

THE MEDIEVAL PERIOD

RESOURCE ASSESSMENT

Edited by Caron Newman

With contributions by: David Cranstone, Chris Crowe, Andrew Davison, Julie Edwards, Geoff Egan, Andrew Fielding, Mary Higham, Elisabeth Huckerby, Mark Leah, Jennifer Lewis, Mike Morris, North West Medieval Pottery Research Group, Mike Nevell, Caron Newman, Rachel Newman, Richard Newman, Rob Philpott, Norman Redhead, Peter Ryder, Nick Thorpe, John Trippier, Simon Ward, Rhys Williams, Ian Whyte and Jason Wood.

Introduction

The region has benefited from a number of major research initiatives. These including multi-disciplinary investigations at Norton Priory, the moated site of Old Abbey Farm Risley, the Rows in Chester and the deserted village of Tatton. These sites all lie in the south of the region, illustrating one of a number of biases and challenges inherent in the nature of the region's settlement pattern and the character of its geography. Whilst the degree of nucleation and dispersion within the settlement pattern is not entirely geographically related, there are clear differences in the medieval settlement geography and typology in Cheshire to that in Cumbria. The intervening area to an extent shades from the south to the north. This general view is complicated, however, by a broad east to west settlement trend reflecting a movement away from lowland to upland (Winchester 1993) and by numerous more local variations. In addition archaeological research into both medieval rural and urban settlement is hampered by the destruction of the evidence through nineteenth century urbanisation and industrialisation, removing both above and below ground evidence in a belt incorporating much of north Cheshire, south Lancashire, Merseyside and Greater Manchester, though Lewis's work (2000) on surviving earthworks of the West Derby Hundred and Nevell and Walker's research (1998) into the buildings of Tameside, have shown how productive research can be undertaken even in these areas. In East Lancashire much of the medieval settlement pattern is obscured by later development and here the evidence is primarily presented by historical research completed 50 years ago or more (Tupling 1927; Shaw 1956).

The region's SMRs for the medieval period are dominated by rural sites. In total there are around 6500 records for the medieval period, of which over half are rural sites. Many of the SMR entries for urban sites relate to Chester and Carlisle, particularly defensive and ecclesiastical features. Twenty-one per cent of the entries can be considered higher status sites, either castles, defensible buildings, moated sites or parks. Around 550 SMR entries, or 8.5% of the total, are findspots. In addition, the Portable Antiquities database holds another 477 findspots for the North West, most of which (330) are from Cheshire.

Rural Settlement and Landuse

Research has concentrated traditionally on nucleated villages and moated sites. Only in Cumbria has there been much archaeological research into dispersed settlements and these have tended to be transitional, seasonally occupied habitations (Lambert 1996; Hair and Newman 1999). In Cumbria and elsewhere in the region valuable research into such settlements has been undertaken by historical geographers (Atkin 1985; M.C. Higham 1996; Winchester 2000b). Only for the very late medieval period in the uplands has permanent dispersed settlement been investigated in detail (Winchester 2000b), though more limited historical investigations have been undertaken of Cheshire's dispersed settlements (N.J. Higham 1987). Excavation for the most part has been concentrated in the south of the region, especially on moated sites. One of the larger excavations of medieval settlement remains undertaken in the region is at Tatton Park (Ch) (N.J. Higham 2000). Very few of the site comparisons it draws are from the region, however, because most comparable projects have been undertaken elsewhere, and the region lacks a major archaeological research project such as Wharram Percy in Yorkshire, Raunds in Northamptonshire or Shapwick in Somerset (Wrathmell 2003, 364).

The issues and approaches put forward by the Medieval Settlement Research Group are relevant to the region and form a context within which to assess medieval rural settlement research within the region thus far (Wrathmell 2003). This includes the necessity to recognise the significance of dispersed settlements and avoid an over concentration on nucleations, study of settlements within their estates and the context of their territories, multi-period research and a focus on periods of transition, the study of local vernacular architecture and interdisciplinary programmes of research. All these issues were contemporaneously highlighted in an outline research agenda for medieval settlement studies in Lancashire (R. Newman 1996, 120-3), were at least partially embodied in the Tatton Park project (N.J. Higham 2000), and informed the approach to the investigation of the moated site at Risley (Ch) (Heawood *et al.*, 2004).

Settlement pattern

The North West was long considered an area of little interest. Beresford and Hurst's national maps of deserted medieval villages showed only a small group in eastern Cumbria, a couple of sites in Bowland and two in Cheshire (Beresford and Hurst 1971, 34). Yet the prevailing view that medieval peasant settlement consisted primarily of villages was reflected in a previous attempt to assess archaeological knowledge and research in northern England (Clark and Gosling 1976). There was no consideration of dispersed settlement and the research need was seen as a requirement to move the emphasis away from deserted villages towards existing villages of medieval origin (Clark and Gosling 1976, 53). This has been done in the last few years in Cumbria, as development threats have been addressed by limited excavations within empty single crofts, especially in the Eden district. Elsewhere such opportunities have often been limited by significant post-medieval expansion and infilling. Regionally the few projects that have been undertaken have generally concentrated on an extraordinary subset (the failures) of an unusual settlement type (the nucleated village).

The recent mapping of rural settlement in the nineteenth century, as depicted on the first edition Ordnance Survey maps, has allowed settlement density, nucleation and dispersion to be portrayed (Roberts and Wrathmell 2000a) and appears representative of the medieval settlement pattern. This shows large tracts without settlement in the uplands and a generally high density of dispersed settlement elsewhere. Areas of dispersed settlement have been correlated with areas of surviving woodland in the late Anglo-Saxon period (Roberts and Wrathmell 2000b, 87-8), which correspond with the ancient landscape zone defined by Oliver Rackham (1986) and contrast sharply with the planned landscapes of Roberts and Wrathmell's Central Province in the Midlands. Certainly, the North West region contained many forests and chases, not necessarily wooded, suggesting that the model of a closely planned landscape of open fields around a nucleated village centre is not generally applicable. Away from the uplands the only areas where dispersed settlement density is not high or very high is along the Solway coast and in parts of west Cumbria (Roberts and Wrathmell 2000a). Even so, in those parts characterised by dispersion, the settlement pattern was often mixed with significant numbers of nucleated village-type settlements existing alongside isolated farms and small hamlets, for example in the Manchester area, the Wirral, the West Lancashire Plain, along the Morecambe Bay littoral and in the Eden valley. Whilst many hamlets and farms were associated with curvilinear field enclosures, characteristic of assarting, townships characterised by dispersed settlements, particularly in the Greater Manchester and east Lancashire areas, were often based around commonfield systems, usually centred on one of the principal medieval landholdings.

The villages of the north of the region exhibit considerable elements of planning, stimulated by a powerful, presumably lordly, authority, for example in the Eden valley (Roberts and Wrathmell 2002b, 174). The villages generally consist of two rows, often with a green and a highway between. The strip-like crofts extend away from the central communal village space and often there is a back lane facilitating access to the rear of the crofts (Roberts 1990). Such settlement characteristics can be seen elsewhere in Cumbria and north Lancashire, such as Shap and Hale in Cumbria and Yealand Redmayne in Lancashire. Their genesis has been placed in the late twelfth century as part of a consolidation of Anglo-Norman power (Roberts 1990). In west Cheshire, too, nucleated, planned villages are characteristic of the area. Many retain typically medieval features such as narrow plots fronting onto a street with the remains of back lane separating them from ridged and furrowed fields. Other villages were based on manor houses, such as Bruera, where a moated site stands opposite a small twelfth century church, a few remaining houses, abandoned house platforms and fields with ridge and furrows. Similarly, Baddiley has a moated site with associated enclosures within a large area of ridge and furrow, and which may be a lost grange of Combermere Abbey. Cheshire villages also have greens, such as at Caldecott Green, where the green consists of nothing more than a strip of varying width on each side of the lane. Hetherson Green, near

Malpas, is a linear settlement along a lane, where an unusually wide verge suggests the green was probably on a sharp bend. Wide verges further along the lane suggest a second green, and it may be that Hetherson Green developed from an original polyfocal settlement one element of which has been lost. This area of Cheshire has some of the best surviving examples of ridge and furrow in the region, perhaps because it is on the clay lands of west and south Cheshire, rather than on the more sandy and wooded areas near the central ridge and in the east of the county. Excellent examples are still to be seen at Hatton, Shocklach and Bruera.

In the Eden valley, researchers have been attracted to the well-preserved earthworks of nucleated villages (Roberts 1993a; 1993b; 1996), mostly involving topographical analysis, with little excavation. Only at Newby has the below ground evidence been sampled to any extent. This excavation remains unpublished and the only medieval village excavation submitted for publication in Cumbria is the recent work at Rickerby, near Carlisle (Masser forthcoming). Other significant excavations of nucleated settlements, apart from Tatton, have been few. Medieval buildings at Easington in the Hodder valley (L) were investigated over a number of seasons in the late 1970s and 1980s, but remain largely unpublished. Very little work has been undertaken on rural structures in Merseyside or Cheshire. At Fazakerley (M) a single croft was excavated in the 1990s, but is unpublished (Wright 1996). At Irby three buildings constructed using dwarf foundation walls were excavated, and at Brunt Boggart, Tarbock a probable cottage was excavated (Cowell and Philpott 2000, 126-32), with a suggested thirteenth or fourteenth century date (Speakman 2000). The settlement at Meols is the chief source of comparative information on medieval buildings in Wirral. Unfortunately no plans or photographs survive, but antiquarian accounts suggest there were three distinct types of structure. The first consisted of rough stone foundations, into which upright timbers were set, the second consisted of clay walls of rectangular buildings, and the third were simple wattle constructions. Clay walled buildings, known as clay dabbins, are also found in north Cumbria in the post medieval period, but documentary sources and some dating evidence suggests they were once widespread at least from the late medieval period (Jennings 2003, 33-50).

One of the most significant, and extensive, categories of buildings from the late medieval period is the cruck-framed timber building, and one of the earliest vernacular building traditions to survive in the North West, of which in 1981, 346 examples were known in the region. Within the Mersey Basin, where the status of the building can be established, 27% of the known crucks are associated with manorial estates and 36% with freeholdings, indicating that cruck-frames were often used in the construction of high status buildings. The thirteenth century vicarage in Poulton-le-Fylde, Lancashire, for example, appears to have been a cruck-framed open-hall (Thorner 1837). Few detailed, local vernacular studies, such as those of McClintock and Watson (1979; 1995), have been undertaken. Of the 70 cruck buildings within Greater Manchester, a few have been dated by dendrochronology, but timbers at Newton Hall have a fourteenth century felling date (Burke and Nevell 1996, 5) a cruck from Kersall Cell has a felling date range of around 1515, and Staircase House has a felling date range of 1459-60. Apethorn Fold in Hyde, Taunton Hall, and Stubble Old Hall in Rochdale all have fifteenth century dates. Documentary and other evidence indicates that this medieval building tradition persisted well into the post medieval period in the North West, unlike other regions.

A number of open halls still survive in the North West, such as Adlington Hall in Macclesfield, Ordsall Hall in Salford, Smithills Hall in Bolton, and the fourteenth century Baguley Hall in Wythenshawe which is the earliest dated surviving timber manorial hall in the region. Archaeological work on late medieval halls in the region has been sporadic, largely focused on National Trust properties. An important survey accompanied the renovation works at Little Moreton Hall, particularly the sixteenth century South Range. At Sizergh Castle, an RCHME survey transformed understanding of the development of the house, especially the extent and phasing of the sixteenth century works to the building (National Trust 2000, 44-45). A survey of the timber frame of Rufford Old Hall was carried out in advance of repairs to the roof structure. Stylistic and other evidence suggested a date in the very late fifteenth or early sixteenth century for the main hall and a reinterpretation of its building history (LUAU 1996b; 1996c). Ongoing repair work at Speke Hall, Merseyside, has revealed a complex sequence of building history still to be fully interpreted; survey and excavation has also taken place at Lydiate Hall and at Samlesbury Hall (LUAU 1997d). Altogether, a significant body of new work has resulted from recording and repair programmes for the North West's late medieval and sixteenth-century secular architecture but this remains to be brought together and properly assessed. Much of the building recording work has not been reported or published.

Medieval settlement earthworks have attracted conservation designations and have acted as a focus for research, although rare outside the Eden and Ribble valleys. There has been insufficient field investigation to generalise about the dating of settlement earthworks but there are indications that many belong to the post medieval period. For example the earthworks of the scheduled monument at Stock in Lancashire, classed as a deserted medieval village (R. Newman 1996, 118), represent nineteenth century desertion (Darlington 2003, 80-2). Similarly at Rufford New Hall park (L) earthworks of buildings and enclosures assumed to be medieval were shown during desk-based research to represent early nineteenth century emparking (Egerton Lea 2002).

The study of dispersed settlements is a growing area of research but aside from Lewis's work in south-west Lancashire, there have been few large-scale co-ordinated programmes of research into dispersed settlements in the region. Nationally there are still relatively few excavations of dispersed settlements (Lewis *et al* 2001, 13). Excavations at Stephenson's Scale (C) uncovered a double-walled farmhouse, the arrangement of which may have been a combination of storage facility and animal pen. Nearby, an egg-shaped, stone-walled structure was interpreted as a longhouse. Phosphate analysis suggested that the upslope area was occupied by people, whilst the lower part was occupied by animals. It was occupied during the twelfth to fourteenth centuries, dated by both small sherds of pottery and radiocarbon dating. An early investigation of part of a dispersed settlement pattern at Ashbeck Gill, near Sedbergh (C), was little considered because it lacked a research context (Wrathmell 2003, 364). The building had a rectangular plan with drystone-built walls, and finds suggesting occupation in the fourteenth to sixteenth centuries. The settlement context for the site is provided by the existing dale-side dispersed settlement pattern of the area (Addyman *et al* 1963, 33). This highlights one of the difficulties in analysing the development and nature of medieval settlement patterns in the region. Much of what may have existed in the medieval period may be retained by the modern settlement pattern (see Winchester 2000b) and does not lie abandoned and available for investigation nor visible as earthworks. The location and small size of dispersed settlements mean they are not as easily identifiable as larger deserted nucleations and are more easily rendered 'invisible' by later land use.

Excavations at Powsons Farm near Tebay (C), examined the site of a known upland farmstead from the sixteenth century, but found that the house was of similar dimensions and dry stone construction to buildings elsewhere in the region considered to be upland medieval shielings. It was considered by the excavators that the single-celled building originated as a medieval seasonal dwelling before becoming a permanent farmstead. Dating evidence, however, was poor with most artefacts derived from the topsoil and none of these were diagnostically medieval (Hair and Newman 1996, 189-90). Throughout much of the North West region rural medieval sites produce a relative lack of artefacts, particularly pottery, but it seems excessive to claim that 'excavations within the region have demonstrated a relatively aceramic culture in rural areas throughout the medieval period and until the eighteenth century' (Hair and Newman 1996, 189). No other non-moated medieval dispersed farmsteads have been archaeologically investigated within the region in any detail. The lack of data also relates to plant and animal remains, and very little is known about the range of crops grown, and how trends evolved over time, nor about the physical and genetic types of livestock farmed.

The expansion of settlement and cultivation during the medieval climatic optimum has been identified in south-east Scotland, with a subsequent progressive retreat from the fourteenth century linked to the climatic deterioration of the Little Ice Age. Subsequently this model has been applied to the British uplands generally (Parry 1978). Within the North West, settlement expansion led to widespread assarting, land improvement and new enclosure. Although different chronologies of settlement expansion and retreat can be identified at local scales (Appleby 1978), more research is needed to establish broader regional patterns. The deteriorating climatic conditions can be seen in the pollen and plant macrofossil record from northern Cumbria, with reductions in agricultural indicators and the identification of wetter conditions on the mire surface of Bolton Fell Moss between cal AD 1258-1395 and cal AD 1298-1428 (Barber 1981, 191) and Burnthill Moss (Tipping 1995). In the Cumbrian uplands the wetter conditions may have contributed to major episodes of erosion at Seathwaite, Borrowdale (Wild *et al* 2001) and Langdale in the Howgill Fells (Harvey *et al* 1981; Hodgkinson *et al* 2000, 323-24).

