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March 1987

INFORMATION 41

EDITORIAL: BUILDING CERAMICS

In 1986 the British Brick Society visited sites in West Sussex and Surrey; this was the first meeting of its kind - unconnected with the AGM - and it is hoped that the exercise can be repeated in other areas of the country. A full report on the day's activities, written by Mary Bentley, is included in this issue of Information.

During that day I was able to meet Valerie Shelton-Bunn, who had already been in contact with Michael Hammett and who for some time has been concerned with establishing and organising a Ceramic Building Materials Research Group (CBMRG). The interests of such a group are obviously so closely connected with our own that Michael Hammett and I readily agreed to a provisional joining together of our two organisations - provisional because the matter will need to be ratified at our next AGM in June of this year. Meanwhile, Valerie Shelton-Bunn has contributed to this issue of Information a short introduction to the CBMRG for the benefit of BBS members. It will be clear that our interests overlap to a considerable extent, for BBS has always catered for those with an interest in roof-tiles, chimney-pots, and so on. Also included in this issue are contributions from members of the CBMRG. I hope that all our members will feel that it is right and to our mutual benefit that our interests be combined in this way.

Terence Paul Smith
Editor

Autumn Visit to West Sussex and Surrey, 1986

On Saturday 20 September 1986 twenty-five members and friends of the British Brick Society came from far and near to enjoy an interesting and useful day's activities - useful because it enabled an exchange of information and ideas between members with special interests. The event was the outcome of discussions held at the AGM in June 1986.

The day began at Rudgwick Brickworks Co Ltd, Lynwick Street, Rudgwick, which is a small company producing high quality stock bricks using the benefits of modern technology whenever possible. They have pioneered the replacement of the traditional coke bed in brick clamps by firing with LPG (liquefied petroleum gas) and more recently with Natural Gas. Good weather permitted a thorough tour of the site, including the clay-digging areas. The clay, used in a continuous soft-mud process, has coke ash, water, and steam added to it before being moulded in sanded moulds. Two types of sand give a choice of final colour, with the clamp firing giving further variations. Hand-moulding is still used for Specials, but other processes are mechanised, except for setting the oven-dried green bricks in the clamp and drawing them after firing. Rudgwick bricks, excluding Specials, are now Quality Assured. Questions about this and much else were ably dealt with by our guides: Mr Pat Laker, Managing Director, Mr Len Forcey, Works Manager, and Mr Barry Farrell, Deputy Works Manager.

After lunch we re-assembled at Farnham Castle in Surrey. Here the Chief Guide, Mr Windeatt, conducted us to Waynflete's Tower - built of brick in 1470-75. With the help of BBS member Eddie Godsil, a local historian, we viewed roof tiles, in situ, that are thought to be of medieval date. They have been brought together following restoration work on the Castle roofs, and a more precise dating is to be attempted. Mr Godsil then took us on an all-too-brief walk about Farnham town, pointing out genuine Georgian buildings and later copies as well as Victorian and more modern houses. A rare example of dated mathematical tiles was also included, before the tour ended at the Farnham Museum.

Here our attention moved to brick- and tile-making in the medieval period. We were accompanied by BBS member Valerie Shelton-Bunn, who spoke about and answered questions on the MSC-funded excavation at Borelli Yard, Farnham (NGR: SU 470468). In a six-month excavation carried out prior to development, an area of the Town Ditch was located for the first time and was excavated. It had been known from thirteenth- to fifteenth-century entries in the Pipe Rolls of the Bishops of Winchester. A double, parallel-flue, updraught kiln was found just outside and to the south of the ditch. Dated by thermo-remanent magnetism to 1235 ± 15 years for the final kiln firing, it is the earliest known tile kiln. Examples of bricks used in its construction and of tiles were on view, and there were also many drawings and photographs displayed. A welcome cup of tea refreshed us before we journeyed home.

Thanks go to those mentioned above and also to Maurice Exwood and Michael Hammett for a most successful day. Ideas for future meetings in other areas to Michael Hammett please!

Mary Bentley

Brick Mosaic at Risk. The laws of Hywel Dda, the tenth-century prince of all Wales, are fit to rate among the great codifications of all time: Ine of Kent and Alfred of Wessex were seventh- and ninth-century predecessors. The laws were traditionally delivered at Whitland, a small town above the Afon Taf, at its junction with the Afon Cwmwantgron, on the western edge of Carmarthenshire (now part of Dyfed).

In the centre of Whitland (approx. NGR: SN 198167) a memorial to Hywel Dda was erected in 1984, consisting of a complex of gardens and mosaic pavements. The mosaics are a colourful complex of bricks laid in various patterns.

Unfortunately, Whitland lies on the notorious A40, the road to Fishguard. A proposal for road closure to preserve the memorial brick mosaic was put to a town referendum on Thursday 20 November 1986. In a poll of 51.6% of those eligible, 557 (92.7%) voted against the road closure proposal and only 44 (7.3%) were in favour (total = 100%).

The Mayor of Whitland, Mr Iileth Parri Roberts, feared that to reject the road closure would mean irrevocable damage to the brickwork. 'Look,' he commented, 'We haven't been able to stop people driving over it for eighteen months and it is already damaged. We are putting at risk a great attraction which is bringing visitors and jobs to Whitland.'

The referendum was brought to English notice by the Guardian newspaper on 17 November 1986, when a photograph of the mosaic was published. Other - colour - photographs of the mosaic appear at p.30 of Decorative Brickwork, a brochure issued by Ibstock Building Products Ltd, which was amongst the literature sent to members of the British Brick Society with Information 40 (November 1986).

David H. Kennett

Bricks at Risk. On Radio 4, Friday 5 December 1986, the travel programme Going Places reported an unusual risk to a brick-lined tunnel at Kentish Town, London. High above the tunnel on the St Pancras to Luton, Bedford, Leicester, and Sheffield line is an urban farm. The farmer has dumped over 70 tons of horse and cow manure on a narrow stretch above the railway. The dump, reported as 40 metres long, 5 metres wide, and 2 metres high, is not confined to above ground. It is slowly seeping down through the hill at Hempstead to threaten the brickwork of the tunnel. British Rail report the danger of blockage due to the manure affecting the brickwork of the tunnel, causing its collapse.

D.H.K.

Risk from Bricks. In the parish register of Campton, Bedfordshire, there occurs the following entry for a burial on 30 November 1703:

Frances, wife of Charles Ventris, gentleman, she was killed in her bed by the fall of a chimney in the great wind and tempest and buried in the church.

The Ventris family were the local squires from the mid-sixteenth century to the mid-eighteenth century. Their very fine timber-framed house, Campton Manor, finished in 1591, still stands: the offending chimney has been rebuilt!

D.H.K.

THE NATURE OF 'BRICKEARTH' AND THE LOCATION OF EARLY BRICK BUILDINGS IN BRITAIN

Ian Smalley

This paper grew from a presentation prepared for the Experimental Firing Group in the Archaeology Department at Leicester University. It is an attempt to produce a more rigorous definition for the term 'brickearth' and to show that the distribution of a geologically distinct loessic brickearth had a significant influence on the location of early brick buildings in the southern and eastern parts of England. As Jane Wight observed,¹ 'overwhelmingly the most important counties for old brick are Norfolk and Essex, followed by Suffolk,' and these are where geomorphological factors have concentrated the 'ideal' brickearth.

Introduction

The 'self-firing' Fletton brick came into widespread use in Britain around 1900. Large-scale production, the fuel economies due to the carbonaceous content of the clay, and the widespread system of relatively cheap transport meant that the Fletton brick could reach most parts of the country and could be cheaper than the local product. Before the Fletton revolution, bricks were made and used on a local scale, and many of the bricks made and used in London and the South-East came from loessic deposits called 'brickearth'.

'Brickearth' is an ancient term and is still widely used. It is also the cause of much confusion and imprecision in the scientific study of the loess deposits and brickmaking materials in Britain. The term was extensively used when the Geological Survey was mapping South-East England at the end of the nineteenth century. It referred to a loamy surficial or near-surficial deposit, often found in river valleys. It was not a precise scientific term, but at the time it was an adequate mapping term. Unfortunately, the existence of this imprecise mapping term has hindered the development of more precise scientific terms. 'Brickearth' suggests any deposit which is used to make bricks - but within this all-embracing term are what we might call the 'true' brickearths, materials which deserve to be geologically identified, which are the British occurrences of the widespread European loess.

