteenth-century agricultural production may not necessarily have applied to the whole medieval period. Indeed, in the more flexible agricultural conditions of the fifteenth and sixteenth centuries the horse might have contributed some positive advantages. Nevertheless, insofar as this one technical innovation is concerned, there is not much in this study to refute the basic neo-Malthusian position that improvements in technology did little to alleviate subsistence crises in the Middle Ages. Indeed, it may be said that the work-horse actually aggravated these crises by supplying a technical solution to such problems as ploughing (that is, by allowing smaller plough-teams) which actively encouraged the fragmentation of holdings or at least made it easier for these small holdings to exist as self-sufficient farming units.

Where historians holding to the neo-Malthusian line can be criticised, though, is for their view that medieval society had a very limited capacity for technical change, especially in the two or three centuries leading up to the Black Death.<sup>108</sup> This study indicates that innovations in traction at least were clearly taking place during this period, some of them, like



horse hauling, at a considerable pace, and one could name other innovations not related to traction, such as windmills and higher levels of legume-growing, that were also adopted in the interval between Domesday and the beginning of the fourteenth century.<sup>109</sup> That these innovations in most cases did not seem to have a sizeable effect on agricultural production must not blind us to the fact that they were occurring and often had important effects in other ways, or were pointers to the future. In this regard, it is interesting to note that even in the pre-Black Death period there were some signs that the Malthusian stranglehold was being broken, as in eastern Norfolk or Holderness, where high yields were recorded, along with the progressive techniques of fallow reduction, thick sowing rates, the growing of a high proportion of legumes, and intensive manuring.<sup>110</sup>

In direct opposition to the neo-Malthusian view is the model ~~proposed~~<sup>proposed</sup> by Ester Boserup.<sup>111</sup> The theory contends that, rather than limitations in agricultural production being the factor determining population growth, it is population growth itself that provides the motor for economic and social development. In relation to technology, Boserup claims that as societies begin to experience food shortages due to population pressure they actively seek to relieve that pressure by intensifying agricultural production; in other words, they raise their agriculture to a new technological level. Much of this is based upon the premise that there is a readily available pool of information about agricultural techniques, which either lies dormant in the social knowledge until circumstances bring it to the fore or is easily borrowed from neighbouring cultures.<sup>112</sup> These techniques are considered adequate to deal with the new population pressure. Thus, as an example, a region where two-course rotation was the rule will adopt a more intensive rotation, say a three-course, in order to improve food production to meet the needs of an expanding population. Conversely when population declines the tendency is to return to the less intensive form

of agriculture, where labour requirements in ploughing, weeding, etc., are not so great. In recent years support for some elements at least of the Boserup theory has grown, particularly from medieval studies of such regions as eastern Norfolk or, further afield, Flanders and Artois, where population growth and progressive methods of agriculture seemingly went hand in hand.<sup>113</sup> Similarly there are several instances of villages in England converting from two- to three-field systems (with, presumably, a similar change in the crop rotation) during the thirteenth century.<sup>114</sup> On the other hand, some of this intensification was also occurring in the late fourteenth century, well after the population had collapsed.<sup>115</sup>

What evidence for or against Boserup's theory does this study contribute? First of all, it should be said that Boserup limits her consideration of technical improvements to only those developments which intensified agriculture.<sup>116</sup> Thus certain technical developments lie outside her frame of reference. In this regard, she makes a distinction between, as she puts it, the "kind of tool" and the "make of tool".<sup>117</sup> Changes in the kind of tool, such as from the hoe to the plough, which had direct relevance to the intensification of agriculture, are far more important in Boserup's scheme than changes in the make of tool; for instance, from wooden spade to metal one, both variations of which could occur within the same system of cultivation. In this sense, the replacement of oxen by horses would probably count as a change in the make of tool, since it did not necessarily result in the intensification of agriculture. Nonetheless, as we have already indicated (p. 352), there may well have been some connection between the use of the horse and the intensification of agriculture, since the animal could be fed more effectively on field crops than oxen. On the other hand, where agriculture was less intensive and pasture more available, the ox became the favoured animal. We should then expect - following Boserup's hypothesis - that the horse would become increasingly popular as population rose and as agriculture, theoretically

at least, become more intense. This would characterise the period leading up to the beginning of the fourteenth century. Conversely, when population declined after the onset of the plague, or perhaps even before if one accepts the neo-Malthusian chronology, oxen would regain their popularity as reserves of pasture became free again upon the disintensification of farming systems.

As we have seen, however, such a pattern only resulted in part. The rise in popularity of the horse did occur much as predicted in the early period up to about 1300. After this, the rate of rise in the level of horses tapered off considerably, again as might be expected. But there was no fall back to previous levels, even after the Black Death. Indeed, the proportion of horses began to rise again, quite steeply it seems, in the fifteenth century, when population was still very much depressed. In other words, for much of the period covered by this study, the introduction of the horse to farming seemed to carry on regardless of the population trend. This may have been because the introduction of the horse was, after all, a "make of tool" and not really suitable for testing the theory. But it would seem equally plausible that, after the Black Death, the connection between the introduction of the work-horse and population (and perhaps the intensity of farming systems) was somehow severed, probably because of some other factor at work, which was much stronger than pure population rise or fall. We shall consider such a factor shortly. In general, because of the confusion as to how the introduction of the horse should be considered as a technical innovation, it is difficult to pass judgement on the Boserupian model, but it would seem at this stage that population rise or fall was unlikely to have been a major influence on technical fluctuations in the Middle Ages.

Another view of technology is that voiced by Marxist historians, who see technical advance as being firmly dependent upon the ruling mode of

production, whether slave, feudal, capitalist, or otherwise, which shaped the economic and social framework beyond which a technical innovation could not function.<sup>118</sup> For example, a slave mode of production, because of its resources of captive labour, finds it unnecessary to indulge in the technical improvements that a capitalist society in particular finds essential.<sup>119</sup> Here the relationship between classes, or at least between the exploiters and the exploited, is of prime importance. Thus, in the feudal system, as slaves were gradually replaced by a mass of peasantry, this latter group, although having a certain degree of social and economic autonomy, was nonetheless subject to very high levels of surplus extraction, through rents and other exactions, by their feudal lords. Some historians feel that this extraction was so severe that peasants had virtually no excess production, beyond that needed for subsistence, with which to invest in new technologies.<sup>120</sup> As a result, technological advances among the peasantry are considered to have been very limited.

Such an interpretation would seem very out of place in our study, however, since we have shown that technical advances in regard to traction at least were definitely taking place among the peasantry during the medieval period. In any case, as even Marx himself admitted,<sup>121</sup> there was enough flexibility in the relationship between lord and peasant, if only through the inefficiencies of surplus extraction in the more primitive conditions of feudalism, to allow peasants to set aside some of their surplus for their own use, whether in acquiring new land or improving techniques. In this regard, it should also be noted that Marxist pronouncements on the low capacity of medieval peasant agriculture for technical improvement are often based on the assumption that technological developments necessarily needed large inputs of capital; but, as we have seen, innovations such as the work-horse often needed less capital than the technologies they replaced, although day-to-day operational costs may have been more. A more promising line of thought with some connection

to the Marxist theme would seem to be that of the non-Marxist historian, Georges Duby, who suggests that heavy seigneurial demands, far from discouraging improvements in agricultural production, actually encouraged peasants to look harder at technical innovations and other methods of improving production as a way of meeting the pressure of these seigneurial exactions.<sup>122</sup> In this regard, the peasantry can be seen as the most technically active sector in medieval society.<sup>123</sup> On the surface, this fits in quite well with our study, which shows horses being adopted more readily on peasant farms than on demesnes. However, as we have seen, this picture of a horse-oriented peasantry applied mostly to smallholders. More substantial tenants, significantly the most exploited in terms of the absolute amount of rents and labour services owed, tended to use draught animals in much the same way as the demesne, including having substantial levels of oxen. The division here between farmers tending to use oxen and those tending to use horses, in other words, seems to have been an economic one, depending mainly on the size of farm, rather than on a distinction between classes. As regards whether the increase in the use of horses was initiated by demesnes or by the peasantry, there is no certain way of telling. The somewhat more precipitous rise in the level of horses in the Winchester heriots than in the demesne stock levels for the same estate (cf. Table 4.7 and pp. 127-8) might indicate that the peasantry were a little slower in adopting horses than the demesne and were in the process of catching up, although this might also be explained by increases in the number of smallholders. Certainly, whoever introduced the work-horse, the peasantry as a whole took it much further. It seems likely, though, that this was because<sup>of</sup> a combination of economic and technical factors, involving such things as the versatility of the horse, rather than because the feudal system of exploitation made peasants more innovatory.

Towards the end of our period, English agriculture began to move towards a new mode of production. Marx saw this as first happening in the

transition from an arable to a sheep or cattle economy, which began to divide English peasant society into a class of capitalist farmers and a rural proletariat.<sup>124</sup> This gradual drift to capitalism began in the last third of the fifteenth century (according to Marx) and gathered momentum in the sixteenth. Marx does not mention specific technical innovations, beyond a quoted reference to enclosure, but many other innovations, such as convertible husbandry and floated meadows, have been claimed as occurring from the second half of the sixteenth century and perhaps even earlier.<sup>125</sup> The relationship between the rise of capitalist tendencies in agriculture, which included the trend towards larger farm sizes,<sup>126</sup> and a quickening in the pace of farming innovations may thus be significant. Does our study support this contention? To some extent it does. The number of work-horses employed on English farms does seem to have increased substantially during the fifteenth and sixteenth centuries. The beginning of this surge occurred a little in advance of Marx's timetable, but the agreement may be considered close enough in the circumstances. It is notable, too, that the rationalisation process of going completely to horses or mainly to oxen, to make as much use of the chosen animal as possible, indicates a sophistication perhaps characteristic of a new type of social and economic relationship. On the other hand, it is clear that it was not just large farmers that were participating in this phase of rationalisation but the whole of farming society; indeed, in the case of those areas going to all-horse draught, the movement may have been led by relatively small farmers (e.g., the virgate holder at Wistow; see pp. 279-80 above). It is unlikely that capitalism in its very tentative beginnings could account for changes of this order;<sup>127</sup> other mechanisms were almost certainly involved.

One of these mechanisms was the market, allied with the rise of trade and industry. As Pirenne stated, when discussing the economic expansion in the twelfth century:

"Commerce and industry did not merely find a place alongside of agriculture; they reacted upon it. Its products no longer served solely for the consumption of the landed proprietors and the tillers of the soil; they were brought into general circulation, as objects of barter or as raw material. The rigid confines of the demesial system, which had up to now hemmed in all economic activity, were broken down and the whole social order was patterned along more flexible, more active and more varied lines."<sup>128</sup>

This "commercialisation theory", which saw the growth of trade, the market, and the money economy as the key determinants in the revival of the medieval European economy and society, has been criticised on several points, primarily in that it ignores such factors as population growth and the constrictive relationship between lord and tenant.<sup>129</sup> Nevertheless, our study does show that the influence of the market was felt on the technological side of agriculture. In particular, there seems to have been a connection between the quickening of market forces in the twelfth and thirteenth centuries and the adoption of horse hauling on farms. It is difficult to know which came first. As we have seen, the introduction of mixed plough-teams dated from the early part of the twelfth century<sup>130</sup> and horse hauling was evident from at least the middle of the century.<sup>131</sup> Markets and trade, of course, had very ancient roots in England,<sup>132</sup> but the substantial expansion of market activity in the twelfth and thirteenth centuries is unlikely to have predated the year 1150. For example, the impact of this activity was not felt in grain and livestock prices until the last two decades of the twelfth century, and the creation of new markets did not peak until the third quarter of the thirteenth century.<sup>133</sup> Both these indicators are unlikely to have followed immediately upon the first stirrings of economic expansion, but for prices in particular it is improbable that they were delayed by more than a generation or two; therefore, the rate of increase in market activity probably did not take off in any substantial way until at least the middle of the twelfth century.

In this instance, the rise of horse hauling and the renewed growth of the market in England occur so closely together as to be almost simultaneous. In any case, it appears they were mutually reinforcing, particularly as horse hauling was specifically geared to a more active and fast-paced economy. It is significant, too, that as the economy showed signs of contraction in the fourteenth century, so did the rate of adoption of the horse.

The second phase of the rapid rise in the use of the horse, that is, the period of "rationalisation" in the fifteenth century, is harder to explain in terms of market activity. Although some authorities have argued vigorously that the economy was still expanding in the fifteenth century,<sup>134</sup> the general consensus is that the period was one of contraction or even depression for the economy.<sup>135</sup> Yet we have shown that a significant restructuring of draught animal use along with a renewed rise in the employment of horses overall began again in the same century, well before the age of economic expansion in the Tudor era.<sup>136</sup> What may have occurred here, though, was not a change in the activity of the market, but in its degree of complexity. For example, it has been suggested that there was a growing tendency for specialisation in agriculture during the fifteenth century. Instead of following a system that tried to suit both animal husbandry and arable farming, communities now tended to concentrate much more on one or the other. Allegedly this was a result of the growing influence of market forces, which meant that a community no longer had to be self-sufficient in both grain and livestock.<sup>137</sup> Certainly the development of heavily pastoral economies was a marked feature of the period,<sup>138</sup> and specialisation of this order was also occurring in the use of draught animals, as we have seen. The latter, in fact, was probably reflected in the marketing and trading patterns of the age. P.R. Edwards has noted how, during the seventeenth century, the nature of the horse trade varied from region to region. In some areas (Shropshire or



Staffordshire) the trade was mostly in pit- or pack-ponies or in high quality horses presumably for riding, while in other areas (Leicestershire or Northamptonshire) heavy draught horses dominated the trade, the difference corresponding roughly to the economies of the respective regions, that is, industrial-pastoral versus arable.<sup>139</sup> The same would also seem to have occurred, in rudimentary form at least, in the medieval period, with some market areas - notably in the east - concentrating more on horses than other regions (see p. 367 above). This differentiation in the nature of horse-trading areas must have sharpened considerably during the fifteenth century as the polarisation between areas using horses and those using oxen became more marked. In short, it seems highly probable that there was a connection between the growth of market complexity and the polarisation in the use of horses and oxen. The general drift in favour of horses within this polarisation is somewhat more difficult to explain in market terms, but it may have had something to do with the growing demand for beef during the period,<sup>140</sup> which would have encouraged the tendency to replace oxen with horses.<sup>141</sup>

Finally, we come to the concept of technical determinism, which - in its purest form - views technological development as the main factor behind social and economic change. Here it is the fortuitous technical idea or inspiration that matters most. Social and economic progress must often wait until such ideas come to fruition or, as was most usual for medieval Europe, are imported from areas that have already developed them. Thus, dealing with the medieval period, it has been claimed, inter alia, that the development of the modern horse harness led to the abolition of slavery;<sup>142</sup> the advent of the stirrup to the development of heavy cavalry and the eventual creation of the feudal system;<sup>143</sup> and a whole series of agricultural improvements - the heavy plough, equine power, the replacement of two-course by three-course rotations, the dissemination of the corn mill,

the reintroduction of legumes, and the use of iron in farming implements - to what is claimed to have been an agricultural revolution in the early medieval period, which in turn provided the impetus for a new wave of urbanisation and commerce.<sup>144</sup>

Not surprisingly this view of technology as the prime motor behind the development of medieval society has met with considerable opposition.<sup>145</sup> But what is the verdict of this study? Did any of the innovations we have examined have consequences substantial enough to justify the technical determinist view? In general, it would seem not. For example, since the introduction of the horse has been claimed as one of the cornerstones of the "agricultural revolution" of the early Middle Ages, we should expect to see this reflected in significant improvements in agricultural production. As we have seen, however, there is no positive indication that this occurred; rather, any improvements in cultivating efficiency seem only to have added to the consumption of landlords or peasants. On the other hand, it may be argued that horse hauling directly stimulated the market in the twelfth and thirteenth centuries, particularly as the innovation may well have pre-dated the sharp rise in market activity noted towards the end of the former century. Important as this may have been, however, it would still seem to have accounted for only a part of the market expansion. Even more problems for the technical determinist view arise when considering the fifteenth century. Here it would seem pretty certain that specialisations in the market economy were leading to specialisations in the use of draught animals instead of vice versa, since draught animals were only a small part of the market economy. It may be suggested that possible breeding improvements noted in the later Middle Ages (see pp. 19-20 above) might account for the more intensified use of either one animal or the other in a particular district and that this in turn added to the degree of regionalism noted; but, at best, this development would seem to be reinforcing market specialisation rather than in any way causing

it.

It appears, then, that technical changes were seldom as free-wheeling as the technical determinist argument would indicate, but were more often held back or controlled by other mechanisms, such as the market, or perhaps simply conservatism on the part of medieval society in preferring cost-savings methods to those that improved production.<sup>146</sup> Nevertheless technical change often seems to have had a certain inexorability that transcended these other controlling mechanisms. It is interesting to note, for instance, how often the work-horse was adopted in medieval England despite the often powerful economic arguments against it, a situation reminiscent of the adoption of the tractor in the first half of this century.<sup>147</sup> In some cases, too, the lack of a specific invention was clearly crucial. Thus the fact that four-wheeled vehicles in medieval England did not have moveable forecarriages meant that oxen were still needed to haul the heavy, two-wheeled wain.<sup>148</sup> However, when four-wheeled wagons with moveable forecarriages, capable of being hauled by horses, began to replace these wains in some districts in the seventeenth century it is notable that the use of oxen died away, possibly because they could no longer be justified for ploughing alone.<sup>149</sup> If such a change had occurred, say, in the fifteenth century, it may have dramatically altered the appearance of English traction at the time.

In summary, two things in particular stand out from this study. The first is that the introduction of the work-horse to English farming seems to have interacted most strongly with changes in the market economy, whether it was a simple expansion of that economy or a change in the degree of its sophistication or complexity. In this regard, the so-called "commercialisation theory" would seem to provide the best theoretical model to explain the development of this particular innovation during the Middle Ages. If one was to take a technical determinist stance, it could be

argued that it was in relation to the market that the horse had its greatest effect in medieval England, contributing to much closer ties between town and country, which probably had much to do with the renewed vitality of the former. The second point to be emphasised is the strength of the role played by peasants, especially smallholders, in promoting the use of horses overall. In this instance, it was the peasantry - and, again, especially smallholders - who seem to have been the most technically progressive sector in medieval society. This is the very antithesis of the widely held belief that only large farms could satisfactorily fulfil this innovatory role;<sup>150</sup> but it may well have been the guiding principle behind many, if not most, of the improvements to agriculture during the medieval period.<sup>151</sup>

#### FOOTNOTES

1. For example, the construction of the curves for, one, the peasantry and, two, the peasantry and demesne together was begun by taking the c.1300 estimates as given on p. 267 above (that is, 45 and 40 per cent respectively) and plotting them on the figure. The end-points for all three curves were set at the year 1574, the median year for the sample of probate inventories in Table 4.9. The proportion of horses on all farms at this time was assumed to be 62.1 per cent, as indicated by the sample. From this, a work-horse level of 50 per cent was assumed for demesne-sized farms and 70 per cent for peasant farms, giving a separation about equal to that existing c.1300. This is little more than guess-work, but at least provides a rough guide. For the proportion of work-horses on peasant farms at Domesday, it was assumed - as on p. 64 above - that the typical peasant draught stock holding at this time was two oxen and one horse, that is, a proportion of 33 per cent, and from this we calculated that the level of horses for peasant and demesne farms together was 24 per cent at Domesday (see again p. 64). These figures are necessarily very rough, but at least they supply provisional starting levels with which to compare the c.1300 figures. Since the heriot material indicates that, as with the demesne, the rate of increase in the use of horses levelled off during the fourteenth century, it has been assumed that this was a period of complete

stagnation for the peasant use of horses and one that lasted until the beginning of the fifteenth century, before entering the phase of "rationalisation", which we have arbitrarily set as starting in the year 1500. The curve for the peasantry and demesne together was constructed as an intermediate between the peasant and demesne cases, assuming a proportion of two to one for the number of peasant versus demesne draught animals. Finally, the solid demesne curve was constructed using a figure of 5.5 per cent horses at Domesday (the midpoint between the minimum and maximum figures given on p. 39), the corrected twelfth-century figures for the surveys, leases, etc., in parts a and b of Table 2.12 (set at 1125 and 1175 respectively in the figure), and the overall figures for Samples A and B in Table 3.1 (set at the median year of each sample respectively, that is, 1293 and 1381).

2. See pp. 272-4 above.

3. E.g., see pp. 274 and 313 above.

4. Walter of Henley, p. 319, c. 36; Fitzherbert, pp. 15-6; J. Crofts, Packhorse, Waggon and Post, London (1967), p. 113; see also Appendix D below.

5. According to probate inventories: e.g., WoRO Ref. 008:7, 1590, box 94b, nos. 39, 43, 47f; box 95a, no. 55; LJRO Lichfield Probate Inventories B/C/11 Alice Lees, 1590; Thomas Littlehales, 1590; Robert Laken, 1592; Thomas Lythall, 1592; Probate Inventories of Lichfield and District 1568-1680, ed. D.G. Vaisey (Staffs Rec. Soc., 4th series, v, 1969), pp. 41-3, 44-5.

6. Darby, Domesday Geography of Eastern England, op. cit., fig. 55 (p. 217); Kerridge, Agricultural Revolution, p. 89.

7. As at Yardley, Warks (Victor Skipp, Medieval Yardley, Chichester (1970), pp. 5-8). For the variability of soils on the bishop of Worcester's lands in the West Midlands during the Middle Ages, see Dyer, Lords and Peasants, p. 23.

8. E.g., see pp. 134-6 above. The variable draught experience for the county is also evident in sixteenth-century probate inventories, where farms using only horses are freely intermixed with those still employing oxen; e.g., see KAO PRC 10/1, fos. 2-3, 16-17v, 17v-18v, 19v-20, 20-22, 24-24v, 24v-25v, etc. (Kentish inventories from the 1560s).

9. E.g., see p. 134 above.

10. Kerridge, op. cit., p. 49; Edward Little, 'Farming in Wiltshire', JRAS, v (1844), p. 170.

11. E.g., Minchinhampton, Avening, Bourton-on-the-Hill, Bibury, Blockley, Bishop's Cleeve, Withington, and other Cotswold demesnes listed in Appendix C under Gloucestershire. We have little evidence for the

peasantry, but it seems that in the sixteenth century the Cotswolds were still employing oxen to a significant degree. Kerridge, *op. cit.*, p. 68.

12. They were still using them in the late sixteenth and early seventeenth centuries. Devon Inventories, ed. Cash, *op. cit.*, pp. 4-38.

13. E.g., Bartholomew Gazetteer of Britain, Edinburgh (1977), precipitation and rainfall maps on pp. 120-1.

14. B.F. Willetts, 'The Performance of Footings on, and Cultivation Implements in, Soils' (Univ. of Durham PhD thesis, 1954), ii, p. 20. As a result, the draining of fields often allowed the use of smaller plough-teams; W. Palin, 'The Farming of Cheshire', *JRAS*, v (1844), p. 82.

15. That is, for hauling conditions at least (Crofts, *op. cit.*, p. 6).

16. See Table 3.1 under Durham and Sussex; also the Durham inventories in Table 4.1. For the later draught experience of both these areas, see p. 272 above and Kerridge, p. 133.

17. *Op. cit.*, p. 15.

18. A New Historical Geography of England before 1600, ed. H.C. Darby, Cambridge (1976), pp. 48-9.

19. At least on the demesne; see especially Figures 3.7 and 3.8.

20. E.g., as in Blackbourne Hundred (Table 4.2); for the fragmentation of holdings in this area, see Hallam, *op. cit.*, p. 72.

21. E.g., Miller and Hatcher, p. 129.

22. On balance, the difference in experience between lay and ecclesiastical estates in the early part of our period (see pp. 63-4, 124-7 above) implies that the horse was introduced first on the demesne and then to the peasantry, instead of vice versa; otherwise, if the peasantry had had the idea of using horses first, it would seem more likely that lay and ecclesiastical demesnes would have adopted from them together.

23. B.M.S Campbell, 'Commonfield Origins - the Regional Dimension', in The Origins of Open-Field Agriculture, ed. T. Rowley, London (1981), pp. 112-29; *idem*, 'The Regional Uniqueness of English Field Systems? Some Evidence from Eastern Norfolk', *AHR*, xxix (1981), pp. 16-28; *idem*, 'Field Systems in Eastern Norfolk during the Middle Ages: A Study with Particular Reference to the Demographic and Agrarian Changes of the Fourteenth Century' (Univ. of Cambridge PhD thesis, 1975), pp. 29-32.

24. As outlined by Gray, *op. cit.*, frontispiece map; see also A New Historical Geography of England before 1600, *op. cit.*, fig. 23 (p. 82).

25. As at Ashcot in Somerset, c. 1235-40, and at Rackham (Sussex) in the latter half of the thirteenth century, where the licences only applied to male foals, which may have discouraged horse breeding. Glast. Cust.,

p. 153; Chichester Customals, p. 66.

26. White, op. cit., pp. 72-4; B.H. Slicher van Bath, Agrarian History of Western Europe, op. cit., pp. 63-4; idem, 'Yield Ratios, 810-1820', Afdeling Agrarische Geschiedenis Bijdragen, 10 (1963), p. 14.

27. Hallam, Rural England, p. 249; Miller and Hatcher, pp. 89-90; Dyer, Lords and Peasants, pp. 68-9, 322 (two-course rotations on the West Midland estates of the bishop of Worcester); P.F. Brandon, 'Demesne Arable Farming in Coastal Sussex during the Later Middle Ages', AHR, xix (1971), pp. 126-9 (intensive rotations in coastal Sussex); B.M.S. Campbell, 'Agricultural Progress in Medieval England: Some Evidence from Eastern Norfolk', EcHR, 2nd series, xxxvi (1983), pp. 28-9 (intensive rotations in eastern Norfolk).

28. E.g., A New Historical Geography of England before 1600, op. cit., fig. 23 (p. 82).

29. Esp. White, pp. 70-4.

30. Hilton and Sawyer, op. cit., pp. 98-9; Titow, English Rural Society, op. cit., p. 39.

31. See Tables 3.1, 4.2, 4.5, and 4.6.

32. Oxen were still employed in the Arden in the sixteenth century: e.g., LJRO Lichfield Probate Inventories B/C/11 William Coke, 1536-7; Richard Coke, 1538; Robert Dagull, 1547; John Undertre, 1537; PRO Probate 2, 223, 294, 295, 390, 499 (Warwickshire inventories for Sutton Coldfield, Stretton on Dunsmore, Bedworth, Weddington, Berkswell, Kingshurst, Ward End, Little Bromwich, and Maxstoke).

33. White, pp. 67-8, makes this point as a possible explanation for the desertion of hamlets.

34. E.g., see the Blackbourne Hundred (Suffolk) and Bedfordshire lay subsidies. Powell; Gaydon.

35. Miller and Hatcher, pp. 159-61; C. Dyer, 'English Diet in the Later Middle Ages', in Social Relations and Ideas: Essays in Honour of R.H. Hilton, ed. T.H. Aston, P.R. Coss, C. Dyer, and J. Thirsk, Cambridge (1983), p. 216.

36. E.g., see Harvey, Med. Ox. Vil., pp. 60-1; also Gras and Gras, pp. 382-5. The same applied to horses.

37. Dyer, 'Warwickshire Farming', p. 20; C. Skeel, 'The Cattle Trade between Wales and England from the Fifteenth to the Nineteenth Century', Trans. of the Royal Hist. Soc., 4th series, ix (1926), pp. 137-8.

38. Of all the counties surrounding London, Surrey, for instance, had the lowest proportion of horses in both demesne and peasant stock and certainly much lower than more distant counties, such as Suffolk and Norfolk (see Tables 3.1 and 4.5).

39. Campbell, 'Agricultural Progress', op. cit., esp. pp. 26-7; Brandon, op. cit., pp. 113-34; E. Searle, Lordship and Community: Battle Abbey and its banlieu, Toronto (1974), pp. 272-86.
40. Gray, op. cit., pp. 8-9; Homans, English Villagers, pp. 24, 303; R.H. Hilton, 'Rent and Capital Formation in Feudal Society', Second International Conference of Economic History, 1962, Paris (1965), pp. 36-7; Campbell, 'Commonfield Origins', op. cit., p. 120; Dyer, 'Warwickshire Farming', p. 35.
41. R.H. Britnell, 'Agricultural Technology and the Margin of Cultivation in the Fourteenth Century', ECHR, 2nd series, xxx (1977), p. 55.
42. Ibid, pp. 55-6.
43. See Figures 3.5 and 3.6. For the soil experience in Essex, ranging from heavy clays in the south central parts to lighter lands in the north and on the coast and Thames basin, see Darby, Domesday Geography of Eastern England, fig. 55 (p. 217). Essex seemingly only departed from the mixed plough-team pattern when all-horse farms began to appear after the Black Death in the south-eastern part of the county (see Figure 3.4).
44. As at West Wycombe (see p. 195 above). In general, many of the areas where all-horse farms were found were also regions of wheeled ploughs, especially after 1350 (cf. Figures 3.4 and 3.11).
45. Plough wheels, if bound, usually cost more than plough feet, but there was often very little difference (Rogers, A Hist. of Agric. and Prices, 1, pp. 560, 567). On the other hand, at Offley (Herts) in 1769, Arthur Young noted that a wheeled plough was worth 4-5li., while a foot plough fetched only 30-40s. A Six Months Tour through the North of England, 2nd edition, London (1771), 1, pp. 23-4.
46. Walter of Henley, p. 319, c. 37.
47. No references to horse meat being sold or consumed were found in any of the accounts and only one reference in the sixteenth-century probate inventories examined (that is, in the 1552 inventory for Margaret Hardcastell of Womersley (Yorks), where seven pieces of beef were found, worth 4li., and also seven pieces of "horsfleshe", also worth 4li.; BI Exchequer Wills). M.L. Ryder has also commented on how horse bones and skeletons are usually found complete on medieval sites (Agrarian History of England and Wales, 1, pt. 1, op. cit., pp. 334-5). The taboo, however, could be broken in times of emergency, as during the 1315-7 famine, when even horse meat fetched a good price on the market (Kershaw, 'Agrarian Crisis', op. cit., p. 91).
48. At least not in modern times (Ian Niall, To Speed the Plough, London (1977), p. 56). It may be debatable that the same applied in



the Middle Ages.

49. Trow-Smith, *op. cit.*, pp. 62-3, indicates this may have been the case in Celtic and Anglo-Saxon times.

50. E.g., see Slicher van Bath, Agrarian History of Western Europe, p. 290; Haudricourt and Delamarre, p. 180; D. Warriner, The Economics of Peasant Farming, Oxford (1939), p. 158n.

51. There are also a number of factors not yet mentioned: 1) religious fatalism (hindering technical advance and, hence, the use of horses; see Homans, English Villagers, p. 378); 2) industrialisation (perhaps of the type later observed in south Staffordshire, which coincided with a gradual reduction in oxen (Frost, *op. cit.*, pp. 37, 40); such a situation may have been applicable to medieval Suffolk and Norfolk, with their strong tradition of weaving); 3) manure (did the reduction of the plough-team size that usually occurred when converting from oxen to horses have a harmful effect on manure production, such that medieval farmers often thought twice about changing?); and so on.

52. We might, in future, be able to quantify the effect of some of these variables by, say, correlating the level of horses in a particular area with modern soil, climate, and topographical data.

53. It seems that, when the time came, farms with mixed plough-teams, both peasant and demesne, generally converted to all-horse farming (as at West Wycombe; pp. 193-4 above; see also pp. 139, 291-3). Thus, the areas of mixed plough-teams shown in Figures 3.5 and 3.6 were areas of all-horse farming by the sixteenth century; similarly areas of all-ox plough-teams in the thirteenth and fourteenth centuries (see Figures 3.7 and 3.8) were still employing oxen two or three centuries later. This is not an exact correlation, but a preliminary mapping of the data from over 870 sixteenth- and early seventeenth-century inventories carried out by the author indicates that it is roughly correct.

54. E.g., as according to Walter of Henley (*op. cit.*, p. 321, c.42).

55. D.B. Grigg, Population Growth and Agrarian Change, Cambridge (1980), p. 36.

56. Robert Baker, 'On the Farming of Essex', *JRAS*, v (1844), p. 34.

57. W. Harwood Long, 'The Low Yields of Corn in Medieval England', *ECHR*, 2nd series, xxxii (1979), pp. 459-69.

58. E.g., see Postan, Medieval Economy and Society, pp. 156-7; Dyer, Lords and Peasants, pp. 299-301, 314-5; Hatcher, Plague, Population and the English Economy, pp. 47-54.

59. Personal communication with Mr. Philip Brooks, retired farmer from Churt in Surrey, who worked with both horses and oxen in Argentina and

England.

60. See pp. 189-90, 193-4 above.

61. Dyer, 'Warwickshire Farming', p. 15; *idem*, Lords and Peasants, pp. 126-7.

62. Fleta, ii, ed. H.G. Richardson and W.O. Sayles (Seldon Society, lxxii, 1953), p. 256.

63. It is usually extremely difficult to calculate the proportion of costs spent on weeding from the accounts. A detailed list of labour services for Harewood (Yorks) in 1287-8, however, records that 61½ weeding works (most of which were used) were due out of a total of 646½ works dealing with the crop. The weeding works here thus comprised nearly 10 per cent of the total. But the works were not equal in value; the ploughing works, for instance, were undoubtedly each worth much more than those for weeding. When a rough adjustment is made for this, the proportion of costs allocated to weeding (from the point of view of labour services alone) falls to less than 5 per cent. PRO SC6 1077/29.

64. E.g., see Dyer, 'Warwickshire Farming', p. 15.

65. Thus, estimated yields from two Warwickshire peasant holdings in 1377 and 1481 were very low, implying that such things as weeding were not performed very efficiently. *Ibid*, pp. 29-30.