The North West has shown high potential for investigating environmental change, and the relation of climatic, human and ecological factors, during the medieval period. It has suitable deposits that contain proxy indicators of past environments and has a history of detailed, often pioneering, palaeo-environmental

investigations. It is a region where many types of agricultural activity are close to their margins for economic viability and where many species of flora and fauna are also at the edges of their geographical distributions. This last factor means that landuse patterns and distributions of wild plants and animals are susceptible to changes in climate or human activities even if those changes are relatively slight.

Moated sites

There are now over 500 known sites, of which 24% are scheduled, though some soil and crop mark sites may still remain undetected. In Greater Manchester alone, there are 63 certain and 22 possible moated sites. Of these, the medieval halls survive at Clayton Hall and Ordsall, whilst excavated moated manor houses include Timperley Old Hall in Trafford and Denton Old Hall in Tameside. At least 80 sites (15%) have disappeared through urbanisation, industrialisation and intensive agricultural regimes, and the real figure is probably higher. In the north of the region the lack of moated sites is mirrored by a greater number of fortified and defensible tower houses and halls with towers or tower-like wings. Some were surrounded by moats but they were more often enclosed by barmkins. Moated sites are usually associated with dispersed settlements, although they occur around some higher status sites within nucleated settlements, especially manorial centres. They are more often found in isolated situations usually within dispersed settlement landscapes of farmsteads and hamlets (Lewis *et al* 2001, 114). The majority (84%) are considered to be moated homesteads. In Cumbria there is a notable group of moats situated on hill tops. The precise nature of these is uncertain and they may not have had domestic occupation on their platforms.

Most moated sites lie below 150m aOD, many on the poorly drained lowlands of the Solway Plain and south Lancashire, and mostly on boulder clay across the region as a whole (Lewis 2000, 106-107), although there are a small number of rock-cut moats. The majority are single platforms, but 8% comprise either more than one enclosure or elaborate complex of platforms and associated ditches. The principal platforms tend to be rectangular or square, with a small number of rounded or oval, trapezoid or polygonal forms. The plan forms of sites in south-west Lancashire have been published (Lewis 2000, 112-117) and may be compared with those from elsewhere in England (Taylor 1978, 6-11). Fishponds have been noted at 42 sites; and other ancillary features include leats, gatehouses, bridges and causeways, chapels and farm buildings. The survival of embanked platforms in Cheshire and Cumbria may be a consequence of farming regimes which have favoured pastoralism.

Only about 12% of sites have been surveyed in detail, and RCHME surveys have been undertaken in Cumbria and Cheshire where Reynolds and Cocroft have also done some important work (1990; 1991). Occasional use of geophysics has had limited results. Archaeological approaches, dominated by developer-funded work, have been limited to the ditches and platforms, omitting wider consideration of the social aspirations of their owners and the impact of such sites on landscape management (Roberts and Wrathmell 2002a, 58). There has been archaeological investigation at 69 sites, ranging from small-scale evaluations and watching briefs to extensive open area excavations but most have been trench excavation in the 1970s and earlier.

Moat creation is thought to date principally from the twelfth to thirteenth centuries (Roberts and Wrathmell 2002a, 58). With rare exceptions, the chronological relationship between buildings and their moats is far from clear. Excavation has shown that buildings at Tanner's Farm were destroyed and new buildings raised when the moat was created in the fifteenth century (Lewis 2000, 211-212). At Speke Hall excavation and dendrochronological dating of the standing building have shown successive occupation, indicating that the present dry moat may date from no earlier than the sixteenth century (Higgins 1992; Lewis 2000, 345-346). Dendrochronology might play a role dating standing structures adjacent to empty platforms; with a potential for establishing a *terminus ante quem* for abandonment of the platform. At Bewsey, a radiocarbon date suggests occupation in the early twelfth century but timbers discarded in backfill of a massive ditch were of sixteenth century date (Lewis 2000, 204-205) demonstrating that here, as on many other sites, the platform buildings were modified and adapted on several occasions. Buildings tended to reflect local plan, form and function and were constructed from local materials. Timber-framed buildings predominated in the lowlands, though dwarf walls might sometimes be used. Stone was probably favoured in the Cumbrian uplands. Timber and stone bridges are known across the region. Resources have not always been available for analysis of environmental evidence from moat fills though macrofossil remains from Bewsey were indicative of running water (Innes and Tomlinson forthcoming). At Speke Hall insect remains suggested that the early

ditch found beneath the mid-sixteenth century west range may have been grazed after it had been filled (Kenward and Tomlinson 1992, 78).

One of the best researched moated sites in the region is Old Abbey Farm, Risley (Ch) which is associated with agricultural expansion in the thirteenth century. The project is unique in the region, involving the study of a moated farmstead from fully standing buildings which were demolished archaeologically through to the total excavation of the moat's platform. The earliest elements of the house formed part of a late thirteenth century timber framed open hall which had been successively remodelled. Without an intensive study of a type rarely possible on most sites it is unlikely that the origins of the house would have been recognised, since the evidence consisted of a few reused medieval timbers, an excavated beaten clay floor and some excavated possible padstones for an aisle (Heawood *et al* 2004). The artefactual evidence for medieval occupation was also slight, with only seven sherds of medieval pottery recovered, as well as three fragments of late medieval leather footwear and possible medieval wooden objects recovered from moat deposits (Heawood *et al* 2004).

Many publications are only in summary form in various journals, as grey literature, or the data has yet to be fully processed. Limited surveys of Cheshire's and Great Manchester's moated sites have been published (Tindall 1985; Wilson 1987; Williams 1997). Many older excavations do not survive or fall short of modern standards, such as West Derby Castle (Droop 1928; Droop and Larkin 1928) and Mote Hill (Kendrick 1853); and field records for Sefton Old Hall (Lewis 1981) and The Old Hutt (M) (Wrathmell 1992) are of limited value in interpreting the evidence.

Seasonal settlements

One of the most distinctive forms of upland settlement was the seasonally occupied shieling, and many have left archaeological traces in the form of earthworks and associated dykes. The structures may vary in complexity, form and function but in general consist of buildings for habitation and work activities related to the seasonal exploitation of upland resources, most commonly summer grazing. The archaeological remains of these structures can be isolated, closely grouped or loosely clustered. The nature of the landscape exploitation initiated through these sites may date from the tenth or eleventh centuries (Ramm *et al* 1970, 3) and some may have been consistently seasonally occupied from the early medieval period into the twelfth century (Roberts 1993b). Others are of later medieval origin and continued to operate well into the post-medieval period. The social and estate context of these settlements also seems to have varied considerably. Some were part of long distance transhumance systems where isolated summer grazings were being exploited from distant and separated estate centres, as has been proposed for parts of the Howgill Hills (Hair and Newman 1999, 156). Others lay within the main block of territory of an estate or township but were too distant from the principal stading for daily movement, as has been proposed for shieling sites at Kentmere in the Lake District (Atkin 1991, 76).

Recently there have been important historical studies and landscape surveys that have greatly added to our knowledge of upland settlement (Winchester 2000a; 2000b; Bowden 1996), but there is a concentration on documentary sources and a lack of dating evidence for primarily earthwork archaeological remains. Excavation and detailed topographical analysis has been limited, and most has been largely focused on Cumbria (e.g. Richardson 1979). Consequently, the variety of building and settlement forms in relation to location, function and period as well as the material culture and thus interpreted lifestyles of the inhabitants have been little investigated.

Specialist settlements

By the twelfth and thirteenth centuries the uplands were dominated by cattle rearing, through the establishment of purpose-built cattle ranches known as vaccaries, often in areas of royal forest or baronial chases. Forests were essentially large tracts of land best suited to extensive demesne pastoral exploitation, where deer were carefully managed to produce venison, skins, antlers and bones. Alongside the deer, cattle were reared in *vaccariae* (cattle farms) located in the forests. The vaccaries gave rise to some very characteristic landscape features and settlement forms, which can still be recognised in the modern landscape, for example in the Forest of Bowland, where they were located in side valleys near large areas of hill grazing. The centre of a vaccary was essentially a hamlet, with several dwellings and associated farm buildings clustered together. The settlement was often in a girdle pattern round the arable area, and footpath and bridleway evidence often points to a long-established focal point, the vaccary centre or headquarters.

Individual vaccaries have been the subject of documentary studies (Winchester 2003) and the settlement pattern formed by them has been analysed (Atkin 1985, 177-9; 1994). The vaccary of Sykes, in the Trough of Bowland was largely governed by topography, with the settlement in the valley floor, and arable land behind the settlement to maximise the light available for crop growing. Vaccaries had at least one stock funnel or drift way, where animals were brought down from moorland. These stock funnels tended to have curving boundaries, which allowed for the more controlled movement of animals. The presence of large holly trees can indicate a medieval boundary, as the trees were used for feeding cattle in the worst of the winter. Some, such as Sykes, developed into small hamlets in the sixteenth century but others survived as isolated farms (Winchester 1993, 23-7). The settlement form of the vaccary has been the subject of only one archaeological investigation, at Sabden Fold, the site of Goldshaw Booth vaccary, where structures were uncovered, but little dating evidence (M.C. Higham 1968). In Bowland, the remains of the medieval vaccaries appear have been incorporated into the later settlement pattern. Vaccary farming appears to have been in decline by the later fourteenth century (Porter 1980, 27).

In some uplands, particularly on limestone, sheep rearing took place in *bercarii*. The settlement patterns are similar to those of the vaccaries, with sheep folds/sheep shelters still surviving on the upland grazings. In some former *bercarii* the remains of sheep huts can be identified within the in-bye land. These were often owned by the monastic houses and used as summer grazings as part of a transhumance system (McDonnell 1988, 9). Consequently rather than being managed from a permanently occupied farm, they may have been run from seasonally occupied shielings (Hair and Newman 1999, 156). Horse rearing, too, seems to have taken place in the limestone uplands, including within deer parks. Other types of specialist settlements such as fishing villages and hamlets have not been examined at all. Elsewhere the value of studying such settlements has begun to be demonstrated (Gardiner 1996) but despite the importance of the marine environment to the region such research is hampered by later coastal development. For example the fishing hamlet of North Houses, known to exist on the Fylde coast in the early sixteenth century, grew to become Blackpool (Egerton Lea 2003).

Granges were scattered throughout the North West, a number of which were moated sites such as those on the Wirral (Lewis 1991, 96-7). A few formed elements of nucleated settlements but the majority appear to have been isolated farmsteads. Aside from some of the moated sites of Merseyside and Cheshire, such as the site at Bromborough which belonged to St Werburgh's Abbey in Chester (Chitty and Warhurst 1979), very few of the North West's granges have been studied archaeologically (see *Religious Houses* below). With regard to the establishments of the military orders, the accepted view, based on the documentary record, was that the North West lacked preceptories (Gilchrist 1995, fig 34). Recent survey work in advance of the upgrading of the A66 trunk road has shown that Temple Sowerby in Eden was not only the site of a Knights Templar's preceptory but may also have had an Hospitaller's establishment nearby (NAA 2003).

Estates and territorial organisation

A territorial framework not only provides a context for understanding medieval settlement but can provide the research structure within which a settlement or settlement pattern can be investigated (Harvey 1996, 34). The only project that has used this approach, with an excavation of a medieval settlement at its core, is the Tatton Park project in Cheshire, which explored the development of the manor of Tatton and its settlements in relation to the tenurial exploitation of the landscape. Multi-period in scope and multi-disciplinary in technique, the project was able to place the nucleated settlement that developed at Tatton Old Hall in the thirteenth century within a continuum of landscape development (N.J. Higham 2000).

Concluding remarks

The study of medieval settlement is complex and varies not only regionally but from one township to another in response to an interaction of geographical and social circumstances. Studies have not begun to address the considerable disparity between the dominant regional view presented by research into the central province, as represented by recent work in the Midlands (Lewis *et al* 2001), and the very different settlement agenda beginning to be recognised in regions such as the North West.

Urban Settlement

The North West had relatively few towns in the medieval period. As a region it was relatively thinly populated and, outside Cheshire, underdeveloped economically in comparison to other areas of England. In

terms of size and regional status, Chester was the only city, and was described as such in Domesday Book and having a bishopric. Carlisle was also of importance as a bishopric and because of its strategic position on the Anglo-Scottish border. Both Chester and Carlisle were provided with defensive walls. Few other towns were of any significance at a national scale and the overwhelming majority were chartered boroughs, deliberate creations of the thirteenth to fourteenth centuries with a characteristic planned layout. Only a sample are recorded in West's (1983) composite list of previous national surveys of boroughs, and smaller medieval towns like Warton and Hornby in Lancashire, are not included. A number of urban communities, though not chartered boroughs, functioned and had the physical characteristics of towns, for example, they held markets, exhibited similar plan components to boroughs and sometimes had friaries. The larger market villages do not seem to have been urban (White 1996, 127), but work on the EUS suggests they had at least a proto-urban function and appearance, for example Blackburn, Colne (L) and Ulverston (C).

Relatively few excavations have been undertaken in Cumbria's towns, other than in Carlisle, where excavations in the northern Lanes identified well preserved sequences from probably the late twelfth to the early sixteenth centuries, including timber and latter stone-footed buildings (Zant forthcoming). The lanes from which this part of the city took its name have been shown to date from the fourteenth century. Similarly excavations on Castle Green uncovered well-preserved stratigraphy of twelfth to thirteenth century date, including the remains of timber buildings to the north of the City Ditch, and well-preserved organic material within the ditch itself. To date, however, much of this material remains unpublished.

Small-scale work has been undertaken in Egremont (R.M. Newman 1988), Cockermouth (Leech forthcoming) and Penrith (Newman *et al* 2000), but it is Kendal that has received the most attention since the mid 1980s. Two relatively large areas have been excavated, one on either side of Stricklandgate (R.M. Newman forthcoming) and a further major area in Highgate, together with two further areas to the south. Where street frontages have been available for investigation, evidence has been produced for a planned layout from the fourteenth century or earlier, and at Stricklandgate, a complete sequence of structures from the fourteenth century onwards, were recorded some 13m from the street frontage (Hair and Wild unpublished; R.M. Newman forthcoming). Medieval buildings were built of timber or cob walls, and stone was not introduced until the early post medieval period. Some evidence for industrial use has been found, including a hearth close to the street frontage of Stricklandgate, and a kiln of unknown purpose close to the back of a burgage plot.

In Lancashire, Lancaster has been the subject of the most recent archaeological interventions, although work has concentrated on the Mitchell's Brewery site in Church Street, which had been disturbed by later activity. This demonstrated that many of the medieval plot boundaries echoed those of the Roman period, never deviating more than 1m, and suggesting some continuity of use. The final Roman structures, which were stone-built apparently survived to an extent which dictated the layout of the medieval town (Howard-Davis *et al* forthcoming). Excavations on the site of the market, suggests that this area lay at the southern extremity of the town, as shown on Speed's map of 1610 (Drury forthcoming). After Lancaster, Ormskirk has probably had the most archaeological excavations undertaken in Lancashire (10 since 1992 at the time of writing) but all are small-scale, limited investigations lacking in a research context. In total they add little to the history of the town as recorded by Philpott in 1988. In Manchester, excavations have been undertaken on the defensive ditch, known as Hanging Ditch, which enclosed a promontory overlooking the confluence of the rivers Irk and Irwell, encompassing both the castle and church that formed the historic core of the medieval settlement. In Merseyside, archaeological investigation has been limited mainly to Prescot, where six area excavations and a number of watching briefs had been undertaken by 1988. Even there, medieval deposits had been heavily disturbed by later activity (Philpott 1988, 31). In Liverpool, the only major excavations have been close to the site of the castle which revealed little about the medieval town (Davey and McNeil 1980, Philpott 1988, 40).