During the Quaternary Period (roughly the last two million years) much of Europe has acquired a complex cover of loess material. It was named (Löss) by Karl Caesar von Leonhard of Heidelberg in the early years of the nineteenth century. Von Leonhard recognised that deposits of loess material in the valleys of the Neckar and the Rhine had enough significant individual characteristics to warrant a special classification as geologically identifiable materials. Löss could be distinguished from other superficial materials (largely by particle size distribution and mineralogy) and was worthy of study. That loess became widely known, and a subject of much scientific study and speculation, is largely due to Charles Lyell, who included a few paragraphs on loess in his Principles of Geology.² The loess in Europe made excellent bricks, since it contained the right proportions of silt and clay for it to be fired without any difficult mixing or

pretreatment. Many large loess deposits in eastern Europe are still supplying satisfactory bricks today, and many smaller deposits supplied the bricks for the great Victorian expansion of London.

Brickearth was defined by Arkell and Tomkeieff³ as 'Loam used for making bricks. Especially in the Pleistocene of the Thames valley. See EARTH.' Under the heading 'EARTH' is a quotation: 1667 Evelyn, Mem.ii.24, O.E.D., 'We went to search for brickearth.' Arkell and Tomkeieff, and probably John Evelyn too, use the term 'brickearth' in a suitably restricted sense, although further semantic restrictions

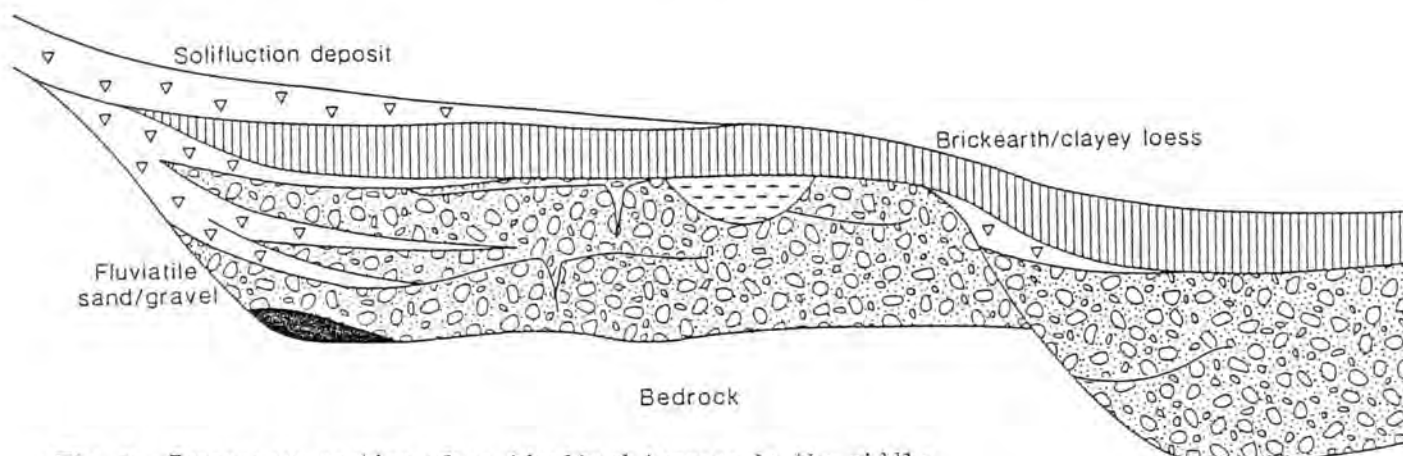


Fig.1 Transverse section of an idealised terrace in the middle reaches of a river in South-East England (simplified after Gibbard 1985). Fluvial sands and gravels are overlain by the recent brickearth, deposited roughly 10,000 years ago; typical raw material for early brickmakers.

will be useful. Tomkeieff⁴ defined loess as 'Homogeneous, unstratified yellowish deposit of material of silt-size occurring in areas from North-Central Europe to China as well as the United States.' This yellowish material deposited in southern Britain and concentrated in river valleys provided the raw material which could be fired to form early British bricks. Its depositional position is shown in fig.1 (based on Gibbard⁵), which shows a typical valley in South-East England. The widespread aeolian loess is concentrated by fluvial action into the river valleys. In some places, for example Crayford, Sittingbourne, and Faversham in North Kent, considerable accumulations formed and many millions of bricks were subsequently manufactured there.

The way in which confusion has arisen, and precision been lost, can be seen when the Tomkeieff definition of brickearth is consulted: 'Naturally occurring clays which are used in the manufacture of bricks.... British brickearths are found in the Oxford Clay, the lower Lias and in the Wealden clays of Sussex, etc.'⁶ These three examples cited by Tomkeieff should not be included in the brickearth definition, but the confusion will not be removed by attempting to restrict usage of the term - better to add an adjective, so that 'loessic brickearth' can refer to the silty-loamy deposits of South-East England which provided the raw material for early bricks and accounted, by their limited occurrence, for the constraints on the use of bricks at an early date. Brick buildings in medieval Britain were constructed near to deposits of loessic brickearth.

Brickearth in South-East England

The major deposits of loessic brickearth in Britain are in the Middle and Lower Thames Valley, but most of South-East England would have received some loess material during the later Pleistocene period. T.P. Smith's recent map⁷ of brickmaking in England in the period 1400-1450 shows brickyards near the river at Crockernend, Windsor, Slough, Petersham, and Deptford. According to Smith, Deptford supplied most of the bricks for Henry VIII's manorhouse at Dartford in Kent, with smaller quantities obtained from Limehouses and from places much closer to Dartford itself. It seems likely that some of the bricks for Henry's house could have come from the famous brickearth at Crayford - which was to be fully exploited in the nineteenth century.⁸

The loessic brickearth fires to a red brick - what were later called 'Kentish Reds' - but the greatest output from the Thames Valley brickyards was of the so-called 'Stock Bricks', in which the firing was augmented by the addition of combustible material, and these fired to a yellow colour. Stock Brick production began around 1700 and was at its peak between 1870 and 1890. The Sittingbourne/Faversham area was a major centre for the production of Stock Bricks.

The manufacture of hand-made bricks was a simple process and required no fixed equipment. The brickmakers were mobile and this allowed them to exploit quite small deposits of brickearth. This is a major factor accounting for the removal of brickearth from the Thames Valley sites - and most (all?) of what was removed and used in brick manufacture was the loessic brickearth. R.J. and P.E. Firman, in their geological approach to the study of medieval bricks,⁹ stated that examination of the bricks themselves has shown that small superficial deposits of clay and brickearth were normally, and perhaps exclusively, worked. All the evidence of plasticity, fossils, and inclusions suggests that only superficial deposits were used.

Smith stated that it 'is possible to regard eastern England in the fifteenth century as, in a sense, the westernmost extension of the European Brick Gothic region; but if this is done, the contrast must not be forgotten: in England brick occurs as the principal material in isolated, usually large-scale, buildings throughout the eastern counties, and one should hesitate before calling it, at this date, a characteristic material of these counties.'¹⁰

There are geological parallels: it is possible to regard eastern England as the westernmost extension of the European loess region. In England, the loess occurs in isolated deposits rather than as the continuous cover found in western and central Europe. Initial brick-making operations in medieval England would tend to be located where geological factors had combined to produce fairly substantial deposits of brickearth, and in fact this geological control operated on brick manufacture and use until developing technology provided access to deeper, harder clays and to an efficient transport network. Brickearth may be a characteristic material of the eastern counties but it was not recognised as such by the geological mappers of the nineteenth century; it was necessary to wait for the soil survey mappers of the 1950s before the widespread extent of loess in southern and eastern England was recognised. Significant amounts of brickearth do occur as isolated deposits and these provided the raw material for English bricks up till about 1900.

The classic brickearth at Crayford has been described by A.S. Kennard in what is essentially a geological treatise,¹¹ and the downstream deposit at Sittingbourne and Faversham has been described by S.J. Twist from the point of view of brick manufacture. Twist gives a typical chemical analysis for a North Kent brickearth:¹²

Silica 76.76% Alumina 10.89% Magnesium 1.06% Lime 0.64%
 Sulphuric Anhydride 0.03% Ferric Oxide 4.43% Sulphur as
 sulphide 0.01% Alkalies 2.16% Loss on ignition 2.16%.

