

¹⁸ Henry op. cit. in note 14, pl. 46; C. Bourke, 'Three twelfth-century appliqué figures', *Keimelia. Studies in Medieval Archaeology and History in memory of Tom Delaney*, eds. G. Mac Niocaill and P. F. Wallace (Galway, 1988), 112–26.

¹⁹ M. Redknap, 'Remarkable Viking find in a remote site', *Amgueddfa, National Museum of Wales*, 14 (1992), 9; idem., 'The Smalls Reef Viking wreck site (SM 466 088)', *Archaeology in Wales*, 32 (1992), 84–85.

²⁰ A life of Dunstan describes how he was instructed by Irish teachers and a cult of St Patrick (d. A.D. 472) existed at Glastonbury in the 10th century. Another Irish saint, Bridget, is linked to nearby Beckery and St Indracht is reputed to have been murdered in Shapwick on his way back from Ireland (M. D. Costen, *The Origins of Somerset* (Manchester, 1992)). These Irish connections were particularly strengthened after the disastrous fire at the Abbey in 1184 when the relics of Patrick, Indracht and Dunstan, amongst others, were exhumed for display. Numerous other Somerset churches and chapels are either associated or formally dedicated to 'Celtic' saints (R. Dunning, *Christianity in Somerset* (County Council, 1976); P. A. Rahtz, *Glastonbury* (London, 1993)).

²¹ Further examples of 18th-century forgeries of ancient vases, jugs and lamps can be found in M. Jones, *Fake! The Art of deception* (London, 1990).

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THE CHARACTERIZATION AND INTERPRETATION OF EARLY TO MIDDLE SAXON GRANITIC TEMPERED POTTERY IN ENGLAND (Fig. 7)

Early to mid Saxon pottery with distinctive granitic inclusions was first recognized in the late 1970s, when John Walker studied thin sections of pottery from a number of sites of this date in Cambridgeshire and south Lincolnshire.¹ At that time the pre-Cambrian acid-intermediate igneous intrusions and associated felsitic agglomerate rocks of the Charnwood Forest area of N. Leicestershire, including the nearby Mountsorrel granodiorite, were suggested as a possible source. However, it was noted that many of the find-sites for this fabric were situated near to Boulder Clay glacial deposits. A variety of far-travelled igneous erratics are present in the Chalky Boulder Clays and Gravels of the E. Midlands, including boulders of Shap Granite and small amounts of Mountsorrel granodiorite,² and it could not be ruled out that the granitic inclusions in the pottery may have been present in the local clays due to glacial action.

Since then, further thin section work on similar early to mid Saxon pottery tempered with fragments of granite, often several mm across, has been done by the writers on material from a wide distribution of sites, both domestic and cemeteries, with much of the early information coming from Northamptonshire.³ The petrological results show that granitic pottery is especially common in Leicestershire and Northamptonshire although the distribution is much wider than this, even though some collections contain only a few sherds. This work makes it appear far less likely that there would be sufficient quantity of these igneous erratics in the local drift to satisfactorily account for the scale of production that is now coming to light, no matter whether the inclusions occur naturally in drift clays selected for potting or were deliberately sought out as a tempering agent.

A comparison of the petrological characteristics of the rock fragments in this pottery with that of the Mountsorrel granodiorite suggests that this is most probably the ultimate origin of the inclusions. However, it is likely that the immediate source was a glacial or riverine sand or gravel, or possibly a boulder clay. Thus the potential source area is likely to be much wider than the actual Mountsorrel outcrop, stretching to the S. and SW, and also accommodating the nearby Triassic breccia. A limit to the potential source area is given by the analyses of sands from the Coventry and Warwick areas, whilst the possibility that granodiorite fragments or their constituent minerals were being transported northwards by the R. Soar or its Holocene predecessors has been tested and disproved by sampling of the Soar and Trent valley gravels.⁴

Within the central distribution area of the fabric, there seems to be little doubt that the actual source lay somewhere in modern Leicestershire. However, identical fabrics have been noted in thin section by the writers over a wide area of midland and eastern England (Fig. 7, Table 2).