Cheshire, too, has had a variable history of archaeological intervention but most has been small-scale, and it is only in the salt towns that any significant work has been undertaken, though the number of investigations have increased in recent years. Amongst the small-scale excavations was an evaluation in Knutsford which examined the back plots of medieval properties, and excavations in Nantwich, Middlewich and Macclesfield have looked at medieval deposits (Cheshire County Council 2004). Much of this area had been heavily disturbed by later activity, however. There has also been considerable work undertaken in Warrington, which has concentrated on specific aspects such as the castle, friary and moated site, though there has also

been a recent excavation of parts of the burgage plots, particularly in the Bridge Street area which has produced the largest group of medieval pottery yet recovered from the area of the medieval town.

Chester, the only designated AAI (Area of Archaeological Importance) in the region, has seen more extensive archaeological investigation than any other urban area in the North West. Between the Norman Conquest and the Dissolution, Chester was the North West's principal urban centre, as the capital of a major Norman earldom until 1237, and then as the headquarters for the English conquest of North Wales. Prosperity and growth attended this status. The city had a full range of medieval urban institutions, including castle, walls, abbey, churches and other religious houses. The main streets were occupied by closely packed tenement plots which developed into the Rows. However, there remained much open land and even agricultural activity within the Walls. Chester was a sea-going port and had widespread trading contacts, though the silting of the River Dee was of increasing concern through the period. Chester's Rows are a large and nationally important collection of medieval urban houses, which have been systematically and extensively studied, most recently in the Chester Rows Research Project (Brown 1999). Medieval structures survive as near complete structures or fragments within later buildings, and demolition and replacement of medieval buildings was less likely than updating, at least until the later nineteenth century. Buildings comprise both sandstone and timber framed-elements, and they appear to date largely from the mid-thirteenth to the mid-fourteenth century. Extensive excavations have been carried out in the yards and backlands behind street frontage properties (Ward 1988). Rubbish and cess pits have proved a rich source of evidence for site use, domestic and manufacturing activity. Only rarely, however, has it been possible to relate evidence for specific building structures with excavations to their rear, and the majority of excavated evidence remains unpublished. The medieval property strips are thought to be a post-conquest creation, but there is a great paucity of evidence for the first 150 years or so following the Conquest. At the very end of the medieval period, there is some evidence for new building forms and a breaking away from a rigid attachment to street frontages, a development which becomes more noticeable after the Dissolution, when religious precincts become available for secular development.

Chester city walls survive as an almost complete circuit and are recognised as an internationally important monument. They incorporate half the Roman fortress wall circuit but with major extensions on the west and south to the River Dee. The surviving elements comprise the curtain wall, sometimes with a bank, and mural towers, which come in a wide range of styles and conditions. Missing elements include the majority of the gates and the ditch. The monument as it survives today has been subject to repair and adaptation throughout its history and forms a patchwork of masonry from all periods. As an archaeological resource, it has been much studied over a long period, although frequently in a piece-meal fashion. This has included historical research, survey, research excavation and rescue excavation resulting from restoration projects, which has produced a large quantity of published and unpublished material. However, the main research concentration has been on the Roman period and the major element of investigations attached to restoration projects has been the post-medieval structure. Consequently, the development and structure of the walls during the medieval period is not so well understood. Rescue excavations have demonstrated the archaeological potential of the gates and ditches (Alebon *et al* 1976; Ward 1992; Ward *et al* 1993). The former can survive well below ground but are difficult to access as they lie beneath major thoroughfares. The ditches have proved to be a rich source of well-preserved organic and other finds.

Ritual, Religion and Ceremony

Religious Houses

In the North West, unlike in the south, there was no strong tradition of monasticism at the time of the Conquest, and no evidence for continuity. As the Normans moved into the North West, Benedictine monasteries or priories were established at Chester, Birkenhead (M), Lancaster, Wetheral (C), and St Bees (C). A later foundation at Upholland (L) in 1319 is notable as the last Benedictine house to be founded in England. The relative rarity of monastic houses at this period may have been due to the tensions between England and Scotland, or a reflection of the sparse settlement of the area. The sparse nature of settlement, and the availability of vast areas of unimproved land in the North West encouraged colonization by the reformed monastic orders in the second quarter of the twelfth century. The first and most important Savigniac foundation in the British Isles at Tulketh (near Preston) dates from 1124. The site was only occupied until 1127 when the monks transferred to Furness (C). The Savigniac order also founded Combermere (Ch) (1133) and Calder (C), a daughter of Furness (1134, later refounded 1142). Furness,

Combermere and Calder, along with the rest of the Savigniac order, were amalgamated with the Cistercians in 1147. Further Cistercian houses were founded at Vale Royal (Ch), Sawley (L) in the Ribble valley and at Holmcultram (C) on the southern shore of the Solway. A late Cistercian foundation was at Whalley (L) in 1296, having transferred from Stanlow (Ch) on the Mersey estuary, which had fallen victim to incursion from the sea. Other reformed orders included houses of Augustinian canons at Norton Priory (Ch), Carlisle, Lanercost (C), Conishead (C), Burscough (L) and Cartmel (C), whilst the Premonstratensians, whose austerity matched that of the Cistercians, established houses at Cockersand (L) and Shap (C). The Gilbertines had a small house at Ravenstonedale (C) from c. 1200. After the beginning of the thirteenth century, benefactors preferring to found houses of friars, with houses in many of the towns, such as Chester, Warrington, Carlisle, Lancaster, Preston, Appleby and Penrith. By the end of the century few settlements of any size were without a hospital to provide assistance for the elderly or the infirm. Few of these houses were extensively endowed, and their buildings were far more modest than those of the more established orders.

There are a number of short-lived houses, most of which were closed to move to more favourable sites. These include Barnoldswick (L) which moved to Kirkstall, Wyresdale (L) which moved to Ireland, Preston Patrick (C) which moved to Shap, Runcorn (Ch) which moved to Norton (Ch), Darnhall (Ch) which moved to Vale Royal (Ch), Poulton (L) which moved to Dieulacres in Staffordshire (Emery *et al* 1996), and Stanlow which moved to Whalley. Moberly (Ch) was taken over by Rochester, and Warburton (L) by Cockersands (L). It is uncertain how complete the monastic structures of some of these shorter lived houses were, but Poulton and Stanlow, which operated for 61 and 126 years respectively, must have had well-established monastic complexes.

Monasteries had a significant impact on the landscape of the North West. The greatest impact was that of the Cistercians, and other orders used them to model the management and exploitation of their estates, notably the adoption of the grange system. The former abbey sites of Darnhall and Poulton were retained as granges. The chapel at the latter has been investigated archaeologically but generally they have been little examined. Some granges, rather than being simply agricultural enterprises, also functioned as country retreats for their abbots. Saughton and Ince both served the Abbot of Chester and have substantial masonry survivals. The Cistercian economy, at least in the north of the region, was based largely upon sheep farming, but there were also important cattle and horse rearing economies (M.C. Higham 2003). Furness had major pastures in Cumbria and in the Pennines, whilst Holmcultram pastured thousands of sheep on the Solway marshes. Other resources were also exploited, and iron was worked in Furness, whilst Calder, Furness and Holmcultram extracted salt around the west Cumbrian coast and also controlled extensive coastal fisheries. Furness and Holmcultram had close trading links with Ireland, and developed port facilities to encourage these. Furness built and maintained a castle on Piel Island (from 1327) to defend the nearby port, and also established a courthouse at Dalton.

Furness was the first of the major monasteries to be dissolved in England (1537) and at this time it was the second richest Cistercian monastery in the country. By 1540, all the North West's monasteries been swept away, the majority demolished and recycled for building material. Only Carlisle and Chester cathedrals, and a few churches which were granted to local communities, such as Cartmel, Holmcultram, Lanercost and Upholland, were retained for worship.

Archaeological interest in monastic sites developed during the nineteenth century, particularly Cistercian sites. There were excavations at Sawley in the early 1850s and again in the 1870s (Walbran 1852-3; 1876), at Shap in 1889 (Weston and Hope 1889), and at Furness at the end of the century following earlier clearance from the 1840s (Hope 1900; Brakspear 1901, Harrison *et al* 1998). Limited excavations were carried out at Holmcultram soon after, (Hodgson 1907) and also at Whalley in the 1930s, following earlier clearance from as early as the 1790s. These early excavations tended to focus upon the church and the immediate buildings of the cloister, as did excavations on the houses of other orders such as Burscough (Bromley 1890), Cockersand (Swarbrick 1923) and Conishead (Kelly 1930). Modern research excavations have been carried out on a number of monastic sites. Norton stands out as the most extensively excavated monastic site under modern conditions in the country (Greene 1989). The post-excavation programme is still in progress. Medium- to large-scale, modern excavations have been carried out at Chester Abbey and Chester Dominicans (Ward 1990; Ward 2000a); of which the latter is published. Excavations in the past have also been conducted at Vale Royal (LUAU 1997a; 1998a; 1998b; McNeil and Turner 1990; Thompson 1962) and Chester Nunnery, both of which are published. There have been small-scale excavations at Furness Abbey

including important work in the southern half of the precinct (Wood 1999), at various locations in and around Whalley Abbey (LUAU 1991a; 1991b; Lloyd Evans Prichard 2002), in the south cloister range at Sawley, 1977-84 (Coppack *et al*, 2002) and the monastic precinct at St Bees.

Recording of standing remains using modern techniques has only been carried out extensively at a few sites. The Furness Abbey Survey Project, undertaken by LUAU, was one of a number of historic fabric surveys initiated by English Heritage in the 1980s. At the time Furness was the largest and most complex site for which complete survey had been attempted. The results await full publication (see Wood 1992 and forthcoming; Keevill Heritage Consultancy 2004; PLB Consulting Ltd and Associates 2004). Historic fabric surveys have also been conducted at Whalley Abbey (L) (LUAU 1991a; 1997b; Lloyd Evans Prichard 2002), Chester Abbey (Ward 1998; Ward 2000b), Vale Royal Abbey, Birkenhead Priory (Davey and Lewis 1991; Lewis 1992a; 1992b) and Lanercost (Summerson and Harrison 2000). Targeted recording was also undertaken at Calder Abbey during consolidation works in 1995-96 (J. Quartermaine pers. comm.). A range of developer-funded small excavations and watching briefs, have seldom achieved more than a passing mention, although there are exceptions at Lanercost and Cartmel (e.g. Whitworth 1998, Wild and Howard-Davis 2000).

Although there has been extensive research into documentary records of monastic sites of all kinds, and their estates over the past 150 years, archaeological excavation and recording has concentrated almost entirely on the remains of the claustral buildings of the larger monasteries, with the exception of excavation at the tiny Gilbertine house of Ravenstonedale carried out in 1928-9 (Frankland 1929, 1930; Turnbull and Walsh 1992). Apart from the published excavations at Warrington Austins (Heawood *et al* 2003) and Chester Grey Friars (Ward 2000a), little work has been carried out on the lesser monastic sites such as friaries, nunneries or hospitals; nor has there been extensive field investigation of the archaeology of monastic granges and estates in the region. Limited excavation at the Hospital of St Saviour, Stydd in the 1960s (Edwards 1977) has been interpreted as the remains as a Mithraeum. Overall the region has made small contribution to the national research agenda for understanding the social and economic impact of medieval religious houses and the post-Dissolution histories of their estates. Considering that religious houses and their estates represent some of the most substantially surviving archaeological sites and buildings of the period, there has been relatively little new research in the last 50 years beyond the work at Norton and Furness which both remain substantially unpublished.

Parish Churches and Chapels

The distribution of medieval churches and chapels across the North West was relatively sparse, reflecting the largely dispersed and small population, and was dominated by monastic estates such as Furness Abbey, Whalley Abbey and St Mary's Priory, Lancaster. Even so, churches and chapels are among the most common surviving medieval buildings. In Lancashire, their physical development has been analysed in detail by the Victoria County History, but in general, there seems to have been little archaeological analysis, of their standing fabric nor work on below ground remains across the North West. A small number of watching briefs have been linked to re-ordering and landscaping works, for example at St Mary's Priory, Lancaster, and at St Bartholomew's Church, Wilmslow where a section was recorded through the churchyard wall and a number of medieval architectural fragments were recovered. Overall, however, there has been no analysis of the distribution of medieval places of worship nor their relation to earlier estate and parish centres. Medieval Lancashire had 52 parish churches and 92 chapels, of which 29 churches and three chapels may have had pre-Conquest origins. Only four, however, have any known pre-Norman masonry, and only another ten are known to have Norman fabric. Most surviving churches appear to date from the fourteenth century or later, and many seem to have been substantially rebuilt in the sixteenth century, often followed by extensive remodelling in the nineteenth century. In some cases, alterations may mask earlier fabric. At Poulton-le-Fylde, for example, recent restoration work has shown that a documented rebuilding in the sixteenth century was in fact a refacing of the original fabric. Beneath ashlar stonework, the original Norman masonry and fenestration survived intact (Storey 2001, 37).

Most churches and chapels were stone-built, reflecting the importance of these buildings to their local communities, there were also a number of timber-framed churches in the region. Only 27 timber-framed chapels and parish churches survive in England and 12 of these are in the North West, although few survive complete. Those in the townships of Baddiley, Holmes Chapel, Lower Peover, Marton, Siddington, Swettenham, and Whitegate lie in modern Cheshire. Rushton now lies in northern Staffordshire, Farnworth

in Cheshire, and the churches and chapels in Chadkirk, Denton and Warburton now lie in Greater Manchester and have been recently studied by the University of Manchester Archaeological Unit. The parish churches at Marton and Lower Peover, both fourteenth century, are considered the oldest longitudinal aisled churches in Europe, and Warburton church is probably of the same date (UMAU 1999). The latest is St Lawrence's in Denton is mid-sixteenth century. In plan these churches fall into two groups; aisled structures (Holmes Chapel, Marton, Peover, Warburton, Whitegate) and linear, single bay structures (the rest). Most began as chapels and it seems likely that their status as subsidiary religious sites may have led indirectly to their survival through the absence of a wealthy patron prepared to rebuild the chapel in stone or brick.

Considering their importance as the richest surviving resource for studying medieval communities, their places of worship and burial, there has been remarkably little recent research or archaeological investigation of the North West's medieval churches and their context in villages and towns. The repair, renovation and development of medieval church and chapels appears seldom to have been the subject of archaeological evaluation or recording.

Crosses

The scarcity of churches may have been supplemented by preaching crosses, though the nature or purpose of many standing stone crosses is uncertain. Survival is best in churchyards, but there are also mediaeval crosses sited in moorland and open country. Crosses also marked the boundary of monastic estates, such as the well-preserved group of cross bases connected to Vale Royal Abbey (Ch). Wayside crosses were often placed along Roman roads, such as those on the line between Wigan and Standish, and perhaps confirm the continuity of use of those routes. There were also market crosses in many of the boroughs and market villages, some very elaborate. These do not survive so well, as they were often moved or have disappeared from an inconvenient location with the advent of trams and the motor car, and others were rebuilt to commemorate occasions such as Queen Victoria's jubilees. The market cross in Ormskirk (L), for example, was replaced by a fine clock tower in the late nineteenth century.