It seems feasible that most (perhaps all) of the alumina in such an analysis was derived from clay minerals present in the brickearth. If the clay minerals were a mixture of kaolinite and illite (i.e. a mix of 1:1 and 2:1 minerals) then we might estimate the clay mineral content at around 25-30%. The rest of the mineralogy is dominated by quartz (usually of a typical size between 20 and 60 μm in particle diameter). The material looks like a typical clayey-loess. Analysing the clay mineral content is difficult. The most interesting analyses carried out on Thames Valley brickearths are probably the thermogravimetric determinations by G.O.Lill.¹³ Besides giving valuable semi-quantitative mineralogical data, the thermogravimetric method gives a picture of events occurring during the firing process, and in fact, starting with a raw brickearth sample one ends up with a fired product.

Smith's Question

T.P.Smith puts the question, 'Why did the wealthy men of State and Church not build in brick outside eastern England?'¹⁴ A simple answer is that the brickearth used by medieval brickmakers is not found in exploitable deposits outside eastern England. Smith¹⁵ has proposed that building materials made from ubiquitous surface deposits present problems when attempts are made to determine provenance from physical or chemical tests, and there is no doubt that the analytical signal from most earthy materials (such as those used to make bricks and tiles) is far from adequate for almost any purpose. However, it appears that the superficial brickmaking materials were not as ubiquitous as they appear at first sight. The lack of precision in the term 'brickearth' has led to useful distinctions being obscured and a lack of appreciation of some of the factors affecting the making of bricks in England before, say, 1700.

The loessic brickearth used for early bricks had a high proportion of quartz silt and this tended to give the bricks dimensional stability - the shrinkage problem was avoided. Of all superficial earthy materials which might be used to make bricks it is probably only the loessic brickearths which give satisfactory bricks without pretreatment. The Romans may have been familiar with such materials, which are widespread in France, Germany, and northern Italy (but not in southern Italy), and when they came to southern Britain could have recognised the local brickearths.

Smith quotes some observations by J.Blunden: 'Brick clays, like aggregates, are found in a very varied range of deposits of widespread occurrence in every region of Britain.'¹⁶ In 1975, when Blunden's book was published, that was true, and it remains true today; but in the context in which it was cited it is a very misleading statement. Nineteenth- and twentieth-century technology gives us access to the Devonian clays in South Wales, to the Triassic Keuper Marls of the English Midlands, and to the Jurassic Oxford Clay which makes the Bedford and Peterborough Flettons, but none of these were accessible to early brickmakers. Roman and medieval brickmakers used recent surficial deposits, which did not have widespread occurrence in every region of Britain; they were concentrated in the south and the east of England and this is where medieval bricks were made and used. As Smith points out, bricks were rarely transported over long distances: 15-20 miles (24-32 km) was exceptional, most movements being over 0-5 miles (0-8 km).¹⁷ Thus, bricks were made where the brickearth occurred, and that was where the buildings were constructed.

cont./

KENT: BRICK BUILDINGS BEFORE 1600

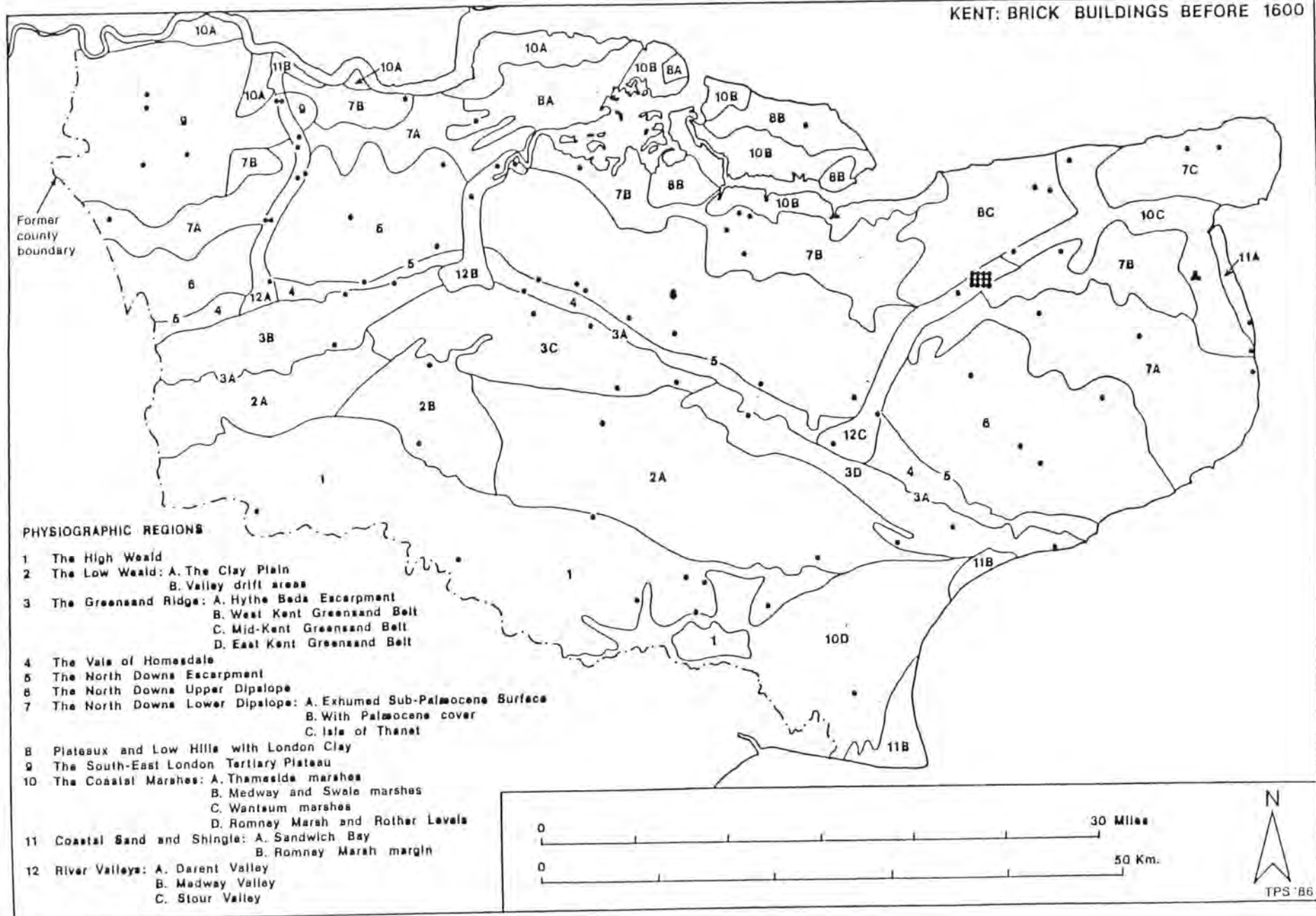


Fig.2

Conclusions and Proposals

We have to be careful not to overstate the importance of loessic brickearth in early brick manufacture in Britain. However, it seems reasonable to claim that it was the major source of material for early bricks and that its geographical distribution influenced the siting of the early brick industry and the location of early brick buildings. Other clay materials were used for brick manufacture; as Jane Wight has stated: 'Many different types of clay were used, not just one ideal brickearth.'¹⁸ But the older clays were used in smaller quantities than the recent brickearths, which are in fact close to an ideal brickmaking material. Battle Abbey in Sussex used the Gault Clay for its tilery, but the Gault in Kent and Sussex, exposed by the unroofing of the Weald Anticline, has a relatively limited occurrence, and indeed there were few buildings of brick in the Wealden region by c.1600 (cf. fig.2). By contrast, in Essex, the Thames Valley, and East Anglia there were many brick buildings of before that date.

We should try to distinguish between brickearth and brick clay. This is a problem fraught with difficulties; usage varies with time, with geographical region, with the various groups of people involved (e.g. geologists and brickmakers), and precision will be difficult to achieve. It is worth stressing, though, if it will make understanding easier and communication more efficient. As can be seen from the work of Tomkeieff already cited,¹⁹ a wildly wrong definition can set the whole process back immeasurably. We must emphasise that brick-earth is a sedimentary deposit of recent origin, quite distinct from the old clay 'rock' which is used to make modern bricks. The Arkell-Tomkeieff definition can be adapted and enlarged:

Brickearth: Loam used for making bricks. Especially in the Pleistocene of the Thames Valley and Eastern England. A sedimentary deposit, related to the loess of western and central Europe, consisting largely of quartz (SiO_2) of a characteristic particle size range (20-60 μm) and perhaps up to 30% by weight of clay minerals. Of recent age, usually less than 20,000 years old. Used as found to make medieval bricks; from about 1700 mixed with combustible material to make Stock Bricks.