66. P. 195 above.

67. Pp. 189-90 above.

68. No individual manor was studied in sufficient depth to determine if this in fact was true, but <sup>it</sup> is to be noted that the transition to mixed plough-team at Elton (Hunts) in the twelfth century was accompanied by a reduction in teams from five to four. The same may also have been true of the twelfth-century manors of "Adulvesnasa" (Essex) and Hardley (Norfolk), where significant reductions of draught stock were effected upon the introduction of mixed plough-teams (or, in the case of "Adulvesnasa", what looks to have been mixed teams from the proportion of horses in the stock). Cart. Mon. Ram., iii, pp. 257, 259-60; Dom. St Paul, pp. 129-32; Register of the Abbey of St Benet of Holme, op. cit., pp. 129, 112.

69. Thus, although there was a modest increase in the proportion of work-horses on the bishop's estates during the thirteenth and fourteenth centuries (see p. 128 above), yields in general showed a slow decline, especially before the Black Death (J.Z. Titow, Winchester Yields, Cambridge (1972), pp. 12-29). On the other hand, yields in parts of Norfolk, where horses dominated, were very high, although they could also be impressive in areas where oxen were predominant: e.g., Sussex and Holderness. Campbell, 'Agricultural Progress', pp. 29-31; Brandon, op. cit., pp. 130-2; Mate, op.

cit., pp. 332-3.

70. See especially Hilton, 'Rent and Capital Formation', op. cit., pp. 33-68.

71. Thus, ox-hauled vehicles were only found on 20-30 per cent of manors at the end of the thirteenth century, for both peasant and demesne farms (see Tables 3.12 and 4.14 and pp. 182-3 above); the rest, that is, 70-80 per cent, had only carts. This would indicate that at least 70-80 per cent of the hauling done on English farms c.1300 was performed by horses. However, since horse-hauled vehicles were in fact found on 90 per cent of manors for both demesne and peasant farms, sharing in some cases with ox hauling, the 70-80 per cent figure is probably low.

72. See Tables 3.12 and 4.13.

73. Harvey, Med. Ox. VII., pp. 20-2. The Cuxham peasants lived on average a half-mile from their strips in the fields (see map II, facing p. 30).

74. White, op. cit., pp. 67-8. It has been estimated that in the case of Cuxham (see note 73 above) the peasant would only save fifteen minutes a day on average by having horses instead of oxen to carry him and his equipment out to the fields and back. This would hardly seem enough to justify moving house, particularly in view of the small number of days these peasants actually spent ploughing (Langdon, p. 38).

75. See p. 284 above.

76. Chapter 3, note 103.

77. As estimated from Titow's figures (Winchester Yields, esp. p. 149), from which the tithes were presumably already taken. A sowing rate of 2½ bushels per acre was assumed.

78. Postan, Medieval Economy and Society, p. 256. D.L. Farmer, however, indicates that it was sometimes a good policy to sell at the beginning of the harvest year, perhaps in the event of continuing high prices after a famine year; 'Some Grain Price Movements in Thirteenth-Century England', EcHR, 2nd series, x (1957), p. 215.

79. This assumes that horses can haul twice as fast as oxen (see pp. 188-9 above) and that the loads in general were light enough that horses would not have to haul them in more stages than if they were transported by oxen.

80. P.D.A. Harvey, 'The English Inflation of 1180-1220', in Peasants, Knights and Heretics, ed. R.H. Hilton, Cambridge (1976), pp. 57-84; Postan, Medieval Economy and Society, pp. 260-72.

81. Although Postan does mention the development of new credit and payment arrangements, which also quickened commercial transactions. 'The

Economic Foundations of Medieval Society', in Essays on Medieval Agriculture and General Problems of the Medieval Economy, Cambridge (1973), p. 10; see also 'The Rise of a Money Economy', same volume, p. 34.

82. As according to the Equation of Exchange,  $MV=PT$ , where M represents the quantity of money in circulation; V represents the velocity of circulation; P, the average price level; and T, the total volume of transactions.

83. Harvey, 'English Inflation', op. cit., pp. 57-8.

84. R.H. Britnell, 'The Proliferation of Markets in England, 1200-1349', EcHR, 2nd series, xxxiv (1981), p. 218.

85. Joan Thirsk, Horses in Early Modern England: for Service, for Pleasure, for Power (Stenton Lecture, 1977), Reading (1978), p. 24.

86. Farmer, 'Livestock Prices', op. cit., p. 6; Langdon, p. 40.

87. Although it is impossible to tell conclusively that this was so. The exchequer pipe rolls of the late twelfth century only indicate the purchase price of animals, which were generally more stable than selling prices. Even so, it seems that these purchase prices varied more for horses than for cattle (cows perhaps excepted); D.L. Farmer, 'Some Price Fluctuation in Angevin England', EcHR, 2nd series, ix (1956), p. 40.

88. P. 312 above.

89. E.g., see p. 285.

90. "Coursours" or horse dealers were a craft in London in 1422, for example (G. Unwin, The Gilds and Companies of London, London (1908), p. 370). There are, however, no instances of peasants being specified solely as horse dealers, so at best it would seem to have been a secondary occupation for them, if at all.

91. Where a market for horses was held every Friday; e.g., see The Peasants Revolt of 1381, ed. R.B. Dobson, London (1970), p. 193.

92. RBW, iv, pp. 499, 502, 510, 513, 515, 524 (for six Gloucestershire and Worcestershire manors).

93. This is hardly surprising given the fact that the ox was the dominant draught animal in the area (see Tables 3.2 and 4.8 under "West Midlands"). In fact, the five horses recorded in the fines were probably ~~heavy~~ riding horses, since they were seemingly fined at 2d. each (compared to only 1d. apiece for the oxen), suggesting that they were high quality animals.

94. For some thoughts on early forms of regionalism, see G.C. Homans, 'The Explanation of English Regional Differences', P & P, no. 42 (1969), pp. 18-34; W.G. Hoskins, 'Regional Farming in England', AHR, ii (1954), pp. 3-11.

95. As, indeed, Walter of Henley, indicates in several instances. Walter of Henley, pp. 313, 315, 323, 325, cc. 23-4, 49-50, 60.

96. J.D. Chambers and G.E. Mingay, The Agricultural Revolution 1750-1880, London (1966), p. 172; W. Marshall, The Rural Economy of the Southern Counties, London (1798), i, pp. 56-7.

97. A good example of this can be observed in a published series of probate inventories for Lichfield and area, where the use of oxen is evident in the sixteenth century, but fades out rapidly in the seventeenth. Probate Inventories of Lichfield, op. cit., pp. 41ff.

98. Particularly for Hampshire: e.g., "Item ij iron bownde cartes & vij horsse bestes w<sup>t</sup> ther apparrell, x<sup>li</sup>...Item viij oxen for the plough w<sup>t</sup> ther apparrell belonginge to the same, viij<sup>li</sup>" (1550 inventory for Walter Carter of Romsey; HRO Bishopric Wills, 1550, no. 30; for other explicit examples, see Bishopric Wills, 1545, no. 91; 1549, no. 136; Unclassified Wills, 1544-8, no. U. 147b).

99. For example, James Nightgale of North Leverton (Notts) in 1545 is listed as having "3 cartes & a wayne with yokes & temes / Horce harnes carte ropes halters carte harnes plow harnes & collers" (Nottinghamshire Household Inventories, op. cit., p. 46). The order here indicates that oxen were employed for hauling wains and horses for ploughing and hauling carts. The same is also indicated on three other Nottinghamshire farms from the order in which the equipment is listed; *ibid*, pp. 65, 74, 75. A similar arrangement of oxen hauling and horses ploughing also seems to have occurred on the South Downs; Kerridge, Agricultural Revolution, pp. 52-3.

100. Postan, Medieval Economy and Society, esp. chapters 3 and 4; *idem*, C.E.H., i, pp. 552-70; Titow, English Rural Society; Miller and Hatcher, esp. p. xv; see also Grigg, op. cit., pp. 65-6, for a general review of the argument and its supporters.

101. M.M. Postan, 'Some Economic Evidence of Declining Population in the Later Middle Ages', ECHR, 2nd series, ii (1950), pp. 221-46.

102. Postan in 1950, for example, characterised medieval technical development as being "remarkably static for the whole of the Middle Ages". 'The Economic Foundations of Medieval Society', op. cit., p. 17; see also 'Why was Science Backward in the Middle Ages?', same volume, p. 84. For similar views concerning agricultural technology specifically, see Postan, Medieval Economy and Society, p. 49; Titow, English Rural Society, pp. 37, 50.

103. R.H. Hilton, 'A Crisis in Feudalism', P & P, no. 80 (1978), p. 13.

104. Miller and Hatcher, p. 59.

105. *Ibid*, pp. 33-41.

106. Grigg, op. cit., pp. 91-2; D.M. Palliser, 'Tawney's Century: Brave New World or Malthusian Trap?', EcHR, 2nd series, xxxv (1982), p. 348.
107. Palliser, op. cit., p. 348; Kerridge, Agricultural Revolution, ch. III; Dyer, 'Warwickshire Farming', pp. 9-14.
108. See note 102 above; also Postan, Medieval Economy and Society, pp. 46-9.
109. Singer et al, ii, p. 623; Miller and Hatcher, p. 215; Hallam, pp. 13-4.
110. Campbell, 'Agricultural Progress', pp. 28-36; idem, thesis, pp. 338-55; Mate, pp. 332-3; see also Hallam, pp. 13-4, 248.
111. First in The Conditions of Agricultural Growth, London (1965) and later in Population and Technology, London (1981).
112. Conditions of Agricultural Growth, pp. 38-9; Population and Technology, pp. 3-4.
113. Campbell, 'Agricultural Progress'; Slicher van Bath, Agrarian History of Western Europe, pp. 175-80, 240-3.
114. Miller and Hatcher, p. 90; Hallam, pp. 14, 116, 137, 249.
115. Brandon, op. cit., p. 129.
116. At least in Conditions of Agricultural Growth. Population and Technology is more wide-ranging.
117. Conditions of Agricultural Growth, pp. 26-7.
118. E.g., see Perry Anderson, Passages from Antiquity to Feudalism, London (1974), p. 183.
119. According to Anderson; *ibid*, pp. 25-8, 79-80.
120. As most recently stated by R. Brenner, 'The Agrarian Roots of European Capitalism', P & P, no. 97 (1982), pp. 35-6. Brenner also comments that the "patriarchal" nature of the feudal system shielded both peasant and lord from the market and the "economic compulsion to produce competitively" (p. 34).
121. Capital, iii, Lawrence and Wishart edition, London (1959), pp. 793-4 (ch. XLVII).
122. Duby, Early Growth of the European Economy, esp. pp. 181, 211, 269-70.
123. See also Anderson, op. cit., pp. 185-6.
124. Capital, i (Penguin edition, Harmondsworth, M'sex, 1976), pp. 877-883, 905-7; also iii (Lawrence and Wishart edition, op. cit.), p. 801.
125. Kerridge, Agricultural Revolution; Dyer, 'Warwickshire Farming'.
126. E.g., see J.P. Cooper, 'In Search of Agrarian Capitalism', P & P, no. 80 (1978), pp. 33-4; Brenner, 'Agrarian Roots', op. cit., p. 95.

127. Indeed, it has been doubted whether capitalist tendencies could ever have accounted for the agrarian changes that were eventually to set English agriculture apart from that on the Continent. Cooper, *op. cit.*, pp. 20-65.

128. Henri Pirenne, Medieval Cities, Princeton, New Jersey (1925), p. 72.

129. Postan, 'Rise of a Money Economy', *op. cit.*, pp. 28-40; *idem*, 'Economic Foundation of Medieval Society', *op. cit.*, esp. pp. 13-6; R. Brenner, 'Agrarian Class Structure and Economic Development in Pre-Industrial Europe', P & P, no. 70 (1976), esp. pp. 42-6. The term "commercialisation theory" is essentially Brenner's, who calls it the "Commercialization Model" (*ibid*, p. 42).

130. See Figure 2.7 and pp. 66-72 above.

131. That is, from the cart-horse (carectarius equus) at Sandon (Herts) in 1155 and the cart-loads (caretate) of barley and hay, probably horse-hauled at Ardeley (also Herts) in 1141. Dom. St Paul, pp. 134, 136; see also p. 74 above.

132. E.g., Postan, 'Rise of a Money Economy', pp. 29-32.

133. Farmer, 'Some Price Fluctuations in Angevin England', *op. cit.*, pp. 34-43; Harvey, 'English Inflation', *op. cit.*, pp. 57-8; Britnell, 'Proliferation of Markets', *op. cit.*, pp. 209-10.

134. E.g., A.R. Bridbury, Economic Growth: England in the Later Middle Ages, London (1962).

135. M.M. Postan, 'The Fifteenth Century', in Essays, *op. cit.*, pp. 41-8; *idem*, 'The Economic Foundations of Medieval Society', pp. 22-7; Hatcher, Plague, Population and the English Economy, pp. 35-54. A.R.H. Baker (in A New Historical Geography of England before 1600, ed. Darby, *op. cit.*, pp. 192-5) suggests an economic decline in the first half of the century followed by a modest period of recovery in the second half.

136. Agricultural prices, for instance, only began to rise significantly again after 1500. Grigg, *op. cit.*, p. 85; Hatcher, *op. cit.*, pp. 50-1.

137. C.J. Dahlman, The Open Field System and Beyond, Cambridge (1980), ch. 5.

138. E.g., Dyer, 'Warwickshire Farming', pp. 16-21; *idem*, 'A Small Landowner in the Fifteenth Century', Midland History, 1 (1972), esp. pp. 6-8.

139. 'The Horse Trade of the Midlands in the Seventeenth Century', AHR, xxvii (1979), pp. 91-6.

140. E.g., Dyer, 'Warwickshire Farming', p. 20; *idem*, 'English Diet',

op. cit., pp. 213-4.

141. According to the mechanism already discussed on p. 354.

142. Lefebvre des Noëttes, op. cit., pp. 184-8.

143. White, op. cit., pp. 1-38.

144. Ibid, pp. 39-78; J. Gimpel, The Medieval Machine, London (1977), pp. 29-58.

145. Hilton and Sawyer, op. cit., pp. 90-100; Titow, English Rural Society, pp. 37-42; Anderson, op. cit., p. 183.

146. A type of conservatism noted even in the twentieth century, as implied by E.J.T. Collins, when discussing the adoption of the tractor as against using cheaper horses: "Progressive farmers were more keenly interested in higher production and wider gross margins than in further reducing unit production costs." 'Horses in Pre-industrial and Industrialized Economies', paper delivered at the 8th International Economic History Congress, Budapest, 1982. I am indebted to Dr. Collins for permission to quote from this paper.

147. Ibid.

148. See p. 180 above.

149. This seems to occur in the Lichfield and district inventories, where oxen and wains disappear over the seventeenth century, to be replaced - occasionally at least - by wagons. Probate Inventories of Lichfield, op. cit., pp. 199, 280.

150. E.g., Brenner, 'Agrarian Class Structure', op. cit., pp. 63-4; idem, 'Agrarian Roots', pp. 96-100; see also Cooper, op. cit., pp. 24-5.

151. The growing of legumes may also have been a peasant-oriented innovation. Thus, in the 1290 Ramsey Abbey banlieu lay subsidy assessment, peas and beans made up 12.8 per cent of the peasant crops taxed compared to only 6.0 per cent for the demesne (as calculated from Raftis and Hogan for the villages of Wistow, Great Raveley, Upwood, Bury next to Ramsey cum Heighmongrove, and Heighmongrove). See also the high level of legumes grown on peasant holdings at Cuxham compared to the demesne there (Harvey, Med. Ox. Vil., pp. 130-1). On the other hand, this did not happen everywhere: for example, Leicestershire, where peasants apparently grew proportionally less peas than on the demesnes, although they caught up eventually (R.H. Hilton, The Economic Development of some Leicestershire Estates in the Fourteenth and Fifteenth Centuries, Oxford (1947), pp. 65-6).



## APPENDIX A

### Sources of Power in Domesday England

In terms of the medieval power supply, the question of the transition from ox to horse was clearly very important. During ancient times, there were essentially only two sources of power, that supplied by man and that supplied by animals; and it was one of the triumphs of the medieval period to develop a third, that of the mill. Very seldom can we secure a glimpse of the relative contribution of these three sources, but the Domesday survey does afford a rough comparison. Thus, for the year 1086, we can obtain the following figures relating to manpower, animal power, and mill-power:

Rural and burghal population (heads of families) - 300,790<sup>1</sup>

Number of plough-teams - 81,184<sup>2</sup>

Number of mills - 6,082<sup>3</sup>

As with all things connected with the Domesday survey, the counties of Durham, Northumberland, Cumberland, and Westmorland are not represented in these figures, but since only a comparison is needed this is not important. Dealing with manpower first, the population, as indicated, is only given in heads of families. To convert this figure into total units of manpower I shall multiply by three, counting the head of the household as one labour unit and his wife and children as another two.<sup>4</sup> Thus, we have a total human labour potential at Domesday of  $300,790 \times 3 = 902,370$  units.

Since animals are very inconsistently detailed for Domesday, calculations for animal power must come from the plough-team figures. Fortunately it appears that the Domesday plough-team, as entered in the survey,

was almost always one of eight oxen.<sup>5</sup> Therefore, to obtain the total number of plough-ox units, we have only to multiply the number of plough-teams by eight: thus, we obtain  $81,184 \times 8 = 649,472$  units. This figure must be considered very much a minimum as an estimate of the number of draught animals at Domesday, since it ignores extra oxen<sup>6</sup> and, of course, horses.<sup>7</sup>

Finally, we come to mill-power. As the figure above indicates, there were more than 6,000 mills in England at the time of Domesday. Although the data upon which it is based are not without their inconsistencies,<sup>8</sup> this is probably a fairly reasonable estimate in the circumstances, and so the number given above can be left as it is. Presumably all these mills were powered by water.<sup>9</sup>

The horse-power rating for each type of power unit, as derived from modern estimates, is shown below in Table A.1.

TABLE A.1

Horse-power Ratings for Various Domesday Power Sources<sup>10</sup>

	<u>Horse-power/unit</u>
Oxen	0.52
Men	0.08
Mills	10.0

The estimate for mills is very much a maximum, and it is thought that a rating of 2-5 hp may have been more often the case for those powered by water.<sup>11</sup> The larger figure, though, does help to compensate for the fact that mills could be run for twenty-four hours a day (although it must have been seldom that they were), while the daily work limit for men and animals would only be eight hours or so.

Proceeding, then, the comparison of power supplies available at the time of Domesday is shown in Table A.2. It should be repeated that these are only rough estimates and subject to much qualification. Nevertheless

TABLE A.2

Sources of Power at Domesday

	<u>No. of Units (A)</u>	<u>HP Rating per Unit (B)</u>	<u>Total HP Available (A)x(B)</u>	<u>%</u>
Animal Power (oxen)	649,472	0.52	337,725	71.7
Manpower	902,370	0.08	72,190	15.3
Mill-power	6,082	10.0	60,820	12.9

it must be admitted that animals were clearly the major source of power at Domesday, comprising over 70 per cent of the total even when only considering beasts of the plough. As we have already indicated (p. 23), changes in the nature of this animal power would have significant repercussions for the medieval power supply as a whole, and this applies to the transition from the ox to the horse. Although the horse exerts roughly the same pull as the ox, modern experiments show that it does so at a 50 per cent greater speed, such that the power rating of an average horse is 0.78 hp compared to 0.52 hp for the ox.<sup>12</sup> Assuming the same applied in medieval times, then the wholesale replacement of the Domesday plough oxen by horses would result in a power jump from 337,725 to 506,588 hp, an increase of 168,863 hp, which is well over that supplied at Domesday by mills and manpower together. This is all very theoretical, of course, but it does point out the potential importance that changes in traction had for medieval society.

FOOTNOTES

1. The rural population figure is taken from Darby, Domesday England, op. cit., p. 336. The burghal population is derived from Russell's figures (British Medieval Population, p. 54), but excluding the figure for Durham and dividing the remainder by 3.5 to convert back to heads of families.

2. Darby, op. cit., p. 336.

3. Ibid, p. 361.

4. This is probably very generous in the circumstances. Chayanov, for

instance, indicates that a peasant family would not reach this level of labour until the eighteenth year after the founding couple were married, and even this assumes the birth of a surviving child every three years, very unlikely in a medieval context. Theory of Peasant Economy, p. 58.

5. See pp. 40-1 above.

6. And other draught cattle, such as barren cows and young animals being broken in. Some of these, however, may have been incorporated in the plough-team figures.

7. As we have already indicated (p. 64), horses may have comprised as much as a quarter of the draught animals at Domesday.

8. E.g., Darby, Domesday England, p. 272.

9. *Ibid*, p. 270.

10. The values for animal- and manpower derive from Rankine's Useful Rules and Tables, *op. cit.*, pp. 251-2. The value for mill-power comes from A History of Technology and Invention, ii, ed. M. Daumas, New York (1969), p. 438.

11. Daumas, *loc. cit.*; also Usher, A History of Mechanical Invention, *op. cit.*, p. 335.

12. Rankine's Useful Rules and Tables, p. 251.

## APPENDIX B

### The Twelfth-Century Sources: Surveys, Leases, Rotuli de Dominabus et Pueris et Puellis, and Pipe Rolls

#### Introduction

The following pages summarise the data concerning demesne draught animals obtained from the various twelfth-century sources used in Chapter 2. Part 1 contains the survey and lease material for the first half of the century. Part 2 includes the same for the second half of the century plus that for the Rotuli de Dominabus et Pueris et Puellis. Part 3 contains the data for the Pipe Rolls. For each part, the following applies:

- 1) The data are entered by county.
- 2) The form for each entry is as follows: manor or group of manors, date, reference (number of oxen, number of horses).
- 3) If the document is a lease or grant it is so indicated in brackets after the name of the manor.
- 4) Non-working and young horses have been excluded from the figures; see also pp. 53 and 56.
- 5) In Part 2, where two different surveys or leases exist for a manor, the data relating to horses and oxen from these have been averaged. In the cases of Ashbury (Berks) and Hardley (Norfolk), however, the results from the sources concerned are so different that each has been noted separately, although they are averaged together for the purposes of Table 2.8.
- 6) In the case of the Rotuli de Dominabus and the Pipe Rolls (Parts 2 and 3), there are occasionally two or more entries for the same community. These are considered to have been separate manors, although there is no way of being certain of this.
- 7) Unidentified manors or groups of manors that cannot be accurately mapped are given in inverted commas.

Part 1: Surveys and Leases, 1101-1150Bedfordshire

Pegsdon, t. Hen I, Cart. Mon. Ram., iii, p. 307 (4,8); Shillington, t. Hen I, *ibid* (24,1); Caddington (lease), before 1138, Dom. St Paul, p. 124 (16,1).

Berkshire

Ashbury, t. Hen I, Inq. Hil., fo. 116A (64,3).

Cambridgeshire

Graveley, t. Hen I, Cart. Mon. Ram., iii, p. 278 (12,6); Girton, t. Hen I, *ibid*, p. 313 (16,1).

Derbyshire

Mickleover, 1114-8, Burton Abbey Survey B, p. 229 (32,1); Littleover, 1114-8, *ibid*, p. 232 (32,1).

Dorset

Buckland Abbas (or Newton), t. Hen I, Inq. Hil., fo. 116A (50,2); Sturminster Newton, t. Hen I, *ibid* (40,0); Tarrant (Launceston), early 12th c., Delisle, *op. cit.*, p. 255 (18,1).

Essex

Adulvesnasa, i.e., The Sokens in NE Essex (lease), prob. before 1150, Dom. St Paul, pp. 125-6 (58,6); Felsted, early 12th c., Delisle, p. 254 (28,4).

Gloucestershire

Pucklechurch, t. Hen I, Inq. Hil., fo. 116v (40,3); Avening, early 12th c., Delisle, p. 255 (64,8); Minchinhampton, early 12th c., *ibid*, p. 254 (40,2); Pinbury, early 12th c., *ibid*, p. 255 (24<sup>1</sup>,1).

Hampshire

Damerham with Martin, t. Hen I, Inq. Hil., fo. 116v (60,5).

Herefordshire

Marden, t. Hen I, Herefordshire Domesday, ed. V.H. Galbraith and James Tate (Pipe Roll Soc., new series, xxv, 1947 and 1948), p. 75 (18,3); Lugwardine, t. Hen I, *ibid* (18,2); Stanford Regis (in Stanford Bishop), t. Hen I (6,1);

Wilton, t. Hen I, *ibid* (18,2); Linton, t. Hen I, *ibid* (12,1).

### Hertfordshire

Ardeley (lease), 1141, Dom. St Paul, pp. 135-6 (20,1).

### Huntingdonshire

Elton, t. Hen I, Cart. Mon. Ram., iii, p. 257 (40,2); Stukeley, t. Hen I, *ibid*, p. 274 (30,2); Hemingford Abbots, t. Hen I, *ibid*, p. 277 (12,12); Houghton with Wyton, t. Hen I, *ibid*, p. 279 (24,2); (Old) Weston, t. Hen I, *ibid*, p. 311 (24,2); Bythorn, t. Hen I, *ibid*, p. 313 (16,1); Alwalton, 1125-8, Liber Niger, p. 160 (12,2); Fletton, 1125-8, *ibid*, p. 165 (12,1).

### Leicestershire

Appleby, 1114-8, Burton Abbey Survey B, p. 244 (24,1); Great Easton, 1125-8, Liber Niger, p. 160 (12,0).

### Lincolnshire

'Turlebi', 1125-8, Liber Niger, p. 160 (7,0); Fiskerton, 1125-8, *ibid*, p. 164 (24,0); Scotter and 'Scaletorp', 1125-8, *ibid*, p. 165 (24,2); Gosberton, 1125-8, *ibid* (4,0).

### Norfolk

Brancaster with Deepdale, t. Hen I, Cart. Mon. Ram., iii, p. 261 (12,10); Ringstead, t. Hen I, *ibid*, p. 266 (12,10); Holme next the Sea, t. Hen I, *ibid* (8,7); Wimbotsham, t. Hen I, *ibid*, p. 285 (12,5); Hilgay with Snorehill<sup>2</sup>, t. Hen I, *ibid*, p. 287 (12,4); South Walsham (grant), 1141-9, St Benet of Holme, *op. cit.*, i, p. 84 (8,2); Horstead, early 12thc., *Delisle*, p. 255 (27,1).

### Northamptonshire

Kettering, 1125-8, Liber Niger, pp. 157-8 (32,3); Oundle, 1125-8, *ibid*, p. 158 (24,0); Pilsgate, 1125-8, *ibid* (8,1); Longthorpe, 1125-8, *ibid*, p. 159 (16,1); Cottingham, 1125-8, *ibid* (12,0); Warmington, 1125-8, *ibid*, p. 160 (32,1); Werrington, 1125-8, *ibid*, p. 161 (16,1); Peterborough, 1125-8, *ibid* (29,2); Pytchley, 1125-8, *ibid*, p. 162 (30,2); Ashton, 1125-8, *ibid*, p. 162 (16,1); Glinton, 1125-8, *ibid*, p. 163 (24<sup>3</sup>,1); Castor, 1125-8, *ibid*, pp. 163-4 (32,2); Walton, 1125-8, *ibid*, p. 165 (16,0); Eye, 1125-8, *ibid* (8,0); Aldwincle, 1125-8, *ibid*, p. 166 (16,0); Irthlingborough, 1125-8, *ibid* (16,1); Stanwick, 1125-8, *ibid* (16,1).

Nottinghamshire

Collingham, 1125-8, Liber Niger, p. 159 (16,0).

Rutland

Tinwell, 1125-8, Liber Niger, p. 158 (12,0).

Somerset

Glastonbury, t. Hen I, Inq. Hil., fo. 115 (24,2); Street (nr. Glastonbury), t. Hen I, *ibid* (24,2); Walton, t. Hen I, *ibid* (24,2); Shapwick, t. Hen I, *ibid* (32,2); High Ham, t. Hen I, *ibid*, fo. 115v (16,1); West Monkton, t. Hen I, *ibid* (24,1); Brent Marsh, t. Hen I, *ibid* (48,4); Winscombe, t. Hen I, *ibid* (16,1); Wrington, t. Hen I, *ibid* (16,2); Marksbury, t. Hen I, *ibid* (16,1); Mells, t. Hen I, *ibid*, fo. 116 (24,2); Camerton, t. Hen I, *ibid* (16,1); Cranmore, t. Hen I, *ibid* (16,1); Doulting, t. Hen I, *ibid* (16,1); Pilton, t. Hen I, *ibid* (50,2); East Pennard, t. Hen I, *ibid* (16,1); Batcombe, t. Hen I, *ibid* (16,1); Ditchat, t. Hen I, *ibid* (24,2); Baltonsborough, t. Hen I, *ibid* (16,1); Lympsham, t. Hen I, *ibid*, fo. 116v (16,1); Meare, t. Hen I, *ibid*, fo. 116A (8,1); Blackford (nr. Wincanton), t. Hen I, *ibid* (8,1).

Staffordshire

Burton (upon Trent), 1114-8, Burton Abbey Survey B, p. 212 (24,4); Branston, 1114-8, *ibid*, p. 215 (16,1); Stretton, 1114-8, *ibid*, p. 217 (16,1); Wetmore, 1114-8, *ibid*, p. 219 (16,0); Abbots Bromley, 1114-8, *ibid*, p. 222 (8,1); Leigh, 1114-8, *ibid*, pp. 225-6 (16,2); Stapenhill, 1114-8, *ibid*, p. 238 (24,1); Winshill, 1114-8, *ibid*, p. 241 (16,1).

Warwickshire

Austrey, 1114-8, Burton Abbey Survey B, p. 246 (16,1).

Wiltshire

Nettleton, t. Hen I, Inq. Hil., fo. 116v (24,1); Grittleton, t. Hen I, *ibid* (32,1); Kington St Michael, t. Hen I, *ibid* (24,2); Christian Malford, t. Hen I, *ibid* (16,1); Winterbourne Monkton, t. Hen I, *ibid* (24,2); Idmiston, t. Hen I, *ibid* (40,0); Badbury, t. Hen I, *ibid* (16,2); Longbridge Deverill, t. Hen I, *ibid* (32,2); Tilshead, early 12th c., Delisle, p. 255 (8,0).

County Unknown

'Dineslai', early 12th c., Delisle, p. 254 (22,1).



FOOTNOTES

1. Includes two draught cows.
2. The editors of the Cart. Mon. Ram. give this as Snoring, but I have followed Raftis's lead here (Ramsey Abbey Estates, op. cit., p. 307).
3. Given as 34 in the printed text, but 24 on the original document; see Lennard, 'Twelfth-Century Demesne Plough-teams', op. cit., p. 205n.

Part 2: Surveys, Leases, and Rotuli de Dominabus, 1151-1200Bedfordshire

Barton, c.1160?, <sup>1</sup> Cart. Mon. Ram., iii, p. 274 (16,1); Dunton Chamberlain, 1185, Rot. Dom., p. 32 (12,4); Kensworth (lease), 1152, Dom. St Paul, pp. 128-9 (24,2); Leighton (Buzzard), 1155, Three Records of the Alien Priory and the Manor of Leighton, op. cit., p. 23 (36,2).

Berkshire

Ashbury: a) 1176, Inq. Hil., fo. 116A (43,1); b) 1189, Lib. Hen. de Sol., p. 119 (16,6).

Buckinghamshire

Horton, 1185, Rot. Dom., p. 35 (17,4); Eton, 1185, ibid (8,1); Wycombe, 1185, ibid, p. 36 (8,2); Wycombe, 1185, ibid, pp. 36-7 (12,6); Wycombe, 1185, ibid, p. 37 (8,2).

Cambridgeshire

Knapwell, c.1195, Cart. Mon. Ram., iii, p. 244 (12,4); Graveley, c.1195, ibid, p. 246 (12,3); Elsworth, <sup>c.1195</sup> ibid, p. 248 (12,5); Girton, c.1160, ibid, p. 314 (12,5); Haslingfield, 1185, Rot. Dom., pp. 85-6 (12,4).

Dorset

Sturminster Newton, 1176 & 1189, Inq. Hil., fo. 116A & Lib. Hen. de Sol., p. 137 (20,1); Buckland Abbas (or Newton), 1176, Inq. Hil., fo. 116A (30,1).

Durham

Wearmouth and Tunstall, 1183, Boldon Buke, p. 6 (20,2).

Essex

Navestock (lease), 1152, Dom. St Paul, pp. 132-3 (30,3); Belchamp St Paul (lease), c.1181?, ibid, pp. 138-9 (18,6); Fairstead, 1185, Rot. Dom., pp. 68-9 (6,3); Stisted, 1185, ibid, pp. 71-2 (10,5); Little Wigborough, 1185, ibid, p. 80 (6,4).

Gloucestershire

Pucklechurch, 1189, Lib. Hen. de Sol., p. 101 (20,2).

Hampshire

Damerham with Martin, 1176 & 1189, Inq. Hil., fo. 116v & Lib. Hen. de Sol., p. 133 (35,1).

Hertfordshire

Sandon (lease), 1155, Dom. St Paul, pp. 134-5 (54,6).

Huntingdonshire

Hemingford Grey, c.1195, Cart. Mon. Ram., iii, p. 241 (12,4); Warboys, c.1195, *ibid*, p. 253 (18,6); Elton, c.1160, *ibid*, p. 257 (24,8); Broughton, c.1160, *ibid*, p. 273 (32,8); Wistow, c.1160, *ibid* (18,9<sup>2</sup>); Upwood, c.1160, *ibid* (22,6); Houghton with Wyton, c.1160, *ibid*, p. 279 (16,6); Ellington, c.1160, *ibid*, p. 306 (8,0); (Old) Weston, c.1160, *ibid*, p. 312 (24,0); Kimbolton, 1185, Rot. Dom., p. 46 (64,0).

Lincolnshire

Swineshead, 1185, Rot. Dom., p. 4 (22,0); Sixhills, 1185, *ibid*, p. 8 (35,0); Caythorpe, 1185, *ibid*, pp. 9-10 (27,4); Broughton, 1185, *ibid*, pp. 20-1 (18,2).