Technology and Production

Iron

No iron mining or other extraction has yet been located on the coalfields of the region. There are just over 200 known bloomeries in Cumbria, though there are some problems with duplication and misidentification, and upstanding earthwork sites are still being identified. Greater Manchester SMR lists eight sites from above- or below-ground field evidence and further sites are known solely from documentary references (N. Redhead pers. comm.). Remaining counties contain few known sites, though a fifteenth century water-powered bloomery has recently been identified at Little Moreton Hall (Ch). Iron mining has received very little archaeological attention, either regionally or nationally; the MPP Step 3 assessments (Instone 1995) remain the only national survey, while the Furness Iron survey (Bowden 2000) includes professional surveys of sites in Furness and Eskdale; however none of the sites in either coverage include demonstrable medieval features, and field evidence for historically-documented medieval mining in Furness has yet to be definitely located. As regards smelting, the Lake District iron industry has had a strong tradition of research from the late nineteenth century onwards (e.g. Collingwood 1902, Fell 1908, Parker and Fair 1922, 1925, Bowden 2000) Research and site identification by Davies-Shiel continues in Cumbria, and the Lake District National Park and National Trust are undertaking a programme of assessment survey and targeted geophysical survey and radiocarbon dating (Cranstone and Irwin forthcoming). Elsewhere bloomeries have received little attention, apart from the work of Norman Redhead (1995; 2003-4) in Greater Manchester. The recorded distribution of sites is probably skewed by biases in both research and site survival, and may particularly under-represent sites on the now heavily urbanised and industrialised coalfields and areas of agricultural improvement. Research in Cumbria has concentrated almost entirely on non-invasive fieldwork, whereas work in Greater Manchester has centred on excavation.

The C14 dates from the current Lake District research project range from the twelfth to the sixteenth centuries cal AD, but have not yet been systematically related to site type. The Castleshaw (GM) site is also dated to twelfth to fourteenth centuries. Recent excavations at Whitecarr Lane (GM) and Gadbury Fold (GM) have given late medieval dates for bloomery-related deposits, on ceramic evidence. The geophysical element of the Lake District project has shown that with high-resolution magnetometry and filled-colour

contour plotting, *in situ* bloomery furnace bases produce a very clear orientated-dipole signature; the potential for non-invasive archaeomagnetic dating from the orientation of the dipole is currently being investigated. The field survey element of the project has indicated a very marked size range, from under 10m³ to over 1000m³ for seemingly-undisturbed sites. The relationships of site type to medieval tenurial arrangements, including monastic estates, are under investigation. Water-powered bloomeries remain very much under-identified and under-studied, both regionally and nationally. The Lake District project has surveyed and dated two sites at Belham Tarn (cal AD 1420-1440) and Black Moss Pot (cal AD 1430-1650) and at least two further sites have been identified as either medieval or post-medieval. The Little Moreton Hall (Ch) site is of late fifteenth century date and, unlike the currently-identified Lake District sites, is on a lay magnate's rather than a Cistercian monastic estate.

Finally, recent research on the continent (Magnusson 1995), indicates that the blast furnace was present in central Sweden by the mid twelfth century, and was widespread in parts of Sweden by the following century; thirteenth century furnaces are also now known from Germany and Switzerland. These early furnaces appear to be consistently sited in relation to oxide/low phosphorus ores. This evidence challenges the conventional assumption that the blast furnace was first introduced into Britain in the Weald (a carbonate/high phosphorus orefield) at the end of the fifteenth century, and only later spread to northern England; the possibility of medieval blast furnaces of Nordic inspiration must now be seriously considered, especially in the Lake District.

Lead and Copper

The region's main lead orefields are the North Pennines and Lake District, with localised lead mineralisation elsewhere. The major lead orefields of Flintshire, Derbyshire, and the Yorkshire Dales are just outside the region, but associated smelting and lead/silver processing may fall within the boundaries. Many of the lead ores are argentiferous, and may have been important silver producers in the earlier Middle Ages (Blanchard 1992). There is documentary evidence for exploitation of the Alston Moor mines from the twelfth century, and Fletcheras mine near Garrigill is specifically mentioned in the fifteenth century (Raistrick and Jennings 1983, 46-50). Field evidence for eleventh to twelfth century mining at Browngill, also near Garrigill, appears to have been found in the nineteenth century (Raistrick and Jennings 1983, 46-7). The twelfth century mining on Alston Moor may have been on a massive scale, with mining and water-management features. The main medieval lead smelting process was the bole/bale, followed by washing and resmelting of the slags in a blackwork oven (Willies and Cranstone 1992, Kiernan 1989). More sophisticated furnace lead-smelting processes may have been in use, especially at Crown mines. Medieval lead-mining has received virtually no archaeological study within the region, and substantial field evidence is likely to survive within the multi-period mining landscapes of the North Pennines. Medieval evidence may be more easily identifiable at outlying sites such as Ashknotts, where later activity has been less extensive. The same applies to smelting; there is evidence for medieval lead smelting at several sites in Cumbria, and at Alderley Edge in Cheshire. There was probably lead smelting at Smelfthwaites, near the lead mines at Ashnott (L) where there are the remains of a stone-lined drain for mine drainage (M.C. Higham 1989a). Medieval lead extraction appears to have been short lived in Bowland (L), and did not recommence until the sixteenth century.

The main copper orefield of the region is the Lake District, notably the Keswick, Caldbeck, and Coniston areas. There is also an important source at Alderley Edge which was worked in the Bronze Age, Roman and post-medieval periods. Medieval copper mining in England is very poorly known, either from documentary or field evidence. A consequent assumption in the literature that copper was not exploited between the Roman period and the sixteenth century requires challenge. Fifteenth century Crown mining in the Keswick area, including the introduction of German experts, is documented, but field evidence has not yet been located; Shaw (1983, 7-8) suggests Goldscope as the location. The technology of medieval copper smelting appears to be unknown; though water-powered shaft furnaces are possible.

Coal

The main coalfields are in west Cumbria and Lancashire, the latter extending through Greater Manchester into northeast Cheshire. Small-scale outcrops also occur, both in small outliers and as sporadic seams in earlier Carboniferous deposits. On the Cumberland coalfield, St Bees Abbey obtained rights to extract coal in the Whitehaven area in the thirteenth century. By the fifteenth century, mining is also documented at Great Broughton, Dean, and near Loweswater, and at Tindale near Brampton in east Cumbria (Hatcher 1993,

111-113). In Lancashire the first documented major colliery was at Haigh in the early sixteenth century (Hatcher 1993, 117-120), and other references to coal mining appear to have been small-scale. The only known archaeological investigation within the region is at Gadbury Fold near Wigan, where recent excavations showed extensive thirteenth to fourteenth century mining (Redhead 2003-4). Nationally, a very high potential has been shown for coal mining features, artefacts, and mining technology (Hartley 1994); the study of small-scale coal workings is as important as large-scale mining.

Quarrying

Stone was used throughout the region for prestige buildings; its use for lesser domestic buildings varied across the region. The archaeology of medieval quarrying has however received little attention nationally, and virtually none regionally; the MPP Step 3 assessments list only one site in the region, at Stainton in Cumbria (LUAU 1999, Appendix 3). This may have provided the limestone for certain architectural details at Furness Abbey. The remainder of the Abbey is of St Bees Sandstone extracted from a number of quarry sites adjacent to a site surveyed by the RCHME (Wood 1999). The limited literature is biased towards high-quality freestone quarries, rather than towards the sources for more vernacular structures, or the technology of quarrying. Of the quarries in the region indexed by Clifton-Taylor (1972, 415-430), he implies late-medieval roofing stone extraction from Mow Cop (Ch), and freestone from Wetheral (C), St Bees Head (C) and Penrith. The quarrying of freestone, rubblestone, roofing stone, slate, and millstones differ in technology, and archaeological evidence for all is likely to occur within the region.

Salt production

The earliest documentary evidence for saltworking in the North West is provided by the Domesday survey for Cheshire, when the centres of salt production were firmly established in the three 'wich' towns of Nantwich, Middlewich and Northwich. At these inland works, brine was usually drawn from natural brine springs, where brine pits were developed, and later, shafts or wells were dug by hand to the wet rock head. Brine was raised and stored in brine cisterns or brine tanks where any solid material was allowed to settle before the brine was allowed to flow through brine pipes by gravity into the evaporating pans. Small lead pans were used throughout the medieval period, but began to be replaced by larger pans of riveted iron sheets in the later Middle Ages. Excavations in Nantwich in 1979-80, revealed timber-framed workshops containing cisterns for storing brine, and two adjoining late twelfth century salthouses. The salthouses were of differing construction; one built with stake and wattle walls, the other built around massive squared earth-fast posts, although they were of similar size and appear to have been built as standardised units (McNeil 1983, 61). More recent excavations have revealed other well-preserved timber buildings associated with salt making (Cheshire County Council 2004).

Salt production in Cheshire followed a technology that was in the main already well established, using timber-lined brine pits, positioned in valley-floor locations in simple open-ended, barn-like structures, known as 'wich houses'. Little work has been undertaken on coastal salt production in the north west. This is likely to have been carried out in the vicinity of the flat estuarine intertidal areas of the Dee, Ribble, Morecambe Bay and the Solway, where some medieval salterns are already known. There are references to salt-making around the Solway and Morecambe Bay, and in west Cumberland, largely associated with monastic houses, notably Holme Cultram Abbey, where peat was used as fuel (Martin 1975). Production was likely to have been through the process known as sleeching or sand-washing, where salt-impregnated sands and silts were filtered through a bed of turf or peat, and the resulting brine was boiled in small pans. The waste sand from the process often remains in large distinctive mounds. On rocky coasts, seawater may have been directly boiled, without prior concentration, using large cast-iron pans fuelled with coal (Wilkinson *et al* 1998). The direct boiling process developed from sleeching in the later Middle Ages, and it has been suggested that salt was possibly produced by direct boiling in the thirteenth century at Saltom on the West Cumberland coalfield (Walsh 1991, 39). The most recent publicly-available overview is contained in the MPP Step 1 Report (Barford *et al* 1998), revised and supplemented by the Step 1 Consultation Report and the Step 2 Shortlist of Sites (Cranstone 1999a; 1999b).

Manufacturing

Archaeological evidence for manufacturing in the North West is sparse, even in the urban centres. The evidence from Chester consists mainly of waste products and tools unrelated to any *in situ* structural remains, although timber-lined pits associated with tanning have been recorded east of the city walls at Love Street (Newstead 1934) and at the Bars (UMAU 1998). A small number of waste hide off-cuts and cobblers waste

were found in the city ditch in 1991, suggesting both shoe-making and mending. Excavations at Witter Place produced evidence for copper alloy metalworking in the form of clay moulds for cauldrons and other vessels. Several fragments from a single cauldron mould were found at Crook Street in 1963, another fragment was also found at Hunter Street, and part of a stone composite mould for annular brooches was found at the Northgate Brewery site (Davey 1973). Outside of Chester, information on the manufacture of metal products is restricted to evidence of bell-casting at Norton Priory. Fragments of molten glass have been found in Handbridge and are considered to be evidence of working on or close to the site, although the date is unclear. Glass working, possibly for glazing, is indicated in Delamere Forest by a dump of crucibles and broken glass, probably for use as cullet (recycled material). Molten waste was also found but no furnace has definitely been identified. Field name evidence suggests glass working or making at Mobberley and Rushton but there is no archaeological evidence. A large pair of wooden and leather bellows recovered from a fourteenth century context within Carlisle city ditch were probably industrial in function (OA North 2002).

Elsewhere in the North West, very little archaeological work has been carried out on manufacturing sites. There is plentiful documentary evidence for the presence of corn and fulling mills, for example, but none have been excavated and very few have even had limited survey. At Harraby, Carlisle, however, medieval deposits were discovered at a nineteenth century corn mill where a medieval one was known (NPH 2003). There is some excavated evidence of corn-drying, for example at Audlem (Ch) (Cheshire County Council 2001), in Chester (Ward 1998), and Mitchell's Brewery, Lancaster (Huckerby forthcoming). This lack of evidence is largely because many mills continued in use and were redeveloped in the post medieval period. Some fulling mills were abandoned, however, such as at Slaidburn (L), where initial survey has identified a surviving leat and potash pits (M.C. Higham 1998). Surveys in Cumbria have identified the remains of potash kilns, fulling mill sites and tenter banks (Davies-Shiel 1972; 1974), whilst other work in both Lancashire and Cumbria has identified physical evidence for flax and hemp retting (M.C. Higham 1989b). The physical evidence for medieval textile production is very scant. Spindle whorls have been found at a variety of sites and the remains of a glass linen smoother/calendar in Chester. There is documentary evidence for manorially controlled fulling mills across the North West, but none have been excavated. Many were later evolved, particularly in Lancashire, as cotton textile mills. Recent investigations at Alderley Edge produced iron slag, including tap slag and hammer scale, from a buried soil found during excavation of a trench across the township boundary, and the recent excavation of the salthouses at Wood Street, Nantwich also produced evidence suggesting metal and leather-working.

Pottery Production

The evidence for pottery and tile production in the North West is extremely poor. In Chester, two tile kilns were excavated at the Deanery field and a dump of medieval roof tiles, including many wasters or 'seconds' were found at George Street (Rutter 1977). A short distance away to the east of the city walls a dump of waste pottery and building material was found in Frodsham Street (Rutter 1990). Seven or eight other production sites have been identified by finds of waste pottery, but only four medieval kilns have been excavated, all in Cheshire, and the region was also served by kilns beyond its modern day borders. A floor tile kiln was also discovered and excavated at Norton Priory. Two of the Cheshire kilns were excavated in 1933 and 1948, (Newstead and Droop 1934, Webster and Dunning 1960), and a third was found during excavation of a Roman villa at Eaton-by-Tarporley in 1982. At Brereton Park (Ch) one kiln was partially excavated (Rutter 1983), and three other are thought to lie close by, and a group of wasted pottery was found during recent excavations on a pipeline. A kiln, excavated within the medieval city walls of Chester in 1936 (Newstead and Droop 1936), is probably a tile kiln, but the evidence is unclear and very little waster material was found. The possible remains of a fifth kiln were found along with large quantities of pottery, including numerous 'wasters', during pipeline construction at Samlesbury near Preston, during 2002. No actual structure was found but a burnt area may represent the position of a kiln. The pottery has highlighted potential differences in medieval pottery traditions between the north and south of the River Ribble. The only other evidence for pottery production is in the form of finds of waste material and documentary evidence.

Excavations in Prescott (Holgate 1989) produced 74 fragments of wasters, and a dump of waste pottery and building material was found in Chester in the late 1970s just outside the city walls (Rutter 1990). In Cumbria waste pottery has been found at Waberthwaite (Cherry and Cherry 1984) and also from several sites in Carlisle, most recently from Botchergate (I. Miller pers. comm.). In Lancashire pottery and kiln debris were discovered at Ellel, to the south of Lancaster, in 1992 (White 1993) and recently at Caton where

documentary evidence also exists (OA North 2003). Pottery industries are well known at Docker Moor and Silverdale on the Lancashire/Cumbria border where production at the former began in the late twelfth to early thirteenth century, and in the late medieval period at the latter (Edwards 1967; Miller and White forthcoming). Evidence has been gained from documents, earthwork evidence, finds of wasters and a resistivity survey (White 2000).

Parallels between waste pottery and some excavated material can be identified in the relevant areas but further evidence is required to identify distribution zones. Well-stratified occupation deposits and independent dating means are required to identify the time spans during which these sites were in production. Little is known about technological advances or changes in ceramic production in the North West. Whilst some changes can be detected in methods of manufacture there is not enough evidence to associate these with any chronological or geographical framework. Study of pottery outside the urban centres of Chester and Carlisle, certain moated, ecclesiastical and defensive sites is limited by lack of excavated sites. When excavations have occurred finds assemblages have often been small, abraded and clearly not primary deposits. In addition to poor assemblages there is a lack of good stratigraphy and independently dated artefacts; any means of absolute dating is often a problem. Thus dating of settlements in the region is hampered by lack of pottery, and the means by which to construct ceramic chronologies is difficult to find.