Brick Clay: Clay-rich material used for making bricks; a geological deposit composed primarily of clay minerals, often from some named formation, e.g. Oxford Clay, Keuper Marl, etc. Mineralogical analysis indicates a predominance of clay minerals; a brick clay will probably have a high plasticity index.

A distinction should be made between the high plasticity clays used by potters and tilemakers and the 'earth' materials, of lower plasticity and relatively low clay mineral content, used by brickmakers. The Roman tegulae possibly have more in common with pots than with medieval bricks. Roman tiles/bricks appear to be largely fired in kilns²⁰ and medieval bricks in clamps. It may be that the ancestor of the 1986 Fletton is the early medieval brick rather than the Roman tegula.

The basic conclusions of this study are set out in tabular form in Table I overleaf.

Table 1

1. <u>Roman period</u> : perhaps up to the 5th century A.D. (See McWhirr's study ²¹ for an authoritative account of the production and distribution of brick and tile in Roman Britain.)	<u>Tegulae</u> made from plastic clays; fired by external heat source in kilns.
2. <u>Medieval period</u> : from 1400. (See Smith's important study of the period 1400-1450. ²²)	Red bricks made of loessic brick-earth, and used close to source. Small deposits of brickearth could be used by mobile brickmakers (very little equipment required). Firing style: in clamps.
3. <u>Stock Bricks</u> : from c.1700. (See Twist's work for a good account of Stock Brick manufacture from North Kent loessic brickearths. ²³)	Red bricks continue to be made, but Stock Bricks begin to appear. The Stock Brick is made from a mixture of brickearth and combustible material. They normally fire to a yellow colour. External and internal heat sources.
4. <u>Fletton Bricks</u> : from c.1900 (named for Fletton, near Peterborough).	Jurassic clays with a high content of combustible carbonaceous material. Firing processes are similar to those for Stock Bricks.

Notes and References

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2. C.Lyell, Principles of Geology, London, 1835; the section on loess, from vol.4, has been reprinted as Loess Letter Supplement, 8, 1986, 'Lyell on Loess', with introduction by I.Smalley.
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5. P.L.Gibbard, The Pleistocene History of the Middle Thames Valley, Cambridge, 1985, p.5.
6. Tomkeieff, loc.cit.
7. T.P.Smith, The Medieval Brickmaking Industry in England 1400-1450, British Archaeological Reports, BS 138, fig.5, p.28.
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11. Kennard, op.cit., 121-67.
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13. G.O.Lill, The Distribution of Loess in Britain, unpublished Ph.D. thesis, University of Leeds, 1976.
14. Smith, op.cit., p.6.

15. Ibid., p.88.
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22. Smith, op.cit.
23. Twist, op.cit.

MATHEMATICAL TILES-THE LATEST COUNT

Maurice Exwood

Several contributors to the Ewell symposium on mathematical tiles (brick-tiles) in November 1981 have continued the recording of relevant buildings in their areas, and many more examples have been found, particularly in Kent, Greater London, Surrey, and Sussex. In addition, some counties which did not appear in the 1981 list are now known to have some examples. In Table 1 (over-leaf) the total number known for each county as at September 1986 is given first, followed by the figure as recorded in November 1981 (in parentheses), and then by the number per 100 square-km for each county. The first and last figures are used for the maps in fig.1 on page 13 below. It is hoped that Information will continue to report progress.

Two interesting cases of mathematical tile buildings have come to light. The first is Norbury Park, Mickleham, near Dorking in Surrey. Here it was known that the front (south face) was at one time covered with mathematical tiles removed some years ago when the wall was rendered.¹ Recent work on the house has disclosed that the rear was also so clad and that here the rendering was applied over the tiles. The tiling was carried out with skill in 1792, apparently by a bricklayer who had done similar work at Chevening six years earlier.² Frank Kelsall has found correspondence between the third earl of Stanhope, of Chevening fame, and William Locke, who built Norbury Hall in 1775 and soon got into trouble with the earlier cement rendering which fell off (as happened at Chevening and at Garrick's Villa, as Frank Kelsall discovered). The other case is at St James' Palace, Westminster. Here, a

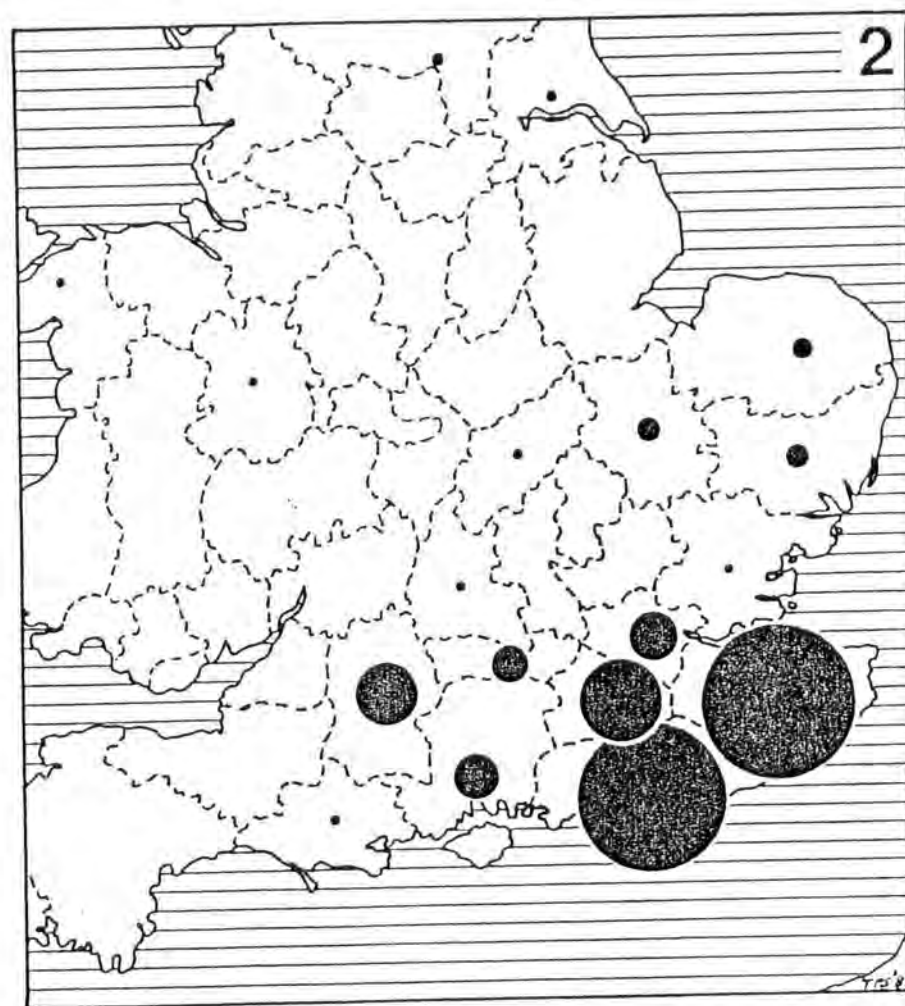
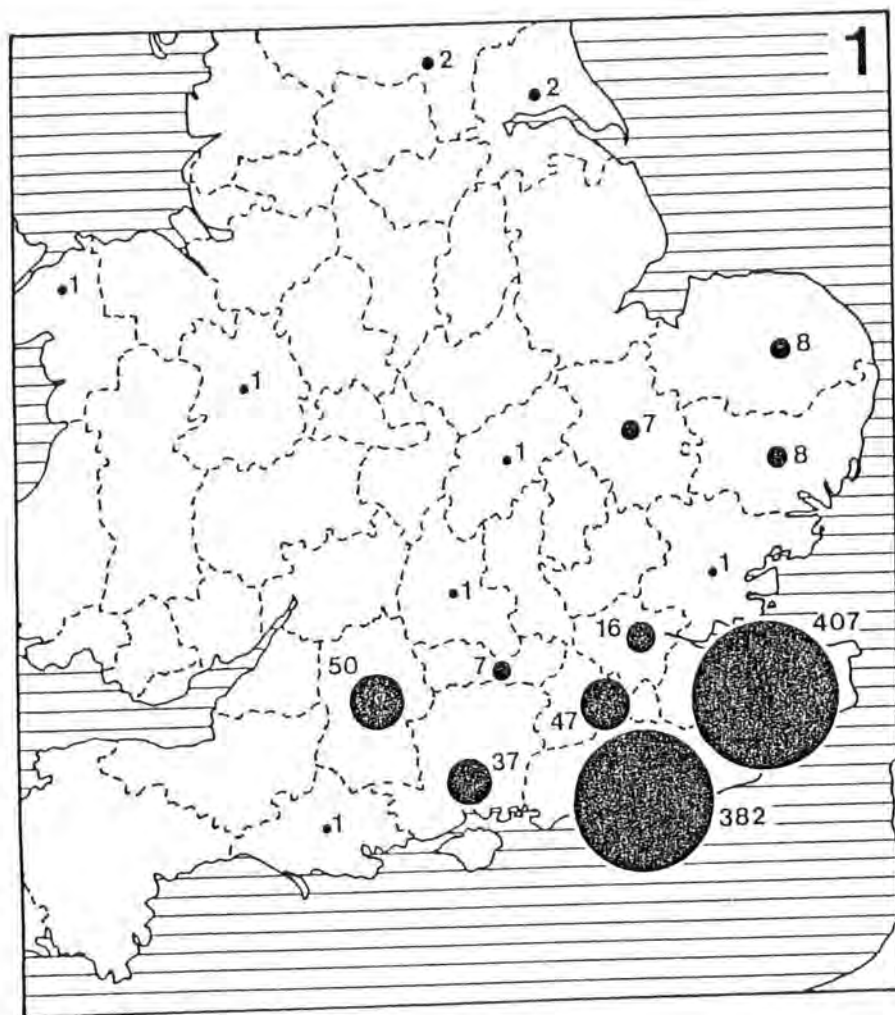
Table 1³

