

Rural Land-use in the Metropolitan Hinterland, 1270–1339: the Evidence of *Inquisitiones Post Mortem*

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Abstract

Inquisitiones Post Mortem (IPMs) have been used by historians for a variety of purposes, but their value as a source for the study of medieval land-use has not been fully realized. Used in large numbers they can illustrate broad contrasts between places and regions in terms of resource endowment and value. This study outlines a methodology for analysing the IPMs with reference to a group of ten counties around London. The results point to the existence of distinctive and specialized agrarian regimes, responsive to a variety of influences – environmental, institutional, and economic.

EXPLOITATION of land lay at the core of the medieval economy and society, but to account accurately for the diverse forms which this exploitation took, and thus to locate medieval land-use within its social, economic, and ecological context, is no simple matter. The biological constraints of an organic agricultural technology, coupled with a reliance upon hand tools and human and animal muscle power, ensured that natural, environmental factors exercised an important general influence upon the overall pattern. Yet if climate, soil, and topography presented certain physical opportunities, it was human factors which determined the precise land-use response.

Prominent among these human factors were the socio-property relations which determined access to, and control of, land. Seignorial and royal privilege marked out substantial areas of the countryside as forest or park-land within which land

exploitation was limited or constrained.² Manorialism was superimposed irregularly upon the land, with important implications for the respective land-use shares of lords and their dependent tenants.³ Demesnes varied greatly in size, in the range of resources with which they were endowed, and in the supplies of customary labour upon which they could draw. They varied also in the size, composition, and type of ownership of the estates to which they belonged, with an important distinction existing between estates on which the consumption requirements of the household dictated patterns of production and those on which production for exchange prevailed.⁴ The need to provide for basic

² P Stamper, 'Woods and Parks', pp 128–48 in G Astill and A Grant, eds, *The Countryside of Medieval England*, Oxford, 1988, pp 128 ff; L M Cantor, 'Forest, chases, parks and warrens', pp 56–85 in *idem*, ed, *The English Medieval Landscape*, 1982.

³ Variations in manorial structure and their implications are discussed in E A Kosminsky, *Studies in the Agrarian History of England in the Thirteenth Century*, Oxford, 1956. For a case study see also B M S Campbell, 'The Complexity of Manorial Structure in Medieval Norfolk: a Case Study', *Norfolk Archaeology*, XXXIX, 1986, pp 225–61.

⁴ For analyses of the role of consumption in structuring production on major ecclesiastical estates see K Biddick, *The Other Economy: Pastoral Husbandry on a Medieval Estate*, Berkeley and Los Angeles, 1989, and *idem*, 'Agricultural Productivity on the Estates of the Bishopric of Winchester in the Thirteenth Century: a Managerial Perspective', pp 95–123 in B M S Campbell and M Overton, eds, *Land, Labour and Livestock: Historical Studies in European Agricultural Productivity*, Manchester, 1991.

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subsistence is generally considered to have loomed large in shaping the land-use of peasant producers and this, in turn, was influenced by the extent to which production was organized on an individual or collective basis. Thus, contrasting field-systems imposed their own stamp on the land and its use and were themselves inextricably related to a range of human and physical factors.⁵

In an age when organic resources set an absolute limit to the size of population that could be supported, these 'institutional' considerations profoundly influenced the fundamental relationship between population and land.⁶ The size and density of the population for its part affected the total area of land devoted to specific activities and the intensity with which those activities were conducted. In the formulation of M M Postan and his followers, a mounting imbalance between population and land-use resources during the thirteenth century is seen as the key to the 'agrarian crisis' which emerged during the first half of the fourteenth century. In its essentials the 'Postan thesis' holds that an increasing scarcity of grass-land *vis-à-vis* arable, in the absence of significant technological progress, led, through a shortage of animal manure, to a progressive impoverishment of the arable and eventually a general productivity decline and associated abandonment of 'marginal' land.⁷ Central to this interpretation is the belief that stocking densities were a direct function of grass-

land supplies and that available technology offered limited scope for the evolution of pastoral farming systems which made more intensive and productive use of available resources. High prices and valuations of meadow and pasture are thus regarded as evidence of the scarcity of these resources rather than the returns contingent upon their productive and profitable use.⁸ Nevertheless, recent research has tended towards a more positive interpretation, with medieval land-use regimes – both arable and pastoral – being viewed as dynamic and adaptable rather than stagnant.⁹ Within this reappraisal the role of market demand as mediated via economic rent is seen as crucial.

In contrast to Ricardo's notion of economic rent, with its emphasis upon land quality and population density as determinants of land-use, von Thünen's formulation stresses the differential impact of concentrated urban demand and its propensity to generate zones of specialized land-usage in the hinterlands of cities.¹⁰ While the assumption that urban demand is necessarily a positive and progressive factor is by no means universally shared – as witness the literature on 'parasitic cities' reviewed by P Abrams – its significance is increasingly stressed by medievalists.¹¹ Recent reappraisal of the population of London and of several leading English provincial towns has increased this interest

⁵ A R H Baker and R A Butlin, 'Conclusion: Problems and Perspectives', pp 619–56 in *idem*, eds, *Studies of Field Systems in the British Isles*, Cambridge, 1973, p 628 ff.

⁶ For example, J B Harley, 'Population Trends and Agricultural Developments from the Warwickshire Hundred Rolls of 1279', *Econ Hist Rev*, 2nd ser, XI, 1958, pp 8–18.

⁷ M M Postan, 'Medieval Agrarian Society in its Prime: England', in *idem*, ed, *Cambridge Economic History of Europe*, I, *The Agrarian Life of the Middle Ages*, Cambridge, 1966, pp 552–9. Also, N Hybel, *Crisis or Change? The Concept of Crisis in the Light of Agrarian Structural Reorganization in Late Medieval England*, Aarhus, 1989, pp 184–5, 230–6; B F Harvey, 'Introduction: the "Crisis" of the Early Fourteenth Century', pp 1–24 in B M S Campbell, ed, *Before the Black Death: Studies in the 'Crisis' of the Early Fourteenth Century*, Manchester, 1991.

⁸ M M Postan, *The Medieval Economy and Society: an Economic History of Britain in the Middle Ages*, 1972, pp 58–61.

⁹ For example, P F Brandon, 'Demesne Arable Farming in Coastal Sussex During the Later Middle Ages', *Ag Hist Rev*, 19, 1971, pp 113–35; B M S Campbell, 'Agricultural Progress in Medieval England: Some Evidence from Eastern Norfolk', *Econ Hist Rev*, XXXVI, 1983, pp 26–46; *idem*, 'Towards an Agricultural Geography of Medieval England', *Ag Hist Rev*, 36, 1988, pp 87–98; M Bailey, *A Marginal Economy? East Anglian Breckland in the Later Middle Ages*, Cambridge, 1989, pp 8–25; Biddick, *op cit*, 1989, pp 61–5.

¹⁰ J H von Thünen, *Von Thünen's Isolated State*, ed P Hall, trans, C M Wartenberg, 1966; see also M Chisholm, *Rural Settlement and Land-Use: an Essay on Location*, 1962, pp 20–32.

¹¹ P Abrams, 'Towns and Economic Growth: some Theories and Problems', pp 9–35 in *idem* and E A Wrigley, eds, *Towns in Societies: Essays in Economic History and Historical Sociology*, Cambridge, 1978.

in the impact of urban consumption on patterns of agricultural specialization.¹² D Keene has argued that London may have had a population of 80-100,000 in 1300, around twice the previously accepted estimate, and the estimated populations of Winchester and Norwich have also been subject to significant upward revision.¹³ These concentrations of non-agricultural population placed a wide range of demands on what E A Wrigley has termed the 'organic economy', for fuel, clothing and building materials as well as for human and animal foodstuffs.¹⁴

I

The importance of the land-use issue for understanding of the medieval economy makes it essential that the subject be investigated as systematically as possible. One source, hitherto under-exploited, which is capable of yielding statistical data on land-use on seigneurial holdings in many thousands of places in medieval England is the inquisition *post mortem* (hereafter IPM). It is the aim of this paper to illustrate the range of information which may be extracted from inquisitions, to establish a methodology for their systematic exploitation, and to apply this methodology in a preliminary examination of the patterns of land-use found in London's hinterland in the period 1270-1339.

IPMs are only one in a range of sources which can be utilized by the historian to

study medieval land-use. The range encompasses the Domesday Survey of 1086, surveys for some large estates, charters and feet of fines recording transfer of lands, treatises on estate management, the 1279 Hundred Rolls, and the annual accounts of manorial bailiffs.¹⁵ In original function the IPMs fall closer to the Domesday Survey than most of these other sources in that like the 1086 Survey their purpose was to inform central government about the landed resources of tenants-in-chief. Inquisitions were held by the king's escheator or his deputy after the death of a lay person who had been or was believed to have been a tenant-in-chief of the crown. Twelve jurors – local men of high repute – were assembled and gave information under oath regarding the lands held by the deceased, the composition of each manor or other holding at a given place, and the revenues accruing thereto each year. They also gave evidence concerning the heir and whether he or she was of inheriting age. The result was an extent or description of each property. The extent itemized the principal types of land-use – arable, meadow, pasture, wood etc. – and commonly provided an acreage and/or valuation for each. In many cases, particularly for arable and meadow, a per-acre valuation was also given which represents the annual 'rent' which the land would be expected to yield. The IPMs also record the existence and value of other types of resource such as dovecots, mills, fishponds, vineyards, and warrens as well as the rents owed by the free and villein tenants of the manor.¹⁶

¹² P Bairoch's recent claim that within western Europe as a whole the level of urbanization c. 1000 was only a few percentage points lower than the corresponding level c. 1700 suggests that the role of medieval urban demand requires more general reassessment: *Cities and Economic Development: from the Dawn of History to the Present*, trans C Braider, Chicago, 1988, pp 136-41. On rural-urban relations in the medieval period see G Persson, *Pre-industrial Economic Growth, Social Organization and Technological Progress in Europe*, Oxford, 1988, pp 30-1, 78-82.