Trade, Exchange and Interaction

Ports and maritime archaeology

Chester was the premier port in the North West during the medieval period (Carrington 1996). A wide range of objects entered the city both by the port and over land, although the archaeological evidence for these external contacts is relatively rare. Many of the goods were either perishable or raw materials which were converted to or used to produce other objects and materials. The principal archaeological evidence for trade thus consists of ceramics, stone and glass. There is considerable potential, however, in the reclaimed ground outside the Watergate and along the western defences. Important evidence for ships and shipbuilding may also be buried in the buried river silts and river bed but the potential has only very recently begun to be assessed (Gifford and Partners 2002). There are three recorded shipwrecks in the River Dee, all lost in 1536, and carrying cargoes of wine and wood. The evidence for the ships is documentary, and their exact locations have not been identified (NMR unique identifiers 1324874; 1324880; 1324885). Only one other shipwreck is recorded for the North West, a fifteenth to sixteenth century wooden sailing vessel off Barrow-in-Furness, identified in 1839 when timbers and cannons were found (NMR unique identifier 908215). Other ports and creeks operated along the length of the North West coastline in the medieval period, though little, if any, archaeological work has been carried out.

Pottery

Knowledge of medieval pottery up to the mid-thirteenth century is limited in the North West. A sequence of fabrics and forms has been suggested by associated dendrochronology for the twelfth and early thirteenth centuries in Carlisle, and similar wares have been recognised from excavations at Dacre (C), Penrith and elsewhere, enabling a distribution pattern to be suggested for the principal wares of the period. In Nantwich two wick houses produced good groups of late twelfth century pottery, but production sources are not known, and there is a mid- to late-twelfth century assemblage from Norton Priory. Elsewhere in the region, published evidence is not available. There is a relative abundance of pottery in the North West from the mid-thirteenth to the fourteenth centuries, but as with the earlier pottery, there is a bias towards pottery from Cheshire and Cumbria. The pottery sequence for Carlisle is published and further work is in progress (McCarthy and Brooks 1992). There are other medieval sequences at the medieval towns of Cockermouth (C) and Kendal, whilst excavations at Dacre recovered over 2000 sherds forming a sequence from the thirteenth or fourteenth century. Only small quantities have been recovered elsewhere in Cumbria, for example Penrith and Cartmel Priory (Newman *et al* 2000; Wild and Howard-Davis 2000). Chester also has good sequences of pottery for this period, though the dating of local pottery is heavily dependent on dated assemblages from castles in North Wales. Little is understood about the extent of use in comparison with other materials, nor about the change from using wares made from Cheshire boulder clays to those made from Coal Measure clays. This seems to have occurred sometime in the fourteenth century. Outside of Chester district, there is a poorly stratified assemblage from Beeston Castle, and unpublished assemblages from Nantwich and Middlewich. Pottery from towns in the east of the county, such as Macclesfield and Congleton, is poorly understood, and there is little material from the few excavations of rural settlements,

although a moated site near Audlem produced a relatively large medieval assemblage. Excavations at the religious sites of Norton Priory and Warrington Friary, however, have produced substantial assemblages, as yet awaiting full publication.

Pottery of mid-thirteenth to fourteenth century date from Lancashire and Merseyside is less well-represented, and many of the assemblages have been small and poorly stratified, a situation commented on in 1975 (Hurst 1977, 123). In Lancashire few towns have been the subject of archaeological excavation and no significant groups of pottery have been published (White 1996, 123, 137). In Merseyside, there is pottery from West Derby Castle and Prescott (Holgate 1989), including wasters, and small quantities of pottery have been found through field walking and excavation. More recent excavations have begun to produce pottery, however, such as the largest group yet excavated in Lancaster from Mitchell's Brewery in the 1990s, and from Fishergate, Preston in 1989 (White 1996, 132, 135). An unusually large spread of medieval pottery on the outskirts of Inskip in North Lancashire was a rare discovery in a rural settlement, made during the North West Wetlands Survey (Middleton *et al* 1995, 116). The sherds were small and abraded but some diagnostic features survive to suggest that they were made at Ellel (L).

Excavations in 1994 and 1995 produced the first sizeable stratified assemblages from the Merseyside area. The first, at Fazakerley (Wright 1996), the site of a toft close to known fourteenth-century settlement, is one of the few rural sites to have been excavated. Unfortunately, features which could be dated by radiocarbon analysis could not be related in any meaningful way to the pottery assemblages. The second, a site at Eccleston Hall, near St Helens, where the earliest documented reference is *c.* 1374 (Philpott and Irvine 1991, 10), produced small but key groups for the late medieval/transitional period, which it may be possible to put into a chronological sequence. Parallels can be found amongst these assemblages with late medieval pottery found in other small but key groups in Merseyside from the Old Hutt (Wrathmell 1992) and Speke Hall (Higgins 1992). Despite the lack of absolute dating, some of the pottery from Fazakerley and Eccleston, along with the material from sites at Tarbock, Roby and Newton-le-Willows, does share some characteristics of form and fabric with the Prescott material and with each other that would seem to indicate a common and therefore perhaps local production. The date of this production is unclear, the later fourteenth or fifteenth century has been suggested as the most likely (Davey 1991, 127) but the possibilities for an earlier date have been discussed recently (Speakman 2000). Although these 'local' wares cannot be securely dated or provenanced it is clear that they are quite different in character to the bulk of pottery found in Chester and have more affinity with the northern gritty ware traditions (Davey 1991, 124-7).

A similar situation exists in Greater Manchester where there is also no sequence of fabrics or forms for the city or the area as a whole although a number of sites have produced pottery since 1975, when Bury Castle was the only representative. Most of the assemblages that have been published are small and fragmentary. Recently, during excavations in Manchester city centre, a small group of probable later medieval pottery was found associated with a large quantity of leather artefacts in the Hanging Ditch, a medieval watercourse backfilled by the mid-sixteenth century. Excavations at Wigan in 1984 produced the first archaeological evidence for the medieval town: a timber-lined well which contained a group of possible late thirteenth- to early fourteenth-century pottery (Jones and Price 1985). Further work took place in 1990 at Hallgate, Wigan, when the excavation of medieval burgrave plots also produced a good group of medieval pottery some of which have been suggested to be wasters (Clark 1991). Long running excavations by South Trafford Archaeology Group at Timperley Old Hall, a moated site near Altrincham, have produced groups of thirteenth to sixteenth century pottery which are currently being studied (Faulkner 1994, 16). A small fifteenth to sixteenth century assemblage has also recently been found at another moated site at Denton to the south of Manchester. As with the Merseyside material the pottery reported on from Greater Manchester is of a type comparable with the gritty ware traditions to the north-east of the area. This is particularly clear in the Hallgate, Wigan group where parallels have been made with some of the Prescott pottery (Clark 1991, 12). As on Merseyside, however, the small quantities of material, poor stratification and an absence of any long occupation sequences containing pottery are a barrier in developing a ceramic sequence.

Whilst the sources of much of the region's pottery are poorly understood it is difficult to draw conclusions regarding exchange and interaction based on pottery distribution. Broad patterns of distribution can be identified, some of which appear to follow national boundaries such as the Mersey. Some of these extend beyond the boundaries of the region, for example Chester with North Wales and possibly the West Midlands, Cumbria with the North East and Scotland and possible links between Greater Manchester and the east of

England. Whilst the evidence for pottery distribution across the region is patchy the existing evidence suggests a lack of interchange of locally produced wares across the region as a whole. The region can be divided into several zones within which certain types of pottery appear to circulate. Cheshire is dominated by red firing wares during the thirteenth and fourteenth centuries but sometime in the fourteenth century pink/white firing wares become common. These wares are occasionally found north of the Mersey but only in small numbers as a different tradition seems to have developed there. In the Merseyside area and extending over to Greater Manchester hard, quite coarse sandy wares appear to be dominant. In Lancashire there are still too few assemblages to be able to form any preliminary thoughts on distribution but the types of wares found at Ellel are similar to the coarse sandy wares found on Merseyside. In Cumbria four possible regions of ceramic tradition have been suggested to exist for the twelfth and thirteenth centuries (McCarthy & Brooks 1992, 34). One includes Carlisle, Penrith and Dacre and follows the Eden Valley; two others are indicated by different groups of material at Kendal and Cockermouth; a fourth area in southern Cumbria has no excavated assemblages but might be ceramically related to northern Lancashire. The trends for the later periods in Cumbria are not clear although more homogeneity is suggested (McCarthy & Brooks 1992, 36) and also a continuation of influences from north-eastern England and Scotland rather than from the south of the region (Miller forthcoming). The extent and use of imported pottery is unclear. A variety of wares have been found in Chester; including Dublin coarsewares, developed Stamford wares, Scarborough, Saintonge, Ham Green and Tudor Green types. Saintonge wares, Surrey wares (Cheam) and Humber wares have also been identified north of the Mersey. Further work is required to examine the long distance trading patterns, their variation and the reasons for this across the region.

Meols

Meols is a remarkable site at the northern tip of the Wirral peninsula which has produced an extremely large and varied assemblage of everyday medieval items, mainly metalwork, as erosion by the sea advanced during the nineteenth century. The evidence of medieval activity appears to be a continuation of an earlier, pre-Conquest settlement. The antiquarian collections from the site, now in several different museums, together comprise a collection second in range and scope only to that from London for the later medieval period. The finds continue to the late fifteenth to early sixteenth century, when the settlement presumably declined irreversibly. There are thousands of dress accessories, buckles, brooches, mounts etc, including some casting wasters of lead/tin from the fifteenth to early sixteenth centuries and series of copper-alloy mounts which may never have been used. A small group of late Norman-period copper alloy brooches also appear to include wasters from cold hammering. Overall, the fashions are those familiar from large urban excavations across the country. It includes cheap political badges from the Wars of the Roses or a little later, and a wide range of pilgrim souvenir badges, not only ones from English shrines, but also from Germany, southern France and Rome. Domestic equipment, though sparser, again largely covers ground that is routine in towns, such as knives, pewter spoons and metal kitchen wares. In contrast, a few buckles have been very clumsily repaired and some keys made of copper alloy sheeting are the kinds of substitutes that might be devised by a community which had temporarily lost direct access to a mainstream market and to some routine metalworking techniques. Fish hooks indicate the likely economic basis of the settlement, and occasional high-class items, like a door or chest ring and part of a Romanesque candlestick of a form found in major churches on the Continent, add to the unusual profile of the finds from Meols. Altogether, the assemblage indicates that the site was far more than a fishing village in the medieval period. It appears to have acted as a major entry point for goods coming into the North West, and developed as a manufacturing centre of metal goods to cater for that trade. Given the general paucity of artefacts from most excavated sites across the North West, Meols stands in stark contrast.

Defence, Warfare and Military Activity

Archaeological work on the castles of the north has been sporadic. There are numerous guidebooks and gazetteers to the castles, and notable surveys (Curwen 1913; RCHME 1936; Hugill 1970 and 1977; King 1983; Stretton 1994; Perriam and Robinson 1998) although within these works the archaeological evidence has been recorded and interpreted to varying degrees.

The earliest castles in the region were of earth and timber construction generally of motte and bailey form. In the Greater Manchester area, many were short-lived, such as Watch Hill, one of three castles guarding the eastern side of the Bollin valley (Redhead 1997, 34-5), and others have been obscured by later development. The motte at Dunham Massey is now truncated as a garden feature and that at Ullerswood is topped by a

house and obscured by trees. At Castleton, Rochdale, the truncated motte sits beneath an early nineteenth century house, and the bailey has been built over (Fishwick 1889, Battersby 2001). Cumbria's mottes for the most part are likely to be later than those further south in the region as the full impact of Norman settlement was not felt until later in the twelfth century. The influence of a fluctuating frontier with Scotland appears likely to have at least in part dictated the distribution of these earth and timber castles in the north of the region. There are comparatively few in Lancashire, but a distinct group concentrated in the Lune valley possibly related to a late eleventh century border with Scotland (M.C. Higham 1991, 85; Wood 1996). These include the well preserved and largely unexplored sites at Halton and Hornby (Castlestede) near Lancaster, and the early twelfth-century castle which preceded the later masonry castle at Lancaster itself. A further less defined line of mottes along the Ribble valley may also relate to a frontier, perhaps that temporarily formed during the anarchy of Stephen's reign when Scottish power extended southwards. In Cumbria, the concentration of mottes is close to the Scottish border, though whether they truly represent national defensive lines, or reflect the militaristic feudal nature and status of the twelfth century landholdings (Lott 1995) is arguable. In some cases similar castles appear to oppose each other across the border as at Liddel Castle and Liddel Strength (MacIvor 2001, 25). Many of these early castles fulfilled functions both as baronial strongholds and estate administrative centres, and as strategic military installations (Wood 1996, 145). Overall modern archaeological investigation to substantiate speculation about dating, fluctuating frontiers and the functions of these earthwork sites is generally lacking.

Few ringworks are known from the region, possibly because they are often obscured by later developments. The stone castle at Kendal is considered to have originated as a twelfth century ringwork for example, and the motte at Aldingham (C) originated as a ringwork (Davison 1969). The three known in Greater Manchester are Buckton Castle (Nevell 1991, 115-7), Manchester and Stockport. Manchester was replaced by a manor house in the thirteenth century (Morris 1983, 36-7), and the site is now occupied by Chethams College, and Stockport castle walls were levelled in the late eighteenth century for the construction of a cotton mill (Arrowsmith 1997, 31-4). In south-west Lancashire and Merseyside, West Derby Castle, Mote Hill in Warrington, and possibly Burnardescastle in Lathom may also have originated as ringworks (Lewis 2000, 89-91).

In Cheshire any relationship between the Anglo-Welsh border and early castles is more difficult to establish. Although motte and bailey castles are more numerous in the Welsh Marches (Renn 1973), there are only 13 definite mottes in Cheshire and one in Merseyside. In western Cheshire, along the border with Wales there are motte and bailey castles located at Dodleston, Aldford, Pulford and Malpas, plus Castletown at Church Shocklach, which forms part of more complex earthworks. Chester and Shotwick to the north can also be considered as part of the group although they continued in existence as royal castles and so are much modified. Traditionally these castles have been considered to belong to the immediate post-conquest period, the result of the imposition of Norman control in an unsettled, frontier area. Earthwork surveys, resistivity surveys, and small-scale research excavation at Aldford, make it the most intensively investigated of the group (Cocroft 1996; Lowerre *et al* 2003). The excavations at Aldford, however, produced no evidence for occupation significantly earlier than the early-thirteenth century. This raises the interesting possibility that these castles were not built in the immediate post-conquest period, instead, they could have been built in the late-twelfth century, in what was then becoming an archaic form, during a period when the Welsh princes were ascendant. Other castles such as Castle Cob are seen as protecting and controlling the agricultural resources of the Cheshire Plain.

Chester Castle had a major administrative and symbolic function, though it was not particularly important or innovative from a military architectural point of view (Donald Insall Associates Ltd 2001). The original castle was a motte and bailey. During the twelfth and early thirteenth centuries, it was rebuilt in stone as a curtain wall castle and a large new outer bailey was added. The motte was retained but lost its military predominance. Improvements continued under the Crown through the fourteenth century. Substantial accommodation for the constables and the Royal family were also constructed. Substantial rebuilding in the eighteenth to the twentieth centuries probably destroyed the greater part of the medieval domestic ranges. However, the outer bailey wall and gates appear to survive beneath the present parade ground. Excavations, evaluations and watching briefs have demonstrated a good, below ground survival of the archaeological resource in those areas unaffected by post-medieval destruction (Ellis *et al* 1996; Ward 1993). The upstanding masonry structures are also a valuable research resource but are in danger from lack of repair. The site has considerable research potential in the areas of military architecture with the development from

earthwork to masonry structures and for high-status finds particularly the in-filled ditches which have good potential for survival of organic remains.