<u>County</u>	<u>Number recorded</u>		<u>No. per km²</u> <u>per county</u>
	<u>Sept.1986</u>	<u>Nov.1981</u>	
Kent	407	(229)	10.91
Sussex	382	(357)	10.02
Wiltshire	50	(33)	1.44
Surrey	47	(37)	2.84
Hampshire and I.O.W.	37	(32)	0.89
Greater London (Ex-GLC)	16	(6)	1.01
Norfolk	8	(5)	0.15
Suffolk	8	(6)	0.21
Berkshire	7	(7)	0.56
Cambridgeshire	7	(6)	0.21
Humberside	2	(2)	0.06
Yorkshire	2	(0)	0.06
Dorset	1	(0)	0.04
Essex	1	(1)	0.03
Gwynedd	1	(1)	0.03
Northamptonshire	1	(1)	0.04
Oxfordshire	1	(0)	0.04
Shropshire	1	(1)	0.03

five bay house on the west side of what is now Ambassadors' Court was built between 1769 and 1793. On the north it came close to the range of buildings known as York House. Apparently to reduce the amount of light robbed from York House, the five bays were cut to four, above the first floor on the north side, and the set-back flank wall, constructed of timber-framing and filled with brick nogging, was clad with red mathematical tiles. We can assume that this was done as an afterthought at the time when the house was built, when the interference with daylight to York House was realised.

References

1. Surrey History, 2, 5, 209.
2. M.Exwood, ed., Mathematical Tiles: Notes of Ewell Symposium 14 November 1981, Ewell, 1981, p.28.
3. [The present figure for Wiltshire is based on additional information communicated by Mr Ron Martin; the Oxfordshire example (at Abingdon) was given me via Mr David H. Kennett.
TPS]

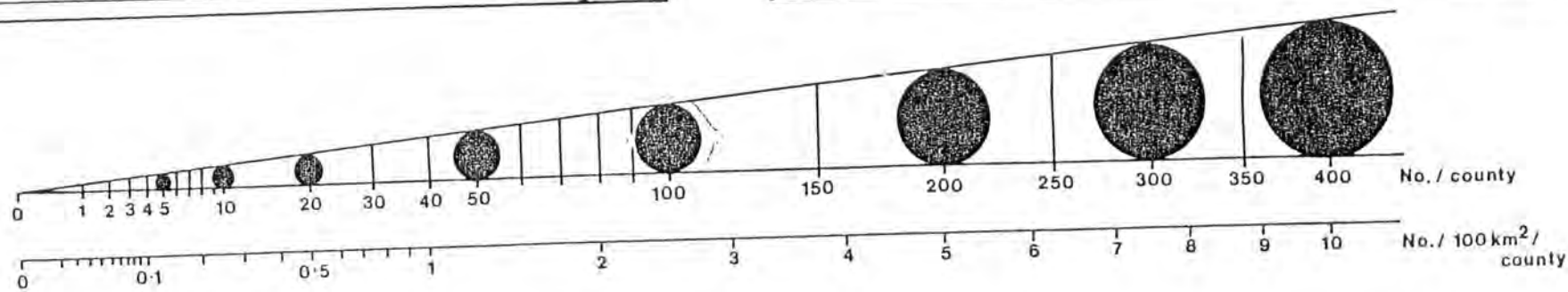


13

Fig. 1

Map 1

Map 2



DOTS AND DASHES

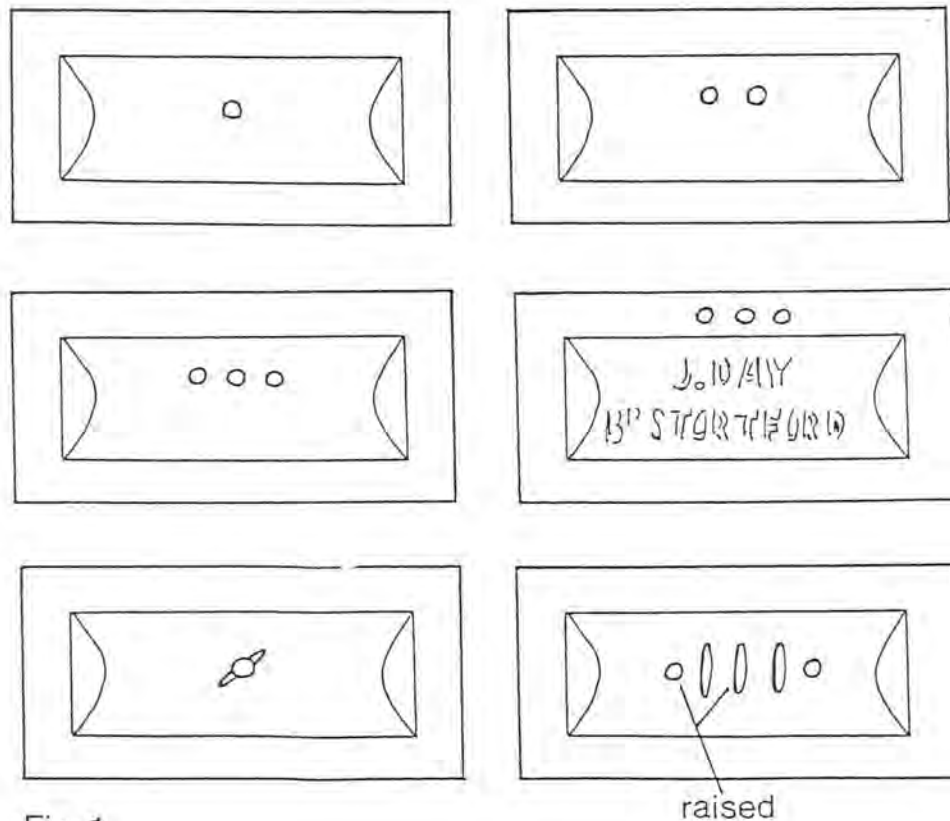
W. J. Wright

During a recent survey of a timber-framed building in Sawbridgeworth, Hertfordshire, two fireplaces were studied. One was an inglenook fireplace 2.3 m. wide and of early seventeenth-century date in what may have been a farmhouse; the other was of similar date but inserted into a mid-sixteenth-century house.

Following the survey, a quick inspection of the garden revealed a pile of bricks with local makers' marks. On a subsequent visit, after the appearance of M.G.Reeder's note on 'Brick Marks' (*Information* 40, November 1986, 3), a closer inspection produced the bricks illustrated in fig.1.