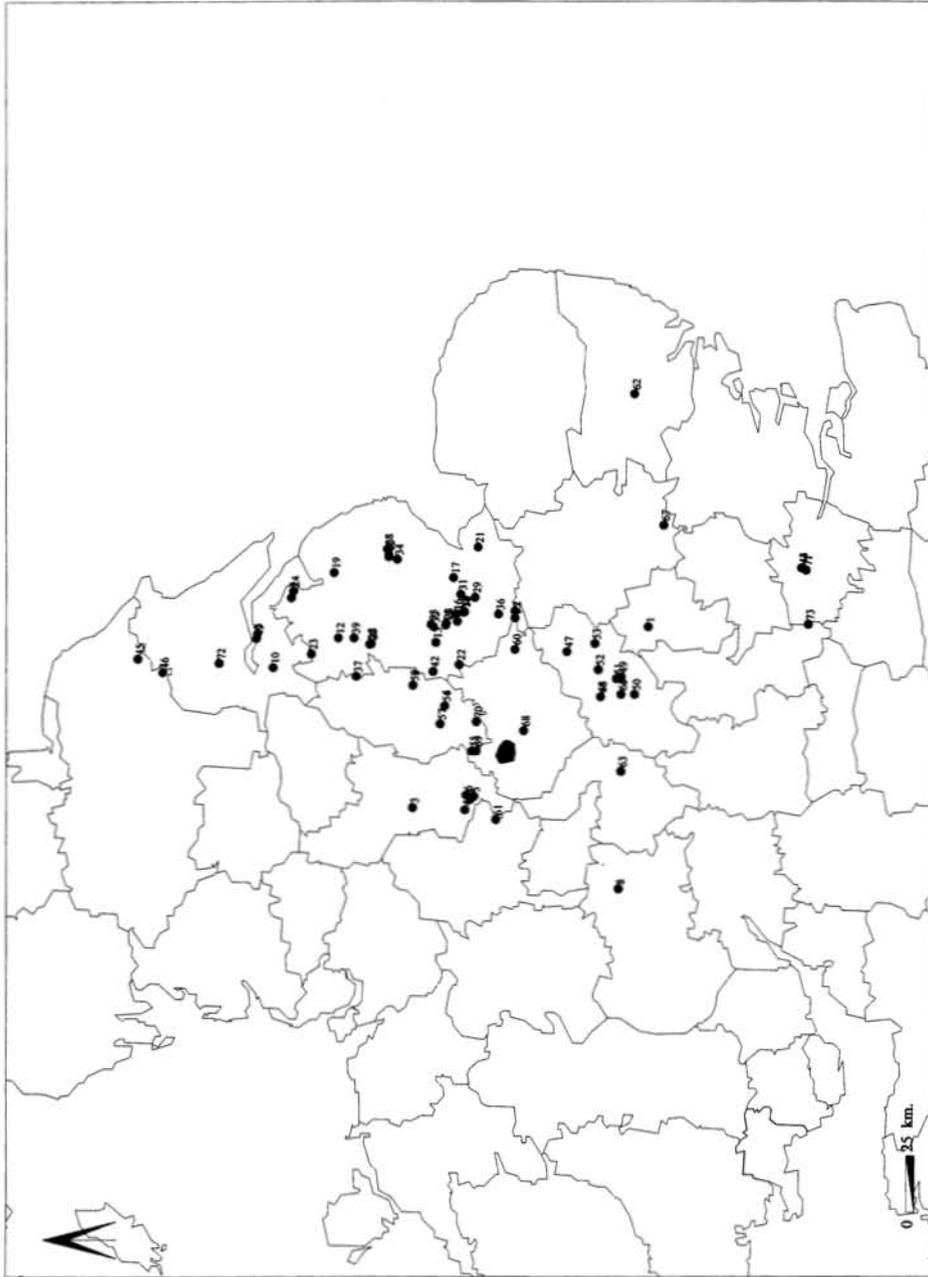


FIG. 7
 Distribution of granitic pottery. The shaded area in Leicestershire indicates Mountsorrel granodiorite. Numbers refer to sites listed in Table 2