Norfolk

Brancaster, c.1160, Cart. Mon. Ram., iii, p. 265 (8,6); Wimbotsham, c.1160, *ibid*, p. 285 (12,5); Hilgay with Snorehill, c.1160, *ibid*, p. 287 (12,4); Saham Toney, 1185, Rot. Dom., pp. 49-50 (14,8); Middleton, 1185, *ibid*, p. 51 (12,1); Bilney, 1185, *ibid*, p. 53 (6,2); Wiveton, 1185, *ibid*, p. 55 (8,6); Stow Bedon, 1185, *ibid* (8,6); half of Scoulton Burdeleys with appurt- enances in Thompson, 1185, *ibid*, p. 56 (6,2); Bintree, 1185, *ibid* (4,3); 'land in hundred of Eynesford', 1185, *ibid*, pp. 56-7 (4,3); South Creak, 1185, *ibid*, pp. 57-8 (2,7); Cockley Cley, 1185, *ibid*, p. 58 (8,4); Hardley: a) prob. c.1163 (grant), St Benet of Holme, i, p. 112 (32,2); b) 1175-86 (lease), *ibid*, i, p. 129 (4,2).

Northamptonshire

Northampton, 1185, Rot. Dom., pp. 21-2 (3,0); East Haddon, 1185, *ibid*, p. 27 (21,5).

Somerset

Glastonbury, 1176, Inq. Hil., fo. 115 (32,0); Meare, 1189, Lib. Hen. de Sol., p. 28 (8,0); Batcombe, 1176 & 1189, Inq. Hil., fo. 116 & Lib. Hen.

de Sol., p. 35 (11,1); Ditcheat, 1176 & 1189, Inq. Hil., fo. 116 & Lib. Hen. de Sol., p. 39 (22,2); East Pennard, 1176 & 1189, Inq. Hil., fo. 116 & Lib. Hen. de Sol., p. 42 (11,1); Butleigh, 1189, Lib. Hen. de Sol., p. 45 (15,3); High Ham, 1176 & 1189, Inq. Hil., fo. 115v & Lib. Hen. de Sol., p. 47 (21,2); Shapwick, 1176 & 1189, Inq. Hil., fo. 115 & Lib. Hen. de Sol., p. 53 (21,3); Ashcott, 1176 & 1189, Inq. Hil., fo. 115 & Lib. Hen. de Sol., p. 57 (22,3); Street, 1176 & 1189, Inq. Hil., fo. 115 & Lib. Hen. de Sol., p. 63 (25,1); Berrow, 1189, Lib. Hen. de Sol., p. 72 (6,0); Lympsham, 1176 & 1189, Inq. Hil., fo. 116v & Lib. Hen. de Sol., p. 80 (8,0); Moorlinch, 1176, Inq. Hil., fo. 115v (8,1); West Monkton, 1176, *ibid* (16,1); Brent Marsh, 1176, *ibid* (48,4); Winscombe, 1176, *ibid* (8,0); Wrington, 1176, *ibid* (16,1); Marksbury, 1176, *ibid* (16,1); Mells, 1176, *ibid*, fo. 116 (9,1); Doultling, 1176, *ibid* (8,1); Pilton, 1176, *ibid* (24,1); Baltonsborough, 1176, *ibid* (10,1); Walton, 1176 & 1189, Inq. Hil., fo. 115 & Lib. Hen. de Sol., p. 60 (23,3).

#### Suffolk

Ingham (lease), 1168-1200, Kalendar of Abbot Samson, pp. 119-20 (14,9); Elvedon (lease), 1186-1200, *ibid*, p. 120 (2,3)<sup>3</sup>; Groton (lease), 1190-8, *ibid*, p. 128 (6,3); Semer (lease), 1190-8, *ibid* (12,13); Great Wratting, 1185, Rot. Dom., p. 59 (0,2); Haverhill, 1185, *ibid* (6,2); Clopton (nr. Woodbridge), 1185, *ibid*, p. 61 (8,3); Kenton, 1185, *ibid*, p. 62 (6,3); Ixworth, 1185, *ibid*, p. 63 (12,5); Walsham le Willows, 1185, *ibid* (16,5); Ashfield, 1185, *ibid* (12,5); Staverton, 1185, *ibid*, pp. 64-5 (6,1); Little Framlingham, 1185, *ibid*, p. 65 (6,1); Lawshall,<sup>4</sup> c.1160?, Cart. Mon. Ram., iii, p. 285 (11,4).

#### Wiltshire

Nettleton, 1189, Lib. Hen. de Sol., p. 106 (15,0); Kington St Michael, 1189, *ibid*, p. 111 (16,1); Christian Malford, 1189, *ibid*, p. 115 (16,0); Badbury, 1189, *ibid*, p. 122 (16,0); Winterbourne Monkton, 1189, *ibid*, p. 124 (24,1); Idmiston, 1189, *ibid*, p. 126 (24,0); Boyton (grant), 1177, Cart. Mon. Glos., i, p. 207 (8,1).

#### Yorkshire

Esholt (grant), 1175-1185, Early Yorks Charters, i, *op. cit.*, p. 170 (8,0); Newton Garth (grant), 1170-1175, *ibid*, iii, p. 38 (24,0).

FOOTNOTES

1. The dates for the Ramsey Abbey manors for this half of the century are those of Raftis (Ramsey Abbey Estates, p. 307).

2. Six horses (equi) plus three crocinis; see Chapter 2, note 47.

3. The data for Elvedon have been included on Figure 2.8, because, although the demesne had only five draught animals and so theoretically should not have been mapped (see Chapter 2, note 77), the animals were nonetheless combined into a known mixed plough-team of three horses and two oxen, as the entry makes clear.

4. The extent for this manor is misleadingly included with one for Holywell (Hunts) in the Cart. Mon. Ram., see R. Lennard, 'An Unidentified Twelfth-Century Custumal of Lawshall (Suffolk)', EHR, li (1936), pp. 104-7. Raftis, *op. cit.*, p. 62 (Table VII), indicates that the stock listing for the manor's demesne refers to an earlier time (c.1135), but the wording of the listing itself seems to suggest a date contemporaneous with the making of the survey in the later twelfth century.

Part 3: Pipe Rolls, 1159-1200Bedfordshire

Stanbridge, 13 Hen II, p. 102<sup>1</sup> (16,2); Wymington, 13 Hen II, p. 103 (4,0); Eaton Bray, 13 Hen II, p. 104 (24,3); Eaton Bray, 31 Hen II, p. 130 (8,1); Harrold, 7 Ric I, p. 35 (16,0); Wrestlingworth, 7 & 8 Ric I, p. 36 & Chancellor's Roll (8 Ric I), op. cit., p. 193 (24,0)<sup>2</sup>; Houghton Regis, 7 Ric I, p. 36 (40,2).

Berkshire

Lambourn, 13 Hen II, p. 26 (20,0); Wargrave, 6 Ric I, p. 127 (56,3); Curridge, 7 Ric I, p. 41 (30,0); Harwell, 7 Ric I, p. 41 (15,0); Cookham and Bray, 7 Ric I, p. 251 (35,4).

Buckinghamshire

Edlesborough, 13 Hen II, p. 104 (16,3); Edlesborough, 32 Hen II, p. 22 (8,1); Edlesborough, 7 Ric I, p. 35 (6,1); Bledlow, 7 Ric I, ibid (24,2); Westbury<sup>3</sup>; 7 Ric I, ibid (4,0); Aston Clinton, 7 Ric I, ibid (16,0); High Wycombe, 7 Ric I, p. 43 (20,2); Saunderton, 7 Ric I, ibid (8,0).

Cambridgeshire

Fordham, 19 Hen II, p. 160 (12,4); Wilbraham, 7 Ric I, p. 49 (6,2).

Cornwall

Launceston, 30 Hen II, p. 88 (10,1); Efford (in Stratton), 30 Hen II, ibid (10,1); 'Landehou', 30 Hen II, ibid (20,2); Climson (in Stoke Climsland), 7 Ric I, p. 132 (15,1); Callington, 7 Ric I, ibid (10,1); Helston, 7 Ric I, ibid (10,1); Winnianton (in Gunwalloe), 7 Ric I, ibid (10,1); Penheale (in Egloskerry), 7 Ric I, pp. 132-3 (20,2); Merthin (in Constantine), 7 Ric I, p. 133 (10,1); Roseworthy (in Gwinear), 8 Ric I, Chanc. Roll, p. 139 (10,1); Tehidy (in Illogan), 8 Ric I, ibid, p. 209 (10,0).

Cumberland

'Manors in firma de Cumberlanda', 32 Hen II, p. 97 (62,5); Gamblesby (in Addingham), 10 Ric I, p. 143 (8,0)<sup>4</sup>.

Derbyshire

Wirksworth, 7 Ric I, p. 15 (56,8).

Devon

Washfield and Tiverton, 13 Hen II, p. 169 (22,2); Ermington, 15 Hen II, p. 48 (20,2); Broadhempston, 31 Hen II (10,0); Shebbear, 7 & 8 Ric I, p. 48 & Chanc. Roll, p. 209 (50,0); Tawton, 7 Ric I, p. 129 (20,1); Venn Ottery, 7 Ric I, *ibid* (10,0).

Dorset

Lulworth, 32 Hen II, p. 141 (30,1); Cerne Abbas, 32 Hen II, *ibid* (20,0); Gussage, 32 Hen II, *ibid* (10,1); Fordington, 7 Ric I, p. 228 (34,2); Gillingham, 7 Ric I, *ibid* (40,2).

Durham

Sadberghe (in Haughton le Skerne), 8 Ric I, Chanc. Roll, p. 92 (8,0).

Essex

Chalvedon (in Pitsea) and Benfleet, 12 Hen II, p. 125 (16,6); Dedham, 12 Hen II, *ibid*, (18,8); Hallingbury, 12 Hen II, p. 126 (8,2); Prittlewell, 13 Hen II, p. 153 (1,2); 'Stoch' (nr Southend?), 13 Hen II, *ibid* (5,0); Laver, 14 Hen II, p. 45 (16,5); The Rodings ('Roingis'), 14 Hen II, pp. 45-6 (12,4); Tolleshunt, 17 Hen II, p. 124 (24,6); 'Belingford' (prob. near Tolleshunt), 17 Hen II, *ibid* (8,6); Wickford, 28 Hen II, p. 103 (21,2); Hallingbury, 31 & 32 Hen II, p. 13 & p. 12 (8,3); Helions (or Steeple) Bumpstead, 31 Hen II, p. 13 (5,2); Wigborough, 32 Hen II, p. 12 (8,0); White Notley, 33 Hen II, p. 30 (12,4); Bradwell, 7 Ric I, p. 52 (10,2); Chalvedon (in Pitsea), 7 Ric I, *ibid* (12,10); Easthorpe, 7 Ric I, *ibid* (12,4); Shopland, 7 Ric I, *ibid* (6,4); Great Birch, 7 Ric I, p. 53 (16,4); Easton, 8 Ric I, Chanc. Roll, p. 211 (4,3); Claret Hall (in Ashen), 8 Ric I, *ibid* (4,1).

Gloucestershire

Pinnock, 7 Ric I, p. 56 (8,1).

Hampshire

Langley, 13 Hen II, p. 176 (14,1); 'Wardia' (poss. East or West Worldham?), 30 Hen II, p. 81 (16,0); Meon, 6 Ric I, p. 10 (100,0); Clatford, 7 Ric I, p. 40 (18,2); Meon, 9 Ric I, p. 17 (12,0); Meon, 9 Ric I, *ibid* (12,0); Eling, 9 Ric I, *ibid* (10,0).

Herefordshire

Dilwyn, 7 Ric I, p. 41 (1,0); Stanford Regis, 7 Ric I, *ibid* (1,1).

Hertfordshire

'Dineslea', 12 Hen II, p. 126 (16,4); Cottered, 7 Ric I, p. 53 (3,1).

Kent

Cheleshurst (now lost) in Rainham, 13 Hen II, p. 197 (6,10); Aylesford, 17 Hen II, p. 137 (3,0); Kingsdown, 17 Hen II, p. 141 (4,2); Maplescombe ('Maplescamp'), 32 Hen II, p. 186 (8,2); Aylesford, 32 Hen II, pp. 186-7, (10,1); Shorne, 32 Hen II, p. 187 (10,0); Aldington (in Thornham), 32 Hen II, *ibid* (4,2); Chatham, 7 Ric I, p. 55 (10,0); 'Cudested' (Cowstead, in Minster or Stockbury) and 'Laweston', 7 Ric I, *ibid* (19,0).

Leicestershire

Arnesby, 16 Hen II, p. 87 (18,2); Frisby on the Wreake, 32 Hen II, p. 134 (16,1).

Lincolnshire

Hacconby and Kirkby (Underwood), 13 Hen II, p. 40 (1,0); Kirton in Lindsey, 8 Ric I, Chanc. Roll, p. 212 (16,0).

Middlesex

Isleworth, 7 Ric I, p. 50 (80,0).

Norfolk

Saham Toney, 7 Ric I, p. 51 (4,3); Cawston, 7 Ric I, *ibid* (4,3).

Northamptonshire

Olney, 13 Hen II, p. 115 (0,6); 'Lands of Hugo Gobion', 13 Hen II, *ibid* (12,2); 'Nova firma', 14 Hen II, p. 51 (24,0); Paulerspury, 7 & 8 Ric I, p. 33 & Chanc. Roll, p. 190 (24,2); Great Houghton, 7 Ric I, p. 33 (12,2); Farthinghoe, 7 & 8 Ric I, p. 34 & Chanc. Roll, p. 190 (12,1).

(For Northumberland, see p. 415 below.)

Nottinghamshire

Clipston, 12 Hen II, p. 53 (6,0); Stapleford, 30 Hen II, p. 99 (12,0); Worksop, 30 Hen II, p. 100 (8,0); Gringley on the Hill, 30 Hen II, *ibid* (8,0); Nottingham Castle, 31 Hen II, p. 116 (8,0).

Oxfordshire

Great Tew, 13 Hen II, pp. 12, 13 (48,5); 'Norton', 13 Hen II, *ibid* (50,4); Benson (or Bensington), 6 Ric I, p. 88 (24,2); Bloxham, 7 Ric I, p. 38 (8,0);



Benson, 7 Ric I, ibid (16,0); Chalgrove, 7 Ric I, p. 43 (50,4); Deddington, 7 Ric I, ibid (54,6); Worton, 7 & 8 Ric I, pp. 43-4 and Chanc. Roll, p. 202 (12,1); Standlake, 7 & 8 Ric I, p. 44 & Chanc. Roll, p. 203 (8,0); Rotherfield Greys, 7 & 8 Ric I, p. 44 & Chanc. Roll, p. 203 (13,1); Dornford Farm (in Wootton), 7 & 8 Ric I, p. 44 & Chanc. Roll, p. 203 (7,1); Great Tew, 7 Ric I, p. 44 (24,2); Mapledurham, 7 Ric I, ibid (16,2); Chinnor, 7 Ric I, ibid (16,0); Sydenham, 7 & 8 Ric I, p. 44 & Chanc. Roll, p. 203 (24,0); Mixbury, 7 Ric I, p. 46 (24,0); Horsepath, 7 & 8 Ric I, p. 46 & Chanc. Roll, p. 204 (14,1); North Leigh, 7 Ric I, p. 47 (16,2); Asthall, 7 & 8 Ric I, p. 47 & Chanc. Roll, p. 204 (32,2); Bampton, 8 Ric I, Chanc. Roll, p. 212 (8,0).

### Somerset

'Marston' (Magna or Bigot?), 17 Hen II, p. 12 (10,1); Somerton, 32 Hen II, p. 140 (24,1); 'Bikehilla' or 'Dikehilla' (Bickenhall?), 32 Hen II, ibid (20,1); Huntspill, 32 Hen II, ibid (6,1); 'Hamma' (High Ham?), 32 Hen II, p. 38 (8,1); Exton and Hawkridge, 32 Hen II, p. 39 (8,1); Carhampton, 32 Hen II, ibid (20,2); Bath and King's Barton (in Bath), 32 Hen II, p. 46 (24,2); Somerton, 32 Hen II, p. 228 (24,1); Cheddar, 32 Hen II, ibid (12,0); Congresbury, 32 Hen II, ibid (6,1).

### Staffordshire

'Brom' (King's Bromley?), 13 Hen II, p. 57 (8,0); Penkridge, 18 Hen II, p. 104 (16,1); Penkhull, 1 John, p. 163 (16,2); Wolstanton, 1 John, ibid (16,1); Meretown, 1 John, ibid (6,0); Tettenhall, 1 John, ibid (8,0); Alrewas, 1 John, ibid (8,1).

### Suffolk

Orford, 17 Hen II, p. 4 (6,2); Redlingfield, 8 Ric I, Chanc. Roll, p. 121 (24,1).

### Surrey

Kingston (upon Thames), 13 Hen II, p. 203 (10,1); Paddington, 31 Hen II, p. 239 (12,1); Bramley, 7 Ric I, p. 37 (18,0); Gomshall, 7 Ric I, p. 49 (12,0); Beddington, 7 Ric I, ibid (3,0); Woking, 7 Ric I, p. 251 (10,0).

### Sussex

Bosham, 13 Hen II, p. 36 (34,3); 'Burna', 13 Hen II, p. 37 (20,2); 'lands of Richard portarii', 13 Hen II, ibid (8,1); South Heighton, 13 Hen II, pp. 37-8 (24,3); Beddingham, 13 Hen II, p. 38 (24,2); 'Blechinton' (East?

or West? Blatchington), 17 Hen II, p. 128 (10,1); Offham and Preston, 31 Hen II, pp. 171-2 (18,4); valley of Singleton, 7 Ric I, p. 37 (84,4); Westbourne, 7 Ric I, *ibid* (12,1); Stoughton, 7 Ric I, *ibid* (12,0); Barcombe, 7 & 8 Ric I, p. 49 & Chanc. Roll, p. 201 (20,4).

#### Warwickshire

Dorsington, Broom, and Milcot, 13 Hen II, p. 163 (40,5); Broom, 34 Hen II, p. 119 (13,1); Meon (in Quinton), 7 Ric I, p. 56 (16,1); Whichford, 7 Ric I, p. 58 (24,2).

#### Wiltshire

Westbury, 17 Hen II, p. 23 (32,0); 'Terra bataille', 19 Hen II, p. 106 (2,0); Cheverell, 31 Hen II, p. 195 (8,1); Colerne, 31 Hen II, *ibid* (24,2); Heytesbury, 7 Ric I, p. 45 (5,1); Westbury, 7 Ric I, *ibid* (24,2); Broughton (Giffard), 7 Ric I, *ibid* (16,0); Corsham, 7 Ric I, *ibid* (8,2); Chippenham, 7 Ric I, *ibid* (24,0); 'Cumba', 7 Ric I, pp. 45-6 (16,0); Calstone (Wellington), 7 Ric I, p. 46 (16,0); Marlborough, 8 Ric I, Chanc. Roll, p. 33 (32,1).

#### Worcestershire

Severn Stoke, 17 Hen II, p. 98 (24,2); Martley, 7 Ric I, p. 57 (4,0).

#### Yorkshire

'Wardra' or Wartra', 12 Hen II, p. 43 (40,5); Ouseburn, 12 Hen II, *ibid* (10,2); Tickhill, 12 Hen II, p. 50 (40,5); 'Lambelea', 12 Hen II, *ibid* (16,2); Cowthorpe and 'Bodingelea', 14 Hen II, p. 80 (12,0); Drifffield, 26 Hen II, p. 62 (11,0); Tickhill, 9 Ric I, p. 153 (25,0).<sup>5</sup>

#### County Unknown

'Lands of Jordan de Buisseio' (in Lincs?), 9 Hen II, p. 73 (184,21); 'Muna' (in Glos or Warks?), 12 Hen II, p. 78 (16,1); 'Weston' (Beds or Bucks?), 13 Hen II, p. 103 (16,1); 'Traveia' and 'Bruha' (Beds or Bucks?), 13 Hen II, *ibid* (3,0); 'Akelai' (Beds or Bucks?), 17 Hen II, p. 62 (10,2); 'Lands of William de Heriz (Notts or Derbys?)', 18 Hen II, p. 8 (28,3); 'Wicha' (Norfolk or Suffolk?), 22 Hen II, p. 60 (18,2); 'Sefeld' (poss. Sheffield), 30 Hen II, p. 100 (8,1); 'Honor of Gloucester', 30 Hen II, p. 111 (44,1); 'Land which was Thomas de Muscamp's' (Surrey?), 30 Hen II, p. 155 (66,11); 'Honor of the Constabulary in Surrey', 30 Hen II, *ibid* (83,17); 'Honor of the Constabulary of Berkshire', 31 Hen II, p. 27 (58,35); 'Various manors (in Berks?)', 31 Hen II, *ibid* (25,0); 'Lands which were

Widonis de Rocheford's' (Norfolk or Suffolk?), 31 Hen II, p. 43 (45,23); 'Honor of Glos', 31 Hen II, p. 155 (49,9); 'Lands of the Bishop of Lincoln (in Rutland?)', 32 Hen II, p. 84 (11,1); 'Brugis' (Dorset or Somerset?), 32 Hen II, pp. 140-1 (8,1); 'Redersheda' (in Honor of Glos), 32 Hen II, p. 201 (6,5); 'Land which was Roger filii Raanulfi's' (Notts or Derbys?), 33 Hen II, p. 172 (8,0); 'Lands of Albert Gresle' (prob. Lincs), 34 Hen II, p. 6 (13,10); 'Honor of William Peverell of Nottingham', 7 Ric I, p. 23 (56,1); 'Neweton' (Dorset or Somerset?), 7 Ric I, p. 38 (8,1); 'Unnamed manor in Cornwall or Devon', 7 Ric I, p. 47 (12,2); 'Nieweton' (Norfolk or Suffolk?), 7 Ric I, p. 51 (8,6); 'Honor of Lancaster', 8 Ric I, Chanc. Roll, p. 98 (120,15).

#### Northumberland

'Bolda' (Belford?) and Spindlestone, 13 Hen II, p. 73 (8,1); 'Hertelawa', 13 Hen II, *ibid* (8,1); 'Manors in the farm (firma) of Northumberland', 33 Hen II, p. 182 (42,3); Ellingham, 34 Hen II, p. 5 (5,0); Howick, 34 Hen II, *ibid* (4,0); 'Kelesego', 34 Hen II, *ibid* (32,0); 'land that Henry de Valoignes held', 34 Hen II, *ibid* (48,0); Bamburgh, 8 Ric I, Chanc. Roll, p. 92 (24,0).

#### FOOTNOTES

1. Refers to the page number of the Pipe Roll Society volume for the year indicated, unless otherwise specified.
2. Where two references for succeeding years are given, the draught animals in each are added together, as indicated on p. 52 above.
3. Lands of Thomas Sancto Walerico in Westbury; see also Chanc. Roll, p. 191.
4. Stock sold rather than bought.
5. Not included here is the draught stock listing for the honour of Count Conan of Richmond in 1176-7, as it was impossible to separate the working horses from those used for riding and other purposes (Pipe Roll 23 Hen II, pp. 81-2).

## APPENDIX C

### Demesne Account Samples A (1250-1320) and B (1350-1420)

#### Introduction

##### 1) Collection

For the gathering of data for Samples A and B the basic aim was to obtain as broad a geographical spread as possible, with the hope of acquiring samples which reflected the actual distribution of manorial demesnes in England at the time. To this end, in addition to those already published, the accounts of forty record offices around the country have been sampled.<sup>1</sup> Because of the vast numbers of documents involved and their scattered locations, the sampling process was inevitably sketchy. In particular, in those cases where long series of accounts were available for individual demesnes, it was usually only possible to select one or two of the accounts for analysis. In this case, normally the best preserved account was chosen, or one in the middle of the series. The degree to which such series of accounts were sampled usually depended upon the amount of time the author was able to spend in a particular record office. Indeed, in some cases pressures of time prevented the obtaining of even one account for a particular demesne. As a result, the 874 demesnes for which data was collected (162 of these demesnes being common to both samples) could easily have been many more. These difficulties, of course, introduced a definite - if unintentional - element of bias to the sampling, reflecting such things as the difficulty in getting to the more remote record offices, problems in ascertaining where the accounts actually are, speed of document production in the various record offices, and so on. Nevertheless, it is felt that the

sampling was probably as random as the existing state of archives in England would allow. As indicated in Figures 3.1 and 3.2, some parts of the country are very poorly represented in the samples, but it does appear that the actual distribution of arable demesnes at the time may have been somewhat similar (see pp. 115-6, 122-4). Finally, although we have indicated that only accounts have been included in the samples, there are a small number of cases (about thirty) which are based on documents that should strictly be called inventories (such as those relating to the forfeited lands of the Earl of Arundel in 1397; see Allington, etc., under Sussex in Part 2). Since these inventories often supplied as much relevant information as the accounts, they have been included in the samples.

#### ii) Format

The sources and data for Samples A and B are listed by county in Parts 1 and 2 following, with a separate entry for each demesne. The form of each of these demesne entries is as follows:

- a) Name of the village or town where the demesne was located.<sup>2</sup>
- b) The years of the accounts sampled for the demesne.
- c) The published or record office source.
- d) In brackets, a summary of the pertinent data, of which there are a possible total of eight items, as follows:
  1. The number of oxen (boves) at the end of the account year (averaged in the case of more than one account).
  2. The number of adult horses (affri, stotti, etc.) at the end of the account year (averaged in the case of more than one account). If any of these are specified as cart-horses (equi carectarii), the number of such horses is given in brackets immediately afterwards.
  3. The number of ploughs in normal operation, as determined according to p. 153. If indicated by the number of ploughmen only, the figure is bracketed.
  4. The types of plough in operation: W = wheeled; F = foot; S = swing. For the method of determining the type of plough

see pp. 161-3. Demesnes with both wheeled and foot ploughs are indicated by a W/F symbol.

5. The types of vehicle on the demesne: C = cart (carecta); P = plaustrum; Ca = carra, carrus, or currus; Cu = curtena (or cortena); T = tumbrel (tumberellus); B = biga; Q = quadriga; Co = curta, courta, or corta; Cpt = 'courtspot'; Dp = 'dungspot'; Cw = 'coupwayn'; Cp = 'coup'; Dr = 'draught'. Cases where more than one type of vehicle is found on a demesne are indicated as with plough type above: e.g., C/P/T = cart/plaustrum/tumbrel.
6. Demesne plough-team type and size, as determined from the draught stock totals (see pp. 138-9, 153-4 above for method): M = mixed team; O = all-ox team; AH = all-horse team (also indicates all-horse demesnes). The number in brackets, if any, after the M, O, or AH symbol refers to the calculated size of the plough-team (as per pp. 153-4). Cases where demesnes switched from one type of plough-team to another during the sample period are indicated by a split symbol: e.g., M/AH = a demesne going from mixed to all-horse plough-teams.
7. Type of ownership: L = lay; E = ecclesiastic. Lands recently of the Templars in the early 1300s or church land temporarily escheated to the king during a vacancy were still considered as ecclesiastic, even though they were now in lay hands, on the basis that substantial changes in practice were unlikely to have taken place during this recent and often temporary change of management.
8. Ox-shoeing: OS = demesnes where oxen were shoed.

Where information was not available for a particular item,<sup>3</sup> this is indicated by a dash, except in the case of ox-shoeing when the entry is simply left off, leaving a total of seven items.

### iii) Examples

- 1) From Hertfordshire, Sample A:

Weston, 1275-6, PRO SC6 873/6 (6,14(2),(2),S,C/T,M(9),L,OS)

The entry for Weston is based on the 1275-6 account in the Public

Record Office at London, ref. no. SC6 873/6. Interpreting the summarised data within the brackets from left to right, there were six oxen on the demesne at the end of the account period and also fourteen horses, of which two were cart-horses. Two regular ploughs were implied from the number of hired ploughmen, and these ploughs seem to have been of the swing variety, because there was no indication of either plough wheels or feet; the demesne also had both cart(s) and tumbrel(s). Using our method of calculation from Chapter 3 (pp. 138-9, 153-4), mixed plough-teams were the norm on this demesne with nine animals per plough. It was a lay demesne (held by Roger Bigod), and oxen were shod.

2) From Sussex, Sample B:

Tangmere, 1382-3, LP E.D. 976 (18,3,2,W/F,C/P,0(9),E,OS)

This entry for Tangmere is based on a 1382-3 account in Lambeth Palace, ref. no. E.D. 976. Interpreting the summarised data from left to right, there were eighteen oxen remaining at the end of the account period, as well as three horses, none of which was labelled as a cart-horse. Two ploughs were in normal operation as indicated by the maintenance costs. Plough wheels and ferra pedalia were both in evidence, indicating that both wheeled and foot ploughs were employed on the demesne; the demesne also had both cart(s) and plaustra. Using our method of calculation from Chapter 3, all-ox plough-teams were the rule on this demesne with nine oxen per plough. It was an ecclesiastical demesne (held by the archbishop of Canterbury), and oxen were shod.

3) From Buckinghamshire, Sample B:

West Wycombe, 1360-1, 1381-2, 1406-7, HRO Eccles. 2 159371, fos. 18-9, 159388, fos. 14-15v, 159410, fos. unnumbered (0, 21(5),23, W,C,AH(6),E)

This entry for West Wycombe is based on three accounts taken from the series of pipe rolls for the bishopric of Winchester held at the Hampshire Record Office in Winchester, ref. no., Eccles. 2, etc. As indicated by the data in brackets, the draught stock at the end of the year for these three accounts averaged at no oxen

and twenty-one horses, of which five were cart-horses. There was an average of  $2\frac{1}{2}$  regularly maintained ploughs (three in 1360-1 and 1381-2, two in 1406-7). Wheeled ploughs were employed on this demesne, as indicated by the purchase of plough wheels in all three accounts; plough feet (or ferra pedalia) are also indicated in the 1360-1 account, but as this involved only ~~two~~ one of three accounts (i.e., less than half) it was not entered in the overall figures. Carts were the only vehicles present. Being an all-horse farm, the demesne employed all-horse plough-teams, for which there was a calculated six animals to a plough. It was, of course, an ecclesiastical demesne, belonging to the bishop of Winchester, and, being all-horse, no oxen were shod.

#### FOOTNOTES

1. The author visited thirty-five of these record offices, and relied on transcripts kindly supplied by others for accounts from <sup>the</sup> remaining five.

2. As in Appendix B, unidentified demesnes or demesnes of uncertain location are given in inverted commas.

3. Usually because of a deficiency or defect in the account, such as a hole, tear, stain, patch of faded writing, or because the account simply omitted to give information on a particular item or was ambiguous. Problems also arose with the use of abbreviated transcript material lent by others (as acknowledged by footnotes in Parts 1 and 2), much of which, for reasons of time and expense, I was not able to check for myself. Here, there are occasional pieces of information that may have been in the accounts but are not recorded in this appendix. This in no way casts any blame on those who lent me the material, since they were simply noting down information for their own research specialities rather than mine, but some omissions may have occurred. It was felt, however, that the benefits of using this possibly incomplete material far outweighed the disadvantages of not using it at all. As with other cases of incomplete or imperfect data, they have been indicated by a dash where applicable and have been excluded from the pertinent analyses.



Part 1: Demesne Accounts, Sample A (1250-1320)Bedfordshire

Sharnbrook, 1307-8, PRO SC6 741/29 (8,4,-,F,-,M,E); (Little) Staughton, 1307-8, ibid (6,7(1),(3),F,C,M(4),E); Millbrook, 1307-8, ibid (4,2,-,-,-,M,E); Swanton (in Harrold), 1307-8, ibid (18,14(2),(4),F,C,M(8),E); Barton (in the Clay), 1284-5, PRO SC6 740/1 (12,7(3),(2),S,C,M(8),E); Eaton Bray, 1256-7, PRO SC6 1094/11, fos. 17v-18 (24,3(3),3,S,C,O(8),L); Shillington, 1314-5, PRO SC6 741/19 (29,12(4),-,-,C,M,E); Sundon, 1296-7, Earldom of Cornwall, 1, pp. 6-12 (18,8(2),(3),-,C,M(8),L); 'Houghton' (Conquest or Regis?), 1256-7, PRO SC6 1094/11, fos. 18-18v (16,2(2),(2),F,C,O(8),L).

Berkshire

Avington, 1295-6 and 1304-5, PRO DL29 1/1, fos. 11 & 11v and 1/2, fos. 21 & 21v (8,3,1,S<sup>1</sup>,-,O(9),L,OS); Upton (with Blewbury), 1273-4 and Easter, 1279, PRO SC6 751/13 and Farr, p. 230 (18,3,-,W<sup>2</sup>/F<sup>2</sup>,C<sup>2</sup>,O,L); Letcombe Regis, 1273-4, PRO SC6 751/13 (27,2,-,W/F,C,O,L); Wargrave, Waltham St Lawrence, and Culham, 1286-7, HRO Eccles. 2 159308, fos. 16-17v (27,17(2),7,W/F,C,M(6),E); Billingsbear (3¼ miles NE of Wokingham), 1286-7, ibid, fo. 17v (8,2,1,F,C,O(9),E); Brightwell, 1286-7, ibid, fos. 19-19v (29,15(3),-,W,C,M,E); Harwell, 1286-7, ibid, fo. 20 (24,2,3,W,C/Ca,O(8),E); Church of Faringdon, prob. 1269-70, Hockey, pp. 55-8 (10,1,1,S,C,O(9),E); Wyke (near Westbrook in Faringdon), prob. 1269-70, ibid, pp. 76-83 (67,8,-,S,C,O,E); Coxwell, prob. 1269-70, ibid, pp. 88-97 (45,10,-,S,-,O,E); Combe, 1306-7 and 1307-8, Abbey of Bec, pp. 146-71 (29,9(4),4,W/F,C,O(9),E); Eaton Hastings Church, 1298-9, PRO SC6 748/6 (8,2,-,F,C,O,L); Speen, 1272-3, PRO SC6 750/22 (12,4,2,W/F,C,O(7),L); Woodspeen ('Bodespenes'), 1272-3, ibid (9,2,(1),W/F,C,O(9),L); Bray, 1297-8, PRO SC6 742/4 (16,2,(2),W,C,O(8),L); Hampstead Marshall, PRO SC6 748/19 (24,9(3),3,W/F,C,M(10),L); Hampstead Ferrers (now Hampstead Norris), 1300-1, WAM 4535 (18,22(6),-,S,C/P,M,-).