¹³ D Keene, *Cheapside before the Great Fire*, 1985; D Keene, *Winchester Studies*, 2, *Survey of Medieval Winchester*, I, part i, Oxford, 1985, pp 366-70; E Rutledge, 'Immigration and Population Growth in Early Fourteenth-Century Norwich', *Urban History Yearbook* 1988, pp 26-8.

¹⁴ E A Wrigley, *Continuity, Chance and Change*, Cambridge, 1988, pp 5-6.

¹⁵ For descriptions of these sources and their usefulness, see R H Hilton, 'The Content and Sources of English Agrarian History before 1500', *Ag Hist Rev*, 3, 1955, pp 3-19; C C Dyer, 'Documentary Evidence: Problems and Enquiries', pp 12-35 in Astill and Grant, *op cit*.

¹⁶ *Calendar of Inquisitions Post Mortem and Other Analogous Documents in the Public Record Office, Henry III-Henry IV*, 18 vols, 1904-87. The Calendar selectively summarizes the information contained in the inquisitions which are organized in files in the Public Record Office (hereafter PRO). IPMs for the counties palatine are calendared separately.

If the heir was of age the escheator was instructed to release the lands to him after a relief had been paid and homage performed. If the heir was a minor the lands stayed in the king's hand until he reached his majority or, in the case of heiresses, married. A primary function of the inquisition therefore was to inform the exchequer how much profit could be expected from lands while they were in the king's hand, and the escheator had to account to the exchequer officials for that revenue.¹⁷

IPMs survive in large numbers for the whole country (see, for example, Table 2 below) from the mid-thirteenth century until 1660, and are especially numerous for the period 1270–1350.¹⁸ Their usefulness as a source is increased by the fact that their chronological and geographical coverage, though far from even, is less riddled with the gaps which characterize sources such as the Hundred Rolls and manorial accounts.¹⁹ Furthermore, although the IPMs concern the lands of lay tenants-in-chief this is in fact an umbrella title for a large group of individuals which included both the owners of major estates made up of 50 or more manors throughout and beyond England, like the Bigods and de Clares, and lesser men and women whose lands covered a small geographical region sometimes organized into manors, sometimes just one 'manor' with scattered parcels of land.²⁰ Not all IPMs contain full extents, but when they do they adhere to a fairly

consistent format and therefore lend themselves particularly well to computerized analysis.

Notwithstanding that the source has been used in various ways by successive generations of historians, systematic analysis of large numbers of IPMs drawn from a wide geographical area has hitherto been unusual.²¹ Much use has been made of individual manorial extents, particularly by settlement historians, who have linked IPM descriptions of land quality with field work evidence relating to marginal cultivation, and deserted and shrunken medieval villages.²² There have also been several county-level studies of the size of demesnes and value of land, as exemplified by R H Hilton's use of evidence drawn from fifty-eight inquisitions to establish the average size of holding of the Warwickshire nobility *circa* 1400.²³ But studies which transcend county boundaries are comparatively few. Among the earliest and most interesting is H L Gray's pioneering employment of statements drawn from the IPMs to identify areas characterized by two- or three-field systems.²⁴

¹⁷ For a thorough if rather impenetrable account of the escheator and his work see E R Stevenson, 'The Escheator', pp 109–67 in W A Morris and J R Strayer eds, *The English Government at Work, 1327–36*, II, Cambridge, Mass., 1947, pp 109–167. A full list of escheators is printed in *List and Index Society*, 72, 1971.

¹⁸ By the seventeenth century IPM extents rarely provide separate valuations of individual resources.

¹⁹ See below Tables 1 and 2 and Figure 1.

²⁰ The estates of the Bigods are discussed in N Denholm-Young, *Seigniorial Administration in England*, Oxford, 1937, pp 123–51; F J Davenport, *The Economic Development of a Norfolk Manor*, Cambridge, 1906; M Lyons, 'The Manor of Ballysax 1280–1288', *Retrospect*, new series, 1, 1981, pp 40–50. For the de Clares see M Altschul, *A Baronial Family in Medieval England: the Clares 1217–1314*, Baltimore, 1965.

²¹ J C Russell and T H Hollingsworth's extensive use of the information provided on heirs and heiresses in their studies of the replacement rate of England's medieval population are perhaps the most notable exceptions: J C Russell, *British Medieval Population*, Albuquerque, 1948; T H Hollingsworth, 'The Demography of the British Peerage', supplement to *Population Studies*, XVIII, 1964. The per-acre value of arable, meadow, and pasture and ratio of grassland to arable are mapped for the country as a whole at a county level in B M S Campbell, 'People and Land in the Middle Ages, 1066–1500', pp 69–121 in R A Dodgshon and R A Butlin eds, *An Historical Geography of England and Wales*, 2nd edn 1990, p 82.

²² M W Beresford, *The Lost Villages of England*, Lutterworth, 1954, pp 269, 427, n 39.

²³ R H Hilton, *The English Peasantry in the Later Middle Ages*, Oxford, 1975, pp 115, 118–19, 129. See also the *Victoria County History* volumes for Sussex (Volume II, 1907, p 169); Rutland (Volume I, 1908, pp 216–20); Oxfordshire (Volume II, 1907, p 181), and Nottinghamshire (Volume II, 1910, p 275). Subsequently, IPMs were used by R Scott in her 1959 account of medieval agriculture in Wiltshire (*VCH*, Volume IV, p 15); by H C Darby in his 1948 description of medieval agriculture in Cambridgeshire (*VCH*, Volume II, pp 65–6); and by R H Hilton in his 1954 analysis of the medieval agrarian history of Leicestershire (*VCH*, Volume II, p 159–65). More recently IPMs have been used to map the size of demesnes in Norfolk, Campbell, *op cit*, 1986, pp 228–31.

²⁴ H L Gray, *English Field Systems*, Cambridge, Mass., 1915, pp 44–6, 301–2.

However, the approach is essentially qualitative, as is Postan's use of the IPMs along with other manorial valuations to add weight to his argument that late thirteenth-century England was pasture deficient.²⁵ Altogether different is J A Raftis' investigation of land values in a block of eight East Midland counties, which represents the first large-scale attempt to exploit the quantitative potential of this source.²⁶ Unfortunately, Raftis stops short of mapping the data which he so systematically tabulates.

Thus, for all their historical familiarity, as Raftis observes, 'the Inquisitions *Post Mortem* have never had their own historiographical tradition; nor ... even their own historian', and their potential for yielding systematic maps of demesne land-use has yet to be fully realized.²⁷ In part this lack of scientific analysis stems from the IPMs' reputation for unreliability. In this respect E A Kosminsky's verdict that 'it is certain, then, that we are dealing with an extremely unreliable source' has been highly influential.²⁸ Kosminsky, however, was mainly interested in the IPMs as a source of information on feudal rights and revenues, where the jurors concerned may well have had a vested interest in understating the value and jurisdiction of the estate. Certainly, historians studying baronial incomes have been less than happy with the IPMs, believing that the jurors were not well informed about the overall financial condition of the estates.²⁹ But this seems much less likely to apply to the physical composition of the demesne and the annual value of its constituent parts, matters with which the local jurors would

have been more familiar. Indeed, Kosminsky's own cross-check between the figures given in the surveys for fourteen manors of Roger Bigod in Norfolk and the contemporaneous (1269-70) series of manorial accounts shows that, although in general the sums given in the accounts were higher than those in the inquisitions, the difference overall was not great.³⁰ This conclusion is endorsed by comparisons of IPMs and accounts undertaken by R H Hilton and P F Brandon.³¹

Clearly, the IPMs are a complex source whose accuracy at a detailed level should not be pressed too far. They are also subject to the usual problems of inconsistencies in the size and types of measures employed. Yet, as Kosminsky concedes, 'a comparison of the figures they contain, carried out over wide areas, enables us to capture certain characteristic traits, certain peculiarities which, though vague, are vital'.³² Nor is it likely, as Raftis points out, that the complex and sophisticated machinery of central government would have tolerated a system which produced thousands of spurious valuations over many generations with the object of defrauding the exchequer.³³ Most historians would agree that the values in the IPMs are often rounded and like many such valuations today have a tendency to under-estimation. In common with many other historical sources they must be treated with care and checked where possible. Used as Raftis used them, in large numbers over a period of time, they do provide a wide variety of data and permit study of the distribution and variation in

²⁵ Postan, *Medieval Economy and Society*, pp 66-7.

²⁶ J A Raftis, *Assart Data and Land Values: Two Studies in the East Midlands, 1200-1350*, Toronto, 1974.

²⁷ *Ibid.*, p 12.

²⁸ Kosminsky, *op cit.*, p 63.