TABLE 2
Anglo-Saxon sites with granitic-tempered pottery

<i>Fig. id.</i>	<i>Locality</i>	<i>Identified</i>	<i>Method</i>	<i>Sitename</i>	<i>Reference</i>	<i>County</i>
1	Bedford	AGV	TS			Bedfordshire
2	Maxey	AGV	BINOC	Maxey		Cambridgeshire
3	Carsington	AGV	TS			Derbyshire
4	Hilton	AGV	BINOC			Derbyshire
5	Repton	AGV	TS	Repton Church		Derbyshire
6	Swarkeston	AGV	BINOC	Swarkeston Lowes		Derbyshire
7	Willington	AGV	BINOC	Mound II		Derbyshire
8	Droitwich	AW	TS	—		Hereford & Worcester
9	Barton-upon-Humber	AGV	TS	Castledyke		Humberside
10	Flixborough	AGV	TS			Humberside
11	Riby	AGV	BINOC			Humberside
12	Saxby	AGV	BINOC	—		Leicestershire
13	Ancaster	DFW	TS	—		Lincolnshire
14	Aunsby & Dembleby	AGV	BINOC	Scott Willoughby		Lincolnshire
15	Barton	AGV	BINOC	Poor Farm		Lincolnshire
16	Billingborough	AGV	BINOC			Lincolnshire
17	Burtoft	AGV	BINOC			Lincolnshire
18	Dowsby	AGV	BINOC	Fenland Survey site DOW4		Lincolnshire
19	Elkington	AGV	BINOC	—		Lincolnshire
20	Folkingham Castle	AGV	BINOC			Lincolnshire
21	Gedney	AGV	BINOC	—		Lincolnshire
22	Harlaxton	AGV	BINOC			Lincolnshire
23	Kirton-in Lindsey	AGV	BINOC	—		Lincolnshire
24	Laceby	AGV	BINOC	—		Lincolnshire
25	Lincoln	AGV	TS	Flaxengate 1972–76		Lincolnshire
26	Lincoln	AGV	BINOC	The Lawn 1984		Lincolnshire
27	Lincoln	AGV	BINOC	The Park 1968		Lincolnshire
28	Osboumby	AGV	BINOC	—		Lincolnshire
29	Pinchbeck	AGV	BINOC	Fenland Survey site PIK23		Lincolnshire
30	Pointon and Semperingham	AGV	BINOC	Fenland Survey site PIK19A		Lincolnshire
31	Quadrang	AGV	BINOC	Fenland Survey site QUADRING 36		Lincolnshire
32	Quarrington	AGV	BINOC	—		Lincolnshire
33	Sleaford	AGV	BINOC	—		Lincolnshire
34	Stickford	AGV	BINOC	Fenland Survey site SKD 10		Lincolnshire
35	Tallington	AGV	BINOC			Lincolnshire
36	Thurlby	AGV	BINOC	Fenland Survey site THU24		Lincolnshire
37	Torksey	AGV	BINOC	—		Lincolnshire
38	Toynton all Saints	AGV	BINOC	Fenland Survey site TOA8		Lincolnshire
39	Welton	AGV	BINOC	—		Lincolnshire
40	West Keal	AGV	BINOC	Fenland Survey site WKE 13		Lincolnshire
41	West Keal	AGV	BINOC	Fenland Survey site WKE F/C 35		Lincolnshire
42	Westborough and Dry Doddington	AGV	BINOC	Westborough SMV by All Saints Church		Lincolnshire
43	London	AGV	TS	Billingsgate Bath House		London

TABLE 2 — (continued)
Anglo-Saxon sites with granitic-tempered pottery

Fig. id.	Locality	Identified	Method	Sitename	Reference	County
44	London	DFW	TS	St Brides		London
45	West Heslerton	AGV	TS			North Yorkshire
46	Wharram Percy	AGV	TS			North Yorkshire
47	Brigstock	AGV	BINOC			Northamptonshire
48	Brixworth	AGV	TS	—		Northamptonshire
49	Cogenhoe	AGV	BINOC	—		Northamptonshire
50	Collingtree	AGV	BINOC			Northamptonshire
51	Ecton	AGV	BINOC			Northamptonshire
52	Little Harrowden	AGV	BINOC			Northamptonshire
53	Raunds	AGV	BINOC			Northamptonshire
54	Bingham	AGV	BINOC	Stamhill Farm		Nottinghamshire
55	Kingston-upon-Soar	AGV	BINOC	—		Nottinghamshire
56	Marigdnunum	DFW	TS	M69.64		Nottinghamshire
57	Netherfield	AGV	BINOC	—		Nottinghamshire
58	Newark	AGV	BINOC	Newark Castle		Nottinghamshire
59	Newark	AGV	BINOC	Newark Castle		Nottinghamshire
60	Empingham II	DFW	TS	Anglo-Saxon Cemetery		Rutland
61	Barton-under-Needwood	AGV	TS	Catholme		Staffordshire
62	Needham Market	AGV	BINOC	chance finds by		Suffolk
63	Southam	AGV	TS	Fabian Ratcliffe		Warwickshire
64	Northampton	DFW	TS	St Peter Street		Northamptonshire
65	Northampton	DFW	TS	Briar Hill		Northamptonshire
66	Brixworth	DFW	TS	Anglo-Saxon		Northamptonshire
67	Great Chesterford	DFW	TS	cemetery Little Lane/ St Peters Lane/Causeway	Williams 1994	Essex
68	Leicester	DFW	TS			Leicestershire
69	Sutton Bonington	DFW	TS			Nottinghamshire
70	Willoughby-on-the-Wolds	DFW	TS	Broughton Lodge		Nottinghamshire
71	London	DFW	TS	Jubilee Hall		London
72	Sancton	DFW	TS	Anglo-Saxon Cemetery	Williams 1993	Humberside
73	Harmondsworth	DFW	TS			Middlesex

