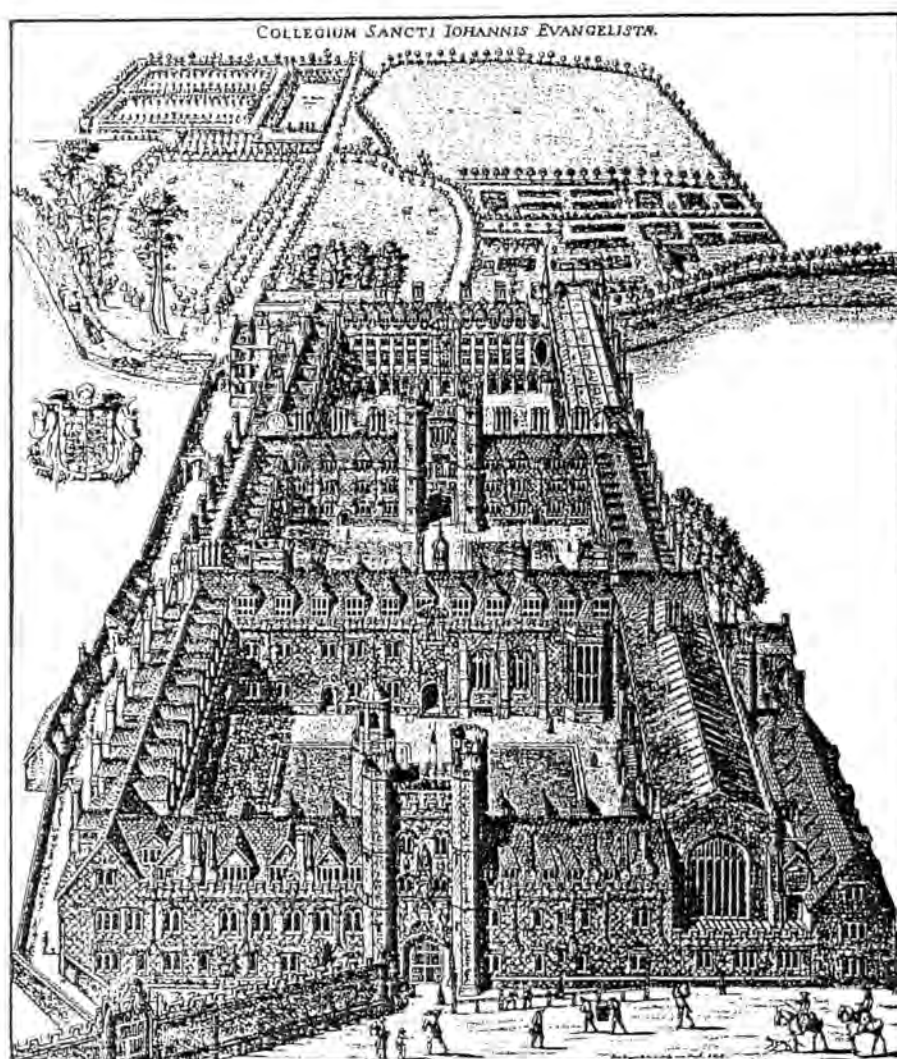


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## Cover Illustration:

St John's College, Cambridge (founded 1511) from David Loggan's print of c.1688; showing the newly-built Third Court. The college was one of those visited following the Society's Annual General Meeting in June 1998.

(Illustration: courtesy T.P. Smith).

## Editorial

As a person whose major research projects include *Contested Spaces: Rebuilding Britain after the Great War*, it is poignant to read of the deaths of architects who were (comparatively) young in the new world which was to be created after the Second World War. On such was David Green of the Lowestoft architects Tayler and Green, who died in retirement in Spain in 1998. The work of Tayler and Green can be seen in many of the villages of south Norfolk around the market town of Loddon. When good quality facing bricks were in short supply in the late 1940s, the architects introduced paint as a means of enlivening the terraces of rural district council houses they designed. An earlier example of their work is the 1940 house in Highgate behind the High Street which is brick and has an open loggia sun roof. Late in their career they did an extension to Barclays Bank, Lowestoft, with grey bricks almost matching the weathered bricks of the original bank building of a hundred years before.

Just as this Editorial was being finished, news came of a major exhibition at the Design Museum, beside the south bank of Tower Bridge, London, on 'Modern Britain, 1929-1939'. It will be interesting to see if the Tayler and Green house is included. The museum is open Monday to Sunday, 11.30 a.m. to 6.00 p.m. and entry costs £5-25 (£4-00 concessions). The exhibition continues until 6 June 1999. With the brick history being central to a major exhibition in Hull in the Summer 1999 and the Glasgow 1999 UK City of Architecture and Design, members of the British Brick Society have much to savour in the coming year.

Pressure on space in this issue of *BBS Information* has meant a delay in the publication of an extended survey of county gazetteers of brickyards in the United Kingdom. The latter, with a revised version of the original editorial, will now appear in *BBS Information* 78, October 1999.

The original editorial to this issue of *BBS Information* was written in the week after the 'Heritage Weekend' of 12-13 September 1998 when the Editor was fortunate enough to visit the canal buildings at Stourport, Worcs.; these are not usually open to the public. If any member visited a place to which access is rarely granted and would like to write a brief account, please submit your article.