Buckinghamshire

Beamond (in Little Missenden), 1278-9, PRO SC6 759/17 (2,11,-,-,C,AH,E); Chesham, 1269-70, PRO SC6 760/1 (-,-,-,F,C,-,-); Wescott, 1288-9, PRO SC6 763/16 (14,4,-,F,C,O,E); Brill, 1275-6 and 1278-9, PRO SC6 1089/6, m. 1v and 759/30 (7,3,1,S,C,M(9),L); Langley Marish, 1275-6 and 1313-4, PRO SC6 1089/6, m. 1 and 761/17 (22<sup>3</sup>,18(4)<sup>3</sup>,3,W/F,C,M(12),L); Wyrardisbury (now Wraysbury), 1275-6 and 1313-4, ibid (12<sup>3</sup>,7(1)<sup>3</sup>,2,W/F,C,M(9),L); West

Wycombe, 1256-7, 1286-7, 1300-1, 1309-10, 1313-4, 1315-20 (5 accounts), HRO Eccles. 2 159292, fos. 5v-6, 159308, fos. 17v, 21, 159312, fos. 11-12, 159325, fos. 12-12v, 159328, fos. 21-22, 159330, fos. 24v-25v, 159331, fos. 13v-14v, 159332, fos. 15-15v, 159333, fos. 12-12v, 159335, fos. 9-9v (12<sup>4</sup>, 14<sup>4</sup>(2<sup>4</sup>), 3<sup>4</sup>, S<sup>4</sup>, C, M/AH(8<sup>4</sup>/-), E); Ivinghoe, 1286-7, HRO Eccles. 2 159308, fos. 15-6 (32, 12(2), 5, S, C/Ca, M(8), E); Morton (now Moreton Farm,  $\frac{1}{2}$  mi. E of Ford, in Dinton), 1286-7, *ibid.*, fos. 21v, 19 (19, 8, 3, S, C, M(8), E); Iver, 1296-7, Earldom of Cornwall, 1, pp. 27-30 (6, 3(1), (1), S, -, M(8), L); Cippenham, 1296-7, *ibid.*, pp. 31-40 (23, 8(2), 3, -, -, M(10), L); Steeple Claydon, 1280, Cart. Os. Abb., vi, pp. 185-6 (31, 7(3), -, -, -, 0, E); Stone, 1280, *ibid.*, pp. 186-8 (24, 8, -, -, -, 0, E); Oving, 1280, *ibid.*, pp. 188-9 (6, 2, -, -, -, 0, E); Turweston, 1293-4, WAM 7755 (14, 8(2), -, F, C, M, E); Halton, 1306-7, LP E.D. 474 (14, 5(1), (2), F, C, M(9), E).

#### Cambridgeshire

Grantchester ('Grantsete'), 1295-6, PRO DL29 1/1, fos. 10 & 10v (2, 6, 1, S, C, M(7), L); Ditton Valence (near Woodditton), 1300-1, PRO SC6 766/15 (6, 12(1), (2), S, C, M(9), L); Kennett, 1280-1, PRO SC6 768/13 (19, 11(2), (4), S, C, M(7), L); Soham, 1272-3, PRO SC6 770/1 (7, 14(2), (3), S, C, M(6), -); Meldreth, 1291-2, 1292-3, 1293-4, 1295-6, 1297-8, 1298-9, 1299-1300, GLRO H1/ST/E95 (8, 5(3), -, S<sup>5</sup>, C<sup>6</sup>, M, E); (Dry) Drayton, 1258-9, 1267-8, 1314-5, Page, pp. 174-6, 215-9, 226-9 (25, 10, 4, S, C, 0(8), E); Oakington, 1258-9, 1267-8, 1292-3, 1314-5, *ibid.*, pp. 176-9, 212-5, 223-6, 229-33 (12, 5, (2), S, C, M(8), E); Cottenham, 1258-9, 1267-8, 1314-5, *ibid.*, pp. 179-81, 219-23, 233-7 (14, 6, (2), S, C, M(9), E); Wisbech Barton, 1314-5, CUL Ely Dioc. Records D8/1/3 (40, 6, -, F, C, 0, E); Downham, 1318-9, *ibid.*, D10/2/2 (14, 7(2), (2), F, C, M(10), E); Harston ('Hardleston'), 1314-5, BL Add. Ch. 18552 (4, 5(1), (1), S, C, M(8), L); Melbourn, 1317-8, BL Add. Ch. 25866 (8, 6(2), (2), S, C, M(6), -); Gamlingay, 1294-5 and 1298, MCL Nos. 5361 and 5356, as in B.C. Lowry, 'The Administration of the Estates of Merton College in the Fourteenth Century' (Oxford University D. Phil. thesis, 1934), pp. 56, 232 (14, 7(3), -, -, -, M, E).<sup>7</sup>

#### Cheshire

Frodsham, 1315, PRO SC6 801/12 (34, 5, -, S, C/P, 0, L).

#### Cornwall

St Germans, 1291 and 1310, PRO SC6 1138/1 and Hale and Ellacombe, p. 17 (19, 4, (2), S, P, 0(10), E); Penryn, 1310, Hale and Ellacombe, p. 18 (20, 5, -, -, P, 0, E); Tregear, 1291 and 1310, PRO SC6 1138/1 and Hale and Ellacombe,

p. 18 (24,6,(2),S,C,O,E); Kaergaul (Cargoll in Newlyn East), 1291 and 1310, *ibid* (35,7,(4),S,P,O(9),E); Lawhitton ('Lawntone'), 1310, Hale and Ellacombe, p. 19 (26,3,-,-,P,O,E); Pawton, 1291 and 1310, PRO SC6 1138/1 and Hale and Ellacombe, p. 19 (38,10,-,S,P,O,E); Egloshayle ('Berner Eglessel'), 1291 and 1310, *ibid* (24,3,(2),S,P,O(12),E); St Keverne (in the Lizard), prob. 1269-70, Hockey, pp. 102-8 (8,5,1,S,C,M(11),E).

### Cumberland

Cockermouth, 1270-1 and 1273-4, PRO SC6 824/8, fo. 1 and 824/9, fo. 2v (11,2,-,S,P,O,L); Birkby ('Bretteby') in Crosscanonby, 1270-1 and 1273-4, PRO SC6 824/8, fo. 2v and 824/9, fos. 2-2v (16,2,-,S,P,O,L); 'Bolton', 1296-7, PRO SC6 824/2 (-,-,(2),S,-,-,-).

### Derbyshire

Melbourne, 1313-4, PRO DL29 1/3, fos. 15 & 15v (16,4,2,S,C,O(9),L); Scropton, 1256-7, PRO SC6 1094/11, fos. 9v-10 (8,2,1,S,-,O(9),L); Belper, 1256-7, *ibid*, fo. 14v (10,1,1,S,P,O(9),L); Derby, 1256-7, *ibid*, fo. 15 (6,1,(1),S,-,O(6),L).

### Devon

Exminster, 1286-7, PRO SC6 827/39, fos. 1 & 1v (31,5(5),-,F,C/P,O,L); Tiverton, *ibid*, fo. 2v (25,4,-,S,P,O,L); Hemyock, 1286-7, *ibid*, fo. 2v (10,2,(1),S,P,O(10),L); Topsham, 1286-7, *ibid*, fo. 3 (12,1,(1),S,P,O(11),L); Plympton, 1286-7, *ibid*, fos. 4 & 4v (38,6,-,S,P,O,L); Honiton, 1286-7, *ibid*, fo. 5 (17,2,-,F,C/P,O,L); Bishop's Tawton, 1291 and 1310, PRO SC6 1138/1 and Hale and Ellacombe, pp. 14-5 (60,6,(5),F,P,O(12),E); (Bishop's) Nympton, 1291 and 1310, PRO SC6 1138/1 and Hale and Ellacombe, p. 15 (24,4,(1),S,P,O,E); Crediton, 1291 and 1310, *ibid* (46,3,-,S,P,O,E); Fluxton ('Floucston', 2 mi. SW of Ottery St Mary), 1291, PRO SC6 1138/1 (-,-,(1),S,-,-,E); Clyst<sup>8</sup>, 1310, Hale and Ellacombe, pp. 15-6 (24,5,-,-,-,O,E); Chudleigh, 1310, *ibid*, p. 16 (22,4,-,-,P,O,E); Bishopsteignton, 1310, *ibid* (42,3,-,-,P,O,E); Paignton, 1310, *ibid*, p. 17 (30,6,-,-,P,O,E); 'Bertona' (possibly Barton in St Mary Church, near Torquay), 1286-7, PRO SC6 827/39, fo. 3v (21,2,(2),F,P,O(10),L).

### Dorset

Canford, 1295-6 and 1304-5, PRO DL29 1/1, fos. 13 & 13v and 1/2, fos. 16 & 16v (22,5,2½,S<sup>9</sup>,C<sup>9</sup>/P<sup>9</sup>,O(10),L); Kingston Lacy, 1295-6 and 1304-5, PRO DL29 1/1, fos. 13 & 13v and 1/2, fos. 19 & 19v (41,7,4,S<sup>9</sup>,C<sup>9</sup>/P<sup>9</sup>,O(11),L); Steeple, 1318-9, PRO SC6 833/1 (23,2,-,F,C/P,O,L); Wyke with Melcombe,

1294-5, PRO SC6 834/22 (45,4,-,-,C/P,O,L).

### Durham

Finchale, 1307-1317 (8 accounts), SS, vi, pp. ii, iii, iv, vi, vii, viii, ix, xi (15,3,2<sup>10</sup>,-,C<sup>10</sup>,0(9<sup>10</sup>),E); Haswell, 1303, 1307, *ibid*, pp. i, ii (23,2,3,-,-,0(7),E); Wingate, 1303-1317 (6 accounts), *ibid*, pp. i-ii, v, vi, x, xii (38,4,6<sup>11</sup>,-,C<sup>12</sup>/P<sup>12</sup>,0(7<sup>11</sup>),E); Thorpe Thewles, 1303-1317 (5 accounts), *ibid*, pp. i, iii, v, x, xii (18,3,-,-,C<sup>12</sup>/P<sup>12</sup>,0,E); Jarrow, 1303, 1310, 1313, SS, xxix, pp. 1, 2, 12 (31,7,-,-,0,E); Bewley, 1304-5, DCD Enrolled Manors 1303-5 (115,12,(11),F,C/P/Ca,0(10),E); Bellasis, 1304-5, *ibid* (43,7,(4),F,C/P,0(11),E); Pitlington, 1304-5, *ibid* (43,9,-,S,C/P,0,E); Bearpark, 1304-5, *ibid* (22,3,-,S,C/P,0,E); Billingham, 1304-5, *ibid* (29,5,(3),F,C/Ca,0(10),E); Ketton, 1304-5, *ibid* (54,8,(6),S,C/P,0(9),E); Rainton, 1304-5 (16,2,(2),-,0(8),E); Westoe, 1304, *ibid* (33,4,-,F,C/P/Ca,0,E); Muggleswick, 1303-4, *ibid* (7,0,(1),F,P,0(6),E); Wardley, 1303-4, *ibid* (26,4,-,F,C/P/Ca,0,E); Houghall, 1301-2, 1302, *ibid* (17,2,(2),F,C/Ca,0(9),E); Dalton, 1305-6, DCD Bursar's Accounts (33,6,(5),F,C/Ca,0(7),E); Ferryhill, 1316-7, *ibid* (33,2,(4),F,C/P,0(8),E); Elvethall (near Durham), 1302-3, 1318, DCD Hostillar's Accounts (18,4,-,-,C/P/Ca,0,E).

### Essex

Chesterford, 1281-2, PRO SC6 837/16 (15,19(2),(4),S,C,M(8),L); Dovercourt, 1282-3, PRO SC6 840/3 (13,10(1),(2),S,C,M(11),L); Eastwood, 1276-7, PRO SC6 840/18 (17,14(2),3,S,C,M(10),L); (Great) Hallingbury, 1276-7, PRO SC6 843/13 (5,8(1),(1),-,C,M(12),L,OS); Widford, 1276-7, *ibid* (4,7(1),(1),F,C,M(10),L,OS); Couwyk (Quickbury in Sheering), 1276-7, *ibid* (5,8(1),(1),F,C,M(12),L,OS); Sutton, 1313-4, PRO SC6 847/11, fos. 1 & 1v (6,18,3,S,C,M(7),E); Chingford, 1313-4, *ibid*, fos. 2 & 2v (8,9(2),2,S,C,M(8),E); West Hanningfield, 1313-4, *ibid*, fos. 3 & 3v (5,4,1,S,C,M(8),E); Bocking, 1277, CCL Bedels Rolls (11,12(1),(2),S,C,M(11),E); Borley, 1276-7, *ibid* (6,13(1),(2),S,C,M(9),E,OS); Hadleigh, 1279, 1293-4, *ibid* (9,9,(2),-,C<sup>13</sup>,M(8),E,OS); Milton (Hall, near Prittlewell), 1294-5, *ibid* (8,10(2),(2),S,C,M(8),E); Lawling (near Mundon), 1280-1, *ibid* (8,13,(2),S,C,M(9),E); Newport, 1296-7, Earldom of Cornwall, i, pp. 48-54 (3,6,-,S,C,M,L,OS); Birdbrook, 1295-1319 (21 account-years), WAM 25398-25424 (15,16(3),3<sup>14</sup>,S<sup>14</sup>,C<sup>14</sup>,M(9<sup>14</sup>),E,OS<sup>14</sup>); Feering, 1271-2, 1302-3, WAM 25372, 25608 (12,21(1),3<sup>14a</sup>,S,C,M(12<sup>14a</sup>),E,OS); Kelvedon, 1294-5, WAM 25779 (11,21(1),(3),S,C,M(10),E,OS); Borley, 1280-1, PRO SC6 1118/21 (15,10(1),(2),S,C,M(12),L,OS); Thundersley, 1314, PRO SC6 847/23 (4,8(2),-,-,C,M,-); Wivenhoe, 1310, 1315-6, ERO T/B 122 (5,4,(1),S,C,M(8),L)<sup>15</sup>; Orsett, 1303, Hale and Ellacombe, pp. 70-2 (12,21(2),-,-,M,E);

Laindon, 1303, *ibid*, pp. 72-4 (6,12,-,-,-,M,E); Crondon, 1303, *ibid*, pp. 74-5 (4,5,-,-,-,M,E); Chelmsford, 1303, *ibid*, pp. 75-6 (6,13(2),-,-,C,M,E); Wickham Bishops, 1303, *ibid*, pp. 76-7 (4,5(1),-,-,C,M,E); Southminster, 1303, *ibid*, pp. 77-83 (33,35(3),-,-,-,M,E); Clacton, 1303, *ibid*, pp. 83-6 (18,14(3),-,-,C,M,E); Copford, 1303, *ibid*, pp. 86-7 (11,13(1),-,-,C,M,E); Rayne, 1303, *ibid*, pp. 88-9 (8,12,-,-,C,M,E).

### Gloucestershire

Alveston, 1281-2, 1285-6<sup>16</sup>, 1289-90<sup>16</sup>, 1291-2<sup>16</sup>, PRO SC6 850/2-5 (9,2,1<sup>17</sup>, S<sup>17</sup>, C<sup>17</sup>/P<sup>17</sup>, O(10<sup>17</sup>), L); Todenham, 1281-2<sup>16</sup>, 1293-4<sup>16</sup>, 1297-8, 1311-2<sup>16</sup>, WAM 25906, 25921, 25927, GRO 1099 (26,3(2),(3<sup>18</sup>), F<sup>18</sup>, C<sup>18</sup>/P<sup>18</sup>, O(9<sup>18</sup>), E); Hardwicke, 1288-9, WAM 8423 (30,9(6),5,F,C/P,O(7),E); Bourton(-on-the-Hill), 1285-1305 (16 account-years), WAM 8237, 8239-8255 (25,4(2),-,-,F<sup>19</sup>, C<sup>19</sup>, O,E); Horsley, 1292-3, PRO SC6 855/2 (40,8,-,-,S,C/P,O,E); Minchinhampton, 1306-7, PRO SC6 856/15 (24,7,-,-,S,-,O,E); Berkeley, 1305-6, PRO SC6 850/12 (57,7,9,F,C/P/Ca,O(6),L); Cam and Coaley, 1296-7, CUL Berkeley MSS (43,4,-,-,-O,L)<sup>20</sup>; Symondsham (Symond Hall in Wotton-under-Edge), 1283-4, *ibid* (14,0,-,-,-,O,L)<sup>20</sup>; Bibury, 1280, Cart. Os. Abb., vi, pp. 193-5 (13,2,-,-,-,O,E); Henbury(-in-Salt-Marsh), 1302-3, RBW, iv, p. 500 (-,-,-,F,Ca,-,E); Bibury, 1302-3, *ibid*, p. 505 (-,-,-,F,-,-,E); Withington, 1302-3, *ibid*, p. 507 (-,-,-,-,C/Ca,-,E); Bishop's Cleeve, 1302-3, *ibid*, p. 509 (-,-,-,F,C/Ca,-,E); Paxford, 1302-3, *ibid*, p. 539 (24<sup>21</sup>, 2<sup>21</sup>, -,-,-,C,O,E); Blockley, 1302-3, *ibid*, pp. 541-2 (25<sup>22</sup>, 3<sup>22</sup>, -,-,F,C/Ca,O,E).

### Hampshire

Anstey, 1309-10, PRO SC6 978/3 (10,6,(2),F,C,M(7),E,OS); Odiham, 1275-6, PRO SC6 979/5 (20,10(2),-,-,W,C,M,-); Bowcombe (Isle of Wight), 1269-70, PRO SC6 984/2, fos. 2 & 2v (31,4,3,W,C,O(10),L); Niton (Isle of Wight), 1269-70, *ibid*, fo. 3 (8,0,1,W,-,O(7),L); Pan (Isle of Wight), 1269-70, *ibid*, fo. 3v (10,1,-,-,W,-,O,L); Wootton (Isle of Wight), 1269-70, *ibid*, fos. 4 & 4v (20,2,-,-,W,-,O,L); Appleford (Isle of Wight), 1269-70, *ibid*, fo. 5 (16,1,(2),W,C,O(8),L); Shorwell, (Isle of Wight), 1269-70, *ibid*, fo. 7 (16,1,(2),W,C,O(8),L); Chillerton (Isle of Wight), 1269-70, *ibid*, fo. 7v (21,1,-,-,W,C,O,L); Crawley, 1251-1320 (51 accounts), Gras and Gras, pp. 212-29, 239-68, 373-84, HRO Eccles. 2 159308, fos. 9-9v (31,9(2),5<sup>23</sup>, W<sup>24</sup>, C<sup>24</sup>, O(9<sup>23</sup>), E); Mardon (near Hursley), 1286-7, HRO Eccles. 2 159308, fos. 8-8v (66,11(5),6,W/F,C,O(12),E); Overton, 1286-7, *ibid*, fos. 9-10v (18,12(2),4,W,C,M(7),E); North Waltham, 1286-7, *ibid*, fos. 10v-11 (17,12(2),3,W,C,M(9),E); Ashmansworth, 1286-7, *ibid*, fo. 11 (19,7(2),3,W,C,M(8),E); East Woodhay, 1286-7, *ibid*, fos. 11-11v (21,8(2),3,W,C,M(9),E); Ecchinswell

(or Itchingswell), 1286-7, *ibid.*, fos. 11v-12 (26,2(2),3,W,C,O(9),E); Burghclere, 1286-7, *ibid.*, fos. 12-12v (52,2(2),6,S,C/Ca,O(9),E); High Clere, 1286-7, *ibid.*, fos. 12v-13 (19,4(2),3,W,C,O(7),E); Twyford and Marwell, 1286-7, *ibid.*, fos. 14-14v (63,16(4),7,W,C,O(11),E); Bishopstoke, 1286-7, *ibid.*, fos. 14v, 25 (28,3,2,W,C,O,E); Fareham, 1286-7, *ibid.*, 18-18v (27,8(2),-,W/F,C,O,E); Havant, 1286-7, *ibid.*, fos. 18v, 23 (9,5(2),2,W,C,M(6),E); Bentley, 1286-7, *ibid.*, fo. 22v (32,2(2),3,-,C,O(11),E); Bitterne, 1286-7, *ibid.*, fo. 23v (20,2(2),2,W,C/P,O(10),E); Bishop's Waltham, 1286-7, *ibid.*, fos. 25-26v (48,5(2),5,W/F,C,O(10),E); Droxford, (in Bishop's Waltham), 1286-7, *ibid.*, fos. 26v-27 (15,6(2),3,W/F,C,M(6),E); East Meon Manor, 1286-7, *ibid.*, fos. 27-28 (55,26(2),11,W,C,M(7),E); East Meon Church, 1286-7, *ibid.*, fos. 28-28v (0,8(2),1,S,C,AH(6),E); Hambledon, 1286-7, *ibid.*, fos. 29-29v (27,9(2),4,W,C,M(9),E); Bishops Sutton, 1286-7, *ibid.*, fos. 30-30v (23,10(2),3,W,-,M(10),E); Cheriton, 1286-7, *ibid.*, fos. 30v-31 (32,10(2),5,W,C,M(8),E); Beauworth, 1286-7, *ibid.*, fos. 31-31v (19,3,2,W,C,O(10),E); Old Alresford, 1286-7, *ibid.*, fos. 31v-32 (18,2,2<sup>25</sup>, W/F,C,O(7),E); Wield, 1286-7, *ibid.*, fos. 32-32v (11,7,-,W,C,M,E); Wolvesey, 1286-7, *ibid.*, fo. 34 (12,3(3),1,W/F,C,O(12),E); Burgate, prob. 1269-70, Hockey, pp. 108-13 (14,3,1,S,-,O,E); Soberton, prob. 1269-70, *ibid.*, pp. 113-20 (5,22,3,W,-,AH(8),E); Colbury, prob. 1269-70, *ibid.*, pp. 120-4 (14,5,1,S,C,O,E); Holbury (between Beaulieu and Southampton Water), prob. 1269-70, *ibid.*, pp. 131-6 (20,12,2,S,C,M,E); Sowley, prob. 1269-70, *ibid.*, pp. 136-9 (30,13,2,S,C,M,E); St Leonards, prob. 1269-70, *ibid.*, pp. 139-45 (128,55,10,S,C,M,E); Boverly ('Beufre'; less than a mile S of Beaulieu), prob. 1269-70, *ibid.*, pp. 146-51 (124,49,9,S,C,M,E); Hartford (about 1 mi. N of Beaulieu), prob. 1269-70, *ibid.*, pp. 152-7 (98,39,7,S,C,M,E); Otterwood, prob. 1269-70, *ibid.*, pp. 158-63 (55,20,5,S,C,O,E); Farrington, 1310, Hale and Ellacombe, p. 13 (33,15,-,-,C,M,E).

#### Herefordshire

Clifford, 1304-5, PRO DL29 1/2, fos 18 & 18v (31,3,5,S,C/P,O(6),L); Garway (with members), 1312-3, PRO SC6 860/31 (52,9,9,S,C/P,O(6),-).

#### Hertfordshire

Meesden, 1315-6, PRO SC6 867/4 (6,13(2),(3),F,C,M(6),L,OS); Shenley, 1285-6, PRO SC6 868/15 (19,18(2),(4),F,C,M(9),-,OS); Standon, 1304-5, PRO SC6 868/17 (16,18(2),(4),S,C,M(8),L); Stevenage, 1284-5, PRO SC6 870/9 (4,13,-,F,C,M,E,OS); Weston, 1275-6, PRO SC6 873/6 (6,14(2),(2),S,C/T,M(9),L,OS); Wheat-hampstead, 1272-3, 1306-7, HertsRO D/ELW M79, 126 (0,24(6),3<sup>26</sup>,F,C,AH(5),E);

(Much) Wymondley, 1280-1, 1301-2, HertsRO 57520a, 57522 (9,16(1),-,S,C,M,L,OS); Berkhamsted, 1296-7, Earldom of Cornwall, i, pp. 12-27 (0,18(5), (2),W,C,AH(7),L); Aldenham, 1278-9, WAM 26026 (8,14(2),(2),S,C,M(10),E,OS); Amwell, 1290-1, WAM 26145 (7,11(1),-,F,C,M,E,OS); Ashwell, 1300-1, WAM 26288 (0,19(3),(4),F,C,AH(4),E); Kingsbourne (in Harpenden), 1273-4, 1298-9, WAM 8761, 8788 (2,13,(2<sup>27</sup>),F<sup>27</sup>,C<sup>27</sup>,AH(7<sup>27</sup>),E); Bishop's Stortford, 1303, Hale and Ellacombe, pp. 89-90 (6,12,-,-,C,M,E); Much Hadham, 1303, *ibid*, pp. 90-3 (24,28(2),-,-,C,M,E).

### Huntingdonshire

Morborne, 1258-9, Page, pp. 200-3 (20,12(2),5,S,B,M(6),E); Elton, 1286-7, 1307-8, PRO SC6 874/1, 4 (18,12(2),4,S,C,M(7),E); Holywell, 1307-8, PRO SC6 877/15 (12,7(2),-,S,C,M,E); Houghton, 1307-8, PRO SC6 878/17 (28,18(6), (4),S,C,M(10),E); Abbots Ripton, 1307-8, PRO SC6 884/1 (30,17(6),-,S,C,M,E); Upwood, 1297-8, PRO SC6 885/11 (-,-,-,S,C,-,E); (Old) Weston, 1297-8, PRO SC6 885/19 (15,15(6),4,S,C,M(6),E); Wistow, 1297-8, PRO SC6 885/30 (19,12(6), -,S,C,M,E); Warboys, 1297-8, PRO SC6 885/30 (19,12(6),-,S,C,M,E); Glatton, 1313-4, PRO SC6 876/14 (24,9(4),4,S,C,O(7),-); Rectory at Diddington, 1279-80, MCL No. 4375, as in Lowry, *op. cit.*, p. 209 (4,2(2),-,-,-,O,E); Slepe, 1307-8, PRO SC6 884/1 (18,10(4),-,S,C,M,E).

### Kent

West Peckham, 1283-4, PRO SC6 894/10 (12,10(1),2,S,C/P,M(11),-); Sharpness (in Upchurch), 1287-8, PRO SC6 896/16 (6,6,-,S,C,M,E); Yalding, 1312-3, PRO SC6 906/18 (14,4(2),-,W,-,O,-); Ospringe, 1292-3, PRO SC6 1027/21, fos. 12, 13, & 13v (4,17(3),(2),W,C,M(9),L); Adisham, 1289-90, 1317-8, CCL Bedels Rolls (11,20(3),-,W,C,M,E); Agney and Orgarswick (in Romney Marsh), 1283-4, 1318-9, *ibid* (0,14,-,-,C,AH,E); Appledore, 1297-8, *ibid* (0,5(1),(1),W,C,AH(4),E); Barksore (or Basser, in Halstow), 1282-3, *ibid* (7,6(1),-,W,C,M,E); Blean, 1297-8, *ibid* (7,2,-,S,C,O,E); Brook, 1290-1, *ibid* (13,2,-,W,C,O,E); Great Chart, 1272-3, 1298-9, *ibid* (24,10(2),(2<sup>28</sup>), W,C,M(9<sup>28</sup>),E); Little Chart, 1288-9, *ibid* (19,6(2),-,W,C,O,E); Cliffe, 1302-3, *ibid* (15,7(2),-,W,C,M,E); Ebony (on the Isle of Oxney), 1285-6, 1304-5, *ibid* (1<sup>29</sup>,10<sup>29</sup>,-,W,C,AH/M,E); Eastry, 1310-1, *ibid* (17,10(3), -,W,C,M,E); Elverton (in Stone, near Faversham), 1289-90, *ibid* (2,5(1), -,W,C,M,E); West Parleigh, 1290-1, *ibid* (13,11(3),-,W,C,M,E); Hollingbourne, 1290-1, *ibid* (18,14(3),(2),W,C,M,E,OS); Leysdown, 1284-5, *ibid* (6,2,-,W,Cu,O,E); Lydden, 1290-1, *ibid* (10,13,-,S,C,M,E); Loose, 1285-6, *ibid* (9,10(2), (2),W,C,M(9),E); Meopham, 1286-7, *ibid* (12,14(2),(2),W,C,M(12),E); Mersham,

1272-3, *ibid* (15,6(2),(2),S,C,M(10),E); Monkton, 1273-4, 1301-2, *ibid* (18,19(1),(5<sup>30</sup>),S<sup>30</sup>,C<sup>30</sup>,M(7<sup>30</sup>),E); Peckham, 1291-2, *ibid* (6,4(1),(1),W,C,M(9),E,OS); Ruckinge, 1314-5, *ibid* (8,7(1),(1),W,C/Ca,M,E); Orpington, 1314-5, *ibid* (10,8(2),(2),W,C,M(8),E); Copton (in Preston), 1311-2, *ibid* (0,8(2),(1),W,C,AH(6),E); Welles (or Westwell), 1291-2, *ibid* (17,15(3),(3),W,C,M(10),E); Westerham<sup>31</sup>, 1314, *ibid* (17,8(2),(2),W,C/P,M(12),E); Westerham<sup>32</sup>, 1293-1306 (11 account-years), WAM 26386, 26389-26402 (19,8(2),(3<sup>33</sup>),W<sup>33</sup>,C<sup>33</sup>/Cu<sup>33</sup>,M,E); Gillingham, 1273-4, BL Add. MS 29794 (8,6(2),-,W,Ca/Cu,M,E); Teynham, 1273-4, *ibid* (20,16(2),-,W,C/Cu,M,E); Westgate, 1273-4, *ibid* (0,17(3),-,W,C,AH,E); Reculver, 1273-4, *ibid* (2,12,(2),S,C/T,M(6),E); Wingham, 1273-4, *ibid* (27,33(5),(6),W,C,M(9),E); Wingham Barton, 1273-4, *ibid* (8,10(10<sup>34</sup>),(2),W,C,M(8)<sup>34</sup>,E); Aldington, 1273-4, *ibid* (12,15,-,W,P,M,E); Willop (in Aldington), 1273-4<sup>35</sup>, *ibid* (20,3,(2),W,Ca,O(10),E); Bishopsbourne, 1272-4, *ibid* (0,15(2),2,-,Cu,AH(7),E); Petham, 1273-4, *ibid* (0,9,(1),W,C,AH(8),E); Lyminge, 1273-4, *ibid* (8,10,-,W,C,M,E); Saltwood, 1273-4, *ibid* (7,1,(1),W,P/Ca,O(7),E); Otford, 1273-4, *ibid* (23,16(3),-,W,Cu,M,E); Bexley, 1273-4, *ibid* (19,6(2),(2),W,C/Cu,O(12),E); North Fleet, 1273-4, *ibid* (9,10(2),(2),S,C,M(9),E); Maidstone, 1273-4, *ibid* (13,12(2),(2),W,C/Ca,M(12),E); Charing, 1273-4, *ibid* (6,12,-,W,C/Ca,M,E); Boughton-under-Blean, 1273-4, *ibid* (8,10,-,W,C/Cu,M,E).

### Lancashire

West Derby, 1256-7, PRO SC6 1094/11, fo. 11v (17,2,1,S,-,O,L); Accrington, 1295-6, 1304-5, Lyons, pp. 1-3, 90 (14,1,-,S,P,O,L); Ightenhill (E of Padham), 1295-6, 1304-5, *ibid*, pp. 17-20, 95-6 (17,2,-,S,P,O,L); Standen (near Clitheroe), 1295-6, 1304-5, *ibid*, pp. 41-3, 91-5 (19,1,1<sup>36</sup>,S,P,O(12),L); Lytham, 1310, 1311, DCD Cell Accounts (24,0,-,-,O,E); 'Swinehurst' (possibly part of Shevington in Standish), 1256-7, PRO SC6 1094/11, fo. 11v (10,2,-,-,O,L);

### Leicestershire

(Castle) Donington, 1295-6, 1304-5, PRO DL29 1/1, fos. 6 & 6v and 1/2, fos. 12 & 12v (41,7,4,S<sup>37</sup>,C<sup>37</sup>/P<sup>37</sup>,O(11),L); Withcote, 1275-6, PRO SC6 1089/6, m.3 (3,3,(1),-,M(5),L); Stretton (en le Field), 1256-7, PRO SC6 1094/11, fo. 19 (6,3,(1),S,C,M(8),L); Barton (in the Beans), 1256-7, *ibid*, fo. 19 (4,2,1,S,C,M(5),L); Cold Overton, 1256-7, *ibid*, fos. 19-19v (18,6(2),3,S,C,O(7),L); Diseworth, 1256-7, *ibid*, fo. 21 (32,4,(4),S,-,O(8),L); Beaumanor (near Woodhouse), 1277-8, LeRO DG9/1954 (21,2,(2),P,C,O(10),L); Great Easton, 1309-10, NRO Fitzwilliam Charters 2389, fos.



27-28v (30,12(3),5.S,C,M(8),E).