On the extremities of the distribution, the possibility of other sources for the granitic rock must also be considered. To the N. and NW. the most likely alternative sources are glacially-transported sands, gravels or clays whose granitic inclusions may have come from the Lake District or Scotland; to the E. the most likely alternative source would be glacial till bearing rocks of Scandinavian origin; to the W. an alternative source might be the pre-Cambrian inlier forming the spine of the Malvern Hills. In the light of recent finds, it seems likely that sherds of Anglo-Saxon granitic tempered ware from Droitwich, examined by Anne Woods at Leicester University and identified as being of Malvernian origin, require re-examination. A significant petrological difference between Malvernian and Charnwood Forest fabrics, however, is the identification of the ferromagnesian minerals, which in the former case are usually hornblende and in the latter biotite.

Finally, for any find close to the E. coast, especially as with London, where the site is known to have participated in long-distance trade, a continental origin must be considered, since handmade wares with similar granitic inclusions are known from sites in the Low Countries, N. Germany and the Baltic Coast. A sherd from St Bride's Church, Fleet Street, has recently been postulated as being most likely of continental origin⁵ although with the recognition of other granitic tempered sherds in London, including the Billingsgate Bath

House site within the walled city and the Royal Opera House site in Covent Garden, this sherd no longer seems to be the isolated import it might have seemed a few years ago.

Some sherds of prehistoric pottery with a similar range of igneous inclusions have also been noted by one of us from Nottinghamshire and Derbyshire,⁶ suggesting that we are looking at a much longer time-span for the utilization of this fabric than originally thought. Many of the sherds of this Anglo-Saxon granitic pottery encountered by the writers have tended to be small plain bodysherds, from which it has been difficult to produce a profile. In the hand-specimen, this ware is in a hard rough, sandy fabric, and is generally a shade of dark grey, ranging from Munsell 5YR 5/1-7.5YR N3/, to black, 7.5YR N2/0, in colour throughout, although occasionally some surfaces are a lightish brown, between 7.5YR 6/4-5/4. Many of the sherds seem to have received some form of smoothing treatment to the surfaces. Inclusions of white quartz grains and pink to grey feldspar are commonly encountered, together with a scatter of large golden plates of biotite mica and occasional small pieces of granitic rock.

This sectioning of this material shows a clay matrix which is dominated by large discrete grains of plagioclase feldspar, quartz, potash feldspar, biotite mica and with small fragments of a granitic rock composed of quartz, feldspar (predominately plagioclase but with some orthoclase) and brown biotite. Also present are occasional grains of brown amphibole, apatite and iron ore, while pieces of sandstone are often present and sometimes calcareous material, usually heavily leached. The biotite flakes often appear 'fresh' and are strongly pleochroic, while many of the plagioclase grains are zoned and the orthoclase feldspars tend to display perthitic intergrowth.

The nearest appropriate igneous formations within the main distribution area of this pottery are those of the Charnwood Forest area (including the Mountsorrel granodiorite), which is located about six miles NW. of Leicester. While slightly further away are the post-Tremadoc diorites around Nuneaton.⁷ The pre-Cambrian rocks of the Charnwood Forest occur in a series of isolated outcrops and cover an area of about 17 square miles. They are made up of both intrusive and extrusive igneous rocks, together with a series of sediments largely composed of volcanic ash and other ejected material. During the Permian and Triassic periods the igneous rocks of the Charnwood Forest formed hills which were covered by Triassic sediments. This cover has now been partially removed by erosion leaving the summits of the pre-Triassic hills exposed and surrounded by Triassic Beds and Drift.