²⁹ C D Ross and T B Pugh, 'Materials for the Study of Baronial Incomes in Fifteenth-Century England', *Econ Hist Rev*, 2nd ser., VI, 1953-54, pp 186-8; J C Ward, 'The Estates of the Clare Family, 1066-1317', unpublished PhD thesis, Univ of London, 1962, pp 133-4.

³⁰ Kosminsky, *op cit.*, p 62.

³¹ R H Hilton compared IPMs and manorial accounts from the first half of the fourteenth century for five Leicestershire manors: *VCH Leicestershire*, Volume II, 1954, pp 161-2. P F Brandon compared IPMs and accounts for the manor of Rotherfield in Sussex: 'Medieval Clearances in the East Sussex Weald', *Trans IBG*, XLVIII, 1969, p 150. A detailed assessment of the reliability of IPM demesne acreages and per-acre valuations will be the subject of a separate publication.

³² Kosminsky, *op cit.*, p 63.

³³ Raftis, *op cit.*, 1974, p 14.

value of different resources in a way that other sources do not. If the absolute areas and values are not entirely to be trusted, their relative amounts are less likely to mislead.

Several historians have, in fact, by their confident use of IPMs, favourably reappraised their worth. In 1967, for instance, I S W Blanchard made extensive use of IPMs to throw light on manorial descent and changes in the composition and level of rents in Derbyshire between 1247 and 1540.³⁴ In 1984, H S A Fox further rehabilitated the reputation of the IPMs when he stated, 'figures from extents in Inquisitions *Post Mortem* provide our best widely and easily available evidence on land-use': he conceded that figures in many extents are rounded approximations, but concluded 'I have become convinced, from the way in which they consistently reflect known local contrasts in physical setting, that they provide a good generalized picture of medieval land-use'.³⁵ The results presented in this paper endorse Fox's positive view.

II

The 'Feeding the City I' project has assembled a computerized database, drawn from all available IPMs for ten counties around London – Bedfordshire, Berkshire, Buckinghamshire, Essex, Hertfordshire, Kent, Middlesex, Northamptonshire, Oxfordshire, Surrey – in the period 1270–1339, as part of its study of the metropolis's influence on its agrarian hinterland.³⁶ This comprises information on the quan-

ties and values of all demesne resources extracted from a total of 1966 IPMs, the chronological and geographical distribution of which is shown in Table 1.³⁷

As will be noted, there are some striking differences in the decadal totals. In part this is explicable in terms of annual fluctuations in mortality, but it also reflects both the evolution of the inquisition as an instrument for raising royal revenue and periodic reforms of escheatorial procedures.³⁸ Thus, by the close of Edward I's reign the range of estates being netted by the scheme was significantly wider than at the beginning. Geographically, as can be seen from Table 1 and Figure 1, the data's density of coverage is very good, being especially full in Essex, Bedfordshire, and Buckinghamshire, but significantly less so in Hertfordshire, Surrey, and, especially, Berkshire. These differences in density, like the more conspicuous of the gaps in Figure 1, are largely explicable either in terms of the prevailing density of settlement or the ratio of lay to ecclesiastical holdings. Hence, extensive tracts of poor soil, such as Bagshot Heath, help to explain the sparseness of geographical coverage in parts of Surrey and its neighbouring counties, as the substantial ecclesiastical holdings of Peterborough Abbey do of the Soke of Peterborough. Nor are these ten counties unusual in the density of coverage afforded by the IPMs. Table 2 gives a breakdown by county of IPMs with equivalent extents for the country as a whole during the decade 1300–09. This shows, if confirmation were needed, that the IPMs are a national source of remarkable comprehensiveness (albeit, more

³⁴ I S W Blanchard, 'Economic Change in Derbyshire in the Later Middle Ages, 1272–1540', unpublished PhD thesis, Univ of London, 1967.

³⁵ H S A Fox, 'Some Ecological Dimensions of Medieval Field Systems', pp 119–58, in K Biddick, ed, *Archaeological Approaches to Medieval Europe*, Kalamazoo, 1984, p 121.

³⁶ The counties concerned are the ancient and historic counties. The IPM extents have been used to provide a dense coverage of land-use information which can thereby provide the context for evaluating other less plentiful but more complex sources such as manorial accounts.

³⁷ Damaged or illegible inquisitions were rejected as were those which could not with confidence be ascribed to a county.

³⁸ For a study of mortality among the medieval nobility, see A E Nash, 'The Mortality Pattern of the Wiltshire Lords of the Manor, 1242–1377', *Southern History*, 2 1980, pp 31–43. Reorganizations of the escheatry are discussed by Stevenson, *op cit* and by S T Gibson, 'The Escheatrics, 1327–1341', *Eng Hist Rev*, XXXVI, 1921, pp 218–25.

TABLE 1
Ten-county study area: number of extents per county per decade

County	1270-79	1280-89	1290-99	1300-09	1310-19	1320-29	1330-39	Total	Extents per 100 sq. km.
Beds.	4	15	23	21	29	16	25	133	11.0
Berks.	7	6	17	27	12	17	15	101	5.4
Bucks.	19	15	34	41	31	25	36	201	10.5
Essex	54	62	108	78	72	83	70	527	13.2
Herts.	8	13	17	22	26	19	14	119	7.2
Kent	17	25	62	70	50	60	42	326	8.1
Middx.	2	2	14	6	6	11	14	55	7.5
N'hants.	33	22	38	35	29	40	17	214	8.3
Oxon.	15	6	28	39	28	14	18	148	7.6
Surrey	5	10	39	19	28	17	24	142	7.2
10 counties	164	176	380	358	311	302	275	1966	8.9

TABLE 2
National coverage of IPM extents 1300-09¹

County	No.	County	No.	County	No.
Beds.	21	I.O.W.	23	Notts.	12
Berks.	27	Heref.	37	Oxon.	39
Bucks.	41	Herts.	22	Salop.	46
Cambs.	24	Hunts.	7	Somerset	38
Cornwall	40	Kent	70	Staffs.	14
Cumb.	18	Leic. & Rut.	32	Suffolk	60
Derbs.	13	Lincs.	48	Surrey	19
Devon	49	Middx.	6	Sussex	42
Dorset	25	Mon.	14	Warks.	21
Essex	78	Norfolk	78	Wilts.	44
Gloucs.	40	N'hants.	35	Worcs.	16
Hants.	47	Northumb.	19	Yorks.	25
Total 1190					

¹ Figures for Beds., Berks., Bucks., Essex, Herts., Kent, Middx., N'hants., Oxon., and Surrey from the 'Feeding the City I' database, all others from an independent investigation of IPMs. The separately calendared IPMs of the counties palatine are omitted.

reliable and informative for the counties south of the Trent than for those which fell within the remit of the northern escheators), providing data for parts of the country and types of manor for which there are often all too few alternative sources.

Comprehensive as is their spatial coverage, to derive maps of demesne land-use from the data contained in individual inquisitions is far from straightforward. Each inquisition relates to an individual

manor at a specific point in time. To obtain a sufficiently full geographical coverage to permit detailed mapping therefore means casting a wide chronological net. Yet, as the inquisitions themselves may be used to demonstrate (see Table 9), land-use and land-values changed with time, and administrative procedures remained far from fixed, hence the range of years and choice of terminal dates require careful consideration. Those employed here – the first decade of the