All the bricks have the frog-shape shown, and all dot and dash or slash marks are impressed into the brick, except that marked 'raised'. A typical size is 22.7 by 10.7 by 6.5 cm. (9 by 4½ by 2½ in.) They are of yellow/pink composition, and some samples would appear to have crushed red-brick grog in them, a feature that I have not noticed before.

'J.DAY / Bp STORTFORD' impressed in the frog in one example illustrated refers to a brickmaker of that name who was working two pits of dates 1899 and 1919.



BRICK PIERS

David H. Kennett

The parish church of St John the Evangelist at Reedham, Norfolk,¹ is well-known for its situation on the edge of the high ground before the marshes of the River Yare begin. The church consists of a west tower, to which Margaret Paston contributed 8s 4d in 1477, a broad nave, a chancel occupying the northern part of the east end, and a south chapel. The chancel and the chapel are separated by a two-bay arcade. The central octagonal pier of the arcade is of brick, although it is now plastered.

On 19 July 1981 a fire destroyed the thatched roof of the church and caused much of the plaster to flake off the walls. Coloured photographs taken soon after the fire and on display in the church show the pier of the chapel arcade to be of large thin bricks, shaped to accommodate the regular octagonal plan of the pier. The bricks, whose colour may be affected on the photograph by the recent burning, appear to be a deep red. They were not all fired evenly and some black cores can be seen in the photographs, showing, incidentally, that they were cut to shape.

The arcade has been dated by the late Sir Nikolaus Pevsner, to c.1300, the same date as the moulding of the vestry door on the north side of the chancel. The chapel roof, before the fire, was arch-braced, but this may be connected with the re-making of the arch from the south chapel to the nave, dated by Pevsner to c.1500. The chapel houses monuments to the Berney family. Surviving at Reedham are tomb chests of c.1500 and of 1584. An earlier brass, to Elizabeth Berney, died 1474, has been removed to St Peter Hungate Museum, Norwich.

This is not, I think, an isolated instance of this kind of use of brick. The large church of St Andrew at Gorleston-on-Sea,² overlooking the post-sixteenth-century entrance to Yarmouth Haven, is equally fine when approached from the west, the landward side. There is a tall, late thirteenth-century tower, and a nave and two aisles. There is no structural division between nave and chancel or between aisle and eastern chapel.

The three aisles are divided by seven-bay arcades. The southern arcade is dated to the early fourteenth century by Pevsner; it is cut into by fifteenth-century buttressing to the tower, which was heightened at that time. The north arcade is dated to the thirteenth century, but the north wall of the church has an early fourteenth-century doorway and an Easter Sepulchre of about the same date: the latter is now cut through to form the entry to a choir vestry and a link with a modern annexe.

The arcade piers are octagonal. The arches are double-chamfered and form the only examples of visible stonework in the interior. The piers are very similar to the single pier in Reedham church and brick is just visible on one pier with damaged plaster. It is possible that the brick piers supported an upper part of the arcade in brick, but confirmation of this must await other fortuitous missing paint and plaster.

This is a somewhat different use of brick from that involved in the wall-fabric of churches.³ It is again structural and not meant to be seen. In the fifteenth-century churches with structural brick, the

arcades between the nave and the aisles are of stone. At Walberswick, Suffolk,⁴ portions of the quatrefoil blocks of an arcade were built into the wall of the reduced church in 1695. The arcades of the churches at Blythburgh⁵ and at Long Melford⁶ are well-known for their fine lines. I have not measured the stone piers at Blythburgh or Long Melford. The blocks at Walberswick are from a stone originally c. 18 cubic inches (500 cubic mm.).⁷

Notes and References

1. M.Cautley, Norfolk Churches, 1949, p.234; N.Pevsner, The Buildings of England: North-East Norfolk and Norwich, 1962, pp.301-2; D.P. Mortlock and C.V.Roberts, The Popular Guide to Norfolk Churches: No.1 North-East Norfolk, 1981, pp.75-6. All descriptions written before the fire; none has an illustration.
2. Cautley, op.cit., p.202; Pevsner, op.cit., p.137.
3. D.H.Kennett (with appendix by T.P.Smith), 'Structural Brick', BBS Information, 34, November 1984, 13-16; D.H.Kennett and M. Wingate, 'More about Structural Brick', BBS Information, 38, February 1986, 5-6.
4. M.Cautley, Suffolk Churches, 1937, 3rd ed. 1954, p.333; N.Pevsner, The Buildings of England: Suffolk, 1961, revised E.Radcliffe 1974, p.472.
5. Cautley, op.cit. in n.4, pp.228-9; Pevsner, op.cit. in n.4, pp.102-3; brick structure of walls observed by the present writer, August 1986: publication forthcoming.
6. Cautley, op.cit. in n.4, pp.288-9; Pevsner, op.cit. in n.4, pp.343-8; C.Sansbury, Holy Trinity Church, Long Melford, church guide, n.d., passim with photograph of arcades and reproduction of engraving of 1825 which shows the size of the individual blocks of the arcades. Preliminary account of brickwork in D.H.Kennett, 'Long Melford Church, Suffolk', BBS Information 38, February 1986, 14.
7. Note written 11 November 1986; Reedham Church visited June 1986; Gorleston Church visited 1 November 1986; Walberswick blocks measured August 1986.

MARKINGS ON MEDIEVAL TILES

Ian Betts

Markings added to Roman brick and tile prior to firing are well known, but much less attention has been paid to markings on medieval roofing tiles. In London such marks are frequently in the form of a diagonal finger-impression near the top corner (fig.1). Occasionally, such marks are intersected by a nail hole, although it is not apparent which was added first. Markings occur on three types of roofing tiles in medieval London: flanged peg-tile, shouldered peg-tile, and ordinary peg-tile. The first two are of thirteenth-century date; the

last were introduced during the thirteenth century and continued in use throughout the medieval period.

The form of the mark on flanged tiles (fig.2) differs from that on peg-tiles. The finger-mark takes the form of a single impression running parallel to the top or to the bottom edge. It

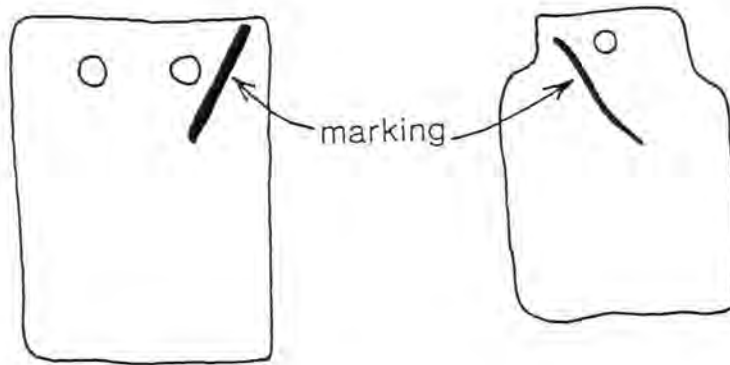


Fig.1

is possible that this particular mark may have been added for a different reason from that for other kinds of roofing tiles.

Proportion of tiles with marks

The lack of complete, or substantially complete, tiles makes any assessment of the proportion of roofing tiles with such marks very difficult. The only evidence from London comes from the excavations at 10 Milk Street (MIL72), where thirty-two complete, or substantially complete, peg-tiles were excavated. Of these, only two (6.25%) had such marks.

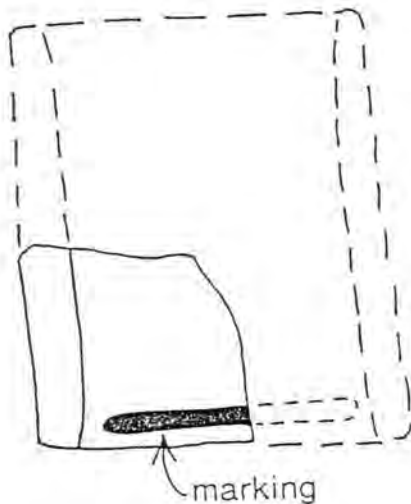


Fig. 2

The purpose of the marks

The purpose of such marks is not certain. Their simple nature suggests that they are probably batch marks, rather than signature marks identifying the tilemaker responsible for making them.

Any other suggestions regarding their use would be most appreciated.