### Lincolnshire

Sedgebrook, 1295-6, 1304-5, PRO DL29 1/1, fos. 1 & 1v and 1/2, fos. 14 & 14v (25,11,3<sup>36</sup>,S<sup>37</sup>,C<sup>37</sup>,M(9),L); Brocklesby, 1295-6, 1304-5, ibid, 1/1, fos. 9 & 9v and 1/2, fos. 10 & 10v (23,7,3,S<sup>37</sup>,-,0(9),L); (South) Thoresby, 1295-6, 1304-5, ibid, 1/1, fos. 9 & 9v and 1/2, fos. 11 & 11v (23,10,3,S<sup>37</sup>,-,M(10),L); Wathall ('Wath'; near Old Bolingbroke), 1295-6, ibid, 1/1, fos. 9 & 9v (9,4,2,S,C/P,0(6),L); (Old) Bolingbroke, 1295-6, 1304-5, ibid, 1/1, fos. 8 & 8v and 1/2, fos. 11 & 11v (19,4,1<sup>36</sup>,S<sup>37</sup>,-,0,L); Greetham, 1295-6, 1304-5, ibid, 1/1, fos. 8 & 8v and 1/2, fos. 10 & 10v (13,6,2,S<sup>37</sup>,C<sup>37</sup>/P<sup>37</sup>,M(9),L); Wrangle, 1295-6, 1304-5, ibid, 1/1, fos. 7 & 7v and 1/2, fos. 13 & 13v (15,5,1<sup>36</sup>,S<sup>37</sup>,C<sup>37</sup>/P<sup>37</sup>,0(12),L); Sutton (on Sea), 1295-6, 1304-5, ibid, 1/1, fos. 6 & 6v and 1/2, fos. 13 & 13v (68,11,6,S<sup>37</sup>,C<sup>37</sup>,0(12),L); Billingham, 1304-5, ibid, 1/2, fos. 14 & 14v (13,7,2,S,C,M(9),L); Horbling, 1304-5, ibid (12,6,2,S,-,M(8),L); Temple Bruer, 1315-6, PRO DL29 242/3882 (4,6,(2),S,C,M(5),L); Kirton in Lindsey ('Kirkton'), 1297-8, PRO SC6 1084/19, fos. 3 & 3v (31,1,(4),S,C/P,0(7),L); Holywell (in Caresby), 1275-6, 1294-5, PRO SC6 1089/6, m. 3v and 1090/3 (13,4(2),2<sup>38</sup>,F,C,0(8<sup>38</sup>),L); Long Bennington, 1294-5, PRO SC6 1090/3 (47,4(4),5,F,C,0(9),L); Frampton, 1295-6, PRO SC6 1116/9, fos. 4 & 4v (23,4,-,S,C,0,L); Dowdyke (near Sutterton), 1258-9, Page, pp. 182-4 (18,7,(3),S,B/Q,0(7),E); Whaplode, 1258-9, ibid, pp. 184-7 (45,7,6,S,C/P,0(8),E); Aswick Grange, 1258-9, ibid, pp. 190-3 (45,9,-,S,-,0,E); Langtoft, 1258-9, ibid, pp. 203-7 (21,7,4,S,C,0(6),E); Baston, 1258-9, ibid, pp. 207-9 (19,7,-,S,B/Q,0,E); Bowthorpe, 1258-9, ibid, pp. 209-10 (10,4,-,S,-,0,E); Bucknall, 1258-9, ibid, pp. 210-2 (8,3,-,S,-,0,E); Scotter (and Scotterthorpe), 1309-10, NRO Fitzwilliam Charters 2389, fos. 14-15v (30,6(6),3,-,C,0(10),E); Walcot (near Alkborough), 1309-10, ibid, fos. 15v-16 (4,3,1,-,C,M(6),E); Fiskerton, 1309-10, ibid, fos. 16v-17v (37,12(5),4,-,C,0(11),E); Stallingborough, 1309, ESuffRO HA53: 359/354 (23,11,(2),S,C,M,L); Wykes (1 mi. E of Donington), 1295-6, PRO SC6 1116/9, fos. 9 & 9v (28,4,(3),S,C,0(9),L); Swaton ('Swaneton'), 1295-6, 1304-5, PRO DL29 1/1, fos. 7 & 7v and 1/2, fos. 14 & 14v (24,10,3,S<sup>37</sup>,C<sup>37</sup>/P<sup>37</sup>,M(10),L); Rippingale, 1316-7, LiRO 3 ANC 3/1 (4,4,-,S,C,M,L).

### Middlesex

Colham, 1295-6, 1304-5, PRO DL29 1/1, fos. 11 & 11v and 1/2, fos. 17 & 17v (6,6,1,S<sup>37</sup>,C<sup>37</sup>,M(10),L); Edgware, 1295-6, 1304-5, ibid (7,6,1,S<sup>37</sup>,-,M(11),L); Isleworth, 1296-7, Earldom of Cornwall, i, pp. 40-8 (4,5(2),(1),W,-,

M(7),L); Knightsbridge, 1288-1313 (21 account-years), WAM 16380-16402 (9,9(2),-,F<sup>39</sup>,C<sup>39</sup>,M,E); Erbury ('Eye'; about a mile W of Westminster), 1273-4, WAM 26848 (10,11,2,S,C,M(9),E); Ashford, 1278-9, WAM 26856 (6,4(1), (1),S,C,M(9),E); Halliford (in Shepperton and Sunbury), 1292-3, WAM 27017 (5,6,(1),W/F,C,M(9),E); Laleham, 1294-5, WAM 27111 (18,6(2),(2),W/F,C, O(11),E); Hampstead, 1297-8, WAM 32373 (7,7,(1),F,C,M(12),E,OS); Harrow, 1273-4, BL Add. MS 29794 (32,15(4),4,W,C,M(11),E); Hayes, 1273-4, ibid (17,3,2,S,C,O(9),E); Sunbury, 1303, Hale and Ellacombe, pp. 66-7 (5,6(1), -, -, -,M,E); Haringay, 1303, ibid, pp. 64-6 (8,9(4),-, -, -,M,E); Fulham, 1303, ibid, pp. 61-4 (40,23(4),-, -, -,C,M,E); Stepney, 1303, ibid, pp. 94-6 (11,20(5),-, -, -,C,M,E).

### Norfolk

Acle, 1279-80, PRO SC6 929/7 (27,13,(4),W,C,M(9),L); Bircham, 1311-2, PRO SC6 930/2 (0,2,-,S,C,AH,L); Brancaster, 1303, PRO SC6 931/1 (0,7(2),-, -, C,AH,E); Bressingham, 1276-7, PRO SC6 931/23 (10,6,(2),S,C,M(7),L); Caistor (St Edmunds), 1279-80, PRO SC6 932/17 (4,4,(1),W,C,M(7),L); Crimplasham, 1304-5, PRO SC6 933/18 (4,2,-,S,C,M,L); Framingham, 1292-3, PRO SC6 935/28 (13,7(2),-,W,C,M,L); Halvergate, 1279-80, PRO SC6 936/7 (6,10,(3),W,C,M(5), L); Hanworth, 1279-80, PRO SC6 936/25 (12,6(2),(2),W,C,M(8),L); Hilgay, c.1286-1316<sup>40</sup>, PRO SC6 937/14 (14,9(3),(2),-,C,M(10),E); Lopham, 1279-80, PRO SC6 938/2 (27,14,(3),S,C,M(12),L); Poppenhoe (in Walsoken), 1291, PRO SC6 942/13 (12,8,-, -, -,M,E); Senges (or Seething), 1284, PRO SC6 943/10 (9,4,(1),S,C,O(11),L); Suffield, 1282, PRO SC6 944/4 (4,5,(2),W,C,M(4),L); (South) Walsham, 1281-2, PRO SC6 944/26 (5,6,(2),W,C,M(5),L); (Great) Moulton, 1276-7, PRO SC6 1002/18 (4,5,-,S,C,M,L); Forncett St Mary, 1272-1306 (13 account-years), F.G. Davenport, The Economic Development of a Norfolk Manor, 1086-1565, London (1906), pp. 33-5, xxx-xli (14,8,2<sup>41</sup>,W<sup>41</sup>, C<sup>41</sup>,M(10<sup>41</sup>),L); Catton, 1265-6, 1272-3, 1301-2, NNRO Ref. No. R234D (2<sup>42</sup>, 3<sup>42</sup>,(1<sup>43</sup>),-,C,M/AH(6<sup>43</sup>/-),E); Thornham, 1265-6, 1277-8, 1309-10, NNRO Ref. No. R232B (0,2,1,-,C,AH(2),E); Sedgeford, 1263-4, 1278-9, NNRO Ref. No. R233D (0,13,(4),-,C,AH(3),E); Gnatingdon (near Sedgeford), 1273-4, NNRO Ref. No. R233B (0,13,-,S,C,AH,E); Plumstead, 1265-6, 1277-8, 1288-9, 1298-9, 1312-3, NNRO Ref. No. R233D (6,7,(2<sup>44</sup>),W,C,M(6<sup>44</sup>),E); Hindringham, 1255-6, 1263-4, 1295-6, NNRO Ref. No. R233C (1<sup>45</sup>,14<sup>45</sup>,(3<sup>46</sup>/4<sup>47</sup>),W,C,M/AH(4<sup>46</sup>/4<sup>47</sup>), E); Hindolveston, 1255-6, 1287-8, ibid (7,15,(4<sup>48</sup>),W,C,M(5<sup>48</sup>),E); Gately, 1263-4, 1294-5, NNRO Ref. No. R233A (5,3,(2<sup>49</sup>),W,C,M(5<sup>49</sup>),E); North Elmham, 1272-3, 1287-8, ibid (0,4,-, -, -,C,AH,E); Martham, 1261-2, 1297-8, 1317-8, ibid (10,6,-,W,C,M,E); Eaton, 1263-4, 1294-5, ibid (4,10,(2<sup>50</sup>),W,C,M(7<sup>50</sup>),E);

Taverham, 1255-6, 1295-6, NNRO Ref. No. R232A (6,5,(2),W,C,M(5),E); Hemsby, 1272-3, 1294-5, 1318, NNRO Ref. No. R233B (12,13,-,W,C,M,E); Scratby, 1301-2, NNRO Ref. No. R232A (5,3,-,-,C,M,E); (Trowse) Newton, 1273-4, NNRO Ref. No. R233D (9,10,-,W,C,M,E); Aldeby, 1312-3, NNRO Ref. No. R234D (2,2,-,W,-,M,E); Monks Grange (just outside Norwich), 1287-8, NNRO Ref. No. R233D (6,5,-,W,C,M,E); Deopham, 1307-8, 1311-2, CCL Bedels Rolls (0,4,(1),W,C,AH(4),E); Hingham, 1271-2, BL Campbell ix, 8 (8,15(2),(2)-,C,M(11),L); 'Loudne' (Lodden?), 1283-4, PRO SC6 937/23 (4,3,(1),W,C,M(6),L).

### Northamptonshire

(Long) Buckby, 1295-6, 1304-5, PRO DL29 1/1, fos. 16 & 16v and 1/2, fos. 16 & 16v (14,9,3,S<sup>51</sup>,C<sup>51</sup>,M(7),L); Higham Ferrers, 1313-4, PRO DL29 1/3, fos. 23 & 23v (16,14,4,S,C,M(7),L); Overstone, 1275-6, PRO SC6 1089/6, ms. 1-3 (12,9(4),3,S,C,M(6),L); Silverstone, 1275-6, *ibid.*, ms. 1v-2v (12,4(4),2,S,-,0(6),L); Pury (End), 1256-7, PRO SC6 1094/11, fos. 10v-11 (18,3,2,S,C,0(9),L); Radstone, 1280-1, PRO SC6 1118/21 (18,9(3)-,F,C,M,L); Naseby, 1280-1, *ibid.* (33,12(4),(5),F,C,0(8),L); Addington, 1258-9, Page, pp. 197-8 (6,2,1,S,C,0(7),E); Elmington (near Glapthorne), 1258-9, *ibid.*, pp. 198-9 (6,3,1,S,C/B,M(8),E); Wellingborough, 1280-1315 (21 accounts)<sup>52</sup>, Wellingborough Manorial Accounts, ed. F.M. Page (Northants Rec. Soc., viii, 1936), pp. 21-121 (18,14(6),(4),S,C,M(7),E); Maidwell, 1290-1, NRO F.H. 519 (12,7(2),(3),S,C,M(6),L); Boroughbury (in Peterborough), 1309-10, NRO Fitzwilliam Charters 2389, fos. 1v-3 (31,26(2)-<sup>53</sup>,-,C,M,E); Eye, 1309-10, *ibid.*, fos. 3-4v (36,5(5),3,S,C,0(12),E); Longthorpe (outside Peterborough), 1309-10, *ibid.*, fos. 4v-5v (21,13(4),3,S,C,M(10),E); Castor, 1309-10, *ibid.*, fos. 5v-6v (44,14(5),5,S,C,M(9),E); Walton (in Peterborough), 1309-10, *ibid.*, fos. 6v-7v (27,7(4),4,-,C,0(8),E); Werrington ('Witherington'), 1309-10, *ibid.*, fos. 7v-8v (26,8(5),2,-,C,0,E); Glinton, 1309-10, *ibid.*, fos. 8v-10 (31,9(4),2,S,C,0,E); Warmington, 1309-10, *ibid.*, fos. 18-9 (21,11(6),3,S,C,0(9),E); Ashton, 1309-10, *ibid.*, fos. 19-20 (12,6,2,S,C,M(8),E); Oundle, 1309-10, *ibid.*, fos. 20-21 (14,10(3),2,S,C,M(11),E); Biggin Grange (between Oundle and Benefield), 1309-10, *ibid.* (44,17(4),6,S,C,M(10),E); Stanwick, 1309-10, *ibid.*, fos. 21-22v (8,8(3),2,S,C,M(7),E); Cottingham, 1281, 1309-10, BL Add. Ch. 737, fos. 3-3v, NRO Fitzwilliam Charters 2389, fos. 25-7 (22,8(4),4,S,C/Co,0(7),E,OS); Irthlingborough, 1281, BL Add. Ch. 737, fos. 2-2v (9,5(2),2,S,C,M(6),E).

### Northumberland

Embleton, 1313-4, PRO DL29 1/3, fo. 2v (17,4,3,S,C/P,0(6),L); Stamford,

1313-4, *ibid.*, fo. 3v (14,5,3,S,-,0(6),L); Bamburgh, 1280-1, PRO SC6 1089/19 (19,4,3,S,C/P,0(7),L); Holy Island (farm at Fenham), 1308, DCD Cell Accounts (-,-,-,-,P,-,E).

### Nottinghamshire

Kneesall, 1295-6, 1304-5, PRO DL29 1/1, fos. 1 & 1v and 1/2, fos. 12 & 12v (27,12,3,S<sup>51</sup>,C<sup>51</sup>/P<sup>51</sup>,M(12),L); Gringley (on the Hill), 1297-8, PRO SC6 953/16, fos. 2 & 2v (40,7,-,F,C,0,L); Wheatley, 1280-1, PRO SC6 1089/19 (27,1,3,S,C,0(8),L); Bingham, 1256-7, PRO SC6 1094/11, fo. 11 (19,8,(2),S,C,M(12),L); Collingham, 1309-10, NRO Fitzwilliam Charters 2389, fos. 13-14 (16,3(3),2,-,C,0(8),E).

### Oxfordshire

Bicester, 1295-6, 1304-5, PRO DL29 1/1, fos. 16 & 16v and 1/2, fos. 15 & 15v (16,7,3<sup>51</sup>,S<sup>51</sup>,C<sup>51</sup>,M(8<sup>51</sup>),L); Middleton (Stoney), 1295-6, 1304-5, *ibid.*, 1/1, fos. 16 & 16v and 1/2, fos. 20 & 20v (15,4,2,S<sup>51</sup>,C<sup>51</sup>,0(9),L); Checkendon, 1269-70, PRO SC6 750/13 (0,9,(1),S,C,AH(8),L); Combe, 1309-10, 1311-2, PRO SC6 958/2, 3 (8,2,(1),F<sup>54</sup>,C<sup>54</sup>,0(9),-); Handborough, 1281-2, 1283-4, PRO SC6 958/22, 24 (20,2(2),2,S<sup>55</sup>,C<sup>55</sup>/P<sup>55</sup>,0(10),L); Heyford, 1291-2, PRO SC6 959/1 (25,2,-,S,C,0,L); Kirtlington, 1291-2, PRO SC6 959/4 (0,6,(1),F,-,AH(5),E)<sup>56</sup>; Stratton Audley, 1292-3, PRO SC6 961/22 (11,6,-,F,C,M,E); Warpsgrove and Easington, 1311-2, PRO SC6 961/36 (21,6,(3),W,C,0(8),E); Whitchurch, 1280-1, PRO SC6 1118/21 (13,6,-,F,C,M,L); Witney, 1286-7, HRO Eccles. 2 159308, fos. 13v, 24-24v (62,4(3),7,S,C/Ca,0(9),E); Adderbury, 1286-7, *ibid.*, fos. 24v, 15 (25,3(1),(2),S,C,0,E); Watlington, 1296-7, Earldom of Cornwall, 1, pp. 84-91 (0,14(2),2,W,C,AH(6),L); Hampton Gay (village, now deserted, near Hampton Poyle), 1274-5, 1280, BoL MS DD Ch. Ch. C43<sup>57</sup>, Cart. Os. Abb., vi, pp. 189-90 (35,13(3),-,-,-,M,E); South Weston, 1280, Cart. Os. Abb., vi, pp. 192-3 (44,19(4),-,-,-,M,E); Water Eaton, 1280, *ibid.*, pp. 196-8 (43,8(6),-,-,-,0,E); Barton Magna (or Steeple Barton), 1280, *ibid.*, pp. 198-200 (9,12(4),-,-,-,M,E); Adderbury, 1280, *ibid.*, pp. 200-1 (4,3,-,-,-,M,E); Little Tew, 1280, *ibid.*, p. 201 (10,4,-,-,-,0,E); Watlington, 1280, *ibid.*, pp. 201-3 (6,4(2),-,-,-,M,E); Black Bourton, 1280, *ibid.*, pp. 203-5 (20,4(1),-,-,-,0,E); Islip, 1279-80, WAM 14777 (41,7,(4),F,C,0(11),E); Launton, 1279-80, WAM 15291 (13,4,-,S,C,0,E); Cuxham, 1276-1319 (12 accounts), Harvey, Man. Records, pp. 163-351 (14,7(3),2,W/F,C,M(9),E,OS); Shilton, prob. 1269-70, Hockey, pp. 58-63 (17,5,-,S,C,0,E); Little Faringdon with Langford, prob. 1269-70, *ibid.*, pp. 63-8 (12,4,-,S,C,0,E); Forest Hill, 1287-8, BoL MS DD Ch. Ch. C26 (4,5,-,-,-,M,E)<sup>57</sup>; Kidlington,

1290-1, BoL MS DD Ch. Ch. C43 (6,7(5),-, -, -, M, E)<sup>57</sup>; Holywell, 1299-1300, MCL No. 4476 (11,7(7),2,F,C,0(6),E); 'Clifton', 1289-90, PRO SC6 957/29 (2,11, -, -, -, M, E)<sup>57</sup>.

### Rutland

Stretton, 1275-6, 1294-5, PRO SC6 1089/6, m. 3 and 1090/3 (13,3(1),2,F,C,0(8),L); Oakham, 1299-1300, WAM 20228 (5,7, -, S, C, M, E); Tinwell, 1309-10, NRO Fitzwilliam Charters 2389, fos. 27-28v (8,5,2, -, Co, M(6), E, OS).

### Shropshire

Adderley, 1318, 1318-9, PRO SC6 965/2, 968/3 (18,2,(2),W/F,0(9),L).

### Somerset

Henstridge, 1295-6, 1304-5, PRO DL29 1/1, fos. 14 & 14v and 1/2, fos. 19 & 19v (21,6,2,S<sup>58</sup>,C<sup>58</sup>,0(12),L); Kingsbury (Episcopi), 1295-6, 1304-5, ibid (27,3,3, -, C<sup>58</sup>/P<sup>58</sup>,0(9),L); Charlton (Horethorne), 1295-6, 1304-5, ibid, 1/1, fos. 14 & 14v and 1/2, fos. 20 & 20v (25,3,3,F, -, 0(8),L); Queen Camel, 1300-1, PRO SC6 1090/6, fos. 1 & 1v (36,2,(2),F,C/Ca,0,L); Hurcott, 1300-1, ibid, fos. 2 & 2v (16,1,(2),F,C/Ca,0(8),L); Stogursey, 1300-1, ibid, fos. 5 & 5v (47,2,(3),F,C/Ca,0,L); Bridgwater, 1256-7, PRO SC6 1094/11, fos. 5-5v (15,1,2,S,C/P,0(7),L); Poundsford (in Pitminster), 1286-7, HRO Eccles. 2 159308, fos. 1v-2 (36,2,4,S,Ca,0(9),E); Holway (in Taunton), 1286-7, ibid, fos. 2-2v (38,2,4,S,Ca,0(9),E); Trendle (in Pitminster), 1286-7, ibid, fo. 2v (34,1,4,S,Ca,0(8),E); Staplegrove, 1286-7, ibid, fo. 3 (20,1,2,S,Ca,0(9),E); Kingston and Nailsbourne, 1286-7, ibid, fos. 3-3v (28,2,3,S,Ca,0(9),E); Rimpleton, 1286-7, ibid, fos. 3v-4 (30,2,4,S,C/P,0(7),E); Winscombe, 1277, SRO DD CC 131908/1 (20,4,2,S,C,0(11),E); 'Berwick' (Barwick?), 1256-7, PRO SC6 1094/11, fos. 5v-6 (8,1,1,F,C/P,0(8),L); 'Marston' (Magna or Bigot?), 1256-7, ibid, fo. 6v (8,1,1,F, -, 0(8),L).

### Staffordshire

Tutbury Grange, 1313-4, PRO DL29 1/3, fos. 4 & 4v (22,4,2,S,P,0(12),L); Marchington, 1256-7, PRO SC6 1094/11, fo. 9 (16,3,2,S,C,0(9),L); Rolleston, 1256-7, ibid, fo. 9v (9,1,(1),S, -, 0(9),L); Haywood (in Colwich), 1307-8, PRO E 358/13 (48,6,(5), -, -, 0(10),E)<sup>59</sup>; Baswich, 1307, 1312-3, ibid, Dean and Chapter Library, Lichfield N1 (16,2(1),(2<sup>60</sup>), -, -, 0(8<sup>60</sup>),E)<sup>61</sup>; Longdon, 1305-6, 1307-8, StRO D1734/J2057, PRO E 358/13 (14,3, -, -, -, 0,E)<sup>61</sup>; Eccleshall, 1307-8, PRO E 358/13 (54,4(4), -, -, -, 0,E)<sup>59</sup>; Brewood, 1307, ibid (36,4, -, -, -, 0,E)<sup>59</sup>; Keele, 1308, 1312-3, PRO E 358/18, m. 4 and 358/19, m. 36

(25,2,(3<sup>62</sup>),-,-,0(7),E)<sup>64</sup>; Shenstone, 1280, Cart. Os. Abb., vi, pp. 205-6 (6,2,-,-,0,E).

### Suffolk

Bungay, 1282-3, PRO SC6 991/20 (7,6(2),(1),S,C,M(11),L); Cratfield, 1278-9, PRO SC6 995/1 (14,5,(2),S,C/T,0(9),L); Peasenhall, 1278-9, ibid (19,6,(3),S,C,0(7),L); Dunningworth, 1282-3, PRO SC6 995/7 (11,5,(2),S,C,M(7),L); Dalham, 1293-4, PRO SC6 995/13 (8,7(1),(2),S,C,M(7),L); Framlingham, 1282-3, PRO SC6 997/4 (25,19(4),(5),S,C,M(8),L); Hollesley, 1282-3, PRO SC6 998/23 (5,4,-,S,C,M,L); Hoo (near Kettleburgh), 1279-80, PRO SC6 999/9 (12,9(1),(2),S,C,M(10),L); Kelsale, 1279-80, PRO SC6 1000/13 (21,8(2),(3),-,C,M(9),L); Lawshall, 1279-80, PRO SC6 1001/7 (19,12,(3),S,C,M(9),E); Nayland, 1280-1, PRO SC6 1003/1 (4<sup>65</sup>,15<sup>65</sup>(2<sup>65</sup>),2,S,C,M(9),L,OS); (Earl) Soham, 1282-3, PRO SC6 1004/4 (10,6,2,S,-,M(7),L); Staverton, 1286-7, PRO SC6 1005/11 (8,5,-,S,-,M,L); (Earl) Stonham, 1282-3, PRO SC6 1005/26 (14,11(2),(3),S,C,M(8),L); Syleham, 1268-9, PRO SC6 1006/29 (8,7(2),-,S,C,M,L); Walton, 1282-3, PRO SC6 1007/11 (13,9(1),-,S,C/T,M,L); Clopton (near Woodbridge), 1280-1, PRO SC6 1118/21 (4,4,(1),S,C,M(7),L); Blakenham, 1297-8, 1298-9, 1299-1300, Abbey of Bec, pp. 172-85 (10,10,-,S,C,M,E); Denham (near Eye), 1286-7, 1305-6, 1317-8, NNRO Ref. Nos. R233B, R233A (3,4,(1<sup>66</sup>),-,C,M(7<sup>66</sup>),E,OS); Henley, 1295-6, NNRO Ref. No. R233B (4,5,-,-,C,M,E); (Monks) Eleigh, 1310-1, CCL Bedels Rolls (8,8,(2),-,C,M(7),E,OS); Lakenheath, 1304-5, CUL E.D.C. 7/15/1/2 (2,11(4),-,S,C,M,E); Melton, 1304-5, ibid, 7/16/2/3 (2,2,(1),S,C,M(4),E); Chevington, 1277-8, WSuffRO E3/15.3/2.1 (12,14(3),(3),S,C,M(8),E); Hargrave,<sup>1311-2,</sup> ibid, E3/15.10/2.1a (5,3,(1),S,C,M(7),E); Westley, 1314-5, ibid, E3/15.15/2.1 (4,6,(2),S,C,M(5),E); Little Ashfield (or Badwell Ash), 1310-1, BL Add. Ch. 9131 (4,8(3),2,S,C,M(5),E); 'Clopton' (Clopton near Woodbridge or Clopton in Wickhambrook?), 1293-4, PRO SC6 994/16 (4,3,-,S,-,M,L); 'Wick' (possibly manor of Wicklow in Hacheston), 1272-3, PRO SC6 1007/24 (11,10(1),(2),S,C,M(10),L).

### Surrey

Banstead, 1276-7, PRO SC6 1010/8 (12,6,(2),W,C,M(8),L); Cheam, 1296-7, CCL Bedels Rolls (10,4(2),(1),W,C,0(12),E); Walworth (near Vauxhall), 1269-70, ibid (3,6,-,F,C,M,E); Farnham, 1286-7, HRO Eccles. 2 159308, fos. 20, 22-22v (9,6(2),1,S,C,M,E); Esher, 1286-7, ibid, fo. 32v (8,2(2),-,W/F,C,0,E); Battersea, 1289-90, WAM 27501 (23,9(3),(3),F,C,M(10),E); Morden, 1295-6, WAM 27294 (18,6,(2),W/F,C,0(11),E); Claygate, 1311, 1318-9, WAM 27201, 27202 (6,3(1),(1<sup>67</sup>),F<sup>67</sup>,C<sup>67</sup>,M(8<sup>67</sup>),E); Pyrford, 1285-6, WAM 27396

(6,1,(1),W/F,C,O(6),E); Lambeth, 1273-4, BL Add, MS 29794 (7,4(1),-,S,C,M,E); Wimbledon, 1273-4, ibid (22,8(2),(3),W,C,M(9),E); Croydon (with Cheam), 1273-4, ibid (18,7(1),3,W,C/Ca,M(8),E); Farleigh, 1278-9, Surrey Manorial Accounts, ed. H.M. Briggs (Surrey Rec. Soc., no. 37, 1935), pp. 6-28 (0,18(2),(2),W,C/B,AH(8),E); Thorncroft at Leatherhead, 1282-3, ibid, pp. 30-54 (14,6(2),(2),W/F,C,M(9),E); Malden, 1300-1, ibid, pp. 58-76 (24,15(4),(3),W/F,C,M(12),E); Chessington, 1289-90, ibid, pp. 81-3 (12,5,-,S,C,M,E); Tyting, 1310, Hale and Ellacombe, p. 13 (8,0,-,-,0,E); Stoke by Guildford, 1303, ibid, pp. 67-9 (13,10(2),-,-,M,E); Bensham (in Croyden), 1303, ibid, pp. 96-7 (12,5,-,-,C,M,E).

### Sussex

Apuldram (or Appledram), 1286-7, 1287-8, PRO SC6 1016/5, 6 (19,6,-,W/F,P,O,E); Bosham, 1282-3, 1295-6, PRO SC6 1020/14, 22 (53,7(4),5<sup>1</sup>/<sub>2</sub><sup>68</sup>,W/F,-,O(10),L); Funtington, 1296-7, PRO SC6 1022/10 (9,0,-,W,-,O,L); West Stoke, 1296-7, PRO SC6 1030/5 (10,1,1,W,C,O(9),L); Stoughton, 1297-8, PRO SC6 1030/20 (9,0,(1),W,-,O(8),L,OS); Thorney, 1296-7, PRO SC6 1030/29 (10,1,(1),W,-,O(9),L); Cakeham (in West Wittering), 1305, PRO SC6 1131/11 (40,1,-,-,0,E); Selsey, 1305, ibid (16,1,-,-,0,E); Sidlesham, 1305, ibid (26,1,-,-,0,E); Aldingbourne, 1305, ibid (44,2,-,-,0,E); Amberley, 1305, ibid (24,2,-,-,0,E); Ferring, 1305, ibid (24,1,-,-,0,E); Preston (near Brighton), 1305, ibid (20,1,-,-,0,E); Bishopstone and Norton, 1305, ibid (20,1,-,-,0,E); Streatham (in Henfield), 1305, ibid (22,0,-,-,0,E); Bexhill ('Bexle'), 1305, ibid (10,0,-,-,0,E); Heighton St Clere (in South Heighton), 1285-6 or 1319-20<sup>69</sup>, ESussRO SAS G1/44 (5,7,-,W,C,M,L); Chalvington, 1290-1, ibid, SAS CH 246 (10,2,1,-,Ca,O(10),L); Beddingham, 1307-8, ibid, Glynde MS 996 (23,4,3,S,-,O(8),L); Warminghurst, 1298-9, WAM 4013 (23,2,2,S,P,O(11),E); Pagham (with Nyetimber, Aldwick, Bersted, and Shripney), 1273-4, BL Add. MS 29794 (88,6,-,W,C/Ca,O,E); Tangmere, 1273-4, ibid (17,2,-,S,C/Ca,O,E); East Lavant ('Lovynton'), 1273-4, ibid (18,2,(2),-,C/Ca,O(9),E); Slindon, 1273-4, ibid (16,2,-,S,Ca,O,E); Chidham, Hale and Ellacombe, pp. 13-4 (27,3,-,-,0,E); (West) Thorney, 1310, ibid, p. 14 (9,0,-,-,0,E); Lodsworth, 1303, ibid, pp. 69-70 (12,2,-,-,0,E); Marley Farm (in Battle), 1309, 1310, Searle, Lordship and Community, op. cit., p. 457 (57,27,-,-,M,E).

### Warwickshire

Fletchamstead (in Stoneleigh), 1309-10, 1310-1, PRO SC6 1039/11 and 1040/21, fos. 7-7v (21,8,3,F,C/P,O(9),E); Warwick, 1309-10, 1310-1, PRO SC6 1039/11 and 1040/21, fos. 6-6v (6,4(2),(1),S,-,M(8),E); Sherbourne, 1309-10, PRO SC6

1040/18 (8,2,1,S,-,0(9),E); Chilvers Coton, 1309-10, 1310-1, PRO SC6 1040/18 and 1038/20<sup>70</sup>(16,3(3),2,F<sup>71</sup>,-,0(8),E); (Temple) Balsall, 1309-10, 1310-1, PRO SC6 1040/18 and 1040/21, fos. 8-8v (27,5(2),(3),F,C/P,0(10),E); Tysoe, 1310-1, PRO SC6 1040/21, fos. 1-1v (8,0,(1),S,-,0(7),E); Harbury, 1310-1, *ibid*, fos. 2-2v (12,4(2),(2),S,T,0(7),E); Cubbington, 1310-1, *ibid*, fos. 3-3v (14,4(2),(2),S,-,0(8),E); Studley, 1310-1, *ibid*, fos. 4-4v (8,2(2),(1),S,C,0(8),E); Wolvey, 1310-1, *ibid*, fos. 5-5v (26,9(3),4,F,-,0(8),E); Talton (in Tredington), 1296-7, PRO SC6 1075/15 (17,2,(2),F,C/P,0(9),L); Kington and Brailles, 1256-7, PRO SC6 1094/11, fo. 8 (32,3,3,S,-,0(10),L); Caluden (in Wyken, Coventry), 1256-7, *ibid*, fos. 20-20v (16,2(2),2,S,C,0(8),L); Sutton-under-Brailles, 1252-3, WAM 25900 (26,2(1),-,-,0,E); Knowle, 1293-4, WAM 27693 (34,5,(3),F,C/P,0(12),E); Hampton Lucy, 1302-3, RBW, iv, p. 534 (17<sup>72</sup>,2<sup>72</sup>,-,-,C,0,E); Stratford(-on-Avon), 1302-3, *ibid*, pp. 535-6 (16<sup>72</sup>,2<sup>72</sup>,-,-,C,0,E); Tredington, 1302-3, *ibid*, pp. 537-8 (33<sup>72</sup>,3<sup>72</sup>,-,F,C/Ca,0,E); 'Compton', 1275-6, PRO SC6 1089/6, m.1v (20,1,2,S,-,0(9),L).

### Wiltshire

Amesbury, 1295-6, PRO DL29 1/1, fos. 12 & 12v (41,5,4,F,C/P,0(10),L); Winterbourne (Earls), 1295-6, 1304-5, *ibid*, 1/1, fos. 12 & 12v and 1/2, fos. 21 & 21v (17,3,2,S<sup>73</sup>,C<sup>73</sup>,0(9),L); Aldbourne, 1295-6, 1304-5, *ibid*, 1/1, fos. 12 & 12v and 1/2, fos. 18 & 18v (28,4,3,S<sup>73</sup>,-,0(10),L); Trowbridge, 1295-6, 1304-5, *ibid*, 1/1, fos. 14 & 14v and 1/2, fos. 20 & 20v (32,4,4,S<sup>73</sup>,C<sup>73</sup>/P<sup>73</sup>,0(8),L); Collingbourne, 1313-4, PRO DL29 1/3, fo. 14 (28,4,3,S,-,0(9),L); Everleigh, 1313-4, *ibid*, fo. 14v (16,3,2,S,C,0(9),L,OS); Calne, 1256-7, PRO SC6 1094/11, fos. 17-17v (18,2,2,F,C,0(9),L); Edington, 1283-4, PRO SC6 1052/1 (58,9,-,F,C,0,E); Great Sutton and Newnham in Sutton Veny<sup>74</sup>, 1286-7, 1287-8, 1289-90, PRO SC6 1074/23, ms. 5-6 & 5v-6v; 4 & 4v, 1-2 & 1v-2v (17,2,2,F,C,0(9),E); (East) Knoyle, 1286-7, HRO Eccles. 2 159308, fos. 4-5 (57,4,7,W/F,C,0(8),E); Upton Knoyle (about 1 mi. NW of East Knoyle), 1286-7, *ibid*, fo. 5v (16,2,2,W,C,0(8),E); Fonthill Bishop (or Bishop's Fonthill), 1286-7, *ibid*, fo. 6 (27,3,3,W,C,0(9),E); Downton, 1286-7, *ibid*, fos. 6-7v (46,13,8,W,C,0(7),E); Bishopstone ('Ebblesborne'), 1286-7, *ibid*, fos. 7v-8 (26,1,-,W,C/T,0,E); Cowesfield (1 mi. E of White-parish), 1316-7, W1RO 192/31 (3,2,1,W,C,M(4),L); Mere, 1296-7, Barldom of Cornwall, 1, pp. 55-69 (34,6,3,S,C/Ca,0(12),L); Inglesham, prob. 1269-70, Hockey, pp. 68-73 (18,5,-,S,-,0,E); Sevenhampton, 1269-1288 (17 accounts), Farr, pp. 31-185 (57,5,-,F,C,0,L); Stratton (St Margaret), 1279, *ibid*, p. 230 (30,4,-,-,0,E).