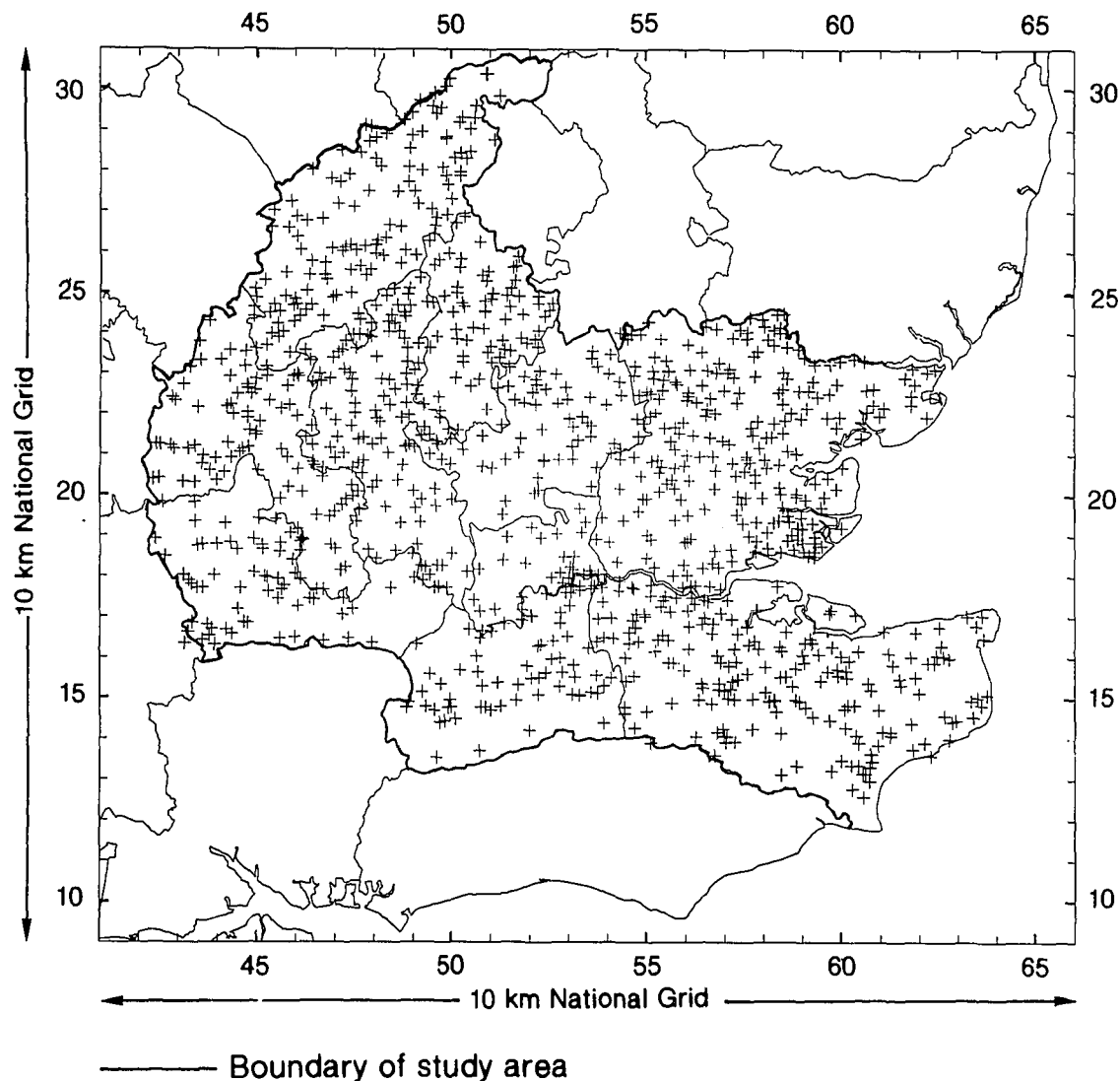


FIGURE 1

Distribution of IPM extents in 'Feeding the City' database 1270-1339

fourteenth century and the three decades to either side – were chosen to reflect rural land-use when the populations of both London and the country at large were at their medieval maxima.

Further problems derive from the complex and dynamic nature of manorial structures. For many manors there is more than one extent, the details of which are often different, thus posing the problem of which extent to use. Quite often

manors comprised lands at a number of different locations, whilst at any one place there might be more than one manor. The problem is highlighted by the situation prevailing at Luton in Bedfordshire, for which there are no less than twelve extents between 1278 and 1328, representing, perhaps, as many as ten different manors. Luton, an area of settlement comprising many hamlets, in addition to a market town, is fortunately an extreme

TABLE 3
Ten-county study area: number of grid-
references with data per county 1270-1339

County	No.	No. per 100 sq. km
Beds.	67	5.5
Berks.	65	3.5
Bucks.	114	5.9
Essex	241	6.0
Herts.	62	3.8
Kent	196	4.9
Middx.	27	3.7
N'hants.	127	4.9
Oxon.	92	4.7
Surrey	74	3.8
10 counties	1065	4.8

TABLE 4
Ten-county study area: number of grid-
references per 10 kilometre grid-square

Grid refs. per grid sq.	Grid sqs.	
	No.	%
0 per grid sq.	30	10.95
1 per grid sq.	27	9.85
2 per grid sq.	44	16.06
3 per grid sq.	36	13.14
4 per grid sq.	31	11.31
5 per grid sq.	32	11.68
6 per grid sq.	27	9.85
7 per grid sq.	15	5.47
8 per grid sq.	12	4.38
9 per grid sq.	10	3.65
10+ per grid sq.	10	3.65
Total	274	99.99

example.³⁹ Over the period 1270-1339 only 9 per cent of grid references have more than three extents whereas 55 per cent have only one. Restricting analysis to relatively short spans of time is one way of dealing with the problem of multiple extents. Another is to select just one extent per place on the basis of the range and quality of the information provided. The former, however, militates against small-scale mapping and the latter entails the arbitrary loss of much potentially useful information. A more satisfactory solution, facilitated by the computerization of the data-base, is to derive a single composite measure of land-use at a particular place by averaging the information contained in all available extents, regardless of their manor of provenance and the exact geographical disposition of their lands.

According to the procedure employed here, a mean is first calculated from all the extents relating to the same 'place'. This exercise is then repeated for all 'places' identified by a single grid reference, thereby permitting mapping on a point basis as exemplified by Figures 2 and 3. In this way data from the original 1966 extents are reduced to 1065 discrete grid references, as specified in Table 3. For

purposes of choropleth mapping a final set of means is then calculated from those for the individual grid references on the basis of a superimposed grid of 274 ten-kilometre squares (Table 4).⁴⁰ The coverage thereby obtained is dense, with, on average, 8.9 extents and 4.8 grid references per 100 square kilometres. Only 11 per cent of grid squares contain no information at all and, as will be seen from Figure 4, these are mostly in peripheral locations, where only part of the grid square lies within the area under investigation. This consistency of coverage lends confidence to the land-use patterns revealed by choropleth mapping.

The IPMs itemize a wide range of different demesne resources which occur with varying frequencies and in differing combinations so that no two demesnes were ever exactly alike. A diagnostic feature of all working demesnes was the presence of a complex of farm buildings usually in conjunction with a dovecot, fishpond, garden, and even vineyard, and often a manor house or other lordly residence. Separate valuations of the individual components of this 'capital messuage

³⁹ J Godber, *History of Bedfordshire 1066-1888*, Bedford, 1969, p 84.

⁴⁰ The squares used are based on the National Grid and are those shown on the Ordnance Survey 1/250,000 map series.

complex' occur in only a minority of extents and show that a capital messuage was worth, on average, 3s 4d, a dovecot 3s 0d, a fishpond 6s 0d, and a garden 5s 10d. These values are, however, unlikely to be truly representative, for the average value of the entire capital messuage complex – and it is a single aggregate value that is most usually given – was only 6s 6d. Over four out of five extents record the presence of a capital messuage complex, the exceptions mostly being extents of lands which were either at farm or formed a detached portion of a demesne whose main focus lay elsewhere.⁴¹

Within the study area the average demesne comprised some 180–90 arable acres. In some cases this figure clearly includes land lying fallow, in others it does not: due allowance for the latter would therefore raise the mean arable acreage to perhaps 225–75 acres. These mean figures, however, subsume a very wide size range, from a maximum of 1200 acres belonging to William de Beauchamp at Hanslope, Buckinghamshire, in 1298, down to the small isolated plots of arable which are a feature of many extents, such as the 6 acres belonging to Philip Burnell at Kingston upon Thames, Surrey, in 1294.⁴² There can be no doubt that the arable holdings of many lay owners were relatively small: half of those extended comprised less than 150 recorded acres, of which a third contained less than 75 acres. Such modest arable holdings might be encountered almost anywhere, but, as Figure 4 shows, were especially a feature of the immediate environs of London, as, more generally, of Kent and Surrey. Substantial arable holdings, by contrast, were more restricted in distribution. One in six demesnes comprised 300 acres or more,

but localized concentrations of such demesnes were relatively unusual. Northamptonshire affords several examples, but altogether more remarkable is the concentration of substantial arable demesnes in eastern Hertfordshire and north-central Essex. Such size variations imply important variations in the intensity and techniques of management. Other things being equal, small holdings were likely to have been more intensively cultivated than large, not least because inputs of labour and capital are likely to have been higher per unit area.⁴³ On the other hand, as the 1279 Hundred Rolls show, large demesnes were more likely to have access to supplies of cheap customary labour since servile tenures tended to be more developed on large manors with large demesnes.⁴⁴ The institutional variations implied by this evidence of demesne size are certainly intriguing and their economic implications merit closer investigation.

Table 5 shows that, of the 'landed resources' surveyed in the extents, arable was almost universally present, whereas meadow was encountered at three-quarters of all locations, pasture at two-thirds, and wood at half. As these figures imply, most demesnes lacked at least one of these land-uses, with only about a quarter of the total combining all four principal types. Compensation was occasionally provided by other types of land-use. These included parks, present at only one in ten locations, and marsh and heath/moor, present at only one in 40. Mapping these lesser land-uses serves to confirm the topographical reliability of the IPMs at an aggregate level since the patterns which emerge are consistent with other factors.

As can be seen from Figure 2, the distri-

⁴¹ In order to maximize the geographical accuracy of the database and avoid the intractable problems of trying to reconstitute functional units such 'detached' lands have been given grid references representing the places where they are stated to lie.

⁴² PRO C133/86 (1); C133/68 (10).

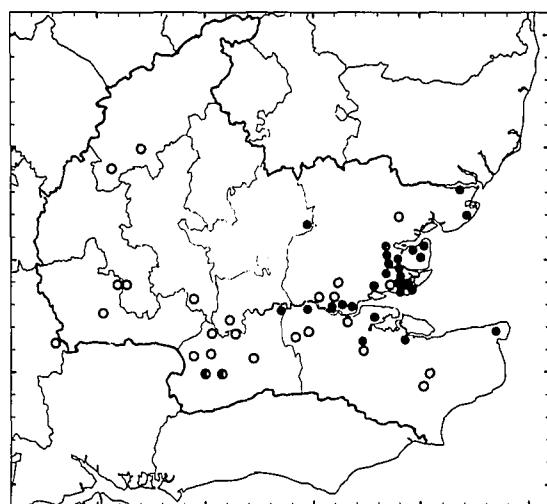
⁴³ The relationship between farm size and capital and labour inputs is discussed by R C Allen: 'The Two English Agricultural Revolutions, 1450–1850', pp 236–54 in Campbell and Overton, *op cit*, pp 244–6.