(The author may be contacted at: Dept. of Urban Archaeology, Museum of London; but consideration of the matter, and further examples, would make ideal subject matter for inclusion in future issues of Information. TPS)

CERAMIC BUILDING MATERIALS FROM ARCHAEOLOGICAL EXCAVATIONS

Valerie Shelton-Bunn

Ceramic building materials commonly form a large and unwieldy component of excavated assemblages, presenting considerable problems of collection, processing, analysis, and storage. Until fairly recently, little consideration had been given to resolving these difficulties, which were often dealt with by the simple expedient of collecting as little as possible! As a result, the information-potential of ceramic building materials is under-appreciated and the materials have a low priority in artifact analysis. The claim that it is not as useful to interpretation of excavations as some other artifacts and therefore not worthy of study is a self-fulfilling prophecy. However, there is a growing realisation of the value of in-depth studies of brick and tile and a growing interest in its industry. Although there are a number of studies concerned with regional overviews, attention still needs to be addressed to the topic. The present article is a brief resumé of one approach to studying excavated assemblages and although some of it may appear self-evident there is still a great need for the problems to be stated and discussed. It is presented in a fairly dogmatic way, but this is rather for the sake of clarity, and comments and criticisms are invited.

The ultimate aim of studying ceramic building materials is to obtain information relating to chronology, technology, economy, and social organisation. This may sound grandiose, in the context of brick/tile assemblages, but it is implicit in the study of any class of archaeological artifacts and should be given more than token consideration.

Major stumbling-blocks to studying most bricks/tiles are those associated with physically managing the material. Consequently, prior to an excavation taking place, a strategy dealing with collection, analysis, and storage must be established. Problems of collection and basic processing can be reduced by implementing rigorous on-site sampling strategies and the storage problem is solved by recording the material in sufficient detail that it can, if necessary, be largely discarded. The absolute quantity of material that can be collected and processed is mainly dependent on the labour and space available. However, even if these are limited, it is always of paramount importance to understand and control the ways in which the assemblage is biased - which is to say, it is more valuable to collect a little under controlled conditions than to collect a lot haphazardly, and any sample taken must be representative of the complex range of material in that context. This is already well understood and documented for other classes of artifacts.

The method of recording brick/tile is probably thought to be the biggest problem. This is in part due to the paucity of useful published reports that enable comparisons of methodologies and results to be made, and the lack of time or facilities for literature-searching. It frequently leads to very basic recording systems being

employed, which note, for example, 'artifact type', 'fabric type', 'sherd count', 'sherd weight', and 'comments'. This is rarely adequate since a very large number of variables then get subsumed under 'comments'; there is little control over such a category and the data are difficult to retrieve and manipulate. It is better to design a proforma that provides the option of recording a large number of specified variables and then to exercise control over which parts of the assemblage are recorded in what sort of detail. Features that may be considered for recording include: artifact type; fabric type; evidence of manufacturing technology; makers' marks and tally marks; prints, graffiti, and other secondary impressions; complete dimensions; presence of mortar indicating how the artifact was used; and evidence of re-use. Each of these can be broken down into component elements. The number of bricks/tiles present in an assemblage may be more effectively estimated by counting corners rather than by counting and weighing the sherds; or all three measures may be required.

Given that the time available for analysis is usually limited, it is probably necessary to record different parts of the assemblage in a different degree of detail. This is dependent on the type of site being excavated, the contexts from which the material is recovered, the variety and condition of the material, and the problem-orientation of the analysis. For example, bricks/tiles from primary contexts such as walls and floors have a high information-potential and should usually be recorded in great detail, whereas for a residual context producing material that is small, abraded, and of uncertain origin it may be sufficient to record type, count, and weight. Additionally, it may be desirable to record in depth a particular type of brick/tile regardless of context.

A great deal of flexibility along these lines is possible within a well-structured recording framework. A consistent and systematic analysis encourages compatibility where several people are working on one assemblage, and it also facilitates inter-site comparison of data.

Greater validity will be given to statistical interpretation if, for a particular variable, the record differentiates between the following negative conditions: the variable has not been recorded because it was not looked for; it was looked for but not observed because the sherd is too small or abraded; it was looked for but seen never to have been an attribute of the artifact.

It may be worth mentioning that I find an alpha-numeric encoding system encourages further consistency, is more economic in time and materials, and is quicker to enter on computer than verbal description. It is also easier to manipulate manually if a computer is not available. It may not be necessary to publish all the information recorded but it will always be available for future reference. This is particularly important if some of the material is to be discarded.

This is a short discussion of a complex problem. Hopefully, some of the issues highlighted will be followed up by subsequent papers in response to this one.

A Probable Anglo-Saxon Tile from London. Excavations by the Museum of London Department of Greater London Archaeology at Westminster Abbey have uncovered a fragment of polychrome relief floor tile in yellow and brown glaze. This is the first occurrence of such a tile in London. The dating of such tiles is problematic; the available dating evidence suggests that they may have been manufactured in the late tenth or eleventh century. It is hoped that examination of the associated pottery may establish a firmer date.

Ian Betts

BLYTHBURGH CHURCH, SUFFOLK

David H. Kennett

The parish church dedicated to the Holy Trinity at Blythburgh, Suffolk¹ is not only one of the grandest churches of England, it also has one of the finest settings of any parish church known to me. When viewed from the north, it is majestic on its bluff above the pool of the River Blyth. Jane Wight is typical when she describes some of its features: 'Huge Perp[endicular] church included as most splendid example of East Anglian combination: flint fabric, stone dressings, brick voussoirs. Plain square 83 ft high tower of c.1330. Body of church completely rebuilt from mid C15. 128 ft long, with only slightly shorter N and S aisles. Un-dressed flint fabric but careful work, with flint flushwork to buttresses and at E end. Most elaborate stonework fretted parapet of 7-bay S aisle - where windows depressed pointed. All windows have reinforcing brick voussoirs, including great E window and (blocked) N and S windows of chancel. Clerestory is spectacular, having 18 4-centred windows separated only by flat stone shafts, so the 288 bricks to a side - outward sign of rubble and brick splays - form strong undulating line.'² Miss Wight's note catches the sense of awe that Blythburgh church inspires. Yet it seriously underestimates the amount of brick used in its construction.

The early fourteenth-century tower was clearly a replacement of an earlier structure. Diagonally-set buttresses to its east face suggest that the building to which the tower was added was narrower than the present nave. The west tower was built in stages, allowing each year's work to settle, and probably took between ten and fifteen seasons to build. The fabric of the tower is rendered, but in some places the rendering is worn, and it is clear that much of the tower is of flint rubble with much brick. The east face is virtually all of brick.

The outer walls of the north and south aisles have an outer skin of brown and black flints with no patterning. The outer skin and internal plastering preclude examination of long stretches of the wall. The structural fabric can be seen where the north wall is pierced for the rood stair. The fabric is of brick and stone carefully coursed and with the inner and outer faces of brick, again carefully coursed. The projecting rood stair turret is lined with brick, whilst the stair itself has brick risers, stone treads (some renewed), and a stone newel. By the south porch, too, the wall of the church is of brick and stone in neat courses.

The floor of the church is varied. The chancel is mostly relaid but the aisles, the nave, and the north chapel (an extension of the north aisle) have brick lumps giving a somewhat uneven surface. Parts of the floor were replaced prior to the seventeenth century by stone slabs into which monumental brasses (all now missing) were set.

There are a number of known dates for the fabric of the main body of the church: 1442 for the chancel, 1452 for the north chapel, 1457 for glazing a window in the north aisle, and 1462 for glazing a chancel window.

The church dedicated to the Holy Trinity at Blythburgh is thus a generation earlier than the church at Long Melford in the same

county,³ where the clerestory is of 1481, the south chapel of 1484, and the Lady Chapel of 1496. It is earlier than the recorded date of 1493 for the use of brick as a structural material of nearby Walberswick church.⁴

Notes and References

1. N.Pevsner, The Buildings of England: Suffolk, 1961 second ed. revised E.Radcliffe, 1974, 102-103; N.Scarfe, Suffolk: a Shell Guide, 1960, third ed., 1976, paperback 1982, 51-2, photograph showing setting at 53 and of south aisle at 24-5; H.M.Cautley, Suffolk Churches, 1937, third ed. 1954, 228-29, with exterior photograph at 225.
2. J.Wight, Brick Building in England from the Middle Ages to 1550, 1972, 358.
3. Pevsner, op.cit., 343-8, with full text of inscriptions; Cautley, op.cit., 288; C.Sansbury, Holy Trinity Church, Long Melford (= church guide), 1979; D.H.Kennett, 'Long Melford Church', BBS Information, 38, February 1986, 14.
4. Pevsner, op.cit., 472; Cautley, op.cit., 333; D.H.Kennett, 'Structural Brick', BBS Information, 34, November 1984, 13-16. (Paper completed January 1987, following fieldwork at Blythburgh, 3 September 1986.)