Large-scale, modern archaeological investigations of earth and timber castles have concentrated on those that developed into important later castles as at Halton and Nantwich in Cheshire. There have been a few modern archaeological explorations, including Davison's excavations at Aldingham, and a number of excavations in the Manchester area, including at Watch Hill in 1976 (Brown and Johnson 1985, 35-8), and at Chethams Yard, exposing a possible inner defensive ditch for the Manchester ringwork (Tindall 1983, 5-8). Although a number were at least partially excavated in the nineteenth century, for example Penwortham, near Preston, and Mote Hill, Warrington, these have not been especially informative (Renn 1973) and often the detailed information from the investigations has been lost as at Hornby in the Lune valley. Little archaeological work of any type has been undertaken on Cumbria's northern earth and timber castles. Of the larger castles in the north of the region, there have been few formal or extensive historic fabric surveys or excavations with the exception of Carlisle (McCarthy *et al* 1990; Lloyd Evans Prichard 2001), where opportunities for excavations have been limited, Brougham (Williams 1992; Summerson, Trueman and Harrison 1998), Brough (Jones 1989) and Piel (R.M. Newman 1987; 1996). There have been a number of small-scale investigations at Kendal Castle, which has helped to confirm the rather sporadic historical record. The origins of the castle remain uncertain, and the lack of excavation of Kendal's other castle on the other side of the town, at Castle Howe, means that the relationship between the two remains unknown. There is some slight evidence, however, that Kendal Castle may have had a timber phase pre-dating the visible stone remains (LUAU 1995a; Howard-Davis forthcoming). There has been recent geophysical survey within the enceinte, suggesting a range of buildings that may have echoed the hall block. Work at Pendragon (C) has focused on the recording of upstanding elevations and partial clearance of collapsed masonry (LUAU 1996a). Limited recording and excavation has also taken place at Egremont (Turnbull 1994; LUAU 1998d) and a report on the state of Gleaston appears in a feasibility study (LUAU 1998c). Archaeological investigation at Lancaster Castle has been limited by its current use as a prison, but a watching brief within the early fifteenth century gatehouse suggested that there has been considerable disturbance of medieval phases (LUAU 1995b). There has also been a fabric survey of the Witches', or Well, Tower, and detailed investigation of its upper floor, which demonstrated that much of the original thirteenth century masonry and structural timbers survived intact along with evidence for refurbishment in the early fifteenth century (LUAU 1997c). The site of the late medieval castle at Lathom (L) rebuilt on a palatial scale in the fifteenth century has been confirmed by evaluation. Timbers re-used in the Palladian mansion produced felling dates of 1475 and the site is the subject of a continuing research programme (Lewis 1999; Nayling 2000). Beeston Castle (Ch) was the subject of extensive excavations between 1968 and 1985 (Ellis 1993).

Below the level of castles proper is a category of defensible buildings, of various types. Their distribution is concentrated in the north of the region, and in a survey of defensible buildings in Cumbria, a little over 100 such buildings were recognised (Ryder 2002). There are examples further south, such as Radcliffe Tower and Bury Castle, in Great Manchester, which appear rather to have been fortified manor houses. The most common was the tower solar, often termed 'pele tower' but which can now be shown to have been part of a larger residential structure, predominantly of the later fourteenth and fifteenth centuries. A separate group of houses with thick-walled cross wings rather than towers proper was also recognised. Tower houses in which domestic accommodation was confined to a single tower are a much smaller group and mostly fall right at the end of or just beyond the medieval period. Courtyard manors provided another substantial group again often falling late in the period. The Cumbrian buildings have been surveyed by the RCHME *et al*, but there has been little excavation. Both Radcliffe Tower (GM) and Bury Castle (GM) have been the subject of excavations. These revealed that Radcliffe had a fine timber-framed hall, linked to an L-shaped timber-framed wing, all enclosed by a stone wall fronted with a broad ditch (Arrowsmith 1995), whilst Bury appears to have been a massive tower house with walls 2.3m thick. It was protected by a broad moat, revetted by a sandstone wall strengthened with buttresses. Excavations of the moat silts revealed many domestic and military artefacts, and also architectural fragments such as window tracery and corbels (Arrowsmith 1999). There appears to be a correlation between the distribution of these defensible buildings and moated sites, with the former largely in the uplands, and the latter largely in the lowlands. Both forms were used mainly for the display of status, rather than for true defence, and the distribution reflects changes in geology and topography and thus the availability of building materials.

Legacy

Many aspects of the archaeology in the medieval period in the North West are little understood. Published work is concentrated in Chester, perhaps as a consequence of its status as an area of archaeological importance. In a region which was dominated by large areas of unpopulated or scarcely populated uplands and wetlands, the lack of archaeological evidence for many aspects of the medieval period is, perhaps, not surprising. The success and continuity of many medieval urban and rural settlements and buildings is a factor in limiting understanding of their archaeology. For example, the three substantial medieval castle complexes at the heart of Carlisle, Chester and Lancaster have remained in use for a variety of uses as courts, barracks, prison, administrative and civic centres. The impact of rapid post medieval urban and industrial growth on small medieval market centres has in many places severely truncated earlier archaeological levels. Large medieval rural parishes grew rather than shrank in population so that redundant medieval churches and chapels are not a feature of the North West landscape. Similarly the relative lack of visible deserted settlement of all types limits the opportunity to identify and examine well preserved rural sites. In contrast, work undertaken at the salt working sites in Cheshire, the artefacts from Meols, and the excavations of medieval Carlisle demonstrate that the North West also contains areas of well-preserved deposits and rich assemblages of organic and other artefacts. The region's extensive coastline and long-established trading links made it well placed to exploit the growing Atlantic trade of the early post medieval period. The North West's ports and trade were the catalysts that would transform its mining, metal, and chemical industries. Trade played a key part too in the development of the textile industry from the wool and linen production that prospered in the extensive farming regimes of the uplands and wetlands, to sustain the skills base and trading economy in which the later cotton manufacturing industry would flourish.

Contributions to the Medieval period assessment

Cranstone, D. Medieval Industry
Crowe, C. Medieval Stone Crosses in Cheshire Greater Manchester and Merseyside
Davison, A. Monasteries in Cumbria and Lancashire
Edwards, J. Medieval Pottery Production
Edwards, J. Craft and industry in medieval Cheshire
Egan, G. Medieval Material from Meols
Fielding, A. Salt production and the salt industry
Fielding, A. The Salt Industry and the Monument Protection Programme
Higham, M. Upland Settlement, with particular reference to Lancashire
Higham, N. Medieval bibliography
Huckerby, E. Pollen and Environmental Overview
Leah, M. Cheshire towns
Lewis, J. Moated Sites
Morris, M. Notes on Medieval Chester
Morris, M. Traded Artefacts from Chester
Nevell, M. Medieval Settlement in Greater Manchester
Nevell, M. Timber-framed Churches in North West England
Newman, R.M. Notes on the towns of Cumbria, Kendal Castle, Lancaster Castle, excavations in Kendal and Medieval Lancaster
Newman, R. Medieval Settlement
North West Medieval Pottery Research Group (edited by J. Edwards). Medieval pottery in the North West 1000 – 1500
Redhead, N. Greater Manchester Castles
Ryder, P. Medieval Defensible Buildings in Cumbria
Thorpe, N. Excavations at Stephenson Scale
Trippier, J. Medieval Churches in Pre-1974 Lancashire South of the Sands
Ward, S. Settlement in Chester
Ward, S. Chester Castle and Walls
Ward, S. Monastic sites of Cheshire
Ward, S. Border Castles in West Cheshire
Williams, R. The Physical Evidence for Medieval Settlement and Agriculture in Cheshire
Wood, J. Castles and monasteries in Cumbria and Lancashire; later halls

References

- Addyman, P.V., Simpson, W.G. and Spring, P.W.H. 1963. Two medieval sites near Sedbergh, West Riding. *Yorkshire Archaeological Journal* 41, 27-42.
- Alebon, P.H., Davey, P.J. and Robinson, D.J. 1976. The Eastgate, Chester 1972. *Journal of the Chester Archaeological Society* 59, 37-49.
- Appleby, A.B. 1978. *Famine in Tudor and Stuart England*. Stanford University Press.
- Arrowsmith, P. 1995. *Radcliffe Tower – An Introduction to the Scheduled Ancient Monument*. Chester: Bury Metropolitan Borough Council.
- Arrowsmith, P. 1997. *Stockport – A History*. Stockport Metropolitan Borough Council.
- Arrowsmith, P. 1999. *Bury Castle – An Introduction to the Scheduled Ancient Monument*. Chester. Bury Metropolitan Borough Council.
- Atkin, M.A. 1985. Some settlement patterns in Lancashire. In D. Hooke (ed.) *Medieval Villages*, 170-185. Oxford University Committee Archaeology Monograph 5.
- Atkin, M.A. 1991. The medieval land use of Kentmere. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 91, 69-78.

- Atkin, M.A. 1994. Land use and management in the upland demesne of the de Lacy estate of Blackburnshire. *Agricultural History Review* 42, 1-19.
- Barber, B. 1981. *Peat stratigraphy and climatic change: a palaeoecological test of the theory of cyclic peat bog regeneration*. Rotterdam.
- Barford, P., Fielding A. and Penny, S. 1998. *Monuments Protection Programme: The Salt Industry Step 1 Report*. Report to English Heritage.
- Battersby, Y. 2001. *Rochdale Castle, Castle Hill, Greater Manchester – Archaeological Evaluation*. Greater Manchester Archaeological Unit unpublished report.
- Beresford, M.W. and John G Hurst, J.G. 1971. *Deserted medieval villages: studies*. London: Lutterworth Press.
- Blanchard, I. 1992. Technical implications of the transition from silver to lead smelting in twelfth century England. In Willies and Cranstone (eds) *Boles and Smeltmills*, 9-11. Matlock Bath: Historical Metallurgy Society.
- Bowden, M. 1996. Recent archaeological fieldwork in the Howgill Fells by the Royal Commission on the Historical Monuments of England. *Transactions of the Cumberland & Westmorland Antiquarian and Archaeological Society* 96, 1-11.
- Bowden, M. (ed.) 2000. *Furness Iron*. Swindon: English Heritage.
- Brakspear, H. 1901. On the First Church at Furness. *Transactions of the Lancashire and Cheshire Antiquarian Society* 18, 70-87.
- Bromley, J. 1890. Notes on Some Recent Excavations at Burscough Priory. *Transactions of the Historical Society of Lancashire and Cheshire* (new series) 5, 126-46.
- Brown, A. (ed.) 1999. *The Rows of Chester; the Chester Rows Research Project*, English Heritage Archaeological report 16. London: English Heritage.
- Brown, K. and Johnson, B. 1985. Watch Hill, Bowdon. *Greater Manchester Archaeological Journal* 1, 35-8.
- Burke, T. and Nevell. 1996. *A History and Archaeology of Tameside Volume 5: Buildings of Tameside*. Tameside Metropolitan Borough with the University of Manchester Archaeological Unit.
- Carrington, P. (ed.) 1996. *'Where Deva Spreads Her Wizard Stream' Trade and the Port of Chester*. Chester City Council.
- Cherry, J. and Cherry, P.J. 1984. Medieval pottery kiln at Muckleground, Waberthwaite. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 84, 267.
- Cheshire County Council 2001. *Cheshire Archaeology News*, Issue 8, Spring 2001.
- Cheshire County Council 2004. *Cheshire Archaeology News*, Issue 11, Spring 2004.
- Chitty, G. and Warhurst, M. 1979. *Bromborough Court House: a survey of the evidence*. Liverpool: Merseyside Archaeological Report 2.
- Clark, R. 1991. *Hallgate, Wigan, excavation report*. Greater Manchester Archaeological Unit unpublished report.
- Clack, P.A.G. and Gosling, P.F. 1976. *Archaeology in the North*. Newcastle: HMSO.
- Clifton-Taylor, A. 1972. *The pattern of English Building*. London: Faber & Faber.
- Cocroft, W. 1996. *Aldford Castle Cheshire, Report on geophysical survey*. Geophysical Surveys of Bradford, report no 96/05.
- Collingwood, W.G. 1902. The ancient ironworks of Coniston Lake. *Transactions of the Historical Society of Lancashire and Cheshire* 53, 1-22.

- Coppack, G., Hayfield, C. and Williams, R. 2002. Sawley Abbey: The Architecture and Archaeology of a Smaller Cistercian Abbey. *Journal of the British Archaeological Association* 155, 22-114.
- Cowell, R. and Philpott, R. 2000. *Prehistoric, Romano-British and Medieval Settlement in Lowland North West England: Archaeological Excavations Along the A5300 Road Corridor in Merseyside*. Liverpool: National Museums and Galleries on Merseyside.
- Cranstone, D. 1999a. *Monuments Protection Programme. The Salt Industry: Report on Step 1 Consultation*. Unpublished report to English Heritage.
- Cranstone, D. 1999b. *Monuments Protection Programme. The Salt Industry: Step 2 Shortlist of Sites*. Unpublished report to English Heritage.
- Cranstone, D. and Irwin, C. (eds) forthcoming. *Master of them all: the History of Iron and Steel in Cumbria*. Cumbria Industrial History Society and Historical Metallurgy Society joint publication.
- Curwen, J.F. 1913. *Castles and Fortified Towers of Cumberland, Westmorland and Lancashire North of the Sands*. Cumberland and Westmorland Antiquarian and Archaeological Society Extra Series XIII. Kendal.
- Darlington, J. 2003. Industrialisation and rural desertion. Some examples from 19th and 20th century Lancashire. In M. Nevell (ed.) *From Farmer to Factory Owner Models, Methodology and Industrialisation. Archaeological Approaches to the Industrial Revolution in North West England*, 79-85. Manchester: CBA North West and University of Manchester Archaeology Unit.
- Davey, J. 1973. *Chester Northgate Brewery. Phase one. Interim Report. (Roman Saxon and Medieval)*. Chester: Grosvenor Museum 1973.
- Davey, P.J. 1991. Post-Roman pottery. In P. Tomlinson and M. Warhurst (eds), *The archaeology of Merseyside. Journal of the Merseyside Archaeological Society* 7, 121-142.
- Davey, P.J. and Lewis, J.M. 1991. *Birkenhead Priory Phase 2 (North Range): archaeological assessment*. North West Archaeological Trust, unpublished.
- Davey, P. and McNeil, R. 1980. Excavations in South Castle Street, Liverpool 1976 and 1977. *Journal of the Merseyside Archaeological Society* 4, 6-29.
- Davies-Shiel, M. 1972. A late medieval industry, part 1 – the making of potash for soap. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 72, 85-111.
- Davies-Shiel, M. 1974. A late medieval industry, part 2 – the ashburners. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 74, 33-64.
- Davison, B.K. 1969. Aldingham. *Current Archaeology* 2.1, 23-4.
- Donald Insall Associates Ltd 2001. *Chester Castle Conservation Plan*. London: English Heritage.
- Droop, J.P. 1928. Excavations at West Derby, Liverpool. *Antiquaries Journal* 8, 40.
- Droop, J.P. and Larkin, F.C. 1928. Excavations at West Derby Castle. *Liverpool Annals of Archaeology & Anthropology* 15, 47-55.
- Drury, D. Forthcoming. Excavations at Lancaster Market.
- Edwards, B.J.N. 1967. The Docker Moor kiln-site. In R.A.C. Lowndes, A medieval site at Millhouse, in the Lune Valley. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 67, 48-50.
- Edwards, B.J.N. 1977. The Hospital of St Saviour, Stydd. *Lancashire Archaeological Bulletin* 3 (2), 33-4.
- Egerton Lea 2002. Rufford Park, Rufford: historical appraisal and restoration plan. Unpublished report.
- Egerton Lea 2003. Extensive Urban Survey: Blackpool. Unpublished report.