⁴⁴ Kosminsky, *op cit*, pp 99–103.

TABLE 5

Ten-county study area: presence/absence of principal extended land-uses 1270-1339
(percentage of 1966 extents and 1065 grid references)

Resource	Extents		Grid references	
	No.	%	No.	%
Capital messuage complex	1636	83.2	936	87.9
Arable	1901	96.7	1040	97.7
Meadow	1461	74.3	835	78.4
Pasture	1183	60.2	727	68.3
Wood	824	41.9	532	50.0
Parks	122	6.2	107	10.1
Marsh	38	1.9	30	2.8
Heath and moor	31	1.6	25	2.4
Warrens	11	0.6	11	1.0



○ Heath/Moor ● Marsh ● Heath/Moor and Marsh

FIGURE 2

Distribution of heath/moor and marsh recorded in
IPM extents 1270-1339

butions of heath/moor and marsh are topographically very specific. Heath and moor are recorded in only 31 extents at 25 different locations, most of them in areas of light soil which were too poor to sustain permanent agriculture. It was rarely worth very much – 7 shillings on average – and the quantities involved were mostly quite small, since the more extensive heaths were held in common and consequently did not qualify for inclusion as a demesne asset. Forty acres of heath at Boughton Aluph

in Kent were valued at only a penny an acre in 1286, and at Hockenden in the same county 92 acres of heath were worth in total a mere 1s 2d in 1305.⁴⁵ At the opposite extreme, 100 acres of moor, heath, and waste at Anningsley in Surrey were valued at £1 5s 0d in 1324.⁴⁶ Kent and Surrey, with their extensive tracts of light sandy soil, account, in fact, for half of all references to heath and moor, the overall distribution of which is decidedly southerly. References to marsh, in contrast, are almost exclusively confined to coastal locations, the only significant exceptions being freshwater marshes at Sawbridge-worth in the Lea Valley in Hertfordshire and at Shere and Shalford in the valley of the Tilling Bourne in Surrey.⁴⁷ Coastal marshes are ecologically rich, and in the Middle Ages were an important source of grazing, reeds, rushes, turves, and salt. They were valued accordingly. Marsh belonging to William de Leyburne at Mere in Murston in northern Kent was valued at an impressive £20 0s 0d in 1310 and the mean value of the 37 marshes recorded between 1270 and 1339 was £3 3s 0d, a sum equivalent in value to 125-90 acres of arable.⁴⁸ The estuarine

⁴⁵ PRO C133/45 (1); C133/120 (9).

⁴⁶ PRO C134/90 (6).

⁴⁷ PRO C133/71 (19); C133/80 (6).

⁴⁸ PRO C134/17 (7).

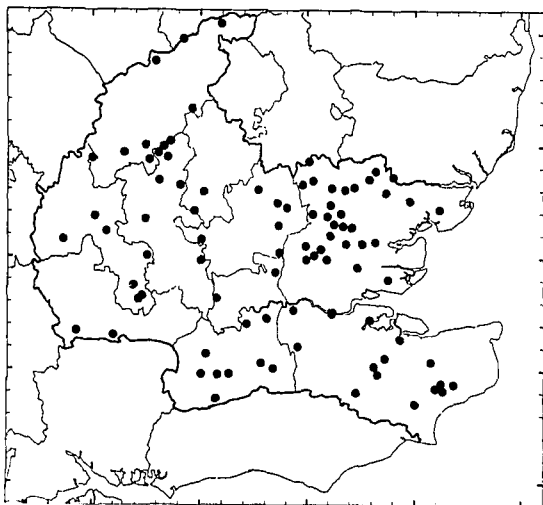


FIGURE 3
Distribution of parks recorded in IPM extents
1270-1339

marshes of the lower Thames Valley, northern Kent, and especially coastal Essex thus show up as a valuable demesne resource, as they had done two centuries earlier in the Domesday Survey.⁴⁹

By contrast, the distribution of parks as shown in Figure 3 reflects the influence of a combination of environmental and human factors. In terms of the former, parks are rarely encountered on soils of the first quality; which may explain both their absence from the rich lands of north-east Kent and their comparative frequency on the poorer soils of Surrey. But this relationship is complicated by the fact that there is also clearly some correlation between park frequency and demesne size. The latter, as observed above and illustrated in Figure 4, was subject to marked spatial variation and bears testimony to the significant contrasts in manorial structure which existed within the region. Nor were these variations independent of environmental conditions. The boulder-clay soils of eastern Hertfordshire and

north-central Essex, for instance, were dominated by the most notable concentration of large arable demesnes in the country, many of them comprising 300 acres or more. Significantly, this same area was characterized by a notable cluster of parks. The explanation undoubtedly lies in the fact that only on the more substantial manors could lords afford to set aside resources solely for the purposes of hunting and recreation, especially if those resources were not themselves intrinsically valuable.⁵⁰ Parks were valued in several different ways depending on the intensity with which this prime use, hunting, was pursued. Brushwood and timber in the park might be ascribed a monetary value, or might be stated just to suffice for fencing the park, as at William Latimer's 200-acre park at Wotton in Surrey.⁵¹ Similarly, herbage in the park might be valued or might be stated to have no value beyond the sustenance of the wild beasts, as at Copton in Kent.⁵² Total valuations of parks thus vary considerably. Robert de Vere's park at Downham in Essex was said to be worth nothing while Guy de Beauchamp's two parks at Hanslope in Buckinghamshire had a combined value of £10 13s 4d.⁵³ The mean value of parks was £1 14s 2d.

In the absence of evidence to the contrary, all these resources are presumed to have been held in severalty. With certain notable exceptions, common resources to which demesnes had access were neither recorded nor valued. Common pasture, for instance, although a widely available resource and in some localities the single most important source of grazing, is separately recorded in only forty-three extents. As with other resources there is a wide

⁴⁹ On the economic significance of the Essex marshlands see H C Darby, *The Domesday Geography of Eastern England*, Cambridge, 1952, pp 239-44.

⁵⁰ For a discussion of the factors influencing the creation and distribution of parks at local and national level see L M Cantor and J Hatherly, 'The Medieval Parks of England', *Geography*, 64, 1979, pp 71-85; Cantor, *op cit*, 1982, pp 73-82.

⁵¹ PRO C135/44 (6).

⁵² PRO C133/71 (19).

⁵³ PRO C135/28 (17); C134/49.

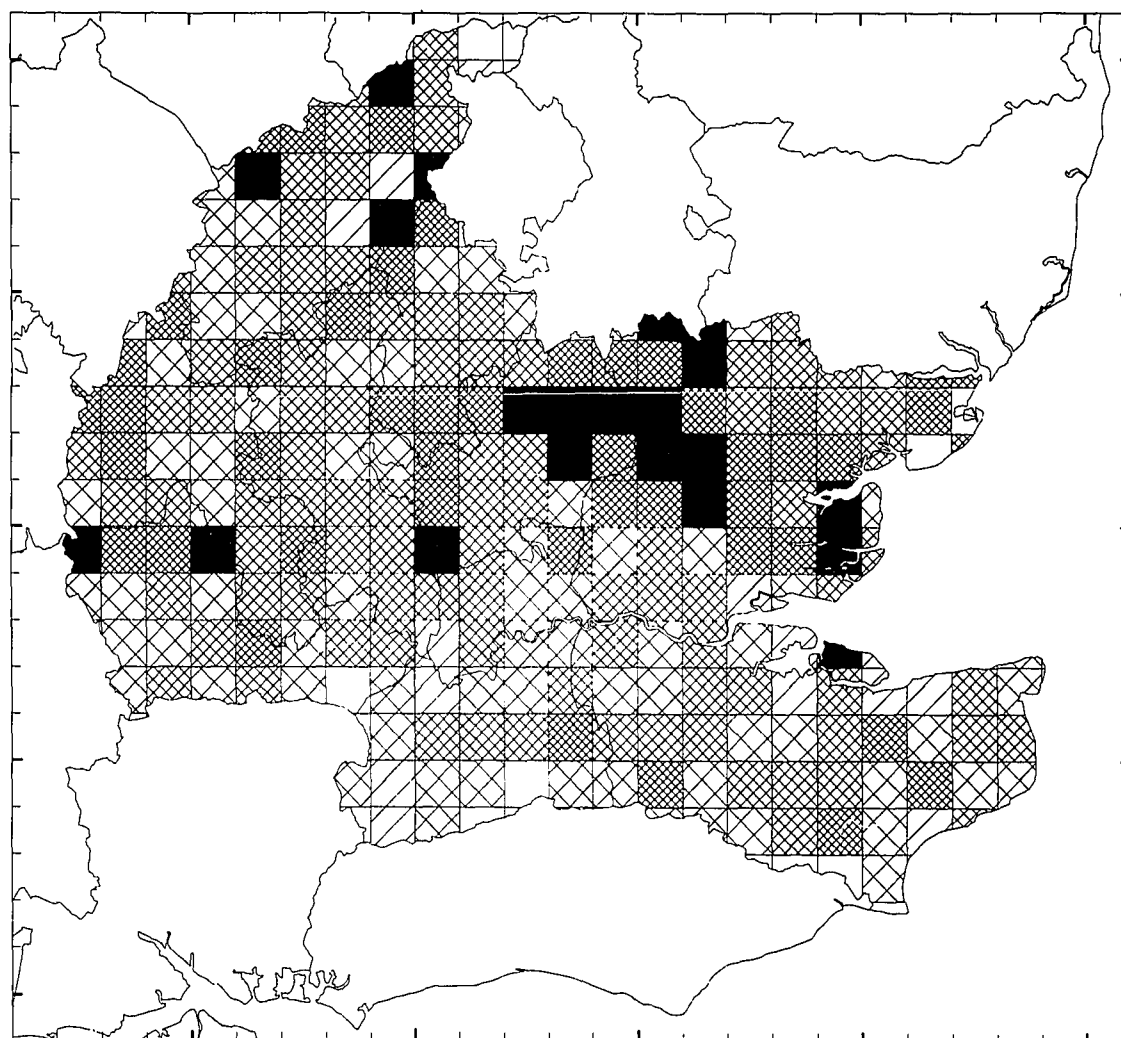


FIGURE 4

Mean acreage of demesne arable recorded in IPM extents 1270-1339

range of values. At Shepperton, Middlesex, 40 acres of pasture were said to be worth nothing because common, whereas at Northampton, Hertfordshire, 46 acres of common pasture were valued at 6d an acre (only 2d an acre less than the 6 acres

of several pasture).⁵⁴ Recorded amounts of common pasture were, however, seldom worth more than two or three shillings in total.