Mountsorrel is located just E. of Charnwood Forest. It consists of an intrusive boss of granodiorite and associated rocks more than a mile in diameter, which form small hills surrounded by low-lying Triassic terrain. The granodiorite is cut by dolerite dykes and has a small intrusion of quartz-mica diorite on the south-western edge of the main mass.

Catholme: A cast study

The early to mid Saxon rural settlement at Catholme in the Trent valley, Staffordshire, was excavated in the late 1970s by Stewart and Pat Losco-Bradley. The site appears to have been an unremarkable village, consisting at any one time of a few farms. About a third of the pottery recovered was found to contain granitic rock fragments. The remaining pottery was either tempered with rounded fragments of Mercian Mudstone, almost certainly derived from the local clays, or a quartzose sand which contains numerous fragments of sandstone. Clay was also used for daub and for loomweights and was found in its raw state in the fillings of some of the grubenhauser, where it was thought to have been used for the production of loomweights.

In order to examine the possibility that the clay body of the granitic wares may have been of local origin but with added non-local sand which included acid-igneous rock fragments, a series of samples were examined both in thin section and using ICPS (Inductively Coupled Plasma Spectrometry). The thin sections confirmed that the granitic fragments had the same characteristics as Mountsorrel granodiorite but it was not possible

to find differences between the clay matrices of these and other wares from Catholme. However, the ICPS analyses did show that the granitic sherds formed a separate cluster from the remaining wares, whose compositions all overlapped. Two ICPS samples of granitic wares from other sites — Southam in Warwickshire (close to the heart of the main 'Charnwood Forest ware' distribution) and Billingsgate Bath House in the City of London (perhaps more likely to be a continental import) were included. These too fell within the Catholme granitic ware cluster.

Charnwood and continental granitic tempered wares

Much of the pottery used in Scandinavia and the Baltic coastlands between the 5th to 9th centuries A.D. is very similar in both fabric and surface treatment to the 'Charnwood Forest' wares. It also contains large fragments of granite, including sheaves of biotite, with rounded quartz sand set in a fine clay matrix. There is, in fact, little to distinguish the two wares in thin section. To investigate whether or not these wares can be distinguished by ICPS, the English ICPS samples mentioned above were compared with material from a series of 7th- to 10th-century A.D. sites in Scandinavia. The latter pottery was initially studied by one of us (AV) as part of a project being undertaken by Mathias Bäck on the origins of the pottery used in the Viking-age trading settlement at Birka, Sweden.

The ICPS analyses not only demonstrated that the samples from Wolin, Kolobrzeg and Szczecin, Poland, and Pollista (in the Malaren valley, Sweden), form discrete clusters but it also showed that the Catholme wares similarly form a separate cluster. The samples from Birka, on the other hand, include a central core with a cloud of points around, some of which overlap with the Polish clusters. This is confirmation that the Birka site includes both locally produced and imported granitic wares. The Billingsgate Bath House and Southam samples fall on the boundary between the Catholme and Birka clusters. Thus the analysis shows that the Baltic and English granitic wares can in the main be chemically distinguished but still leaves the origin of the Billingsgate sherd as unconfirmed. It is, however, very unlikely that the Southam sherd is anything other than a standard 'Charnwood Forest' vessel, demonstrating that there are chemical similarities between the two groups of pottery. These similarities are probably at least partly due to the geochemical similarity of the parent rocks from which both sets of clays and tempers were derived.

Interpretation

Whilst there remains some doubt over the provenance of sherds on the extremities of the Charnwood ware distribution, it seems clear that the majority of granitic tempered wares found in midland England were almost certainly the products of a single source in Leicestershire. The mechanisms used for the distribution of this ware are unknown. Unlike its mid Saxon successors in eastern England, Maxey-type wares and Ipswich ware, 'Charnwood ware' was used in the burial ritual, both as cremation urns and as grave goods in inhumation burials. It was, however, used as much in domestic contexts as in religious ones. The presence of large cremation cemeteries, some in excess of 2000 urns, throughout the area where 'Charnwood ware' occurs does suggest that the ware may have been distributed and exchanged at these centres, perhaps on the occasion of religious festivals. The ware has been found on sites which were definitely Christian, such as Flixborough and Repton, but until post-excavation analysis of these sites is complete it is not possible to say that the ware was used in the Christian period. By the later 7th century there seems no doubt that over much of the distribution area of the ware: in Lincolnshire, Cambridgeshire and East Anglia, 'Charnwood ware' and the other early Anglo-Saxon wares with which it was associated were replaced by other types: a northern Maxey-type ware, found on sites in central and northern Lincolnshire and beyond; a southern Maxey-type ware, found on sites in southern Lincolnshire, Cambridgeshire and Northamptonshire and Ipswich-type ware, found throughout East Anglia and in smaller quantities elsewhere. The interpretation of 'Charnwood ware' as a 'traded' pottery lessens the apparent leap from local production

in the early Anglo-Saxon period to production on a regional scale in the mid Saxon period although in other respects, such as the location of production and the shape and nature of the distribution patterns, the 7th century can be seen to be a pivotal period for the production and distribution of pottery.