Mathematical Tiles: VAG Ewell Symposium 1981

Following this most successful occasion in November 1981, the individual contributions were published as Mathematical Tiles: Notes of Ewell Symposium, edited by Maurice Exwood, produced by Katie Dodson, and published in Ewell, Surrey. The booklet went into several editions. The income from registration fees, donations, and sales of the booklet totalled £625.22p, whilst expenses for hire of the hall and other matters amounted to £430.02p. The surplus of £195.20p has now been donated to the Weald and Downland Open Air Museum at Singleton in Sussex, where computer data relating to the mathematical tile surveys are being kept. The few remaining copies of the published notes have also been transferred to the museum. With admirable, but characteristic, generosity, Maurice Exwood has handed over to the museum his collection, assembled over the years, of mathematical tiles (I still prefer to call them brick-tiles!), including examples from Althorp, Belmont, Brighton Pavilion, Chevening, Culford Hall, Garrick Villa, Helmingham Hall, Norbury Park, and St James' Palace (for these last see above, pp.11-13).

TPS

The Ceramic Building Materials Research Group

The first Newsletter of the Ceramic Building Materials Research Group was very well received at the beginning of last year, but has, alas, remained little more than a good idea since then. However, it seems a better idea to join with the British Brick Society, and I hope that this will be to our mutual benefit. This issue of Information is being circulated to all individuals and groups who have exhibited interest in the CBMRG since its inception and I hope that subsequently everyone will subscribe to the British Brick Society - a snip at a mere £3 per annum!

All the reasons for establishing the CBMRG in the first place still hold, and it is probably worth reiterating them very briefly for the benefit of BBS members who are not familiar with them. Essentially, archaeologists have a problem in dealing with excavated assemblages of ceramic building materials; this problem has largely been ignored, and there is need for a forum for the exchange of ideas and for discussion of methodologies. Most people are working in isolation and need to know who else is working in this field on both excavation and post-excavation aspects of building materials. It is also desirable to establish a common typology/terminology and a bibliography (especially of unpublished, archival reports). There is a pool of expertise in the British Brick Society that may be able to help us with some of these things.

In this issue of Information, the Relief-Patterned Tile Research Group introduces itself; the recording of ceramic building materials from archaeological excavations is considered; and Ian Betts has contributed a short piece stemming from his work in London. This is in addition to the usual, and always interesting, contents of Information. The British Brick Society regularly brings up-to-date and circulates its membership list, including interests and activities, which service the CBMRG previously intended to provide.

Well, I am sorry about the staggering progress of the CBMRG! Still, third time lucky I hope, and as part of the British Brick Society instead I am sure that we can achieve the aims that we previously set out to achieve.

Valerie Shelton-Bunn

The Relief-Patterned Tiles Research Group

Relief-patterned tile, although rare in comparison with combed tile, is nevertheless widely distributed throughout Southern Britain. It seems to be peculiar to Roman Britain, and was made in the late first and second centuries. The relief-patterns serve the same purpose as combing, viz. to give a keyed surface for mortar. Such 'decorated tiles' are most likely to have been flue-tiles set along the walls of heated rooms, particularly in bath-suites.

So far, only 70-80 different relief-patterned designs or 'dies' have been recognised, and it is possible that each represented a particular tilemaker, although this may be a great over-simplification.

Work on the dating of the dies has shown that they were not all in use at the same period. There appear to be three main periods, viz. c.AD 75-90, c.120-130, and c.155-175. The dies belonging to the two earlier periods are very simple and geometric - diamond and lattice, plain chevron and billet patterns. In the last period of production the patterns become more numerous and some are very elaborate, e.g. the well-known 'wolf and stag' pattern (dies 6 and 7).

cont./

The Group is continuing the pioneer work of A.W.G.Lowther and more recently that of David Johnston and David Williams. A programme of thin-section analysis of relief-patterned tile and other tile from various sites in Surrey and Sussex has been undertaken by the Group in conjunction with the British Museum. The production of an up-to-date corpus of examples of relief-patterned tiles is one of the main tasks of the Group and we would be very interested to hear from anyone who has examples of this type of material. We can offer an identification and dating service and will provide reports suitable for inclusion in excavation reports. We are interested in any pieces, however small and of even the commonest dies, as distribution maps are of great importance to the study of relief-patterned tiles.

The members of the Group are: Ian Betts, Ernest Black, John Gower, Angela Hodgkinson, and Mike Stone. Anyone wishing to contact the Group should write to:

The Relief-Patterned Tiles Research Group,
c/o Surrey Archaeological Society,
Castle Arch,
Guildford,
Surrey GU1 3SX

Copies of A.W.G.Lowther's monograph on Relief-Patterned tile are still available and may be obtained from the Group at 75p (including p&p).

Short reports are welcomed from other brick/tile specialist groups or individuals who wish to advertise their existence within these pages.

General Information

1. Bulletin of the Census of Medieval Tiles in Britain. The first Bulletin was produced in 1985 and it is intended that one issue be published each year. Copies are available free of charge on application to: Dr Christopher Norton, Centre for Medieval Studies, University of York, The King's Manor, Exhibition Square, York YO1 2EP.
2. The West Midlands Pottery Research Group is planning to hold a seminar on medieval tiles and tile production in the West Midlands, in mid-1987. Further information will be publicised when it becomes available.

Recent Work on Brick and Tile

Betts, I.M., 1985, A Scientific Investigation of the Brick and Tile Industry of York to the Mid-Eighteenth Century, unpublished PhD thesis, University of Bradford.

Museum of London, 1986, Identifying Ceramic Building Material, postal application only: Museum of London Shop, Museum of London, London Wall, EC2Y 5HN. Price: £1.50.

QUERIES

ROMAN TILE

From RPTRG

The Lowther Collection in the British Museum contains a Roman tile fragment stamped with Die 21. The provenance is unknown, but the tile is marked 'LXV Black 1'. Does anyone recognise this code or can the site be identified? Replies to: The Relief-Patterned Tile Research Group, c/o Surrey Archaeological Society, Castle Arch, Guildford, Surrey GU1 35X.

FROG MARKS

From Molly Beswick

Can any member supply information about the following: blue bricks of slightly larger than normal size (sorry, my correspondent was no more specific than this)? In the frog are the letters J and H on either side of an anchor with a rope twisted round it. The bricks were found at the base of two towers, which served as navigation markers for boats entering Rye Harbour in Sussex. [Could they be special engineering bricks manufactured for the Admiralty by Joseph Hamblet of West Bromwich? Cf. Information 35, February 1985, 20, Information 36, May 1985, 13. TPS] Replies to: Molly Beswick, Turners House, Turners Green, Heathfield, East Sussex TN21 9RB.

HUGUENOTS/WALLOONS

From I. Scouloudi

Has any member been doing serious research into the influence of the Huguenot/Walloon settlers on the making of and use of brick, especially in East Anglia? Is it possible to distinguish this from the influence of the Dutch/Flemish settlers? If so, would they be willing to lecture on the subject to the Huguenot Society of London? Replies to: Miss I. Scouloudi, 67 Victoria Road, London W8 5RH, with copy, please, to D.H.Kennett, 27 Lords Lane, Bradwell, Great Yarmouth, Norfolk NR31 8NY.

HOUGH END HALL, MANCHESTER

From D.H.Kennett

Can any member advise on the present state of Hough End Hall, Chorlton-cum-Hardy, Manchester, described by Sir Nikolaus Pevsner as 'the best, the only major, Elizabethan mansion of Manchester, red brick, on an E-plan, with mullioned and transomed windows and gables.' In the late 1960s 'the roof was open to the skies and the porch had collapsed.' There were eleven fireplaces, but the published hearth tax return (for 1666) records that Edward Moseley paid on only three hearths at 'Hughend Hall'. Replies to: D.H.Kennett, 27 Lords Lane, Bradwell, Great Yarmouth, Norfolk NR31 8NY (Telephone: 0493-668605).