⁵⁴ PRO C135/47 (2); C135/48 (2).

TABLE 6
Ten-county study area: percentage occurrence of land-use information

Resource	N	% of N providing information		
		Aggregate value	Acreage	Value per acre
Arable	1901	99.2	96.5	95.9
Meadow	1461	99.5	98.0	97.6
Pasture	1183	99.5	69.9	69.7
Wood	824	97.3	79.4	77.2
Park	122	98.4	24.5	23.8

N = number of extents with information on the specified land-use.

Rights of common grazing on both mown meadow and fallow arable are also encountered, often in order to explain why the land in question was worth less than might normally be expected. At Yardley Hastings in Northamptonshire 60 acres of demesne arable was said to be worth nothing when fallow 'because it is common to all the tenants'.⁵⁵ The question thus arises whether the acreage figures for arable relate in the main to the entire arable area or merely that part of it which yielded a crop each year. Given that fallowing practices, field systems, and common rights all varied considerably, this has an obvious bearing on any comparison of demesne size, as also upon the relative availability of arable and grassland. Sometimes it is plain that the jurors only recorded that part of the arable capable of yielding an annual income. Fallow arable in such cases was only included when it was a source of seigneurial income, as at Langham and Great Totham in Essex in 1335 where the profits from fallow grazing accrued exclusively to the lord.⁵⁶ Recording practice was, however, far from consistent and changed over time, in as much as from the 1330s extents increasingly distinguished between the sown arable, which yielded an income, and the unsown, which did not. A fuller resolution of this issue is only likely to be

obtained by testing the evidence of the IPMs against that of manorial accounts and other independent sources.

The ambiguous status of fallow arable is frustrating given that in other respects the information available on the principal land-uses is remarkably complete and detailed. As will be seen from Table 6, arable, meadow, pasture, and wood were almost invariably given an aggregate value. The vast majority of arable and meadow entries also specify the acreage and, hence, the value per acre. Thirty-nine manors used carucates to measure arable. Thus, the 1274 extent for Sutton Courtenay in Berkshire gives a value of £12 for the six carucates of demesne arable.⁵⁷ Carucates occur much more frequently in Berkshire and Buckinghamshire than in the eastern counties of the study area. Virgates, which were used by fifty-five manors to measure arable, are also largely absent from the eastern counties, with the bulk of occurrences in Northamptonshire and limited numbers in Oxfordshire and Buckinghamshire. The use of such measures is the main reason why it is meadow rather than arable that is recorded with the most consistent detail.

Some extents distinguish between land of differing qualities on the same demesne. For instance, an inquisition for Woking in Surrey in 1331 distinguishes between arable worth 2d, 3d, and 4d an acre and

⁵⁵ PRO C134/91.

⁵⁶ On both manors the sown arable was assessed at 4d an acre and the unsown at 2d: PRO C135/44 (4).

⁵⁷ PRO C133/6 (1).

specifies no less than eight different meadow valuations ranging from 6*d* to 24*d* an acre. With meadow worth as little as 6*d* an acre the distinction between poor quality meadow and good quality pasture is not always easy to see, especially as the latter sometimes commanded a superior value per acre, but contemporaries seem to have designated grassland as meadow when it was mowable and as pasture when it was not.⁵⁸ Pasture varied a great deal in both quality and extent and in its rougher and more extensive forms was often given only an aggregate value. Hence the fact that only seven out of ten pasture entries specify an acreage, so that it is the better-quality pasture that is disproportionately represented among the per acre values. Interestingly, four out of five woodland entries specify an acreage as well as a value, but here too there are ambiguities. 'Great wood', 'lesser wood', and 'underwood' commanded different values, and, in the case of the last (normally taken to mean coppice wood), it is not always clear whether the value was recurrent or applied only to those years in which wood was cropped. On the whole, the more important and valuable a resource the greater the information which the IPMs are likely to provide about it. Variations in the detail with which resources are recorded thus tell us something about how their economic utility was perceived.

Given these variations in the method and consistency of recording, it becomes clear that comparison of the relative availability and importance of different land-uses is more effectively undertaken in value than areal terms. The effects of doing so may be illustrated with reference to arable and meadow, the only two land-uses for which a value and an acreage are both fairly consistently recorded. A com-

parison of the number of acres of meadow per 100 acres of arable, and the value of meadow in pence per 100 pence of arable is contained in Table 7. The class intervals of the latter have been chosen to reflect the fact that meadow land was worth on average four to five times an acre of arable. Notwithstanding these different intervals and units of measurement, both frequencies exhibit a remarkably similar profile. Meadow was a highly prized resource: on average there were 6.9 acres of meadow per 100 acres of arable and 34 pence worth of meadow per 100 pence of arable. At one in five locations there was no meadow at all and at over half of the remainder there was less than 7.5 acres of meadow per 100 acres arable and less than 30 pence of meadow per 100 pence arable. Both methods of measurement show that locations which were relatively well endowed with meadow were few and far between. In a few exceptional cases there was actually more meadow than arable, but this usually had more to do with the limited extent of the latter than the abundance of the former. At Greenwich, for instance, Giles de Badlesmere had 32 acres of meadow and 28 acres of arable in 1338.⁵⁹

Hay meadows constitute an improved and intensively managed form of grassland developed in response to the need to provide livestock with fodder during the winter months when grass growth ceased.⁶⁰ Environmentally they were dependent upon adequate levels of ground water and spring and early summer sunshine. Their yield varied considerably, as is reflected in valuations which generally lay in the range 6*d* to 4*s* an acre, though

⁵⁹ PRO C135/56.

⁶⁰ For a medieval example of land which was progressively upgraded from marsh, to pasture, to meadow see, H S A Fox, 'The Alleged Transformation from Two-field to Three-field Systems in Medieval England', *Econ Hist Rev*, 2nd ser, XXXIX, 1986, pp 544-5. For the earlier extensive creation of hay meadows during the Romano-British period see M K Jones, 'Agricultural Productivity in the Pre-documentary Past', pp 78-94 in Campbell and Overton, *op cit*, pp 86-93.

⁵⁸ There is only one reference to 'unmowable meadow' - at West Peckham, Kent - where it was worth 3*d* an acre: PRO C133/77 (3).

TABLE 7
Ten-county study area: ratio of meadow to arable
 (calculated at grid reference level)

<i>Acres of meadow per 100 acres of arable</i>			<i>Pence of meadow per 100 pence of arable</i>		
	No.	%		No.	%
0	202	20.1	0	215	20.7
0.1- < 2.5	119	11.8	0.1- < 10.0	120	11.5
2.5- < 5.0	244	24.2	10.0- < 20.0	187	18.0
5.0- < 7.5	160	15.9	20.0- < 30.0	152	14.6
7.5- < 10.0	86	8.5	30.0- < 40.0	88	8.5
10.0- < 12.5	52	5.2	40.0- < 50.0	78	7.5
12.5- < 15.0	29	2.9	50.0- < 60.0	46	4.4
15.0- < 17.5	33	3.3	60.0- < 70.0	39	3.8
17.5- < 20.0	12	1.2	70.0- < 80.0	19	1.8
20.0- < 22.5	20	2.0	80.0- < 90.0	18	1.7
22.5- < 25.0	10	1.0	90.0- < 100.0	13	1.3
25.0- < 50.0	30	3.0	100.0+	64	6.2
50.0+	10	1.0			
Total	1007	100.1	Total	1039	100.0

TABLE 8
Ten-county study area: value per acre of arable and meadow by county
 (pence per acre)