Worcestershire

Oldington (near Kidderminster), 1281-2, 1298-9, PRO SC6 1070/5<sup>75</sup> and 1070/2 (7,2,1<sup>76</sup>,S<sup>76</sup>,C<sup>76</sup>/P<sup>76</sup>,0(7<sup>76</sup>),E); Pershore, 1306-7, WAM 22093 (23,7(5),(2),S,C,O,E); Bredon, 1302-3, RBW, iv, p. 511 (-,-,-,F,C/Ca,-E); Ripple, 1302-3, *ibid* pp. 513-4 (-,-,-,C/Ca,-,E); Kempsey, 1302-3, *ibid*, p. 516 (33<sup>77</sup>,2<sup>77</sup>,-,F,C/Ca,O,E); White Ladies Aston, 1302-3, *ibid*, pp. 517-8 (24<sup>77</sup>,2<sup>77</sup>,-,F,-,O,E); Fladbury and Throckmorton, 1302-3, *ibid*, pp. 519-20 (48<sup>77</sup>,4<sup>77</sup>,-,F,C/Ca,O,E); Wick Episcopi, 1302-3, *ibid*, p. 522 (10<sup>77</sup>,1<sup>77</sup>,-,F,C,O,E); Northwick, 1302-3, *ibid*, pp. 524-5 (40<sup>77</sup>,2<sup>77</sup>,-,F,-,O,E); Knightwick, 1302-3, *ibid*, p. 526 (17<sup>77</sup>,2<sup>77</sup>,-,F,C/Ca,O,E); Hartlebury, 1302-3, *ibid*, pp. 528-9 (17<sup>77</sup>,2<sup>77</sup>,-,F,C,O,E); Hanbury, 1302-3, *ibid*, pp. 530-1 (38<sup>77</sup>,3<sup>77</sup>,-,-,C,O,E); Alvechurch, 1302-3, *ibid*, p. 532 (18<sup>77</sup>,3<sup>77</sup>,-,-,C,O,E).

Yorkshire

Tanshelf (near Pontefract), 1295-6, 1304-5, PRO DL29 1/1, fos. 4 & 4v and 1/2, fos. 8 & 8v (13,6,1,S<sup>78</sup>,C<sup>78</sup>/P<sup>78</sup>,M,L); Kippax, 1295-6, 1304-5, *ibid*, (9,3,1,S<sup>78</sup>,-,0(10),L); Altofts, 1295-6, 1304-5, *ibid*, 1/1, fos. 4 & 4v and 1/2, fos. 4 & 4v (19,3,2,S<sup>78</sup>,C/P/T<sup>78</sup>,0(10),L); Elmsall, 1295-6, 1304-5, *ibid*, 1/1, fos. 4 & 4v and 1/2, fos. 8 & 8v (9,2,1,S<sup>78</sup>,-,0(9),L); Campsall, 1295-6, 1304-5, *ibid* (9,3,1,S<sup>78</sup>,C<sup>78</sup>/P<sup>78</sup>,0(10),L); Ackworth, 1295-6, 1304-5, *ibid*, 1/1, fos. 5 & 5v and 1/2, fos. 8 & 8v (11,2,1,S<sup>78</sup>,C<sup>78</sup>/P<sup>78</sup>,0(11),L); Roundhay, 1295-6, 1304-5, *ibid*, 1/1, fos. 5 & 5v and 1/2, fos. 7 & 7v (33,4,2,S<sup>78</sup>,C<sup>78</sup>,0,L); Owston, 1295-6, *ibid*, 1/1, fos. 5 & 5v (18,3,2,S,C/P,0(9),L); Cridling, 1304-5, *ibid*, 1/2, fos. 4 & 4v (9,3,1,-,-,0(10),L); Whitgift, 1304-5, *ibid*, 1/2, fos. 7 & 7v (41,6,4,S,C/P,0(11),L); Acomb, 1310-1, PRO SC6 1077/1 (6,5,-,-,-,M,-); (East) Cowton, 1309, PRO SC6 1077/13 (22,8,4,S,C/B,0(7),E); Stanghow ('Staynhou')<sup>79</sup>, 1309, *ibid* (12,0,2,S,-,0(5),E); North Deighton, 1309, *ibid* (6,0,1,S,-,0(5),E); Temple Hirst, 1309, *ibid* (32,5,4,S,C/P,0(8),E); Faxfleet, 1308, PRO SC6 1077/19 (62,15(6),7,C/P,0(10),E); Harewood, 1268-9, 1287-8, 1295-6, PRO SC6 1077/26, fo. 4, 1077/29, 1144/4 (30,3,(3<sup>80</sup>),S,P,0(9<sup>80</sup>),L); Easington, 1270-1, 1285-6, PRO SC6 1078/13, fo. 3 and 1079/4 (12,2,(1<sup>81</sup>),S,C,0(11<sup>81</sup>),L); Keyingham, 1270-1, 1285-6, *ibid* (26,5,(2),S,C/P,0,L); Burton (Constable), 1270-1, PRO SC6 1078/13, fo. 4 (8,3,(1),S,-,0(9),L); Cleton, 1270-1, 1280-1, PRO SC6 1078/13, fo. 5 and 1089/19 (16,3,2,S,C,0(9),L); Little Humber (in Paull), 1285-6, PRO SC6 1079/4 (31,3,(2),S,C/P,0,L); Ringbrough, 1285-6, *ibid* (21,3,-,-,-,0,L); Metham, 1315, 1315-6, PRO SC6 1085/11, fos. 1v & 1 (23,3,(2<sup>82</sup>),F,C,O,L); Skipton, 1268-9, 1294-5, PRO SC6 1087/6, fo. 3 and 1090/3 (60,5,(5½<sup>83</sup>),F,C/P,0(11),L); Broughton, 1268-9, PRO SC6 1087/6, fo. 4 (18,1,2,S,P,0(9),L); Holme, 1270-1, *ibid*, fo. 5 (44,2,(5),S,P,0(8),L); Castle and Honour of Tickhill, 1315-6,

PRO SC6 1088/1 (17,3,(2),F,C,O(9),L); Burstwick, 1280-1, PRO SC6 1089/19 (47,3,4,S,C,O(11),L); Pocklington, 1280-1, *ibid* (8,3,-,-,-,O,L); Wetwang, 1304-6, PRO SC6 1144/1 (-,-,-,S,C,-,E); Roecliffe (in Aldborough), 1296-7, 1297-8, Earldom of Cornwall, ii, pp. 196-202, PRO SC6 1084/19, fo. 1v (26,4,(3),S,C,O(9),L); Howden, 1296-7, Earldom of Cornwall, ii, pp. 202-11 (17,3,(2),S,C/P,O(9),L); Soothill (in Batley), 1270-1, SL DB 205, m. 1 (6,2,1,S,P,O(7),L); Sandal (Magna), 1270-1, *ibid*, ms. 2-2v (8,3,1,S,C/P/Ca, O(9),L); Conisbrough, 1270-1, *ibid*, ms. 3-3v (17,1,2,S,C,O(8),L); Thorpe in Balne ('Grangia de Balne'), 1270-1, *ibid*, m. 3v (28,2,3,S,C/P,O(9),L); Hatfield, 1270-1, *ibid*, m. 4 (15<sup>84</sup>, 13<sup>84</sup>, -,-,C/P,M,L); Little Langton (half-way between Great Langton and Thrintoft), 1304, NYRO ZJX (15,5,(2),S,C, O(9),L).

#### County Unknown

'Manerio de Parco' (Northamptonshire?; on same folios as Higham Ferrers), 1313-4, PRO DL29 1/3, fos. 23 & 23v (29,11,4,S,-,O(9),L); 'Stockwood' (probably in Somerset or Dorset), 1256-7, PRO SC6 1094/11, fo. 6v (16,1, 2,S,P,O(8),L); 'Edworth'<sup>85</sup>, 1256-7, *ibid*, fos. 6v-7 (6,0,1,S,P,O(5),L); 'Northstede' (Northstead in Chelsfield, Kent?), 1303, Hale and Ellacombe, p. 96 (16,2(2),-,-,C,O,E); 'Wyteberne' (Whitebarns in Pelham Furneaux, Herts?), 1303, *ibid*, p. 97 (7,6,-,-,-,M,E).

#### FOOTNOTES

1. Based on the 1295-6 account only.
2. Based on the 1273-4 account only.
3. Only the draught stock from the 1275-6 account is listed here, as the 1313-4 account combined the stock for both Langley and Wyrardisbury.
4. Based on the 1256-7, 1286-7, 1300-1, 1309-10, and 1313-4 accounts only, because of the uncertain situation at West Wycombe after 1315 (see pp. 190-3 above).
5. Based on the 1298-9 account only.
6. Based on the 1293-4 and 1298-9 accounts only.
7. I am indebted to the Warden and Scholars of Merton College for permission to use the data from these Merton College documents, as given in Mrs. Lowry's thesis.
8. For the purposes of the various figures, I have placed this at Clyst St Mary, the nearest Clyst to Exeter; but presumably it could be any one of the several Clysts in the area.
9. Based on the 1295-6 account only.

10. Based on the 1311 and 1312 accounts only.
11. Based on the 1303 and 1311 accounts only.
12. Based on the 1311 account only.
13. Based on the 1293-4 account only.
14. Based on the 1295-6 account; only the draught stock totals were taken from the other accounts. 14a. Based on the 1302-3 account only.
15. I am indebted to Dr. C. Dyer for the loan of a microfilm for this source.
16. From transcripts supplied by R.H. Hilton and C. Dyer.
17. Based on the 1281-2 account only.
18. Based on the 1297-8 account only.
19. Based on the 1285-6 account; only the draught stock totals were taken from the other accounts.
20. From a transcript supplied by C. Dyer.
21. Taken from hay and forage costs.
22. As in above note.
23. Based on the 1286-7 account (HRO Eccles. 2 159308, fos. 9-9v) only.
24. Based on the 1256-7, 1257-8, 1286-7, 1305-6, and 1307-8 accounts only.
25. Two and a half ploughs were maintained by the hayward as of custom.
26. Average of both accounts.
27. Based on the 1298-9 account only.
28. Based on the 1272-3 account only.
29. Averaged from both accounts. The demesne was in transition from all-horse farming back to using mixed plough-teams again (see Chapter 3, p. 134 and note 58).
30. Based on the 1273-4 account only.
31. Rectory manor belonging to Canterbury Cathedral Priory.
32. Manor belonging to Westminster Abbey.
33. From the 1293-4 account; only the draught stock totals were taken from the other accounts.
34. Listed as cart-horses in the stock listings, but presumably some were also employed for ploughing, since a number of "stotts" are also mentioned in the plough costs. In working out the plough-team type and size, only two of these were considered as bone fide cart-horses.
35. Consisting of two separate accounts, because of a change of reeve part way through the year.
36. Average of both accounts.
37. Based on the 1295-6 account only.

38. Based on the 1294-5 account only.
39. Based on the 1288-9 account; only the draught stock totals were taken from the other accounts.
40. This Ramsey Abbey account dates from sometime during the abbacy of John of Sawtry, who ruled the house from 1286 to 1316. John is mentioned in the account heading, but the year is illegible.
41. Based on the 1272-3 account; only the draught stock listings were given from the other accounts in Davenport (pp. 33-5).
42. Averaged from all three accounts. The breakdown for the individual accounts is as follows: two oxen and four horses in 1265-6, three oxen and four horses in 1272-3, and no oxen and two horses in 1301-2. The demesne was in transition to all-horse farming.
43. Based on the 1265-6 and 1272-3 accounts only.
44. Based on the 1265-6 account only.
45. Average of all three accounts. The breakdown for the individual accounts is as follows: one ox and fourteen horses in 1255-6, two oxen and eleven horses in 1263-4, and no oxen and seventeen horses in 1295-6. The demesne was seemingly in transition to all-horse farming.
46. Based on the 1263-4 account only.
47. Based on the 1295-6 account only.
48. Based on the 1287-8 account only.
49. Based on the 1263-4 account only.
50. Based on the 1294-5 account only.
51. Based on the 1295-6 account only.
52. The accounts falling before 1280 were excluded here, because of the unsettling effect that the barons' revolt of 1264-5 had on the stock totals of Wellingborough, particularly in the three accounts from 1267-8 to 1276-7.
53. The normal maintenance of five ploughs is indicated. However, two horse ploughs (caruc' equarum) were also mentioned, and it is not certain whether these were included with or additional to the five ploughs already indicated.
54. Based on the 1309-10 account only. I am indebted to C. Dyer for the data from the 1311-2 account.
55. From the 1281-2 account only. I am indebted to C. Dyer for the data from the 1283-4 account.
56. From data supplied by C. Dyer and rechecked by the author.
57. From data supplied by C. Dyer.
58. Based on the 1295-6 account only.

59. From data supplied by C. Dyer.
60. Based on the 1312-3 account only.
61. From data supplied by C. Dyer.
62. Average of both accounts.
- ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~
64. Based on data supplied by Jean Birrell per C. Dyer.
65. Draught stock at beginning of account, as they were all later sold.
66. Based on the 1286-7 account only.
67. Based on the 1311 account only.
68. Average of both accounts.
69. Either 13-4 Edw I or Edw II. The record office dating indicates the former, but the large number of cattle deaths evident in the account argues the latter, since the year 1319-20 coincides with the advent of the cattle murrain that afflicted England at this time. The script, too, seems to favour the later date.
70. From a transcript supplied by C. Dyer.
71. Based on the 1309-10 account only.
72. As indicated from the hay and forage costs.
73. Based on the 1295-6 account only.
74. The PRO Lists and Indexes, v, have given this as being a Maiden Bradley manor situated in Worcestershire, but in fact placenames referred to in the accounts strongly suggest a Wiltshire location, especially as lands in Great Sutton and Newnham<sup>(Wilts)</sup> were given to Maiden Bradley Priory in the 1260s (VCH Wilts, viii, p. 66).
75. From a transcript supplied by C. Dyer.
76. Based on the 1298-9 account only.
77. As indicated from hay and forage costs.
78. Based on the 1295-6 account only.
79. The Templars had a carucate of land in demesne at Stanghow from the early twelfth century at least. Templar Records, pp. ccxi, ccxv, 120.
80. Based on the 1268-9 and 1295-6 accounts only.
81. Based on the 1285-6 account only.
82. Based on the 1315 account only.
83. Averaged from both accounts.
84. Draught stock numbers at the beginning of the account, as those for the end are obscured by defects in the MS.
85. The PRO Lists and Indexes, v, give this as Edworth in Bedfordshire, but Almsworthy in Somerset is also likely (e.g., see H.C. Darby and G.R. Versey, Domesday Gazetteer, Cambridge (1975), p. 346).

Part 2: Demesne Accounts, Sample B (1350-1420)Bedfordshire

Barton (in the Clay), 1368, PRO SC6 740/5 (8,6(2),2,S,C,M(6),E); Cranfield, 1350-1, PRO SC6 740/16 (24,12(4),4,S,C,M(8),E); Shillington, 1377-8, PRO SC6 741/22 (14,10(4),3,S,C,M(7),E); Higham Gobion, 1379-80, 1380-1, 1381-2, BRO B.S. 1175 (14,7(4),2<sup>1</sup>,S<sup>1</sup>,C<sup>1</sup>,O(8<sup>1</sup>),L); Harrold, 1401-27<sup>2</sup>, BRO TW 796 (15,12(6),-,S,-,M,E).

Berkshire

Brightwaltham (now Brightwalton), 1388-9, PRO SC6 742/27 (13,11,-,W,C,M,E,OS); Didcot, 1383-4, PRO SC6 748/4 (0,10,2,W,C,AH(5),L); Eaton Hastings, 1354-5, PRO SC6 748/7 (18,6(4),2,F,C,O(10),L); Southcot (1½ mi. WSW of Reading), 1361-2, PRO SC6 750/19 (20,2,2,F,-,O(10),L); Speen, 1355-6, PRO SC6 750/26 (9,3,1,W,C,O(10),L,OS); Harwell, 1381-2, HRO Eccles. 2 159388, fos. 11v-12 (19,9,3,W,C,M(8),E); Brightwell, 1381-2, *ibid*, fos. 12-12v (19,16,3,W,C,M(10),E); Wargrave, 1381-2, *ibid*, fos. 12v-13 (21,5(5),2,W/F,C,O(11),E); Waltham St Lawrence, 1381-2, *ibid*, fos. 13-13v (17,3,2,W,-,O(9),E); (Upper) Culham, 1381-2, *ibid*, fos. 13v-14 (0,7,1,W/F,C,AH(6),E); Billingbear, 1381-2, *ibid*, fo. 16v (6,5,1,P,C/T,M(9),E).

Buckinghamshire

Cuddington, 1380-1, PRO SC6 760/14 (9,7,(2),W/F,C,M(7),E); Steeple Claydon, 1364-5, PRO SC6 762/29 (16,5,2,S,C,O(9),-); Whaddon (near Nash), 1360-1, PRO SC6 764/3 (35,9(3),(2),F,C,O,L,OS); Aylesbury, 1350-1, 33-5 Edw III, 1375, 1375-6, 1377-8, 1382-3, BRL 504032, PRO SC6 1121/6, BRL 504033 (bis), 504034, 504035 (16<sup>3</sup>,10<sup>3</sup>(3<sup>3</sup>),(2½<sup>4</sup>),F,C,M(10<sup>4</sup>),L); West Wycombe, 1360-1, 1381-2, 1406-7, HRO Eccles. 2 159371, fos. 18-19, 159388, fos. 14-15v, 159410, fos. unnumbered (0,21(5),2½<sup>5</sup>,W,C,AH(6),E); Ivinghoe, 1381-2, 1403-4, HRO Eccles. 2 159388, fos. 15v-16v, BCM Bucks Arch. Soc. 3158 (47,6(6),5<sup>6</sup>,F,C,O(9<sup>6</sup>),E); Turweston, 1387-8, WAM 7828 (8,4,-,S,C,M,E); Denham, 1390-1, WAM 3409 (23,10(6),3,W,C,O(9),E); Manor of Water Eaton, Bletchley, 1383-4, *ibid*, Bucks Arch. Soc. (13,5,2,F,C,O(8),L,OS); Quainton, 1392-3, *ibid*, Quainton 31 (32,15(6),(4),S,C,M(10),L).

Cambridgeshire

Soham, 1365-6, PRO DL29 288/4721 (13,7(3),(2),-,C,M(9),L); Burwell, 1398-9, PRO SC6 765/10 (0,11(4),2,S,C,AH(4),E); Ditton Valence (near Woodditton), 1394-5, PRO SC6 766/16 (8,12(4),2,S,C,M(8),L); Elsworth, 1381-2, PRO SC6

766/27 (17,10(4),3,S,C,M(8),E); Knapwell, 1358-9, PRO SC6 768/36 (8,5,2, S,C,M(6),E); Uphall and (Cherry) Hinton, 1382-3, PRO SC6 770/11 (0,7(7<sup>7</sup>), -, -, C,AH,L); Harston, 1387-8, BL Add. Ch. 18527 (6,10,-,S,C,M,L); Meldreth, 1354-5, 1355-6, GLRO H1/ST/E95 (7,5(2),(1<sup>8</sup>),S<sup>8</sup>,C<sup>8</sup>,M(9<sup>8</sup>),E); Wisbech Barton, 1377-8, 1419-20, CUL Ely Dioc. Rec. D/8/3/2, 29 (37,10,4<sup>9</sup>,F,C,O(11<sup>9</sup>),E); Downham, 1368-9, 1415-6, *ibid*, D/10/2/26, 29 (13,6(3),1,S,C,O,E); Oakington, 1361-2, Page, pp. 271-9 (10,8(3),(2),S,-,M(8),E).

### Cheshire

Frodsham, 1350-1, PRO SC6 783/16, fos. 6-6v (38,6(3),2,S,C/P,O,L); Drakelow (Drakelow Hall, 2 mi. N of Middlewich), 1350-1, 1351-2, *ibid*, fos. 7-7v (24,8,3,F,C/P,O(9),L).

### Cornwall

Whalesborough (near Marhamchurch), 1373-4, SRO DD/WO Box 46 (9,1,-,S,-,O,L); '...enhele' (possibly Penheale<sup>10</sup>), 1400-1, PRO SC6 823/41 (19,13,2,S,P,M,-).

### Devon

Otterton, 1370-1, PRO SC6 827/13 (10,2,(1),S,P,O(10),E); Langtree, 1384-5, PRO SC6 828/9 (13,2,-, -,P/Ca,O,L); Pinhoe, 1395-6?<sup>11</sup>, PRO SC6 829/22 (11,0, -,S,P,O,L); Yealmpton, 1395-6, PRO SC6 830/29 (19,6,-,S,-,O,L); Goodrington, 1414-5, BL Add. Ch. 13770 (19,4,2,S,-,O(10),L).

### Dorset

Tarrant<sup>12</sup>, 1360, PRO SC6 833/18 (18,2,-,F,-,O,-).

### Durham

Finchale, 1354, 1363, 1367, 1397, 1411, SS, vi, pp. xxxviii, lxii, lxxviii, cxviii, clviii (11,3(1),-, -,P,O,E); Wingate, 1354, 1360, 1363, 1367, *ibid*, pp. xxxviii, liii, lxi, lxxix (23,2,2<sup>13</sup>, -,C/P/Cp,O(9<sup>13</sup>),E); Jarrow, 1350-1, 1351-2, 1362, 1370, 1371, 1373, 1382, 1408, 1416-7, SS, xxix, pp. 35-92 (26,5,2<sup>14</sup>, -,C/P,O(10<sup>14</sup>),E); Monkwearmouth, 1360, 1362, 1370, 1378-9, 1380, 1380-1, 1381-2, 1382-3, 1383-4, 1394, 1296-7, 1398, 1408-9, 1416-7, *ibid*, pp. 152-93 (16,4,2<sup>15</sup>, -,C/P,O(7<sup>15</sup>),E); Bearpark, 1374-5, DCD Bursar's Accounts (18,0,(1),F,P,O,E); Bewley, 1405-6, *ibid* (18,10,-, -,C,M,E); Elvet-hall (near Durham), 1371, 1383-4, 1405-6, DCD Hostillar's Accounts (18,4(2), 3<sup>16</sup>,F<sup>17</sup>,P,O(6<sup>16</sup>),E); Fulwell, 1411-2, DCD Bursar's Accounts (15,4,(2),S,C/P,O(9),E); Houghall, 1407-8, *ibid* (20,3,-, -,P,O,E); Ketton, 1369-70, 1409-10, *ibid* (24,5,-,F,C,O,E); Merrington, 1380-1, *ibid* (30,7,(2),F,C/P,O,E); Pit-tington, 1376-7, *ibid* (30,5,(3),F,C/P,O(10),E); Wardley, 1380-1, DCD Misc.

Ch. 2599 (16,1,-,S,P,O,E); Westoe, 1407-8, DCD Bursar's Accounts (18,3,-, -,C/P,O,E); Witton (Gilbert), 1353-4, 1373, 1402, DCD Almoner's Accounts (16,1,2<sup>18</sup>, -,P/Cw,0(8<sup>18</sup>),E); Maudelyns (in Durham), 1353-4, 1373, ibid (8,1,1<sup>19</sup>, -,P,0(7<sup>19</sup>),E); Haswell, 1360, SS, vi, p. liii (18,0,-, -,P,O,E).

### Essex

Boreham, 1378-9, PRO SC6 837/1 (8,13(2),(2),S,C,M(10),-); Eastwood, 1373-4, PRO SC6 840/35 (0,18(2),2,F,C,AH(8),L); Hutton, 1388-9, PRO SC6 844/30 (4, 10(2),(1),S,C,M(12),E); Stapleford, 1383-4, PRO SC6 847/10 (4,6,-, -,M,L); Tolleshunt Major, 1397-8, PRO SC6 848/13 (4,13,2,S,C,M(8),E.OS); Faulkbourne and 'Tarvyns', 1351-2, PRO SC6 1120/5 (13,10,2,S,-,M(10),L,OS); Smeeton (Smeetham in Bulmer), 33-5 Edw III, PRO SC6 1121/6 (4,5,-, -,M,L); Bocking, 1376-7, CCL Bedels Rolls (8,15(3),(2),S,C,M(10),E,OS); Borley, 1384-5, ibid (4,12,2,S,C,M(7),E,OS); Hadleigh, 1370-1, ibid (3,3(1),(1),S, C,M(5),E); Lawling, 1380-1, ibid (0,13(4),(1),S,C/Cu,AH(9),E); Milton (Hall, near Prittlewell), 1355-6, 1388-9, ibid (0,12(3),1<sup>20</sup>,S,C,AH(6),E); Birdbrook, 1395-6, WAM 25491 (9,11(3),2,S,C,M(9),E,OS); Feering, 1368-9, WAM 25691 (7,16(4),2,F,C,M(10),E); Kelvedon, 1385-6, WAM 25849 (10,17(3),2,S, C,M(12),E,OS); Wrabness, 1353-4, WAM 3229 (5,6(2),1,S,C,M(9),E); Writtle, 1360-1, Newton, Manor of Writtle, op. cit., pp. 116-8 (16,30(4),4,-, -,M(11),L); 'Ryngers and Tryndy' (possibly Tendring), 1351-2, PRO SC6 1120/5 (4,8,1,S,-,M(10),L,OS); 'Woodham, Burnham Cage, Creeksea, and Mucking'<sup>21</sup>, 1351-2, ibid (7,17(4),2,S,-,M(10),L,OS).

### Gloucestershire

Brimpsfield, 1379-80, PRO SC6 850/22 (8,3,1,S,P,O(9),L); Cowley, 1357-8, PRO SC6 853/14 (8,2,(1),-,-,0(9),E)<sup>22</sup>; Hawkesbury, 1373-4, 1395-6, PRO SC6 854/13, 15 (29,3(3),-,S,C/P,O,E); Horsley, 1371-2, 1411-2, PRO SC6 855/6, 8 (17,2<sup>23</sup>,-,S,P,O,E); Horton, 1386-7, PRO SC6 856/9 (20,2,2,F,P, 0(10),-); Avening, 1380-1, PRO SC6 856/23 (12,3,2,F,P,0(7),E,OS); Minchinhampton, 1378-9, 1380-1, PRO SC6 856/23, 24<sup>22</sup> (11,3(3),-,S,P,O,E,OS); Alkington, 1386-7, Berkeley Castle Muniments (17,1,(2),-,-,0(8),L)<sup>22</sup>; Cam 1354-5, CUL Berkeley MSS (19,2,-,F,-,0,L)<sup>22</sup>; Bibury, 1371-1395 (15 accounts), WoRO Ref. 009:1 BA 2636 160 92050, 159 92049 4/7, 160 92053, 169 92054, 159 92049 7/7, 159 92049 6/7, 160 92055, 160 92056, 160 92057, 160 92058, 160 92059, 160 92060, 159 92049 5/7, 159 92049 2/7, 160 92061<sup>24</sup> (7<sup>25</sup>,3<sup>25</sup>(3<sup>25</sup>), 1,S,C,0(7),E,OS); Blockley, 1383-4, 1389, ibid, 157 92007, 193 92628 4/9<sup>24</sup> (19,6(6),2<sup>26</sup>,F<sup>26</sup>,C<sup>26</sup>/P<sup>26</sup>,0(9<sup>26</sup>),E); Withington, 1389, ibid, 193 92628 4/9<sup>22</sup> (11,3(3),-,-,0,E); Bishop's Cleeve, 1372-3, 1389, 1393-4, 1394-5, ibid, 161 92113 5/6, 193 92628 4/9, 193 92627 12/12, 162 92114<sup>24</sup> (20<sup>27</sup>,4<sup>27</sup>(3<sup>27</sup>),



2<sup>28</sup>, F, C/P, O(9<sup>28</sup>), E); Stoke Bishop, 1369-1390 (9 accounts), *ibid*, 192 92626 11/12, 192 92626 10/12, 171 92415 4/8, 171 92416, 171 92417, 171 92418, 171 92419, 171 92414 1/6, 171 92415 1/8<sup>24</sup> (8, 1, (1), F, P, O(8), E); Henbury(-in-Salt-Marsh), 1363-1394 (15 accounts), 165 92227-8, 166 92230, 166 92235, 165 92226 2/7, 165 92225 6/8, 166 92240, 166 92246, 170 92387, 165 92226 6/7, 166 92251-2, 166 92256-7, 166 92260<sup>24</sup> (10, 1, 1, F, P, O(9), E); Bourton(-on-the-Hill), 1398-9, WAM 8318 (9, 3(3), (1), F, C/P, O(9), E); Hardwicke, 1372-3, WAM 8444 (19, 5(5), 2, F, C/P, O(10), E); Chaceley ('Chaddesley'), 1368-9, WAM 21092 (6, 2, (1), F, C/P, O(7), E); Awre and Blakeney, 1367-8, GRO D421 M4 (9, 1, 1, S, P/Dp, O(9), L); Pucklechurch, 1383-4, SRO DD/CC 131910 15/15 (-, -, -, S, -, -, E); Thornbury, 1353-4, 1360-1, 1368-9, 1375-6, StRO D641/1/2/133, 136, 140, 144<sup>24</sup> (20, 4, (1<sup>29</sup>), -, -, O(12<sup>29</sup>), L).

### Hampshire

Wroxall (Isle of Wight), 1351-2, PRO SC6 987/33 (22, 2(2), (2), W/F, C, O(11), L); Crawley, 1350-1420 (51 account-years), Gras and Gras, pp. 268-85, 293-312, 374-87, HRO Eccles. 2 159388, fos. 37v-38 (20, 7(3), 3<sup>30</sup>, W<sup>31</sup>, C<sup>31</sup>, O(8<sup>30</sup>), E); Bentley, 1381-2, HRO Eccles. 2 159388, fos. 17v-18v (26, 4, 3, W/F, C, O(9), E, OS); Highclere, 1381-2, *ibid*, fos. 19-20 (15, 2, 1, W/F, C, O, E, OS); Burghclere, 1381-2, *ibid*, fos. 20-20v (41, 3, 4, W/F, C, O(10), E); Ecchinswell (or Itchingswell), 1381-2, *ibid*, fos. 21-21v (21, 4, 2, W/F, C, O(11), E); East Woodhay, 1381-2, *ibid*, fos. 21v-22v (18, 3, 2, W/F, C, O(9), E, OS); Ashmansworth, 1381-2, *ibid*, fos. 22v-23 (8, 1, 1, W/F, C, O(8), E, OS); North Waltham, 1381-2, *ibid*, fos. 23-23v (11, 7, 2, W/F, C, M(8), E, OS); Overton, 1381-2, *ibid*, fos. 23v-24v (23, 10, 4, W/F, C, M(7), E, OS); (Cole) Henley, 1381-2, *ibid*, fos. 24v-25 (6, 2, 1, W/F, C/T, O(7), E, OS); Bishops Sutton, 1381-2, *ibid*, fos. 25-26 (24, 8, 3, W/F, C, O(9), E, OS); Old Alresford, 1381-2, *ibid*, fos. 26-27 (22, 5, 3, W/F, C, O(8), E, OS); Cheriton, <sup>1381-2,</sup> *ibid*, fos. 27-28 (24, 6, 3, W/F, C, O(9), E, OS); Wield, 1381-2, *ibid*, fos. 28-28v (16, 4, 2, W/F, C, O(9), E); Beauworth, 1381-2, *ibid*, fo. 28v (10, 3, -, W/F, C, O, E, OS); Tichborne, 1381-2, *ibid*, fos. 28v-29 (19, 2, 2, W/F, C, O(9), E); East Meon Manor, 1381-2, *ibid*, fos. 29-30 (48, 21(3), 8, W/F, C, M(8), E); East Meon Church, 1381-2, *ibid*, fos. 30-30v (0, 7, 1, W/F, C, AH(6), E); Hambledon, 1381-2, *ibid*, fos. 31-31v (26, 9(3), 3, W/F, C, O(11), E, OS); Brockhampton (in Havant), 1381-2, *ibid*, fos. 31v-32 (9, 5, 1, W/F, C, M(12), E, OS); Fareham, 1381-2, *ibid*, fos. 32-33 (23, 5, 2, W/F, C, O, E, OS); Bishop's Waltham, 1381-2, *ibid*, fos. 33-34 (28, 7(7), 2, W/F, C, O, E, OS); Droxford, 1381-2, *ibid*, fos. 34-34v (13, 6(6), 2, W/F, C, O(7), E, OS); Twyford, 1381-2, *ibid*, fos. 34v-35v (32, 5, 3, W/F, C, O(11), E, OS); Marwell, 1381-2, *ibid*, fos. 35v-36 (15, 4, -, W, C, O, E, OS); Bishopstoke, 1381-2, *ibid*, fos. 36-37 (17, 3, 1, W, C, O, E); Mardon (near Hursley), 1381-2,

ibid, fos. 37-37v (60,6,5,W/F,C,O(12),E,OS); Wolvesey, 1381-2, ibid, fo. 39v (8,8,1,W,C,M,E,OS); Wootton, 1390, 1398, The Manor of Manydown, Hampshire, ed, G.W. Kitchin (Hampshire Rec. Soc., 1895), pp. 168-70, 159-63 (24,12(6),-,-,-,M,E); Hannington, 1390, ibid, p. 168 (2,5,-,-,-,M,E).