- Ellis, P. (ed.) 1993. *Beeston Castle, Cheshire: a Report on the Excavations 1968-85 by Laurence Keen and Peter Hough*. London: English Heritage archaeological report 23.
- Ellis, P. 1996. *Excavations at Chester, Chester Castle, the seventeenth-century armoury and mint*. Chester Archaeology excavation and survey report 10. Chester: Chester City Council.
- Emery, M., Gibbins, D. and Matthews, K. 1996. *The Archaeology of an ecclesiastical landscape; Chapel House Farm Poulton Cheshire, 1995*. Chester Archaeology Excavation and Survey Report 9. Chester: Chester City Council and the University of Liverpool.
- Faulkner, P. 1994. Timperley Old Hall, a report on the fifth season of excavations. *Archaeology North West* 7, 16-18.
- Fell, A. 1908. *The Early Iron Industry of Furness and District*. Ulverston: Hume Kitchin (reprinted London: Frank Cass & Co).
- Fishwick, H. 1889. History of the Parish of Rochdale.
- Frankland, E.P. 1929. Explorations in Ravenstonedale. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 29, 278-92.
- Frankland, E.P. 1930. Explorations in Ravenstonedale (II). *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society*, new series 30, 144-8.
- Gardiner, M. 1996. A seasonal fisherman's settlement at Dungeness, Kent. *Medieval Settlement Research Group Annual Report* 11, 18-20.
- Gifford and Partners 2002. New Street car park, Chester. unpublished report.
- Gilchrist, R. 1995. *Contemplation and Action. The Other Monasticism*. London: Leicester University Press.
- Greene, J.P. 1989. *Norton Priory; the archaeology of a medieval religious house*. Cambridge University Press.
- Hair, N. and Newman, R.M. 1996. A farmstead at Powsons, near Tebay: Excavations in 1990 and 1991. In J. Lambert (ed.) *Transect through time: the archaeological landscape of the Shell North Western Ethylene Pipeline*, 181-90. Lancaster: Lancaster Imprints 1.
- Hair, N. and Newman, R. 1999. Excavation of medieval settlement remains at Croseedale in Howgill. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 99, 141-58.
- Hair, N. and Wild, C. Unpublished. Excavations at Elephant Yard, Stricklandgate, Kendal. Unpublished draft report.
- Harrison, S., Wood, J. and Newman, R 1998. *Furness Abbey, Cumbria*. London: English Heritage.
- Hartley, R.F. 1994. The Tudor miners of Coleorton, Leicestershire. In T.D. Ford and L. Willies (eds) *Mining before Powder*, 54-59. Matlock Bath: Peak District Mines Historical Society and Historical Metallurgy Society.
- Harvey, A.M., Oldfield, F. and Braon, F. 1981. Dating post-glacial landforms in the central Howgills. *Earth Surface Processes and Landforms* 6, 401-12.
- Harvey, D. 1996. Providing a territorial framework for studying medieval settlement patterns and early systems of landscape organisation. *Medieval Settlement Research Group Annual Report* 11, 34-5.
- Hatcher, J. 1993. *The History of the British Coal Industry. Volume 1: Before 1700*. Oxford: Clarendon Press.
- Heawood, R. with Howard-Davies, C., Boylston, A. and Weston, D. 2003. Excavations at Warrington Friary 2000. *Journal of the Chester Archaeological Society* 77 (for 2002), 131-85.
- Heawood, R., Howard-Davis, C., Drury, D. and Krupa, M. 2004. *Old Abbey Farm, Risley, Warrington Borough; building Survey and excavation at a medieval moated site*. Lancaster: Lancaster Imprints 11.

- Higgins, D. 1992. Speke Hall: excavations in the west range, 1981-1982. *Journal of the Merseyside Archaeological Society* 8, 47-84.
- Higham, M.C. 1968. Excavation on the site of the medieval vaccary of Goldshaw Booth, Sabden Fold, Lancashire. Unpublished report.
- Higham, M.C. 1989a. Lead mining in Bowland. *Old West Riding NS* 9, 32-35.
- Higham, M.C. 1989b Some evidence for 12th and 13th century linen and woollen textile processing. *Medieval Archaeology* 33, 38-52.
- Higham, M.C. 1991. The mottes of North Lancashire, Lonsdale and South Cumbria. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 91, 79-90.
- Higham, M.C. 1996. *Aergi* names as indicators of transhumance: problems of the evidence. In H.A.S. Fox (ed.) *Seasonal Settlement*, 1-23. Leicester: Vaughan Paper No 39.
- Higham, M.C. 1998. The organisation and production of textiles in north-west England in the medieval period. In E. Roberts (ed.) *A History of Linen in the North West*, 1-21. Lancaster University Centre for North West Regional Studies.
- Higham, M.C. 2003. Medieval Horse Rearing in NW England. *Retrospect* (Journal of Burnley and District Historical Society) 21, 9-18.
- Higham, N.J. 1987. Patterns of settlement in medieval Cheshire; an insight into dispersed settlement. *Medieval Settlement Research Group Annual Report* 2, 9-10.
- Higham, N.J. 2000. The Tatton Park Project, part 2 the medieval estates, settlements and halls. *Journal of the Chester Archaeological Society* 75 (for 1998-9), 61-133.
- Hodgkinson, D., Huckerby, E., Middleton, R.H. and Wells, C.E. 2000. *North West Wetlands Survey, The Lowland Wetlands of Cumbria*. Lancaster: Lancaster Imprints 8.
- Hodgson, T.H. 1907. Excavations at Holmcultram. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 7, 262-8.
- Holgate, R. 1989. Excavations at Prescott, December 1980-January 1981 (Sites A-E). *Journal of the Merseyside Archaeological Society* 5, 11-22.
- Hope, W.H. St John. 1900. The Abbey of St Mary in Furness, Lancashire. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 16, 221-302.
- Howard-Davies, C.L.E. Forthcoming. Excavations and Investigations at Kendal castle, 1967-71 and 1996-7.
- Howard-Davis, C.L.E., Miller, I., Newman, R.M. and Hair, N.J. Forthcoming. Excavations at Mitchell's Brewery, Lancaster.
- Huckerby, E. Forthcoming. The plant remains. In C.L.E. Howard-Davis, I. Miller, R.M. Newman and N.J. Hair, *Excavations at Mitchell's Brewery, Lancaster*.
- Hugill, R. 1970. *Borderland Castles and Peles*. Newcastle: Frank Graham.
- Hugill, R. 1977. *Castles and Peles of Cumberland and Westmorland*. Newcastle: Frank Graham.
- Hurst, J.G. 1977. Summary. In P.J. Davey (ed.) *Medieval Pottery from Excavations in the North West*. University of Liverpool
- Innes, J. and Tomlinson, P.R. Forthcoming. Environmental Evidence. In J.M. Lewis, C. Howard-Davis and R. Heawood, *Bewsey Old Hall, Cheshire*. Lancaster: Lancaster Imprints Series.
- Instone E, 1995 *Monuments Protection Programme: The Iron Mining Industry. Introduction to Step 3 Site Assessments*. Unpublished report to English Heritage.

- Jennings, N. 2003. *Clay Dabbins: Vernacular Buildings of the Solway Plain*. Cumberland and Westmorland Antiquarian and Archaeological Society Extra Series XXX. Kendal.
- Jones, G.C. and Price, J. 1985. Excavations at the Wiend, Wigan, 1982-4. *Greater Manchester Archaeological Journal* 1, 25-33.
- Jones, M.J. 1989. Archaeological work at Brough under Stainmore II: the medieval and later settlements (fieldwork and excavations). *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 89, 141-180
- Keevill Heritage Consultancy 2004. *Furness Abbey, Cumbria. Conservation Statement*.
- Kelly, P.V. 1930. Excavations at Conishead Priory. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 30, 149-68.
- Kendrick, J. 1853. An account of excavations made at the Mote Hill, Warrington, Lancashire. *Transactions of the Historic Society of Lancashire and Cheshire* 5, 59-68.
- Kenward, H.K. and Tomlinson, P.R. 1992. Environmental Analysis. In D. Higgins. Excavations at Speke Hall, Merseyside 1981-1982. *Journal of the Merseyside Archaeological Society* 8, 75-78.
- Kiernan, D. 1989. *The Derbyshire Lead Industry in the Sixteenth Century*. Chesterfield: Derbyshire Records Society.
- King, D.J.C. 1983. *Castellarium Anglicanum: An Index and Bibliography of the Castles in England, Wales and the Islands*, 2 vols. New York.
- Lambert, J. 1996. *Transect through Time: the Archaeological Landscape of the North Western Ethylene Pipeline*. Lancaster: Lancaster Imprints 1.
- Leech, R.H. Forthcoming. Excavations at 75-87 Main Street, Cockermouth, 1981.
- Lewis, C., Mitchell-Fox, P. and Dyer, C. 2001. *Village, Hamlet and Field. Changing Medieval Settlement Patterns in Central England*. Macclesfield: Windgather Press.
- Lewis, J.M. 1981. Sefton Old Hall, Merseyside: excavations 1956-1961. *Journal of the Merseyside Archaeological Society* 2, 53-72.
- Lewis, J.M. 1991. Medieval landscapes and estates. *Journal of the Merseyside Archaeological Society* 7, 87-103.
- Lewis, J.M. 1992a. *Birkenhead Priory: Archaeological excavations, February 1992*. North West Archaeological Trust and Department of Archaeology University of Liverpool unpublished report.
- Lewis, J.M. 1992b. Birkenhead Priory: Recent Work. *Archaeology North-West* 3, 14-15.
- Lewis, J.M. 1999. Lathom House: The Northern Court, *Journal of the British Archaeological Association* CLII, 150-71.
- Lewis, J.M. 2000. *The Medieval Earthworks of the Hundred of West Derby: Tenorial Evidence and Physical Structure*. Oxford: British Archaeological Reports (British series) 310.
- Lloyd Evans Prichard 2001. *Carlisle Castle Conservation Plan*, 2 vols.
- Lloyd Evans Prichard 2002. *Whalley Abbey Conservation Plan*, 2 vols.
- Lott, B. 1995. Medieval Buildings in Westmorland. Unpublished PhD thesis, University of Nottingham.
- Lowerre, A. et al 2003. *Aldford Castle, Cheshire, 2002 Excavation interim report*. Chester Archaeology evaluation report 66. Unpublished report.
- LUAU 1991a. *Whalley Abbey, Lancashire and its Environs. Excavations and Watching Briefs 1987-1990*. Lancaster University Archaeological Unit unpublished report.
- LUAU 1995a. *Kendal Castle, Cumbria. Fabric History Documentary Survey*. Lancaster University Archaeological Unit unpublished report.

- LUAU 1995b. *Lancaster Castle Gatehouse, Lancashire. Archaeological Watching Brief and Excavation*. Lancaster University Archaeological Unit unpublished report.
- LUAU 1996a. *Pendragon Castle, Cumbria. Excavation and Clearance 1994-95*. Lancaster University Archaeological Unit unpublished report.
- LUAU 1996b. *Rufford Old Hall, Lancashire. Final Report*. Lancaster University Archaeological Unit unpublished report.
- LUAU 1996c. *Rufford Old Hall, Lancashire. Fabric Survey and Watching Brief Report*. Lancaster University Archaeological Unit unpublished report.
- LUAU 1997a. *Vale Royal golf course and housing development, Cheshire*. Lancaster University Archaeological Unit archaeological evaluation report.
- LUAU 1997b. *Whalley Abbey, Lancashire. Archaeological Works 1995-96*. Lancaster University Archaeological Unit unpublished report.
- LUAU 1997c. *Lancaster Castle, Lancashire. Archaeological Intervention Works on the Witches' Tower Upper Floor*. Lancaster University Archaeological Unit unpublished report.
- LUAU 1997d. *Samlesbury Hall, Lancashire: Archaeological survey and Assessment Report*. Unpublished report.
- LUAU 1998a. *Vale Royal Great House, Whitegate, Cheshire*. Lancaster University Archaeological Unit fabric survey report no 1997-98/042/AUA7446.
- LUAU 1998b. *Vale Royal Scheduled Area, Cheshire*. Lancaster University Archaeological Unit archaeological evaluation and excavation report no 1998-99/(023)/7811.
- LUAU 1998c. *Gleaston Castle, Cumbria. Feasibility Study*. Lancaster University Archaeological Unit unpublished report.
- LUAU 1998d. *Egremont Castle Revetment Walls, Egremont, Cumbria: Watching Brief*. Unpublished Report.
- LUAU 1999. *MPP Quarrying Industry: Step 3 (Revised)*. Lancaster University Archaeological Unit report to English Heritage.
- MacIvor, I. 2001. *A Fortified Frontier: Defences of the Anglo-Scottish Frontier*. Stroud: Tempus.
- Magnusson, G. (ed.) 1995. *The Importance of Ironmaking: Technical Innovation and Social Change*. Stockholm: Jernkontorets Bergshistoriska Utskott.
- Martin, J.J. 1975. Collected Notes on the Salt Industry of the Cumbrian Solway coast. In K.W. de Brisey and K. Evans (eds) *Salt: the study of an ancient industry*, 71-6. Colchester: Colchester Archaeological Group.
- Masser, A.P. Forthcoming. The medieval village of Rickerby. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society*.
- McCarthy, M.R. and Brooks, C.M. 1992. The establishment of a medieval pottery sequence in Cumbria, England. In D. Gaimster and M. Redknap (eds) *Everyday and Exotic Pottery from Europe, Studies in Honour of John G Hurst*, 21-37. Oxford: Oxbow Books.
- McCarthy, M.R., Summerson, H.R.T. and Annis, R.G. 1990. *Carlisle Castle. A Survey and Documentary History*. London: English Heritage Archaeological Report 18.
- McClintock, M.E. and Watson, R. 1979. *Traditional House of the Fylde*. University of Lancaster Centre for North West Regional Studies.
- McClintock, M.E. and Watson, R. 1995. Catforth Hall, Woodplumpton, Lancashire and its Great Barn: history and ramifications. *Vernacular Architecture* 26, 39-46.