<i>County</i>	<i>Arable</i>					<i>Meadow</i>				
	<i>mean</i>	<i>min</i>	<i>max</i>	<i>sd</i>	<i>N</i>	<i>mean</i>	<i>min</i>	<i>max</i>	<i>sd</i>	<i>N</i>
Beds.	4.4	1.6	10.0	1.4	130	21.5	8.0	48.0	9.4	104
Berks.	3.8	1.5	12.0	1.7	89	18.7	6.0	48.0	7.5	76
Bucks.	4.8	1.0	12.0	2.2	186	21.2	7.6	60.0	8.5	170
Essex	4.4	1.3	23.1	1.8	495	23.0	6.0	72.0	7.3	399
Herts.	3.7	1.0	10.5	1.3	112	21.8	7.4	42.0	7.4	84
Kent	6.8	1.0	36.0	5.2	319	18.2	0.0	80.0	10.3	178
Middx.	4.9	1.0	18.0	3.4	47	24.7	12.0	57.0	10.7	41
N'hants.	5.3	1.0	21.0	2.6	178	24.5	6.0	80.0	10.6	158
Oxon.	3.9	1.5	12.0	1.9	133	22.9	3.2	80.0	10.9	121
Surrey	3.9	1.0	24.0	2.5	132	19.6	6.9	48.0	8.9	96
10 counties	4.8	1.0	36.0	3.0	1821	21.8	0.0	80.0	9.2	1427

sd = standard deviation

occasionally rose as high as 6s 8d. On average an acre of meadow was worth 4.5 times an acre of arable but there were significant variations in both the absolute and relative value of the two resources (see Table 8). This differential reflected their relative availability, together with the intensity with which meadowland was managed and its central role within an agricultural system which relied upon

livestock for traction and haulage.⁶¹ It is also to be expected that the demands of a city such as London placed an additional premium on accessible supplies. Thus, it was in Middlesex, on London's doorstep, that meadow commanded its highest mean value per acre. Hay in large quantiti-

⁶¹ A Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, Book I, new edn, Edinburgh, 1872, p 69.

ies would have been required by the great volume of traffic which the metropolis generated, as well as by those engaged in supplying meat and dairy products to the city's markets. The profits of intensive dairying may likewise have served to boost meadow values in Essex, given that county's subsequent reputation as a cheese and butter producer.⁶² At a further remove, Northamptonshire also stands out as distinguished by a high mean meadow value; which may reflect local conditions prevailing within the county or, just possibly, its role as a staging post in the long-distance transfer of stock from rearing areas to the north and west to fattening areas to the south and east.⁶³

At the opposite extreme, meadow was least valuable in Kent, closely followed by Berkshire and Surrey. In these three counties it was undoubtedly the general unsuitability of physical conditions for generating lush crops of grass that depressed its value. Significantly, sheep, which were well suited to downland and heathland pastures and returned comparatively low profits per unit area, occupied a relatively prominent role in the livestock economy of these counties.⁶⁴

By and large the values of meadow and arable varied independently of one another. Thus Kent, which had the lowest valued meadowland, commanded both the highest mean arable value – 6.8*d* an acre – and the highest individual value, a remarkable 36*d*. In part this reflected the presence of fertile and easily cultivated loam soils, although it was commercial opportunity, facilitated by good water-transport links with both the London and continental markets, which promoted their early exploitation by progressive and

intensive systems of cultivation.⁶⁵ Northamptonshire, too, at a far greater distance from London but nevertheless linked to major external markets by the navigable rivers Welland and Nene, was also characterized by some good medium-grade arable soils which commanded a high mean value per acre.⁶⁶ The corresponding values of heavy soils were invariably lower since, for all their potentially higher natural fertility, they were much more expensive to cultivate and often returned disappointing yields. Of the clayland counties it was Middlesex, significantly, the closest to London, which supported the highest mean value, followed by Buckinghamshire, Essex, and Bedfordshire. By contrast, values per acre were well below average in Berkshire, which contained much indifferent downland, as also in Hertfordshire and Surrey, neither of which is celebrated for the fertility of its soils. Somewhat surprisingly, the mean value per acre of arable was also below average in Oxfordshire, despite its good medium and heavy soils and the commercial link to the London grain market provided by the Thames. However, county averages conceal important local variations, and a full assessment of the significance of per acre valuations demands more detailed analysis and mapping than is possible here.⁶⁷

The specific moisture and sunshine requirements of meadow meant that opportunities for expanding its area were strictly limited. This was not the case with the other principal type of grassland incorporated into manorial demesnes – pasture. If it is valid, as Postan believed, to see

⁶² F J Fisher, 'The Development of the London Food Market, 1540-1640', *Econ Hist Rev*, V, 1935, p 51.

⁶³ *Loc cit*.

⁶⁴ B M S Campbell and J P Power, 'Mapping the Agricultural Geography of Medieval England', *Jnl Hist Geog* XV, 1989, pp 28-37.

⁶⁵ R A L Smith, *Canterbury Cathedral Priory: a Study in Monastic Administration*, Cambridge, 1943, pp 128-45; M Mate, 'Medieval Agrarian Practices: the Determining Factors?', *Ag Hist Rev*, 33, 1985, pp 22-31; P F Brandon, 'Farming Techniques in Southeast England', pp 312-25 in H E Hallam, ed, *The Agrarian History of England and Wales*, II 1042-1350, Cambridge, 1988, pp 317-25.

⁶⁶ J E Edwards and B P Hindle, 'The Transportation System of Medieval England', *Jnl Hist Geog*, XVII, 1991, pp 123-34.

⁶⁷ This detailed consideration will form the basis of a separate publication.

land-uses as being in competition with each other, the main focus of such competition must thus have been between pasture, or grassland resources as a whole, and arable. In Figure 5 the total value of all types of grassland – meadow, pasture, heath/moor, marsh, herbage, fallow grazings when these are valued separately – is

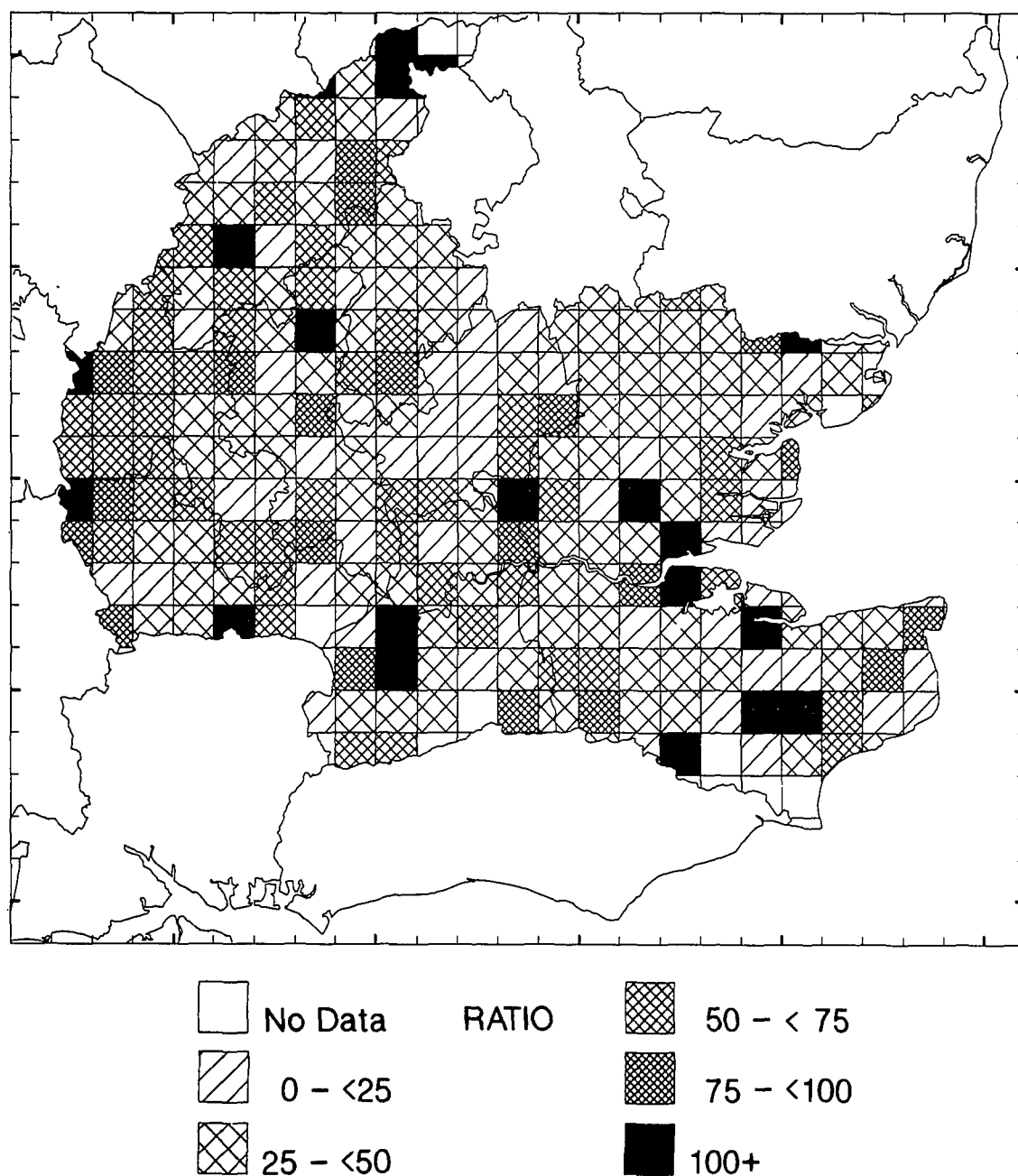


FIGURE 5

Mean ratio of value of demesne pastoral resources to demesne arable recorded in IPM extents 1270-1339
(expressed as pence of pasturage per 100 pence of arable)

expressed as a ratio of the total value of the arable (for convenience this can be referred to as the grassland ratio).