### Herefordshire

Aconbury, 1360-1, 1400-1, PRO SC6 860/5, 7 (29,4,-,S<sup>32</sup>,-,O,E); Huntingdon, 1371-2, PRO SC6 861/1 (10,3,1,F,P,O(11),L); Mansell Lacy, 1357-8, PRO SC6 861/15 (6,1,(1),S,P,O(6),E); Bridge Sollers ('Brugg'), 1357-8, ibid (6,1,(1),S,P,O(6),E); Mathon, 1392-3, 1398-9, WAM 21362, PRO SC6 1069/26 (10,2,1,F,P,O(10),E); Kilpeck, 33-5 Edw III, PRO SC6 1121/6 (20,4,-,-,-,O,L).

### Hertfordshire

Meesden, 1359-60, PRO SC6 867/9 (7,11(2),(2),S,C,M(8),L); Prey 'cum Pleydell' (lands of the priory of St Mary des Pres, near St Albans to the north-west<sup>33</sup>), 1356-7, PRO SC6 867/26 (4,9,(2),S,C,M(6),E,OS); Walkern, 1358-9, 1390-1, 1391-2, HertsRO 9345, 9357, 9380 (6,9(5),2,S,C,M(5),L,OS); Wheathampstead, 1356-7, 1371-2, 1404-5, HertsRO D/ELw M165, 179, 202 (0,17(3),2<sup>34</sup>,W,C,AH(6),E); (Much) Wymondley, 1372-3, HertsRO 57534 (14,7,3,S,C,M(6),L,OS); Great Gaddesdon, tempus Ric II, HertsRO 2632 (0,5,-,-,C,AH,L); Knebworth, 1370-1, 1401-2, 1412-3, HertsRO K100, 102-5, 119 (3<sup>35</sup>,12<sup>35</sup>(1<sup>35</sup>),3<sup>36</sup>/2<sup>37</sup>,W,C,M/AH(4<sup>36</sup>/6<sup>37</sup>),L,OS<sup>36</sup>); Aldenham, 1394-5, WAM 26116 (11,9(6),1,W,C,M,E,OS); Ashwell, 1396-7, WAM 26288 (0,7,1,S,C,AH(6),E); Kingsbourne (in Harpenden), 1375-6, WAM 8840 (0,6,1,W,C,AH(5),E); Sayesbury (in Sawbridge-worth), 1375-6, WAM 26306 (3,6,1,S,-,M(8),-,OS).

### Huntingdonshire

Elton, 1386-7, PRO SC6 874/15 (10,9(4),2,S,C,M(8),E); Holywell, 1392-3, PRO SC6 877/22 (13,10(6),2,S,C,M(9),E); Houghton, 1387-8, PRO SC6 879/10 (16,11(6),2,S,C,M(11),E); Abbots Ripton, 1374-5, PRO SC6 882/23 (18,8(4),4,S,C,O(6),E); Slepe, 1380-1, PRO SC6 884/15 (23,8(5),3,-,-,O(9),E); Upwood, 1370-1, PRO SC6 885/16 (18,12(6),3,-,C,M(8),E); (Old) Weston, 1367-8, PRO SC6 885/23 (13,11(5),4,S,C,M(5),E); Wistow, 1368-9, PRO SC6 885/33 (11,9(5),2,S,C,M(8),E).

### Kent

Chingley (1½ mi. SE of Kilndown on the Sussex border), 1352-3, PRO SC6 889/6 (18,11,-,S,P,M,E); Cosington (about 1 mi. ENE of Aylesford), 1357-8, PRO SC6 889/10 (6,4(2),1,S,C,M(8),L,OS); Dengemarsh (1½ mi. S by E of Lydd), 1374-5, PRO SC6 889/25 (0,11,-,W,C,AH,E); Adisham, 1368-9, CCL Bedels Rolls (4,16(2),-,W,C,M,E);

Agney and Orgarswick (in Romney Marsh), 1368-9, *ibid* (0,6(2),(1),S,C,AH(4),E); Appledore, 1379-80, *ibid* (13,14(4),(3),W,C,M(8),E); Barksore (or Basser, in Halstow), 1361-2, *ibid* (4,3(2),-,S,C,M,E); Brook, 1379-80, *ibid* (3,6,-,W,C,M,E); Great Chart, 1377-8, *ibid* (16,5(2),S,C,O(10),E,OS); Cliffe, 1368-9, *ibid* (11,7(3),-,W,C,M,E,OS); Ebony (on the Isle of Oxney), 1374-5, *ibid* (10,7,2,W,P,M(8),E); Elverton (in Stone near Faversham), 1369-70, 1384-5 (0,6(1),(1<sup>38</sup>),S,C,AH(4<sup>38</sup>),E); East Farleigh, 1372-3, *ibid* (12,8(2),-,W,C/Cu,M,E,OS); West Farleigh, 1370-1, *ibid* (14,6(2),-,S,C/Cu,M,E,OS); Hollingbourne, 1369-70, *ibid* (13,6(2),2,W,C/Cu,M(9),E,OS); Ickham, 1371-2, *ibid* (6,14(2),4,W,C/Cu,M(5),E); Lydden, 1363-4, *ibid* (10,4,-,S,C,O,E); Loose, 1351-2, *ibid* (2,6(1),(1),W,C/Cu,M(7),E); Meopham, 1372-3, *ibid* (10,11(2),(2),W,C,M(10),E,OS); Mersham, 1367-8, *ibid* (8,6(2),(1),W,C,M(12),E,OS); Monkton, 1367-8, *ibid* (-,-,-,S,C/Cu,-,E); Orpington, 1363-4, *ibid* (12,6(2),(2),W,C/Cu,M(8),E,OS); Peckham, 1357-8, *ibid* (1,9(3),-,W,C,AH,E); Copton (in Preston), 1379-80, *ibid* (0,7(2),(1),S,C,AH(5),E); Ruckinge, 1367-8, *ibid* (8,7,(1),S,C/P/Cu,M,E); Westerham, 1365-6, *ibid* (6,4(2),-,W,Cu,M,E); Westwell, 1355, *ibid* (15,2,-,S,C,O,E); Westerham, 1399-1400, WAM 26529 (11,10,1,W,C/P,M,E,OS); Bekesbourne ('Lyvyngesborne'), 1365-6, BL Harl. Roll Z.5 (0,8(2),-,S,C,AH,L).

### Lancashire

Lytham, 1354-5, 1417-8, 1418-9, DCD Cell Accounts (29,4,3<sup>39</sup>,-,P/Ca,O(9<sup>39</sup>),E).

### Leicestershire

Kirby Bellars, 1371-2, PRO SC6 908/19 (14,8(8),-,S,C,O,L); Kirby Bellars<sup>40</sup>, 1383-4, 1394-5, PRO SC6 908/21, 23 (33,14(3),(3<sup>41</sup>),S,C,M,L); Lutterworth, 1360-1, PRO SC6 908/33 (25,10(4),-,S,-,O,L); (King's) Norton, 1358, PRO SC6 908/36 (8,9(5),-,S,C,M,E); Owston and Knossington, 1385-6, PRO SC6 1108/23 (16,11(11),-,S,C,O,E).

### Lincolnshire

Gedney, 1364-5, PRO DL29 242/3888 (18,4,-,-,C,O,L); Caythorpe, 1360-1, PRO SC6 909/15 (25,16(7),-,,-,M,L); Harrington, 1387-8, PRO SC6 910/11 (14,10(4),-,S,C,M,L); Somerton Castle (2 mi. W of Boothby Graffoe), 1365-6, PRO SC6 913/16 (27,14,3,S,C,M(12),-); Cuxwold, 1358-9, BL Harl. Roll Y.12 (-,-,(1),S,C,-,L); Fulstow, 1384-5, LIRO L.M.R. 16/1/6 (11,10(6),-,S,C/P/Co,M,L); Martin (near Horncastle), 1401-2, LIRO 1 ANC 3/8/7 (6,7(2),1,S,C/Cu,M(11),-); 'Thurlby' (prob. Thurlby near Bourne), 1362-3, PRO SC6 914/8 (2,6(6<sup>42</sup>),-,,-,C,O<sup>42</sup>,-).

Middlesex

Ashford, 1395-6, WAM 26819 (5,6,1,W,C,M(9),E); Halliford (in Shepperton and Sunbury), 1398-9, WAM 27054 (6,3,1,-,C,M(8),E); Laleham, 1358-9, WAM 27143 (13,7(3),2,F,C,M(9),E); Knightsbridge, 1355-6, WAM 16440 (15,8(3),(2),F,C,M(10),E,OS); Erbury ('Eye'; about 1 mi. W of Westminster), 1396-7, WAM 26949 (12,7(3),2,S,C,M(8),E).

Norfolk

Tunstead, 1359-60, 1364-5, PRO DL29 288/4720, 4722 (0,4,(1),W,C,AH(4),L); Gimmingham, 1359-60, 1391-2, PRO DL29 288/4720, 4734 (1,4,(1<sup>43</sup>),W,C,AH(4<sup>43</sup>),L); Bircham, 1360-1, PRO SC6 930/30 (0,3,1,S,C,AH(3),L); Brancaster, 1368-9, PRO SC6 931/9 (3,6,-,-,C,M,E); Hilgay, 1359-60, PRO SC6 937/15 (8,6(2),2,S,C,M(6),E); Poppenhoe (in Walsoken), 1391-2, PRO SC6 942/17 (14,4,2,S,C,O(8),E); Thornham, 1351-2, NNRO Ref. No. R232B (0,2,-,S,-,AH,E); Sedgeford, 1352-3, ibid, R233D (0,8,-,S,C,AH,E); Plumstead, 1353-4, 1359-60, 1371-2, 1382-3, 1395-6, 1409-10, 1419-20, ibid (0,7,2<sup>44</sup>,W,C,AH(3<sup>44</sup>),E); Hindolveston, 1404-5, ibid, R233C (0,8,-,W,C,AH,E); Taverham, 1353-4, 1362-3, 1373-4, ibid, R232A (0,5,1<sup>45</sup>,W,C,AH(4<sup>45</sup>),E); Scratby, 1362-3, ibid, R233A (0,2,-,S,C,AH,E); (Trowse) Newton, 1366-7, ibid, R233D (0,11,-,W,C,AH,E).

Northamptonshire

Higham Ferrers, 1365-6, 1382-3, PRO DL29 324/5295, 5308 (10,8(4),2,S,C,M(7),L); (Long) Buckby, 1368-9, PRO DL29 324/5296 (13,8(3),2,S,C,M(9),L); Raunds, 1380-1, PRO DL29 324/5305 (9,8(4),2,S,C,M(7),L); Passenham, 1380-1, PRO DL29 324/5306 (6,2(2),1,S,C,O(6),L); Thrupp Ground ('Throp') and Norton (near Daventry), 1353, PRO SC6 949/12 (10,7,2,S,C,M(8),L); Ashby (St Ledgers), 1394-5, PRO SC6 1041/17 (8,3,1,F,C,O(9),L); Maidwell, 1383-4, NRO F.H. 482 (7,7(3),-,S,C/P,M,L); Longthorpe, 1370-1, NRO PDC AR/1/4 (18,2(2),3,S,C,O(6),E); Boroughbury (in Peterborough), 1378-9, ibid, AR/1/6 (38,14(3),(5),S,C,M(10),E).

Northumberland

Holy Island (farm at Fenham), 1362, 1380-1, 1401-2, 1416-7, DCD Cell Accounts (26,5(2),2<sup>46</sup>,-,P/Cw,O(7<sup>46</sup>),E).

Nottinghamshire

Southwell, 1373-4, PRO SC6 1144/10 (18,4,(2),S,C,O(10),E); Laneham, 1373-4, ibid (6,4,-,F,C,M,E); Scrooby, 1373-4, ibid (18,3,-,F,C,O,E).

Oxfordshire

Shifford, 1407-8, PRO SC6 958/13, 2nd folio (11,3,1,F,C,0(12),-); Crowmarsh, 1391-2, PRO SC6 958/16 (8,4,1,-,C,M(10),E); North Leigh, 1373-4, PRO SC6 959/7 (21,3,(2),S,C/T,0(11),E); Fritwell, 33-5 Edw III, PRO SC6 1121/6 (4,3,-,-,-,M,L); Witney, 1381-2, HRO Eccles. 2 159388, fos. 9v-11 (20,9,3,F,C/T,M(9),E); Adderbury, 1381-2, ibid, fos. 11-11v (6,14,-,F,C,M,E); Islip, 1357-8, WAM 14799 (34,5(5),4,F,C,0(9),E); Launton, 1357-8, 1368-9, WAM 15353, 15367 (11,5(2),(1<sup>47</sup>),F<sup>47</sup>,C<sup>47</sup>,M(10<sup>47</sup>),E); Cuxham, 1350-9 (8 accounts), Harvey, Man. Records, pp. 494-606 (13,7(3),2,W,C,M(9),E,OS); Holywell, 1372-3, MCL No. 4523 (12,6(6),-,F,C,0,E); 'Milton', 1384-5, LRO DDK 1746/11 (12,10(4),3,S,C,M(6),L).

Rutland

Market Overton, 36 Edw III, PRO SC6 964/12 (12,7(3),2,S,C,M(8),L,OS); Oakham, 1350-1, WAM 20267 (0,6,(1),S,C,AH(5),E).

Shropshire

Stanton Lacy, 1392-3, PRO SC6, 967/27, fos. 12-12v (11,1,1,F,P,0(10),L); Cleobury Barnes (in Cleobury Mortimer), 1372-3, PRO SC6 965/12 (16,1,2,S,P/Dr,0(8),L).

Somerset

Beckington, 1375-6, PRO SC6 968/7 (10,2,1,F,P,0(10),L); Farleigh Hungerford, 1352-3, 1385-6, PRO SC6 970/14, 21 (22,2,2,F,C/P,0(11),L); Porlock, 1419-20, PRO SC6 973/24 (18,3,-,S,P,0,L,OS); Wellow, 1365-6, PRO SC6 974/25 (16,0,2,S,P,0(7),L); Holway (in Taunton), 1381-2, HRO Eccles. 2 159388, fos. 1v-2 (27,3,3,F,C,0(9),E,OS); Bishop's Hull, 1381-2, ibid, fos. 2-2v (27,0,3,F,P,0(8),E,OS); Nailsbourne (in Kingston), 1381-2, ibid, fos. 2v-3 (9,0,1,F,P,0(8),E); Staplegrove, 1381-2, ibid, fos. 3v-4 (18,2,2,F,C,0(9),E,OS); Poundsford (in Pitminster), 1381-2, ibid, fos. 3v-4 (18,0,2,F,-,0(8),E,OS); Rimpton, 1381-2, ibid, fos. 4-4v (27,2,3,F,C/P,0(9),E); West Hatch, 1356-(??), SRO DD/CC 112826 13/18 (12,0,1,S,Ca,0(10),E); Evercreech, 1381-2, LP E.D. 440 (-<sup>48</sup>, -<sup>48</sup>, 3,S,P,-,-).

Staffordshire

Sedgley, 1354-5, BRL 347143 (30,4,(2),F,C/P,0,L); Farewell, 1377-8, StRO D1734/3/3/34 (-,-,-,F,-,-,E)<sup>49</sup>; Elford, 1355-6, BoL MS DD Weld. C9/1 (16,4,(2),-,-,0(9),L)<sup>49</sup>.

Suffolk

Acton, 1356-7, PRO SC6 989/1 (28,19(7),3,S,C,M,L,OS); Clopton Kingshall (near Woodbridge), 1355-6, PRO SC6 994/23 (4,4,(1),S,C,M(7),L); Exning, 1350-1, PRO SC6 996/9 (0,7,-,S,C,AH,E); Hundon, 1374-5, PRO SC6 999/27 (21,17(4),3,S,C,M(11),-,OS); Lawshall, 1374-5, PRO SC6 1002/1 (10,10(4),2,S,C,M(8),E); Reydon, 1391-2, PRO SC6 1003/21 (15,15(5),2,S,C,M,L,OS); Little Ashfield (or Badwell Ash), 1356-7, BL Add. Ch. 9176 (8,10,(2),S,C,M(8),E); (Monks) Eleigh, 1370-1, CCL Bedels Rolls (13,8(3),(2),S,C,M(9),E,OS); Lakenheath, 1364-5, CUL E.D.C. 7/15/1/20 (0,8(3),(2),S,C,AH(3),E); Melton, 1378-9, *ibid* 7/16/2/22 (2,4,(1),S,C,M(5),E); Horham, 1371-2, ESuffRO HA 68:484/318 (4,8,2,S,C,M(5),-,OS); Chevington, 1386-7, WSuffRO E3/15.3/2.16 (12,13(4),2,S,C,M(11),E); Risby, 1384-5, *ibid*, E3/15.13/2.20 (8,2(2),(3),S,C,O(3),E,OS); Hargrave, 1376-7, *ibid*, E3/15.10/2.20 (7,4,1,S,C,M(9),E,OS); Great Saxham, 1364-5, *ibid*, E3/15.14/1.7 (10,12(5),2,S,C,M(9),E); Lackford, 1368-9, *ibid*, E3/15.12/2.1 (0,8,2,S,C,AH(4),E); Erbury (in Stoke by Clare), 1385-6, PRO SC6 996/7 (10,14(5),2,S,C,M(10),-,OS).

Surrey

Banstead, 1368-9, PRO SC6 1010/16 (18,6(4),(2),W,C,O(10),L,OS); West Gomshall, 33-5 Edw III, PRO SC6 1121/6 (8,2,-,-,0,L); East Gomshall, 33-5 Edw III, *ibid* (8,2,-,-,0,L); Walworth (near Vauxhall), 1368-9, CCL Bedels Rolls (8,5(3),(1),S,C,M(10),E); Farnham, 1381-2, HRO Eccles. 2 159388, fos. 16v-17v (12,5(5),1,W/F,C,O(12),E); Battersea, 1355-6, WAM 27511 (25,12(6),(3),F,C,O(10),E); Doune (in Wandsworth), 1394-5, WAM 27578 (9,4,1,S,C,O(11),E); Morden, 1356-7, WAM 27335 (13,6(2),2,F,C,M(9),E); Pyrford, 1394-5, WAM 27431 (5,4,1,W<sup>50</sup>,-,M(8),E); Malden, 1379-80, MCL no. 4678 (20,4(3),2,W/F,C,O(11),E); Farleigh, 1360-1, 1371-2, MCL Nos. 4855, 4859 (4<sup>51</sup>,6<sup>51</sup>(2<sup>51</sup>),-,W<sup>52</sup>,-,AH/O,E,OS<sup>52</sup>); Leatherhead, 1376-7, MCL No. 5370 (11,4,1,F,C,O,E,OS); Thorncroft, 1374-5, MCL No. 5767 (10,5,1,W/F,C,M,E,OS).

Sussex

Chalvington, 1366-7, 1413-4, ESussRO SAS CH 257, 263 (19,6,2<sup>53</sup>,W,C/P,O(9<sup>53</sup>),L); Streat, 1366, *ibid*, SAS M 643 (15,3,2,S,P,O(8),L); Westdean (East Sussex), 1387-8, *ibid*, SAS M 673 (8,2,1,W,P,O(9),-); Heighton<sup>54</sup>, 1404-5, *ibid*, SAS G1/45 (8,0,(1),S,Ca,O(7),L); Alciston, 1376-7, 1419-20, *ibid*, SAS G44/30, 73 (46,11,5<sup>55</sup>,W,C/P/Ca,O(10<sup>55</sup>),E); Barnhorn Manor (in Bexhill), 1385-6, *ibid*, Add. MS 4930 (17,19,2,W,C/P,M,E); Glynde, 1368-9, *ibid*, Glynde MS 1073 (28,4,-,W,Ca/Cu,O,L); Beddingham, 1384-5, *ibid*, Glynde MS

1002 (21,6,3,W,P,0(8),L); Bosham, 1368-9, WSussRO Bosham Manor Collection Acc. 939 II/A/11 (44,6,5,W/F,C,0(9),L); Funtington, 1381-2, *ibid*, II/C/1 (6,2,(1),W/F,-,0(7),L,OS); West Thorney, 1355-6, *ibid*, II/1 (6,3,(1),W/F,-,M(8),L); Wiston, 1372-3, 1400-1, *ibid*, Wiston MS 5253, 5272 (22,6,2,W,C/P,0,L); Duncton, 1375-6, *ibid*, Add. MS 12240 (18,2,2,W/F,C/P,0(9),L); Heyshott, 1375-6, *ibid* (21,1,2,W/F,C/P,0(10),L); Sutton, 1375-6, *ibid* (14,2,2,W/F,C/P,0(7),L); Petworth, 1375-6, *ibid* (46,9(7),2,W/F,C/P,0,L); Bersted, 1382-3, LP E.D. 227 (-<sup>56</sup>,<sup>56</sup>,2,F,P,-,E); Stoneham (in South Malling), 1392, LP E.D. 971 (30,4,2,S,P,0,E); Mayfield, 1394-5, LP E.D. 695 (12,0,1,S,P,0(10),E); Tangmere, 1382-3, LP E.D. 976 (18,3,2,W/F,C/P,0(9),E,OS); Ecclesdon (Manor, in Angmering), 1385-6, WAM 27801 (24,3,3,W/F,C/P,0(8),-); Marley Farm (in Battle), 1352-1385 (10 accounts), Searle, Lordship and Community, *op. cit.*, p. 457 (36,24,-,-,-,M,E); Allington, 1397, Salzman, 'Property of the Earl of Arundel', *op. cit.*, pp. 38, 41 (8,1,1,-,P/Cpt,0(8),L); Kingston near Lewes, 1397, *ibid*, pp. 38, 41 (11,1,1,-,P/Cpt,0(10),L); Northease (in Rodmell), 1397, *ibid*, pp. 38, 41 (16,3,2,-,P/Cpt,0(9),L); Rodmell, 1397, *ibid*, pp. 38, 41-2 (10,1,1,-,P/Cpt,0(9),L); Meeching (alias Newhaven), 1397, *ibid*, pp. 38, 42 (7,3,1,-,P/Cpt,M(9),L); Clayton and Pyecombe, 1397, *ibid*, pp. 38, 42 (19,5,2,-,P,Co,0(11),L); Keymer, 1397, *ibid*, pp. 38, 42 (27,3,2,-,P/Cpt,0,L); Ditchling, 1397, *ibid*, pp. 38,42 (22,2,2,-,P/Cpt,0(11),L); Rottingdean, 1397, *ibid*, pp. 39, 42 (10,1,1,-,P/Cpt,0(9),L); Brighton, 1397, *ibid*, pp. 39, 42 (8,1,1,-,P/Cpt,0(8),L); Patcham, 1397, *ibid*, pp. 39, 42 (24,4,3,-,P/Cpt,0(8),L); Cuckfield, 1397, *ibid*, pp. 39, 42 (14,4,1,-,P/B,0,L); Saddlescombe, 1397, *ibid*, pp. 39, 42 (16,2,2,-,P/Cpt,0(8),L); Storrington, 1397, *ibid*, p. 38 (12,4,-,-,-,0,L); 'Houndean' (Houndean in Chailey, or Houndean Bottom in Kingston near Lewes?), 1397, *ibid*, pp. 38, 41 (18,3,2,-,P/Cpt,0(9),L).

### Warwickshire

Ladbroke, 1387-8, 1402-3, PRO SC6 1041/13, 18 (13,5(3),1½<sup>57</sup>,F,C,0(10),L); Knowle, 1362-3, WAM 27705 (18,4<sup>58</sup>(1<sup>58</sup>),2,F,C,0(9<sup>58</sup>),E); (Long) Itchington Rectory, 1367-8, PRO SC6 1039/14 (6,3(3),-,F,C,0,E); Compton (manor of Compton in Henmarsh, in Long Compton), 33-5 Edw III, PRO SC6 1121/6 (10,0,-,-,-,0,L); Hampton Lucy, 1371-2, 1375-6, 1376-7, 1377-8, 1380-1, 1381-2, 1385-6, 1388-9, 1389-90, WoRO Ref. 009:1 BA 2636 163 92160, 163 92158 1/7, 163 92161-8<sup>59</sup> (12,5(2),1½<sup>60</sup>,F,C,M,E); Sutton-under-Brailles, 1379-80, GRO 1099 M31/46<sup>61</sup> (9,2,-,-,-,0,E); Weston Juxta Cherington (about 1 mi. WSW of Cherington; now a deserted village), 1352-3, SBT DR 98/865<sup>61</sup> (16,4,-,-,-,0,L); Oversley, 1379-80, SBT DRS 2254<sup>61</sup> (9,3,(1),F,-,0(10),L); Lighthorne,

1389-90, SBT DR 98/672a<sup>61</sup> (26,5,2,F,C,O,L); Chesterton (now a deserted village; for its location see H.C. Darby and G.R. Versey, Domesday Gazetteer, Cambridge (1975), map 53), 1353-4, SBT DR 98/393b<sup>61</sup> (26,7,-,F,-,O,L); Brandon, 1352-3, PRO SC6 1038/9<sup>61</sup> (16,10(3),-,F,C,M,L); Alderminster, 1396-7, PRO SC6 1063/23<sup>61</sup> (24,4,3,-,C,O(8),E); Priors Marston, 1411, PRO E 164/21 (Coventry Priory Cartulary)<sup>61</sup> (13,6(6),-,-,C,O,E); Blackwell, 1412-3, WCL C538 (19,6,2,F,C/P,O(11),E)<sup>62</sup>.

### Westmorland

Maulds Meaburn, 1363-4, 1364-5, 1369-70, CuRO D/Lons/L Manors, MM Accounts (11<sup>63</sup>, 1<sup>63</sup>, (1<sup>64</sup>), S,P,O,L).

### Wiltshire

Edington, 1413-4, PRO SC6 1052/2 (26,8,4,F,C/P,O(8),E); Heytesbury, 1357-8, PRO SC6 1052/18 (17,3,2,F,C,O(9),L); Downton, 1381-2, HRO Eccles. 2 159388, fos. 4v-6 (39,7,4,W/F,C,O(10),E,OS); Bishopstone ('Ebblesborne'), 1381-2, *ibid*, fos. 6-7 (19,2,2,F,C,O(9),E,OS); Bishop's Fonthill, 1381-2, *ibid*, fos. 7v-8 (19,2,2,W/F,C,O(9),E,OS); (East) Knoyle, 1381-2, *ibid*, fos. 8-9 (33,5,4,F,C/P,O(9),E); Upton Knoyle (about 1 mi. NW of East Knoyle), 1381-2, *ibid*, fos. 9-9v (10,2,1,F,C,O(10),E); Ebbesbourne Wake, 1380-1, WiRO 492/13 (19,4,3,F,C,O(7),-); Kingston Deverill, 1403-4, WiRO 192/32/11 (19,1,3,F,-,O(6),E); Chippenham, 1402-3, WiRO 192/29A (18,5,2,S,C/P,O(10),E).

### Worcestershire

Broadway ('Bradway'), 1396-7, PRO SC6 850/16 (33,12(10),5,F,C/P,O(7),E); Wadborough, 1402-3, PRO SC6 1075/17 (9,0,1,S,P,O(8),L); Peachley, 1351-2, Early Compotus Rolls of the Priory of Worcester, ed. J.M. Wilson and C. Gordon (Worcs Hist. Soc., 1908), pp. 63-70 (29,5,3,F,P,O(10),E); Pershore, 1386-7, WAM 22127 (12,6(5),2,F,C,O(7),E); Pinvin, 1351-2, WAM 22285 (8,0,(1),F,-,O(7),E); Pensham ('Pendesham'), 1367-8, WAM 22223 (10,2,(1),S,-,O(10),E); Bredon, 1375-6, 1384-5, 1389<sup>65</sup>, 1392-3, 1393-4, 1395-6, WoRO Ref. 009:1 BA 2636 158 92014-5, 193 92628 4/9, 158 92017, 157 92012 1/8, 158 92020<sup>66</sup> (17<sup>67</sup>, 4<sup>67</sup>(4<sup>67</sup>), 2<sup>68</sup>, F,C/P,O(9),E); Whitstones (in Claines), 1389, *ibid*, 193 92628 4/9<sup>69</sup> (24,6(6),-,-,-,O,E); Ripple, 1389, *ibid* (9,5,-,-,-,M,E); Kempsey, 1389, *ibid* (18,4(1),-,-,-,O,E); Alvechurch, 1389, *ibid* (22,4(1),-,-,-,O,E); Fladbury, 1389, *ibid* (19,4,-,-,-,O,E); Hallow, 1371-2, WCL C596<sup>70</sup> (15,3,(2),F,P,O(8),E); Cropthorne, 1411-2, WCL C565b<sup>70</sup> (27,8,3,-,C/P,O(10),E); Moor (in Lindridge), 1398-9, WCL C649<sup>70</sup> (19,3,3,F,P,O(6),E); Bromsgrove, 1385-6, WCL C554<sup>70</sup> (8,1,(1),F,P,O(8),E); Newnham (Bridge),



1399-1400, 1412-3, WCL C657<sup>70</sup>, 659<sup>70</sup> (19,4,3,F,P/T,O(7),E); Leopard Grange ('Lippard', about 2 mi. NE of Worcester; see Domesday Gazetteer, op. cit., map 51), 1384-5, WCL C678<sup>70</sup> (8,2,-,F,P,O,E); Henwick, 1350-1, WCL C633<sup>70</sup> (20,3,-,F,C/P,O,E); Harvington, 1361-2, WCL C610<sup>70</sup> (8,4,(1),F,C,M(10),E); Overbury Rectory, 1356-7, WCL C705<sup>70</sup> (8,3,1,F,C,O(9),E); Overbury Manor, 1366-7, WCL C709<sup>70</sup> (16,3,(2),F,C/P,O(9),E); Sedgeberrow, 1367-8, 1381-2, 1394-5, WCL C759a<sup>70</sup>, C760<sup>70</sup>, C762<sup>70</sup> (18,3,2,F,C/P,O(9),E); Grimley, 1392-3, WCL C586<sup>70</sup> (16,2,2,F,P,O(8),E); Caldwell (in Kidderminster), 1363-4, BoL Worcs Rolls No. 1<sup>71</sup> (6,3,(1),F,-,M(8),L).

### Yorkshire

Helmsley Castle and Lordship, 1355-6, PRO SC6 1078/4 (41,8,5,F,C/P,O(9),L); Sherburn<sup>(in Elmet)</sup>, 1373-4, PRO SC6 1144/10 (29,3,-,F,C,O,E); Cawood, 1373-4, ibid (30,0,(2),F,P,O,E); Beverley, 1373-4, ibid (18,4,(2),F,-,O(10),E); Skidby, 1373-4, ibid (27,4,-,F,C,O,E); South Burton (or Bishop Burton), 1373-4, ibid (26,6,(3),F,C,O(9),E); Wetwang, 1373-4, ibid (0,8,(2),F,-,AH(4),E); Paddockthorpe and Newton (Kyme<sup>72</sup>), 1354-5, NRO F.H. 538 (16,4,(2),S,C/B,O(9),L); Thorner, 1356-7, SL MX Archives, no. 3 (17,3,2,F,C/P,O(9),L); West Tanfield, 1406-7, NYRO ZJX (20,4,(2),F,C/P,O(11),L); Burstwick, 1352-3, 1401-2, 1403-4, PRO SC6 1083/4, fos. 1-1v, HumRO DDCC 15/356, 357 (37,7,23<sup>73</sup>,S,C,O,L); Keyingham, 1352-3, PRO SC6 1083/4, fos. 3-3v (28,3,2,S,C/P/T,O,L); Howsham (with various hamlets), 1352-3, PRO SC6 1084/7 (18,6,(3),S,C,O(7),L); Rockley (in Worsborough) and Stainbrough, 1359-60, PRO SC6 1086/10 (18,7,5,-,P/Co,O(4),-); (Market) Weighton, 1403, SS, xlv, p. 24 (0,7,1,-,C,AH(6),E); 'Couhous', 1373-4, PRO SC6 1144/10 (8,0,1,F,-,O(7),E).

### County Unknown

'Durneford' (Herefordshire?), 1366-7, HeRO G37/I/16 (10,2,-,W,-,O,-,OS); 'Melton' (Norfolk or Suffolk?), 1366-6, 1369-70, NNRO Ref. No. R233D (2,4,(1),S,C,M(5),E).

### FOOTNOTES

1. Based on the 1379-80 account only.
2. The heading for the account is missing, although "3 Hen" is indicated on the dorse. From the script of the account this is probably 3 Hen IV, which, if the period of the account was from Michaelmas to Michaelmas, would give 1402-3.

3. These averaged figures do not include the stock listings from the 1382-3 account, which were incomplete due to imperfections in the manuscript.

4. Based on the 1350-1 and 1377-8 accounts only.

5. Averaged from all three accounts.

6. Based on the 1381-2 account only.

7. Four of these "cart-horses" were obviously for the plough, as four sets of harness were bought for the "horse plough".

8. Based on the 1354-5 account only.

9. Based on the 1419-20 account only.

10. Launceston and Egloskerry, both near to Penheale, are mentioned in the account.

11. Probably 19-20 Ric II. The year of the reign is given but not the king; the script, however, appears to be late fourteenth century.

12. I have placed this at Tarrant Rushton for the purposes of the distribution maps, although it could be any one of the Tarrants in the area.

13. Based on the 1360, 1363, and 1367 accounts only.

14. Based on the 1370, 1371, 1373, 1382, 1408, and 1416-7 accounts only.

15. Based on the 1360, 1396-7, 1398, 1408-9, and 1416-7 accounts only.

16. Based on the 1371 and 1405-6 accounts only.

17. Based on the 1383-4 account only, as the other two accounts did not detail plough costs.

18. Based on the 1373 and 1402 accounts only.

19. Based on the 1373 account only.

20. Average of both accounts.

21. Most of these places, of course, are identifiable, but they are so scattered that it is very difficult to decide where to map the data taken from the account; as a result, they have been omitted from the figures.

22. From a transcript supplied by C. Dyer.

23. The horses were not entered in the stock listings for either account, but were shod in the plough costs. It may be that the animals were borrowed or supplied by a tenant as of custom. As they were a regular part of the demesne farming process, however, they have been included here as part of the demesne draught stock.