- McDonnell, J. 1988. The role of transhumance in northern England. *Northern History* 24, 1-17.
- McNeil, R. 1983. Two 12th Century wick houses in Nantwich, Cheshire. *Medieval Archaeology* 27, 40-88.
- McNeil, R. and Turner, R. 1990. An archaeological and topographical survey of Vale Royal Abbey. *Journal of the Chester Archaeological Society* 70, 51-79.
- Middleton, R., Wells, C.E. and Huckerby, E. 1995. *The Wetlands of North Lancashire*. North West Wetlands Survey 3, Lancaster Imprints 4.
- Miller, I. Forthcoming. The post-Roman pottery. In R. Leech, Excavations at 75-87 Main Street, Cockermouth, 1981.
- Miller, I. and White, A.J. Forthcoming. The post-Roman pottery. In C.L.E. Howard-Davis, I. Miller, R.M. Newman and N.J. Hair, Excavations at Mitchell's Brewery, Lancaster.
- Morris, M. (ed.) 1983. *The Archaeology of Greater Manchester Vol. 1: Medieval Manchester*. Greater Manchester Archaeological Unit.
- NAA 2003. *Temple Sowerby bypass*. Northern Archaeological Associates unpublished report.
- National Trust 2000. *Annual Archaeological Review* 8, 1999-2000.
- Nayling, N. 2000. *Tree-ring analysis of timbers from Lathom House, Lancashire*. Ancient Monuments Laboratory Report 5/2000.
- Nevell, M. 1991. *Tameside 1066-1700*. Tameside Metropolitan Borough Council.
- Nevell, M. and Walker, J. 1998. *A History and Archaeology of Tameside Volume 6: Lands and Lordship in Tameside: Tameside in Transition, 1348-1642*. Tameside Metropolitan Borough Council with the University of Manchester Archaeological Unit.
- Newman, R. 1996. Medieval rural settlement. In R. Newman (ed.) *The Archaeology of Lancashire*, 109-124. Lancaster University Archaeological Unit.
- Newman, R.M. 1987. Excavations and Survey at Piel Castle, near Barrow-in-Furness, Cumbria. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 87, 101-116.
- Newman, R.M. 1988. Excavations in Egremont town centre, 1983. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 88, 201-5.
- Newman, R.M. 1996. Further Structural Analysis at Piel Castle, 1987-94. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 96, 121-137.
- Newman, R.M. Forthcoming. Excavations in Stricklandgate, Kendal.
- Newman, R.M., Hair, N.J., Howard-Davis, C.L.E., Brooks, C. and White, A. 2000. Excavations at Penrith market, 1990. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 100, 105-130.
- Newstead, R. 1934 Medieval pottery and kiln at Ashton, near Chester. *Liverpool Annals of Archaeology and Anthropology* 21, 5-26.
- Newstead, R. and Droop, J.P. 1936. Excavations in the Deanery Field and Abbey Green. *Liverpool Annals of Archaeology and Anthropology* 23, 47-50.
- NPH 2003. *Evaluation at Harraby, Carlisle*. North Pennines Heritage unpublished report.
- OA North 2002. *Excavations at Rickergate: Post-excavation assessment*. Oxford Archaeology North unpublished report.
- OA North 2003. *Escowbeck Farm, Caton, Lancashire: archaeological excavation report*. Oxford Archaeology North unpublished report.

- Parker, C.A. and Fair, M.C. 1922. Bloomery sites in Eskdale and Wasdale (Part 1). *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 22, 90-97.
- Parker, C.A. and Fair, M.C. 1925. Bloomery sites in Eskdale and Wasdale (Part 2), *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 25, 272-4.
- Parry, M.L. 1978. *Climatic Change, Agriculture and Settlement*. Dawson: Archon Books.
- Perriam, D.R. and Robinson, J. 1998. *The Medieval fortified Buildings of Cumbria*. Cumberland and Westmorland Antiquarian and Archaeological Society Extra Series XXIX.
- Philpott, R.A. 1988. *Historic Towns of the Merseyside Area: a Survey of Urban Settlement to c 1800*. Liverpool Museum Occasional Papers 3.
- Philpott, R.A. and Irvine, J. 1991. An archaeological site evaluation at Eccleston Hall, St Helens, July-August 1991. Liverpool Museum Field Archaeology Section unpublished report.
- PLB Consulting Ltd and Associates 2004. *Furness Abbey Masterplan. Position Paper for West Lakes Renaissance and Partners*.
- Porter, J. 1980. *The Making of the Central Pennines*. Ashbourne: Moorland Publishing.
- Rackham, O. 1986. *The History of the Countryside*. London: Dent.
- Raistrick, A. and Jennings, B. 1983. *A History of Lead Mining in the Pennines*. Newcastle/Littleborough: David Books and George Kelsall.
- Ramm, H.G., McDowall, R.W. and Mercer, E. 1970. *Shielings and Bastles*. Royal Commission on Historical Monuments (England). London: HMSO.
- RCHME 1936. *An Inventory of the Historical Monuments in Westmorland*. HMSO.
- Redhead, N. 1995. Excavations and material analysis of Medieval iron smelting sites in the Castleshaw valley, Saddleworth. In P. Crew and S. Crew (eds) *Iron for Archaeologists: a review of recent work on the archaeology of early ironworking sites in Europe*, 8-10. Plas Tan y Bwlch: Snowdonia National Park Study Centre Occasional Paper No 2.
- Redhead, N. 1997. Watch Hill Castle. In M. Nevell, *The Archaeology of Trafford*, 34-5. Chester: Trafford Metropolitan Borough Council.
- Redhead, N. 2003-4. A good summer for iron smelting archaeology in Greater Manchester. *Historical Metallurgy Society News* 55, 1.
- Renn, D.F. 1973 (second edition). *Norman Castles in Britain*. London: J. Baker; Humanities Press.
- Reynolds, S. and Cocroft, W. 1990. Old Beachin Farm Moat and Leahall Farm. *Medieval Settlement Research Group Report* 5, 21-23.
- Reynolds, S. and Cocroft, W. 1991. Survey of moated sites at Huntington and Mill House Farm, Eccleston. *Medieval Settlement Research Group Report* 6, 25-26.
- Richardson, GCS, 1979 Kings Stables an early shieling on Black Lyne Common, Bewcastle. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 79, 19-27.
- Roberts, B.K. 1990. Back lanes and tofts, distribution maps and time, medieval nucleated settlement in the north of England. In B. Vyner (ed.) *Medieval Rural Settlement in North East England*, 107-125. Durham: Architectural and Archaeological Society of Durham and Northumberland Research Report 2.
- Roberts, B.K. 1993a. Five Westmorland settlements: a comparative study. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 93, 131-144.
- Roberts, B.K. 1993b. Some relict landscapes in Westmorland: a reconsideration. *Archaeological Journal* 150, 433-455.

- Roberts, B.K. 1996. Field survey of Maulds Meaburn, Westmorland. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 96, 45-50.
- Roberts, B.K. and Wrathmell, S. 2000a. *An Atlas of Rural Settlement in England*. English Heritage.
- Roberts, B.K. and Wrathmell, S. 2000b. Peoples of wood and plain: an exploration of national and local regional contrasts. In D. Hooke (ed.) *Landscape the Richest Historical Record*, 85-95. Society for Landscape Studies Supplementary Series 1.
- Roberts, B.K. and Wrathmell, S. 2002a. *Region and Place: A Study of English Rural Settlement*. London: English Heritage.
- Roberts, B.K. and Wrathmell, S. 2002b. Rural settlement in England: a new assessment. In C. Brooks, R. Daniels and A. Harding (eds) *Past Present and Future the Archaeology of Northern England*, 165-175. Durham: Architectural and Archaeological Society of Durham and Northumberland Research Report 5.
- Rutter, J.A. 1977. Chester Deanery Field. In P.J. Davey (ed.) *Medieval Pottery from Excavations in the North West*. University of Liverpool.
- Rutter, J.A. 1983. Brereton Park. *Cheshire Archaeological Bulletin* 9, 73.
- Rutter, J.A. 1990. Arrowcroft scheme 1977-9. In S.W. Ward, *Excavations at Chester, the lesser medieval religious houses, sites investigated 1964-1983*, 210-223. Grosvenor Museum archaeological and survey reports no.6. Chester City Council.
- Ryder, P. 2002. *Defensible Buildings of Cumbria: a survey, 2000-2002*. Unpublished report.
- Shaw, R.C. 1956. *The Royal Forest of Lancashire*. Preston.
- Shaw, W.T. 1983. *Mining in the Lake Counties*. Clapham: Dalesman Books.
- Speakman, J. 2000. Brunt Boggart Tarbock, medieval pottery. In R.W. Cowell and R.A. Philpott, *Prehistoric, Romano-British and Medieval Settlement in Lowland North West England: Archaeological Excavations Along the A5300 Road Corridor in Merseyside*, 140-154. Liverpool: National Museums and Galleries on Merseyside.
- Storey, C. 2001. *Poulton-le-Fylde*. Stroud: Tempus.
- Stretton, E.H.A. 1994. *Dacre Castle*. Penrith.
- Summerson, H. and Harrison, S. 2000. *Lanercost Priory, Cumbria*. Cumberland and Westmorland Antiquarian and Archaeological Society Research Series 10. Kendal.
- Summerson, H., Trueman, M. and Harrison, S. 1998. *Brougham castle, Cumbria*. Cumberland and Westmorland Antiquarian and Archaeological Society Research Series Number 8.
- Swarbrick, J. 1923. The Abbey of St Mary-of-the-Marsh, at Cockersand. *Transactions of the Lancashire and Cheshire Antiquarian Society* 40, 163-93.
- Taylor, C.C. 1978. Moated Sites: their definition, form and classification. In F.A. Aberg (ed.) *Medieval Moated Sites*, 5-13. London: Council for British Archaeology Research Report 17.
- Thompson, F.H. 1962. Excavations at the Cistercian Abbey of Vale Royal, Cheshire. *Antiquaries Journal* xlii (ii), 183-207.
- Thornber, W. 1837. *The History of Blackpool and its Neighbourhood*. Blackpool and Fylde Historical Society reprint (1985).
- Tindall, A. 1983. Investigations at Chethams School, Manchester. In Greater Manchester Archaeological Unit Annual Report 1982-3. Manchester University: Department of Archaeology.

- Tindall, A.S. 1985. The Moated House. In J.F.S. Walker and A.S. Tindall (eds) *Country Houses of Greater Manchester*. The Archaeology of Greater Manchester 2, 57-72. Manchester: Greater Manchester Archaeological Unit.
- Tipping, R. 1995. Holocene evolution of a Scottish landscape: Kirkpatrick Fleming. Part II. *Holocene* 5 (1), 83-96.
- Tupling, G.H. 1927. *The Economic History of Rossendale*. Chetham Society (New Series) 86.
- Turnbull, P. and Walsh, D. 1992. Monastic Remains at Ravenstonedale. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 92, 67-76.
- Turnbull, P. 1994. Recent work at Egremont Castle. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 94, 77-89.
- UMAUI 1998. The Bars, 156-158 Foregate Street, Chester. An Archaeological Building Evaluation. University of Manchester Archaeological Unit report.
- UMAUI 1999. *St Werburgh's Old Parish Church, Warburton. A Survey of a Medieval Timber-framed Church*. University of Manchester Archaeological Unit interim report.
- Walbran, J.R. 1852-3. On Recent Excavations at Sawley Abbey in Yorkshire. *Associated Architectural Societies' Reports and Papers* 2, 72-89.
- Walbran, J.R. 1876. On the Recent Excavations at Sawley Abbey, Yorkshire. *Publications of the Surtees Society* 67, 159-77.
- Walsh, D. 1991. Salt-Making on the Cumbrian Coast. *Archaeology North* 1, 37-40.
- Ward, S.W. 1988. *Excavations at Chester; 12 Watergate Street 1985; Roman Headquarters Building to Medieval Row*. Grosvenor Museum Monograph 5. Chester: Chester City Council.
- Ward, S.W. 1990. *Excavations at Chester; The Lesser Medieval Religious Houses*. Grosvenor Museum Monograph 6. Chester: Chester City Council.
- Ward, S.W. 1992. *Chester City Ditches, a slice of history*. Chester Archaeological Service Guidebook 1. Chester: Chester City Council.
- Ward, S.W. 1993. *Chester Castle, Chester; an archaeological evaluation*. Archaeological Service Evaluation Report 20. Chester: Chester City Council unpublished evaluation report.
- Ward, S.W. 1998. Archaeology in Chester Cathedral, 1995-7. *Journal of Church Archaeology* 2, 39-44.
- Ward, S.W. 2000a. The friaries in Chester, their impact and legacy. In *Medieval Archaeology, Art and Architecture at Chester*. *Transactions of the British Archaeological Association* 22, 121-131.
- Ward, S.W. 2000b. Recent work at St Johns and St Werburghs. In *Medieval Archaeology, Art and Architecture at Chester*. *Transactions of the British Archaeological Association* 22, 45-56.
- Ward, S.W. et al 1993. *Chester City Walls (East) 1993: interim report*, Archaeological Service Evaluation Report 33. Chester: Chester City Council.
- Webster, G. and Dunning, G.C. 1960. A medieval pottery kiln at Audlem, Cheshire. *Medieval Archaeology* 4, 109-125.
- West, J. 1983. *Town Records*. Chichester: Phillimore.
- Weston, G.F. and Hope, W.H. St John. 1889. The Premonstratensian Abbey of St Mary Magdalene at Shap, Westmorland. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 10, 286-314.
- White, A. 1993. A medieval pottery kiln at Ellel, Lancashire. *Contrebis* 18, 5-18.
- White, A. 1996. Medieval towns. In R Newman (ed.) *The Archaeology of Lancashire: Present State and Future Priorities*. Lancaster: Lancaster University Archaeological Unit.

- White, A. 2000. Pottery making at Silverdale and Arnside. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 100, 285 – 291.
- Whitworth, A.M. 1998. Lanercost Priory Excavations in 1994. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 98, 133-44.
- Wild, C. and Howard-Davis, C. 2000. Excavations at Priory Gardens, Cartmel. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 100, 161-80.
- Wild, C., Wells, C., Andersen, D., Boardman, J. and Parker, A. 2001. Evidence for medieval clearance in the Seathwaite Valley, Cumbria. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 1, 53-69.
- Wilkinson, P.F., Locock, M. and Sell, S. 1998. A 16th-century saltworks at Port Eynon, Gower. *Post-Medieval Archaeology* 32, 3-32.
- Williams, J.H. 1992. Excavations at Brougham Castle, 1987. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 87, 105-21.
- Williams, S.R. 1997. *West Cheshire from the Air*. Chester Archaeology Occasional Paper 4.
- Willies, L. and Cranstone, D. (eds) 1992. *Boles and Smeltermills*. Matlock Bath: Historical Metallurgy Society.
- Wilson, D.M. 1987. The medieval moated sites of Cheshire. *Transactions of the Lancashire and Cheshire Antiquarian Society* 84, 143-54.
- Winchester, A.J.L. 1993. Field, Wood and Forest – landscapes of medieval Lancashire. In A.G. Crosby (ed.) *Lancashire Local Studies in honour of Diana Winterbotham*. Preston: Carnegie.
- Winchester, A.J.L. 2000a. *The Harvest of the Hills. Rural Life in Northern England and the Scottish Borders, 1400-1700*. Edinburgh University Press
- Winchester, A.J.L. 2000b. Hill farming landscapes of northern England. In D. Hooke (ed.) *Landscape the Richest Historical Record*, 75-84. Society for Landscape Studies Supplementary Series 1.
- Winchester, A.J.L. 2003. Demesne livestock farming in the Lake District: the vaccary at Gatesgarth, Buttermere, in the later thirteenth century. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 3, 109-118.
- Wood, J. 1992. Furness Abbey: An Integrated and Multi-disciplinary Approach to the Survey, Recording, Analysis and Interpretation of a Monastic Building. In *Medieval Europe 1992, Volume 6: Religion and Belief*, 163-170. York.
- Wood, J. 1996. Castles and monasteries. In R. Newman (ed.) *The Archaeology of Lancashire: Present State and Future Priorities*, 139-156. Lancaster University Archaeological Unit.
- Wood, J. 1999. *Abbey Park Cottage and Environs, Furness Abbey, Cumbria. Initial Interpretative Report*. Unpublished report for Community Action Furness by Heritage Consultancy Services.
- Wood, J. forthcoming. Furness Abbey: A Case Study in Monastic Secularization. In T. Kinder (ed) *Festschrift for Peter Fergusson*. Brepols (Medieval Church Studies Series) and Cîteaux: Commentarii Cistercienses (Studia et Documenta Series).
- Wrathmell, S. 1992. Excavations and survey at the Old Hutt, Halewood in 1960. *Journal of the Merseyside Archaeological Society* 8, 1-46.
- Wrathmell, S. 2003. Regional frameworks for medieval rural settlement. In T.G. Manby, S. Moorhouse and P. Ottaway (eds) *The Archaeology of Yorkshire: an Assessment at the beginning of the 21st Century*, 363-8. Leeds: Yorkshire Archaeological Society Occasional Paper 3.
- Wright, J. 1996. Higher Lane, Fazakerley, Merseyside. Lancaster University Archaeological Unit unpublished report.
- Zant, J. Forthcoming. Excavations in the Lanes, Carlisle: the Northern Lanes.