In parts of the area – notably much of Chiltern Hertfordshire, parts of the Berkshire Downs, and the eastern reaches of the North Downs – the bias in favour of arable exceeded four to one; although in these specific instances the shortfall in several grassland was almost certainly offset by the availability of significant reserves of common pasturage. West of the Chiltern escarpment, on the commonfield-dominated clay plain which extended south-westwards from Bedfordshire, through central Buckinghamshire, into southern Oxfordshire, the ratio was somewhat higher – the arable generally being worth three times as much as the grassland – but here alternative sources of pasturage were scarcer. An almost identical ratio prevailed on the heavy boulder-clay soils which dominated so much of Essex, which were likewise characterized by three-course cropping although in the absence of a fully-fledged commonfield system of husbandry. On the evidence of the IPMs these were some of the least grassy areas in the country for, on average, notwithstanding the higher per unit value of most meadowland and some pasture, arable resources were worth roughly twice in aggregate the value of all several grassland resources.

Where grassland ratios were higher specific topographical circumstances and commercial opportunities often provide the keys. The lush river valleys, especially those able to cater to the London market and the traffic which its presence generated in the surrounding districts, all had grassland ratios which were well above average, as higher than average acreages of grassland combined with higher than average values. Hence the bands of higher grassland ratios which follow the Wey Valley south of the

Thames, the Colne and especially the Lea Valleys north of the Thames, and much of the upper Thames Valley itself. On the northern edge of the study area, the lower Nene Valley in Northamptonshire and Stour Valley in Essex also show up as having supported higher grassland ratios, as does the Fen edge in the Soke of Peterborough. High grassland ratios also show up in coastal marshland situations, in parts of Kent and coastal Essex. Apart from these specific riverine and coastal contexts, above average grassland ratios were a general feature of the Cotswold escarpment of western Oxfordshire, as well as of parts of south Bedfordshire and neighbouring north Buckinghamshire and south Northamptonshire. The latter is an intriguing area distinguished by high per-acre valuations of meadow and pasture whose pastoral economy may well repay closer investigation.

Areas with low grassland ratios were not necessarily livestock deficient, provided that the shortage of several grassland was compensated by adequate supplies of common pasture and/or the cultivation of fodder crops. One means of testing this relationship is via the livestock data recorded by the many thousands of extant manorial accounts. Analysis of a sample of accounts data assembled by Dr John Langdon has, for instance, revealed an interesting contrast between the livestock profiles of counties such as Oxfordshire with relatively high grassland ratios and counties such as Essex with low. This manifests itself in a greater reliance upon the more intensive forms of livestock husbandry in the more grassland deficient areas (especially those well placed to take advantage of major urban markets): horses rather than oxen for draught work, cattle rather than sheep, and dairying rather than breeding and rearing.⁶⁸ Paradoxically,

⁶⁸ Campbell and Power, *op cit*, pp 24-39; Campbell, *op cit*, 1988, pp 94-8.

TABLE 9
**Ten-county study area: trends in mean value, area, and composition of resources recorded
 in IPM extents 1270-1339**
 (overlapping 10-year means)

Years	mean per extent per decade								
	Total value of all land-use resources* (£)			Combined acreage of arable & meadow (acres)			Grassland ratio† (pence)		
	mean	N	sd	mean	N	sd	mean	N	sd
1270-79	7.91	159	7.37	256	130	209.5	41.2	148	84.6
1275-84	6.30	135	5.13	229	120	198.8	35.2	137	51.3
1280-89	5.62	176	4.52	216	166	170.1	43.2	173	55.5
1285-94	5.35	237	6.35	183	231	184.5	53.8	225	129.5
1290-99	5.90	362	6.66	201	357	192.4	51.6	348	112.6
1295-04	5.51	390	5.40	201	387	174.3	44.5	384	58.8
1300-09	4.58	355	4.26	176	351	151.5	41.0	347	50.4
1305-14	4.97	379	5.62	173	379	144.6	45.7	370	68.3
1310-19	5.30	308	6.53	180	311	147.6	42.5	304	67.4
1315-24	4.58	256	5.06	196	261	158.5	35.6	256	39.7
1320-29	4.46	296	4.42	183	294	146.2	53.8	287	71.7
1325-34	5.02	283	6.24	170	279	147.7	73.8	279	107.9
1330-39	6.04	264	7.34	197	263	183.5	93.1	266	259.7
1270-1339	5.50	1917	6.01	194	1872	170.4	52.8	1873	122.6

* i.e. arable, meadow, pasture, wood, parks, marsh, heath, moor etc.

† pence of grass per 100 pence of arable

N number of extents with information on the specified land-use.

sd standard deviation

therefore, some of the most grassland deficient areas supported some of the most developed and integrated mixed-farming systems, central elements of which were the employment of labour intensive methods and associated partial substitution of fodder crops for forage and grass products.⁶⁹

A more detailed accounts data-base has now been assembled by the 'Feeding the City I' project. This comprises a sample of 461 accounts drawn from the period 1290-1315, within which some 204 individual demesnes are represented. A preliminary and largely non-statistical investigation of this material has pointed

towards the existence of specialized, market-oriented regimes within London's hinterland.⁷⁰ It remains to be seen whether this picture is borne out by more systematic and detailed analysis.⁷¹

The patterns that have been considered in this paper presuppose a static picture, whereas in reality demesne husbandry was a dynamic system. Some impression of the main temporal trends taking place over the period can be gauged from Table 9, which summarizes a series of ten-year means for the total value of all land-use resources, the combined acreage of arable and meadow, and the grassland

⁶⁹ B M S Campbell, 'Commercial Dairy Production on Medieval English Demesnes: the Case of Norfolk', in A Grant, ed, *Animals and their Products in Trade and Exchange, Anthropolozologica, Quatrième Numéro Spécial*, Paris, forthcoming.

⁷⁰ J A Galloway and M Murphy, 'Feeding the City: London and its Agrarian Hinterland', *London Journal*, 16, 1991, pp 3-14.

⁷¹ For some preliminary results see M Murphy and J A Galloway, 'Marketing Animals and Animal Products in London's Hinterland c.1300', in Grant, *op cit*.

ratio. These figures indicate a decline in the mean value and size of the extended units from the 1270s down to *circa* 1300. In part this is explicable in terms of the widening net of the escheators as the inquisition was developed as an instrument for raising royal revenue. But it also probably reflects a genuine decline in the size of manorial units under the kind of demographic and economic pressures whose effects on the size and number of peasant holdings are generally much better known. With the opening of the fourteenth century the value and size of demesne holdings appear to have stabilized, but whether, as these figures suggest, the 1330s actually witnessed an upturn in the size and value of demesne holdings, is a moot point. The problem is that the upturn in the mean figures for 1325-34 and 1330-39 is accompanied by an increase in their standard deviations, which implies that the results obtained for this decade may derive from a structurally idiosyncratic sample of IPMs. This applies particularly to the grassland ratio, which points to a significant swing from arable to grass commencing at about this time, a trend which, if real, demands further investigation.⁷²

III

The consistency and plausibility of the results presented endorse the verdict of those who have argued for the utility of the IPMs as a source for reconstructing medieval demesne land-use. Local idiosyncracies apart, broad spatial and temporal trends may be recognized which make sense in the light of other evidence. To appreciate the full significance of the picture presented here requires both the

extension of analysis to a wider geographical area and investigation of complementary sources of evidence, especially manorial accounts since only these can provide explicit evidence both of the farming systems which these land-use patterns supported and their commercial involvement. Nevertheless, it is already clear that the balance struck between arable and grass and the respective values of these resources were determined by a more complex array of factors than Postan's influential land-use model will allow.⁷³ As it becomes clearer that there was no simple 'frontier' between the two land-uses, so the notion of a 'scarcity' of grassland becomes increasingly anachronistic.

Land-use in the hinterland of medieval England's leading city and market reflected a range of influences. London lay in the midst of a predominantly arable-farming region, but not one that was characterized by uniform soils and terrain, nor by a uniform institutional structure. These factors, combined with unequal access to cheap water transport, ensure that no perfect von Thünen-type pattern of concentric bands of land-use is to be expected. Instead, it seems likely that the capital influenced its hinterland in terms of the impact which its demands for necessities had upon the emergence of specialized agrarian regimes, whose intrinsic character derived from natural resource endowment, institutional structures, and locational factors. In terms of the basic land-use elements considered here, these regimes may be identified as sub-regional types, distinguished by size of demesne, the relative proportion of the principal land-uses and presence or absence of some minor ones, and the varying per unit value of the resources in question. Future work will aim to define these regimes more

⁷² For evidence of a swing away from grain and towards livestock during the fourteenth century see B M S Campbell, 'Land, Labour, Livestock, and Productivity Trends in English Seignorial Agriculture, 1208-1450', pp 144-82 in *idem* and Overton, *op cit*.

⁷³ See above n 7.

clearly, in terms of their character and spatial extent, using the IPM data on per-acre values and the detailed evidence of demesne accounts on land-use and the marketing of produce. Through this study

of the structure of the metropolitan region, and of the flows of commodities and influences within it, a focused view of the impact of a major medieval city on its hinterland should emerge.

Notes on Contributors

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EMERITUS PROFESSOR MAURICE BERESFORD taught economic history at the University of Leeds from 1948 to 1985. He was a contributor to the first number of this Review, but his determination to be an historian rather than an agricultural historian is evidenced by many subsequent books and articles on urban and rural themes. His most recent book, 1990, was rural; its predecessor, 1988, was urban as, he hopes, will be its successor.