24. All from transcripts supplied by C. Dyer.

25. Average of all but the 1394-5 account (160 92061), where the draught stock was in the process of being sold.

26. Based on the 1383-4 account only.
27. Average of all but the 1394-5 account, where the draught stock was in the process of being released from the manor.
28. Based on the 1393-4 account only.
29. Based on the 1360-1 account only.
30. Based on the 1381-2 and 1410-1 accounts only (HRO Eccles. 2 159388, fos. 37v-38; Gras and Gras, pp. 303-12).
31. Based on the 1355-6, 1356-7, 1381-2, 1409-10, and 1410-1 accounts only (Gras and Gras, pp. 268-85, 293-312; HRO Eccles. 2 159388, fos. 37v-38).
32. Based on the 1400-1 account only.
33. Levett, Studies in Manorial History, op. cit., p. 287.
34. Average of all three accounts.
35. Averaged from all three accounts. The breakdown for the individual accounts is as follows: eight oxen and eight horses, of which three were cart-horses, in 1370-1; no oxen and fourteen horses in 1401-2; no oxen and thirteen horses in 1412-3. The demesne was in transition to all-horse farming.
36. Based on the 1370-1 account only.
37. Based on the 1412-3 account only.
38. Based on the 1369-70 account only.
39. From the 1417-8 and 1418-9 accounts only.
40. Held by Robert de Swyllington and successors in 1383-4 and 1394-5. It was seemingly a different manor from that represented in the PRO SC6 908/19 account, which was held by Roger Belers.
41. Based on the 1383-4 account only.
42. See Chapter 3, note 73.
43. Based on the 1391-2 account only.
44. Based on the 1353-4, 1409-10, and 1419-20 accounts only.
45. Based on the 1362-3 and 1373-4 accounts only.
46. Based on the 1401-2 and 1416-7 accounts only.
47. Based on the 1368-9 account only.
48. The draught stock totals were not taken here because of the uncertainty over the number of horses, where the manuscript was badly faded.
49. From a transcript supplied by C. Dyer
50. "In axocione caruc', ijd."
51. Averaged from both accounts, the breakdown being as follows: no oxen and nine horses, of which two were cart-horses, in 1360-1; and eight oxen and two horses, both for the cart, in 1371-2. The demesne was in transition from all-horse farming to using oxen again.

52. Based on the 1371-2 account only.
53. Based on the 1366-7 account only.
54. Presumably Heighton St Clere, as in Sample A (see p. 435 above).
55. Based on the 1376-7 account only.
56. The draught stock totals were not taken here, because of the uncertainty over the number of oxen.
57. Average of both accounts.
58. One cart-horse and three "jumenta pro carecta", assumed to be all hauling beasts for the purposes of calculating the plough-team size.
59. All from transcripts supplied by C. Dyer.
60. Average of all but the 1389-90 account.
61. From a transcript supplied by C. Dyer.
62. From a transcript supplied by C. Dyer and examined in the original by the author.
63. From the 1363-4 and 1369-70 accounts only.
64. From the 1364-5 account, but as there was no stock listed for this account, the plough-team size was not calculated.
65. Stock listing only.
66. All from transcripts supplied by C. Dyer.
67. Averaged from all but the 1395-6 account.
68. Based on the 1384-5, 1392-3, and 1393-4 accounts only.
69. From a transcript supplied by C. Dyer; stock listing only.
70. From a transcript supplied by C. Dyer and examined in the original by the author.
71. From a transcript by C. Dyer.
72. Hornington and Tadcaster - both near Newton Kyme - mentioned several times.
73. Average of all three accounts.

## Appendix D

### Ox-shoeing on English Demesnes, 1200-1500

The question of ox-shoeing, while only a minor issue in the study of medieval agriculture, is unusually interesting from the point of view of technical innovation and diffusion. The shoeing of horses, of course, was an accepted and uncontroversial practice on medieval demesnes and one which showed little change in the period we are now examining. On the other hand, the shoeing of oxen was a much more sporadic practice reflecting perhaps the uncertainty of manorial officials of whether to do it or not. It is this unsettled state of affairs, with its sensitivity to changing conditions and fashion, which provides the main focus of interest.

Although the cost for shoeing oxen was very small - generally only 1 or 2d. per animal per annum<sup>1</sup> - it was, like horseshoeing, carefully recorded in the accounts, because it involved the use of iron. Consequently those demesnes that shoed oxen can usually be separated from those that did not, and altogether 519 demesnes employing oxen in Sample A and 309 demesnes in Sample B had plough costs sections detailed enough to allow this sort of distinction. Of these, 30 demesnes from Sample A (or 5.8 per cent) and 77 demesnes from Sample B (or 24.9 per cent) exhibited signs of ox-shoeing.<sup>2</sup> In both samples, this is likely an underestimate, since, as we have said before, the experience for most of these demesnes is based on only one account; it is entirely possible that ox-shoeing was not done or not recorded for that year, despite it being a normal practice. On the other hand, in those instances where a long

series of accounts was available and consulted in this study, it does appear that ox-shoeing, where it occurred, was done on a year-to-year basis, although inevitably the occasional year was missed.<sup>3</sup>

Despite possible shortcomings in the data, it is clear that concern for protecting the feet of oxen was growing over the period.<sup>4</sup> The proportion of demesnes adopting the practice quadrupled from the time of Sample A to that of Sample B, such that after the Black Death one in four demesnes was doing it. In most cases the practice seems to have been one of prevention, since all of the working oxen were generally shod. In a few instances, however, it may have been done to cure a specific foot ailment, particularly in those cases where a small number of oxen was involved.<sup>5</sup> The geographical distribution of demesne ox-shoeing is shown in Figures D.1 and D.2. From being limited during the period 1250 to 1320 to a belt of demesnes centred round Hertfordshire and Essex, the practice grew until, after the Black Death, it encompassed much of southern England, stretching as far west as Somerset.

What caused this sudden expansion of practice is hard to say. It does seem to have depended on the policies of particular lords. The bishop of Winchester, for example, instituted it in a large way during the fourteenth century,<sup>6</sup> such that, although none of the bishopric demesnes shod oxen in 1286-7, twenty-seven, or about half, of the bishop's demesnes did so in 1381-2.<sup>7</sup> The underlying reasons behind his and other lords' decisions to have oxen shod are difficult to ascertain, but some clues do exist. The more modern reason for shoeing oxen seems to have been to protect their feet from unduly hard surfaces, which would cause hoof damage and eventual lameness.<sup>8</sup> To some extent this also applied to medieval times, as at Steyning (Sussex) in 1337-8, where six of the two dozen or so oxen were shod in August for 12d., when the ground was presumably at its hardest.<sup>9</sup> On the other hand, it is clear from the majority of such references that some other reason was more likely.

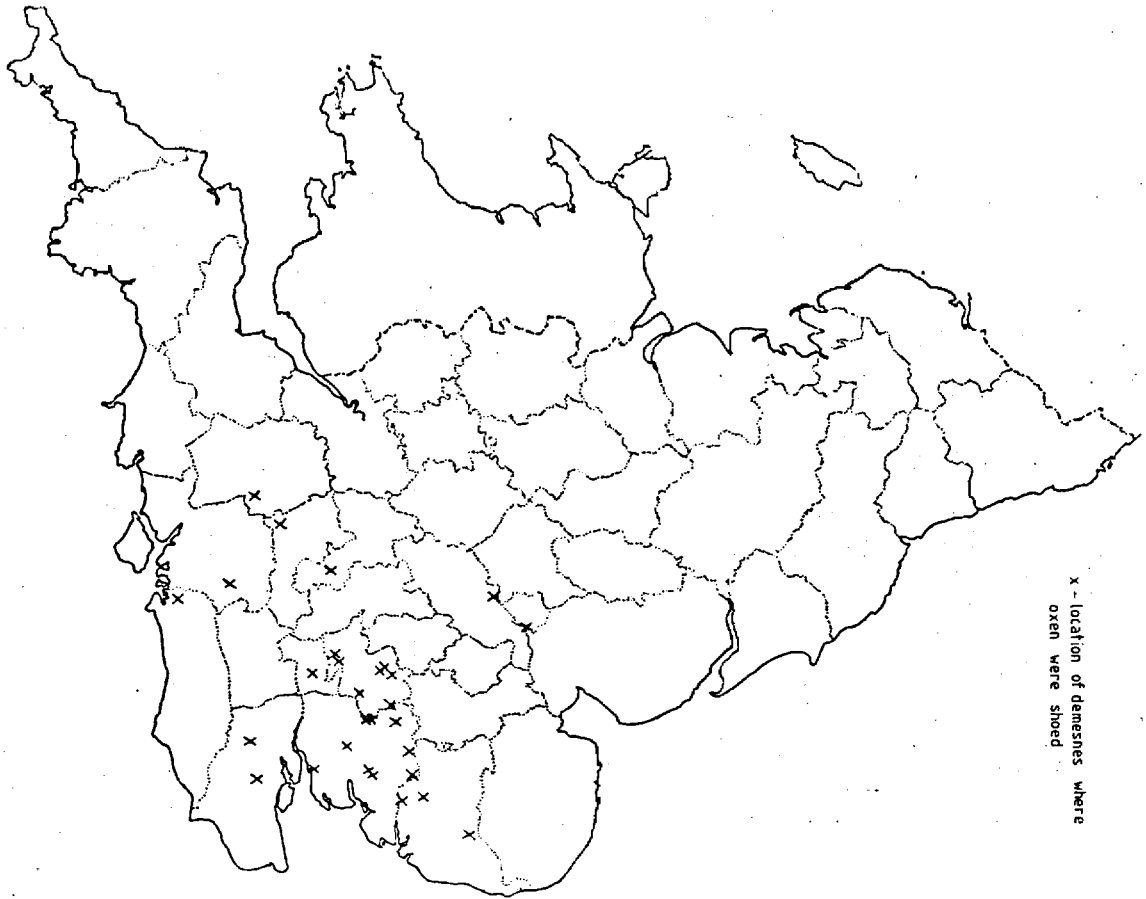


Figure D.1: OX-SHOEING ON ENGLISH DEMESNES (SAMPLE A: 1250 - 1320)

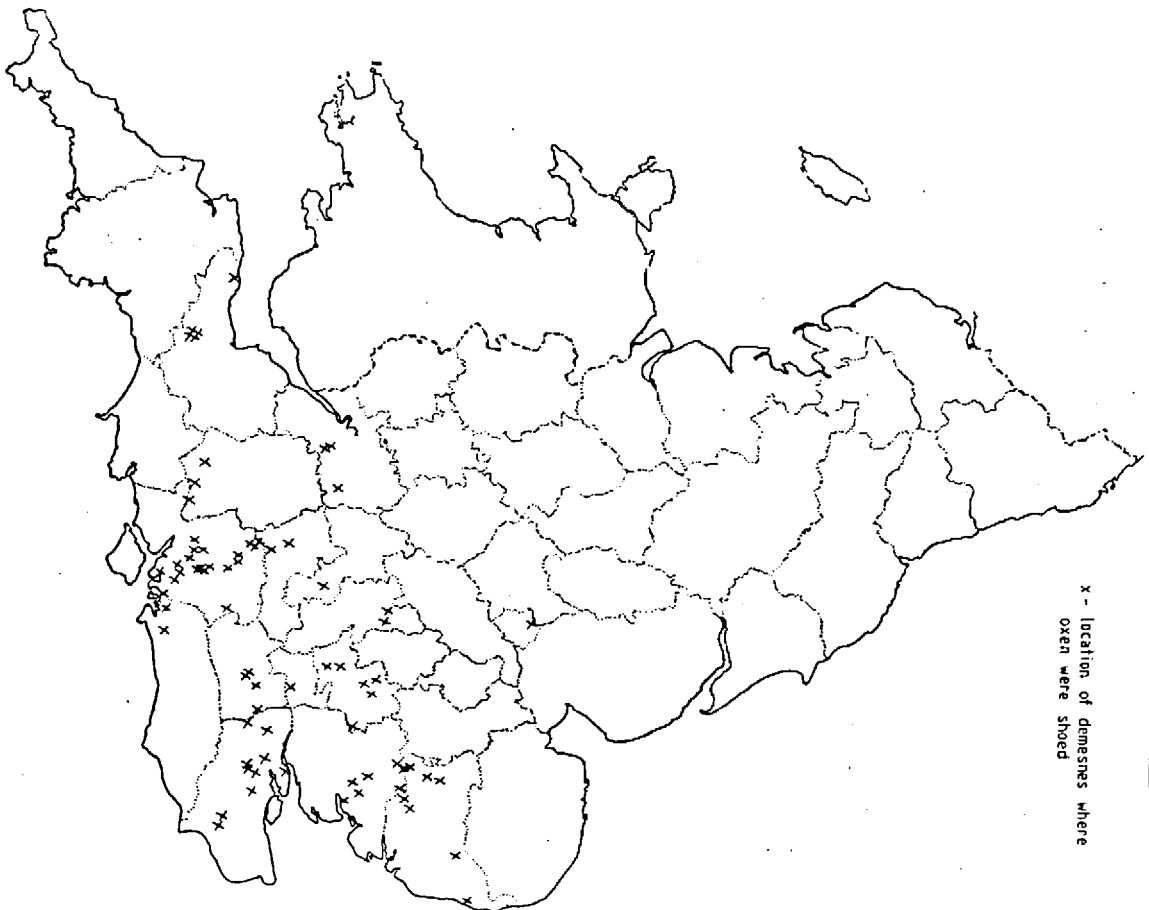


Figure D.2: OX-SHOEING ON ENGLISH DEMESNES (SAMPLE B: 1350 - 1420)

For example, oxen were more often shod at the winter or spring seedings or both,<sup>10</sup> times of damp and cold rather than of heat and hard conditions. Wet weather also figures prominently in an excellent example of one-off shoeing at West Wycombe, Bucks, where the exceptionally bad conditions of 1315-6 made it necessary to shoe eight oxen during the winter seeding "because of the over-abundance of water."<sup>11</sup> Given that West Wycombe was a Chiltern manor, it seems possible that the association of wet weather and stony ground conspired to make ox-hooves tender, a combination that could cause trouble even in the nineteenth century.<sup>12</sup>

The difficulty arising from our distribution maps in Figures D.1 and D.2, however, is that it is not always easy to make the connection between ox-shoeing and the presence of wet stony land. There is a certain concentration of demesnes along the North Downs and the Hampshire chalklands (particularly during the 1350-1420 period), country which, like the Chilterns, often had a covering of flinty loams,<sup>13</sup> but it is more difficult to explain the presence of ox-shoeing in Essex and Hertfordshire. In Essex, for instance, the concentration of ox-shoeing demesnes was found not in the heavy clay-lands of the south of the county, but rather in the lighter, probably better drained soils in the north. Why ox-shoeing should have been particularly required here is not immediately obvious and clearly needs a more detailed examination than was possible in this study.

The general impression from the distributions, though, is that once the practice spread beyond the bounds of Essex and Hertfordshire, especially during the 1350 to 1420 period, it was increasingly to be found in upland areas, where problems with oxen were probably aggravated by wet weather, and it may be here that the rise in the incidence of ox-shoeing reflects the deterioration of climate that has often been portrayed as a feature of European weather at this time. Against this are signs that ox-shoeing continued to spread, reaching the north sometime during the late fifteenth



century. Thus in 1480 a regular practice of ox-shoeing was instituted at Finchale (Durham), while oxen were also shod at Elvethall (Durham) in 1506-7 and 1528-9 and at Monkwearmouth in 1533-4.<sup>14</sup> The long duration of what seems to have been a continuing trend militates against a strict climatic interpretation. It could, for instance, have been simply the result of an increasing tendency to use iron in farming during the later Middle Ages.<sup>15</sup> Perhaps, too, it was just a growing awareness of a cheap means of improving ox traction that attentive lords, such as the bishop of Winchester, were quick to grasp. It may even have been seen as a less expensive alternative to going completely to horses, given that it was these same upland areas that were most prone to going to the new mode of farming.

Finally, it should be noted that the peasant experience of ox-shoeing may not have paralleled that of the demesne, since archaeological finds often indicate the presence of ox-shoes outside the areas indicated in Figures D.1 and D.2, such as on the DMV (deserted medieval village) site at Goltho in Lincolnshire.<sup>16</sup> In view of problems of dating it is difficult to draw firm conclusions from this, but it is apparent that we must be careful in claiming too much on the basis of demesne experience alone. Nevertheless, the spread of ox-shoeing does seem to have exhibited that same east to west movement observed for other innovations in the period (e.g., mixed plough-teams), implying again that it was an imported rather than a home-grown idea. And it was by no means a rapid movement. It seems to have taken at least a century to spread across the south of England, and if we consider the end of the fifteenth century as the terminal date for its diffusion to the furthest reaches of the country, then it obviously took two or more centuries to reach this position, a rate of diffusion that nonetheless would compare favourably with most of the other innovations looked at in this study.

FOOTNOTES

1. It appears that, as with plough-horses (see Chapter 3, note 212), oxen were generally shod on the front feet only, as indicated, for example, at Tangmere (Sussex) in 1382-3 and Hargrave (Suffolk) in 1376-7. LP E.D. 976; WSuffRO E3/15.10/2.20.
2. That is, those demesnes displaying the OS symbol in Appendix C.
3. For example, of the twenty-six accounts printed for Cuxham (Oxon), only six fail to mention the shoeing of oxen. In five of these cases, this was because the account was defective or the period of time covered by the account so short that many costs, including those for ox-shoeing, were omitted. Only in one instance, the account for 1354-5, was the complete absence of ox-shoeing for a whole year noted. Harvey, Man. Records, pp. 163-606.
4. Ox-shoeing, however, was hardly a new phenomenon. It was known in the eleventh century at least and perhaps even in Roman times. Trow-Smith, op. cit., pp. 40, 125; I.G. Sparkes, Old Horseshoes, Aylesbury (1976), p. 29; Leighton, op. cit., p. 107.
5. As at Cottingham (Northants) in 1309-10, when only one of the nineteen demesne oxen was shod, and at Staplegrove (Somerset) in 1381-2, where only three out of the eighteen oxen were shod. References as in Appendix C.
6. Although very few other lords in the regions covered by the bishopric manors seem to have done so, particularly in such counties as Wiltshire and Somerset. Thus, in the B sample, seven out of the eleven bishopric demesnes for these two counties had their oxen shod, compared to only one (Porlock, Somerset) out of eleven demesnes held by other lords.
7. Work done by Mr. Philip Brooks on the Winchester pipe rolls indicates that ox-shoeing was initiated on the bishopric manors during the late thirteenth or early fourteenth century. At Farnham (Surrey), for example, the shoeing of oxen commenced in the 1290s, while oxen at Bentley and Wield (Hants) were being shod in the 1340s. Personal communication.
8. For example, oxen on Lord Bathurst's estates at Cirencester during the last war were reputedly left unshod because they were not used on "macadam roads". E.M. Clifford, 'Working Oxen at Cirencester', Trans. of the Bristol and Glos Arch. Soc., lxxiii (1942), p. 170.
9. WAM 4012.
10. As at Weston (Herts) in 1275-6, Kelvedon (Essex) in 1294-5,

Birdbrook (Essex) in 1295-6, and Bishop's Waltham and Droxford (Hants) in 1381-2. References as in Appendix C.

11. "Item in ferrura viij boum per j vicem hoc anno ad semen yemale propter nimiam habundantiam aque, xijd." HRO Eccles. 2 159330, fo. 24v. This case of ox-shoeing is not indicated in Appendix C or Figure D.1, because it occurred in only one of the accounts sampled for the demesne.

12. As indicated by the experience of the Scottish farmer, James Cowie: "On another farm, however, which I occupy, where the soil is more of a clayey nature, and somewhat wet and stony, the hoofs of the oxen wore, and became tender, and rendered them unfit for steady work." *Op. cit.*, p. 55. As we have already indicated (p. 10), it was these sorts of conditions that may have led to the original shoeing of horses.

13. Kerridge, Agricultural Revolution, *op. cit.*, pp. 42, 53.

14. SS, vi, pp. cccli-cccxiii; DCD Hostillar's Accounts; SS, xxix, p. 232. At Finchale the shoeing of oxen is mentioned in twelve out of thirteen accounts from 1480 to 1529.

15. As in the case of harrows; see p. 170 above.

16. G. Beresford, The Medieval Clay-land Village: Excavations at Goltho and Barton Blount, The Society for Medieval Archaeology Monograph Series: No. 6, London (1975), p. 89.

## APPENDIX E

### Problems of Translation

One of the difficulties faced in this study involves the translation of the various Latin and Anglo-Latin terms applied to demesne and peasant livestock, especially horses and cattle. Some of these are fairly straightforward: for instance, the word bos has been translated as "ox" throughout this study,<sup>1</sup> vacca as "cow", taurus as "bull", equus as "horse", and so on, as in any good Latin-English dictionary. Others, however, are far less clear. The terms covering horses alone - averus, avrus, affrus, carectarius, hercatorius, jumentum, runcinus, stottus, etc. - can be very confusing. In many of these cases, it has been the policy of scholars, particularly those compiling Latin word-lists, to play safe and simply refer to them as "draught animals".<sup>2</sup> While this satisfies the purists and adds a useful note of caution for the beginner, it is unnecessarily fastidious from the point of view of this study, since in the majority of cases the internal evidence from the sources and its consistency of application make it clear which species of animal is being referred to by a particular term. Fortunately enough documents of a varied nature have been examined in this study that it is possible to lay down some general rules about the more confusing of these terms, for which a short glossary relating to work animals primarily has been constructed below.<sup>3</sup>

Affrus, affra, afrus, afra, etc., anglicised as "affer" - This is the most common term for the demesne or peasant work-horse, especially during the period from 1250 to 1400. Afferes referred to as horses or with foals occur frequently in the accounts.<sup>4</sup> They could be either male or female

and were virtually always adult animals.<sup>5</sup> More often than not, they were plough-beasts, particularly in the south and east.<sup>6</sup> As price data indicate, they tended to be less valuable beasts than oxen or cart-horses.<sup>7</sup> Although some historians consider "affer" as a term applicable to both horses and oxen and even donkeys,<sup>8</sup> there is no evidence in this study to indicate that they were anything other than horses.<sup>9</sup>

Animal (pl. animalia) - usually a term designation livestock in general, although occasionally, as in Domesday, it had a more specialised meaning as non-working or even young cattle.<sup>10</sup>

Averium (pl. averia) - again a term for livestock in general, as is best seen in a brief glossary contained in a late thirteenth- or early fourteenth-century legal textbook: Differencia inter affrum et averium: scilicet affrus est equus carretivus, averium est nomen generale ad equos, boves, oves, porcos, etc.<sup>11</sup> Perhaps the most common usage in this sense occurred in regard to heriot and mortuary payments: e.g., dominus habebit melius averium suum nomine domini, et aliud melius averium nomine rectoris.<sup>12</sup>

However, to complicate matters, it is clear that the term averium was often used in more specific senses. For example, in a list of pasture charges for Littleton (Hampshire) in 1265-6, the animals involved appeared in the order of boves, afros, vaccas, averia, porcos, and bidentes; the order in the list and the scale of charges suggests that averia here were young cattle.<sup>13</sup> Similarly, although it was a rarer event, an averium could also be a horse. This is particularly the case in the north, where, for instance, a 1362 inventory for Monkwearmouth in Durham included iiij averia pro caretis, quorum ij nigri, j gray, j dune, iiij colers debiles, iiij paria tractuum sufficientia, etc.<sup>14</sup> Altogether, although in most cases the animal referred to by the term averium can be identified from the context in which it appears in the document, some care must be taken in its interpretation.

Averus, avera, averius, averia, avrus, avra, etc., anglicised as "aver" - When used in the second declension masculine or first declension feminine forms, terms with the base aver- or avr- refer only to horses,<sup>15</sup> and in this regard it seems likely that they were forerunners of the term affrus (or affra). As such, they occur frequently in the documents before 1250, especially in accounts and surveys, but become increasingly infrequent afterwards, as the term "affer" gradually takes over. Much confusion, however, can arise from the scribes' habit of abbreviating the pertinent word to aver' or even av', so that it is impossible to determine if it is the averus or averium form that is meant. In such cases one can only go by the order<sup>or context</sup> in which the words occur. In the lay subsidy assessments, for instance, horses are generally listed first, cattle next, so that an aver' appearing at the head of a list is almost certainly a horse, especially if followed by a foal (pullus or pullanus) or other horses.<sup>16</sup> The term "aver" is also found in medieval French, where it appears to refer specifically to animals in general or to young cattle.<sup>17</sup> On the other hand, where the term survives in English it refers mostly to horses.<sup>18</sup>

Caballus - a term which, in classical Latin, represents an inferior class of riding or pack-horse,<sup>19</sup> although in the medieval period it seems to have had the more general meaning of work-horse.<sup>20</sup> Altogether it was found only on a few occasions, primarily in twelfth- and early thirteenth-century documents.

Carectarius, carretarius, etc. - a cart-horse; often given less ambiguously as equus carectarius.

Hercatorius, hercarius, hercharius, etc. - a harrowing horse, again often less ambiguously given as equus hercatorius.<sup>21</sup>

Jumentum (pl. jumenta) - usually mares serving as combination breeding-working stock.<sup>22</sup>

Occatorius, occator - a harrowing horse, often given as equus occarius.<sup>23</sup>

Runcinus - a rouncey, the most common term for horses found at Domesday. It is felt by some that the rouncey was primarily a riding or pack-horse at this time,<sup>24</sup> although, as we have seen in Chapter 2 (pp. 44-5), its proportions in the demesne stock would seem to point to its use as a harrowing animal. After Domesday, runcini are infrequently found among demesne or peasant stock listings,<sup>25</sup> and gradually they seem to have come to represent a class of riding animals only.<sup>26</sup>

Summarius - As far as can be seen from this study, this always represented a pack-horse and was found most often among the stock servicing a noble or ecclesiastical household.

Stottus - an alternative term for "affer", used especially in the south-east and particularly East Anglia. Like affers, stotts seem to have been mostly plough-horses and were presumably male, since very few instances of female stotts are recorded. In the north, especially towards the end of the medieval period, "stotts" came to represent young oxen or steers rather than horses, a meaning that continued into English.<sup>27</sup> Similarly, in the south and east, although the term stottus continued to be applied to work-horses right to the end of the direct demesne farming period, it gradually lost ground to the term affrus.<sup>28</sup>

### Summary

In general, the risk of confusing cattle with horses is greatest in the pre-1250 documents, mainly because of the conflicting meanings of the words with the base "aver". Indeed, the development of the word "affer" may have been a device to eliminate some of this confusion. Thus by 1250 a consistent terminology for describing work animals had been established, from which it was much easier to discern the species of animal involved.

FOOTNOTES

1. By "oxen" we mean non-breeding adult male cattle. Presumably they were castrated, although we cannot be sure of this in every case, since the accounts in particular curiously omit the costs of this castration (as against, say, castration costs for pigs, which are often recorded in the accounts). Occasional references do exist, however, to indicate that some oxen at least were castrated animals, as, for example, at Wrabness (Essex), where a taurus castratus was added to the demesne oxen in 1353-4 (WAM 3229).

2. For example, see the translation of affrus, avrus, etc., in the Revised Medieval Latin Word-list (ed. Latham), p. 40 (under 2 averium).

3. Terms relating to young animals, such as bovettus (steer or young ox) have not been included. Where they occur in our study, the Latin is usually given.

4. E.g., "In j equo affro empto, xiijs. iiiijd." (Lawshall, Suffolk, 1374-5; PRO SC6 1002/1); "Idem de .viiij. Afris anno preterito remanentibus... De quibus In adiunctione cum equis carectario .j." (Wellingborough Manorial Accounts, ed. Page, op. cit., p. 39); see also under averium below.

5. Although a confusing case does occur in the account-book for Beaulieu Abbey, c.1270, where in listing the various stages in an animal's life for accounting purposes it is stated for horses that "Pullani equorum primo compoto postquam nati sunt pullani vocantur, secundo compoto vocantur superannales, tercio compoto vocantur affri. Quarto compoto coniunguntur masculi cum masculis, femelle cum femellis et efficientur equi vel eque." (Hockey, p. 51). Here it seems that affers were young animals, perhaps being broken in for work. However, nowhere is this interpretation supported by the accounts themselves, even for Beaulieu Abbey, since horses designated as "affers" in the accounts invariably retain that appellation all through their adult lives.

6. E.g., "In j affro empto ad carucam..." (Billingbear, Berks, 1286-7; HRO Eccles. 2 159308, fo. 17v).

7. Cf. the prices for plough-horses (afers and stots) versus oxen and cart-horses in D.L. Farmer, 'Some Livestock Price Movements in Thirteenth-Century England', EcHR, 2nd series, xxii (1969), pp. 2-5.

8. Chibnall, pp. 1-2; Searle, Lordship and Community, op. cit., p. 292.

9. At least in the medieval period. Two "affers" seemingly appear as cattle in a 1528 Bedfordshire will, but this seems to be a corruption for heifers. BRO ABP/R2, fo. 187v.

10. Darby, Domesday England, p. 163. For animalia as young cattle,



see Brown, esp. pp. 9-13.

11. CUL MS Dd. VII. 14, fo. 19, as quoted in Walter of Henley, op. cit., p. 27n.

12. From a 1266-7 extent of Frocester in Gloucestershire. Cart. Mon. Glos, iii, p. 88.

13. Ibid, pp. 36-7. The use of averium as specifying young cattle is also apparent in the Yorkshire lay subsidy of 1297; Brown, esp. pp. 2-8.

14. The colours of the animals and the presence of collars and traces strongly indicate that these were horses. SS, xxix, pp. 159-60.

15. E.g., "In stabulum...remanent...iij avers equorum" (Jarrow, Durham, 1416-7; ibid, p. 91); "Idem reddunt compotum de x averiis Remanentibus anno preterito et de j equo de testamento ywonis coc. Summa xj. Et omnes Remanent." (Crawley, Hants, 1232-3; Gras and Gras, p. 211); "Idem reddunt compotum de 3 avris et 1 pullo remanentibus anno preterito. Et de 1 pullo Roberti combustoris. In mortuo, 1. Et remanent 2 avri, et 2 pulli 2 annorum." (Bitterne, Hants, 1210-1; Pipe Roll of the Bishopric of Winchester, ed. Holt, op. cit., pp. 7-8); "Centum equos, quorum alii erunt manni, alii vero runcini, alii summarii, alii veredarii, alii vero averii" (Vitae Abbat. S. Albani 76, as quoted in OED (1933 edn.), i, p. 582).

16. As, for example, the j aver' cum pullo found among the stock listed for Roger de Nueva of Semley (Wilts) in the 1225 lay subsidy (PRO E179 242/47, m. 14).

17. "Cum il deit aver pasture a totes maneres des avers, ey ne ly soit mie suffert for qe a une manere de avers." (Britton, 1292, as quoted in OED (1933), i, p. 582). See also Seneschaucy, cc. 26, 36, 56, 57 (Walter of Henley, pp. 272, 276, 284 (bis)).

18. "A kindly aver will never become a good horse." (James I, Basil. Doron (1603), as quoted in OED (1933), i, p. 582).

19. Chambers-Murray Latin-English Dictionary, London (1976), p. 87.

20. E.g., the caballus hercerius at Middleton (Norfolk) in 1185 (Rot. Dom., p. 51); see also Chapter 2, note 113 and Chapter 4, note 184 above.

21. E.g., Dom. St Paul, pp. 52-3, 69.

22. As at Chalvington (Sussex) in 1366-7, where it is stated that the jumenta had no foals during the year propter magnum laborem. ESussRO SAS CH 257.

23. Or some form of it. See Cart. Mon. Ram., iii, pp. 257, 261, 266, 274, 278, 279, 307, 310, 311, 313 (bis).

24. Darby, Domesday England, p. 165; H.C. Round in VCH Somerset, i, p. 424; Ryder, 'Livestock', op. cit., pp. 350, 400.

25. Some are listed for the Crowland Abbey demesnes in 1258-9; Page, pp. 182ff.

26. Thus at Finchale (Durham) in 1307 were found duo runcini pro armigeris (SS, vi, p. ii).

27. "Stotts" as young oxen or steers appear frequently in sixteenth-century probate inventories. E.g., see Yorkshire Probate Inventories 1542-1689, ed. P.C.D. Brears (YASRS, cxxxiv, 1972), p. 17.

28. See, for example, Raftis, Ramsey Abbey Estates, op. cit., p. 130.

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From documents held in the<sup>A</sup> BCM, BL, BoL, BRL, BRO, CCL, CUL, CuRO, DCD, DCLL, ERO, ESuffRO, WSussRO, GLRO, GRO, HRO, HeRO, HertsRO, HumRO, LP, LRO, LeRO, LiRO, MCL, NNRO, NRO, NYRO, PRO, SBT, SL, SRO, StRO, WAM, WaRO, WCL, WiRO, WoRO, WSuffRO, and WSussRO (for the record offices involved, see under "Abbreviations" in the prefatory pages at the front of the thesis). For those accounts falling in the sample periods 1250-1320 and 1350-1420, see Appendix C; for the post-1420 accounts, see Chapter 3, notes 51 and 92; for accounts of leased demesnes, see Chapter 3, note 53; for other accounts, mainly relating to the period 1320-1350, see Chapter 3, notes 67, 71, 96, 134, 159, 162, 234, 245, Chapter 4, notes 93, 267.

#### b) Court Rolls

ERO D/DP M189 (per C. Dyer); WoRO Ref. 009:1 BA 2636/167 (Hanbury, 1433; per C. Dyer); *ibid*, Ref. 705:4 BA 54 (Kempsey, 1447; per C. Dyer); *ibid*, Ref. 009:1 BA 2636/175 (Whitstones, 1462; per C. Dyer); BRL 346320-2; WAM 27744.

#### c) Lay Subsidy Assessments

PRO SC11, Roll 531 (per R.H. Hilton); PRO E179 123/5, 238/119a, 242/12, 13, 47, 127.

#### d) Surveys and Extents

TCL MS R.5.33, fos. 115-116A; PRO SC11, Roll 271; BL Cott. MS Claud. C. xi; BL Cott. MS Claud. D. xiii (per J. Williamson); NNRO 21187 (per J. Williamson).

#### e) Wills and Inventories

The fifteenth- and sixteenth-century probate wills and inventories used in this study come from a much larger body of wills and inventories collected by the author for future work. For those employed in this study, see the following (especially those indicated by an asterisk): Chapter 4, notes 115\*, 119, 122, 125, 128\*, 134, 135\*, 136, 240, 242\*; Chapter 5, notes 5, 8, 32, 98; Appendix E, note 9.

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