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NOTES

¹ J. Walker, 'Anglo-Saxon traded pottery', 224–28 in M. Todd (ed.), *Studies in the Romano-British Villa* (Leicester, 1978).

² R. M. S. Perrin, H. Davies, and M. D. Fysh, 'Lithology of the Chalky Boulder Clay', *Nature*, 245 (1973), 101–04; R. A. Martin and G. Osborn, *An Outline of the Geology of Northamptonshire* (Northampton, 1976).

³ D. F. Williams, 'Petrological analysis of Saxon pottery from Brixworth', 84–85, in P. Everson, 'Excavations in the Vicarage Garden at Brixworth, 1972', *J. British Archaeological Assoc.*, 130 (1977); D. F. Williams, 'Petrological analysis of Saxon pottery from St Peter's Street and Briar Hill, Northampton', 155, in J. H. Williams, *St Peter's Street Northampton: Excavations 1973–1976* (Northampton, 1979); M. Gryspeerdt, 'The pottery', in J. H. Williams and M. Shaw, 'Excavations in Chalk Lane, Northampton, 1975–1978', *Northamptonshire Archaeology*, 16 (1981), 108–21.

⁴ Carried out on behalf of the East Midlands Anglo-Saxon Pottery Project. Large granitic erratics have been reported from Trent valley gravels but extensive study of sands used as potting temper in the Trent valley confirms that there has been very little northward movement of rocks from the Charnwood outcrop.

⁵ D. F. Williams, 'Thin sections of the fifth-century pottery', 54–56, in G. Milne, *St Bride's Church London*, English Heritage Archaeological Report No. 11 (London, 1997).

⁶ D. F. Williams, 'Petrology of fabrics', 40–41, in D. Knight, 'Excavations of an Iron Age settlement at Gamston, Nottinghamshire', *Trans. Thoroton Soc.*, 96 (1992).

⁷ B. A. Hains and A. Horton, *British Regional Geology: Central England* (London, 1969).

⁸ English Heritage Ceramic and Lithic Petrology Project, Department of Archaeology, University of Southampton.

⁹ *Internet Archaeology*, Department of Archaeology, University of York.

A MAP OF MOTTES IN THE BRITISH ISLES (Fig. 8)

No distribution map, particularly of monuments over a wide area, can ever be considered complete. New work, whether discovering more examples which have been omitted, or excavation disproving the identification of some thought to belong on the map, will always mean that it needs to be updated. This map improves on that by Renn,¹ and puts together the ones published in King² for England and Wales; Simpson and Webster,³ reinforced by Stell⁴ for Scotland, and that of McNeill⁵ for Ireland. These same maps have also been republished in Higham and Barker⁶ but not together. Even if the lists for each region were all totally reliable, it is not, of course, true that all the mottes on the map were contemporary. Most of the mottes of England were probably erected before the beginning of the 1170s; the mottes of Ireland after that date. Within each region there is no guarantee that the mottes were contemporary or even that they were all coexistent. We think of such a map as being the result of a steady accumulation of sites, but at least some of the earlier ones may have gone out of use as others were built.

All of this must make us wary of drawing any firm conclusions about the distribution of mottes, but it should not completely prevent us from doing so. The distributions should be studied as regional phenomena, but it is also useful in setting the agenda for study to compare the patterns within the regions. The main question which lies behind such a map is this: does the map represent a reasonable picture of the distribution of lesser castles of the 11th and 12th centuries? The addition of the known stone castles would not make a marked difference to the overall pattern, but the addition of other forms of earthworks might. This is certainly the case in Wales and S. England where the identification of lesser enclosure castles (ringworks) does raise the number considerably. Spurgeon⁷ has shown that there is a geological reason for their differing distributions in Glamorgan and made the case for their identification as castles the stronger. In Ireland, on the other hand, there