Michael Hammett, our hardworking Honorary Secretary, kindly told me about the request to find three members to appear on Channel Four's *Big Breakfast* programme in Monday 28 September 1998. The three members who responded to the call were Francis Cherry, Mary Lockwood and Gerard Lynch, who provided a representative sample of the diversity of interests of the society's members and have the advantage of not being among the officers. The slot lasted for about seven minutes after 07.45 a.m. but there was the need to be at the studios by 6.00 a.m.

As a inveterate listener to Radio 4 and the 'Today' programme, on 1500 metres, of course, such television programmes would not enter the consciousness of the Editor. But it does help the society to become better known. Our thanks are due to those who took part; a spirited account of the experience by Mary Lockwood appears elsewhere in this issue of *BBS Information*.

Several BBS members have promised contributions to the next issue of *BBS Information* which is going to focus on 'Brick in Churches'. If others have material, please let the Editor know.

DAVID H. KENNETT

Editor, *BBS Information*, Shipston-on-Stour, Warwickshire, 23 January 1999

## THE EARLY TUDOR CHIMNEY BRICK FROM BRIDEWELL PALACE, LONDON, AND ITS SIGNIFICANCE

Terence Paul Smith

Twenty years ago the Department of Urban Archaeology of the Museum of London (now incorporated within the Museum of London Archaeology Service) excavated part of the early Tudor palace at Bridewell, EC4, and published its findings with admirable promptness.<sup>1</sup> Bridewell was a large complex, built largely of brick for Henry VIII between 1515 and 1523. Abandoned as a royal palace in 1529, when Henry acquired York Place (Whitehall) and Hampton Court Palace following the fall of Wolsey, the building subsequently served various purposes. By the eighteenth century it had become a prison; this was closed in 1855 and what was left of the early building was demolished in 1863.

Amongst the finds recovered was a shaped brick of the sort used for chimneys and related features.<sup>2</sup> These features included pinnacles, as on a number of the Tudor mansions of East Anglia, the vents for garderobes (latrines), decorative features, as on the south wall of Eastgate House, Rochester, Kent (a late example of 1590-91), and even false chimney-shafts, such as those on Framlingham Castle, Suffolk. But the principal use of the bricks was for genuine chimney-shafts, one of the glories of early Tudor brick (and some stone) buildings, especially in the reign of Henry VIII. The Bridewell example seems to have been 'incorrectly worked or superfluous as it was found in the courtyard surface'.<sup>3</sup> The iconographic evidence of Bridewell, dating from the eighteenth and nineteenth centuries, shows no elaborate chimneys but only simple types which were presumably later replacements. There is, however, an intriguing reference in the estimate for building the palace, a document which is undated but seems to have been written early in 1516: it includes the entry: *The making of chymneys and hewying for shafts etc. xl li (£40)*.<sup>4</sup>

Familiar as many of us are with moulded bricks of Victorian date, including those of chimneys – such as those at Hampton Court Palace, which are all replacements – it is easy to suppose that the Tudor bricks were moulded in the same way. Eric Sandon, for example, writes of 'the use of wooden moulds, often of considerable intricacy, in which the sections of brick [for chimneys] could be cast'.<sup>5</sup> Some of the chimneys may indeed have incorporated moulded units,<sup>6</sup> but the late Nicholas Moore quite rightly emphasises that the majority of them were of *cut* brick, and he aptly describes those at Thornbury Castle, Gloucs. (1514) as the 'ultimate in carved chimneys'.<sup>7</sup>

Describing the individual components as *moulded* bricks is, in fact, correct enough so far as it goes, though potentially misleading, since the word 'moulded' is itself ambiguous in this context: on the one hand, it can mean no more than 'having architectural mouldings', being cognate with the same word when applied to *stone* components; on the other hand (as is *not* the case with stone), it can also mean 'formed by being cast in a mould'. Thus, for example, J.A. Gotch long ago referred to the 'moulded chimneys' at Layer Marney Tower, Essex (c.1520), but the drawing (by Arnold B. Mitchell), which Gotch reproduces, clearly labels them 'CUT BRICK CHIMNEY STACKS', which in fact they are; and Gotch himself may have intended no more than '*architecturally* moulded'.<sup>8</sup> Because of this ambiguity, it is better to employ the neutral term *shaped brick*, unless a particular method of manufacture (moulding or cutting) is intended.

That such bricks were indeed usually cut is clear from close examination, although this is often difficult because of the inaccessible locations of these features. Even good quality photographs, however, will sometimes reveal that the bricks have been cut to shape.<sup>9</sup> Such physical evidence is augmented by a number of documentary references – including that, already quoted, relating to Bridewell. As early as 1438/9, for example, the accounts for Tattershall Castle, Lincs. record payment for 2,200 'worked bricks called hewentile' (*de tegulis operatis vocatis hewentile*) for use in chimneys and windows in the stable.<sup>10</sup> Much later, in 1532, the Westminster accounts refer to 'tonellis [tunnels] hewen for chymneys' and to the 'setting up and fenysshing of viij tonnellis of chymneys togederes with their heedis [heads] and bases'. Oddly, L.F. Salzman comments that this 'presumably refers to *stone*



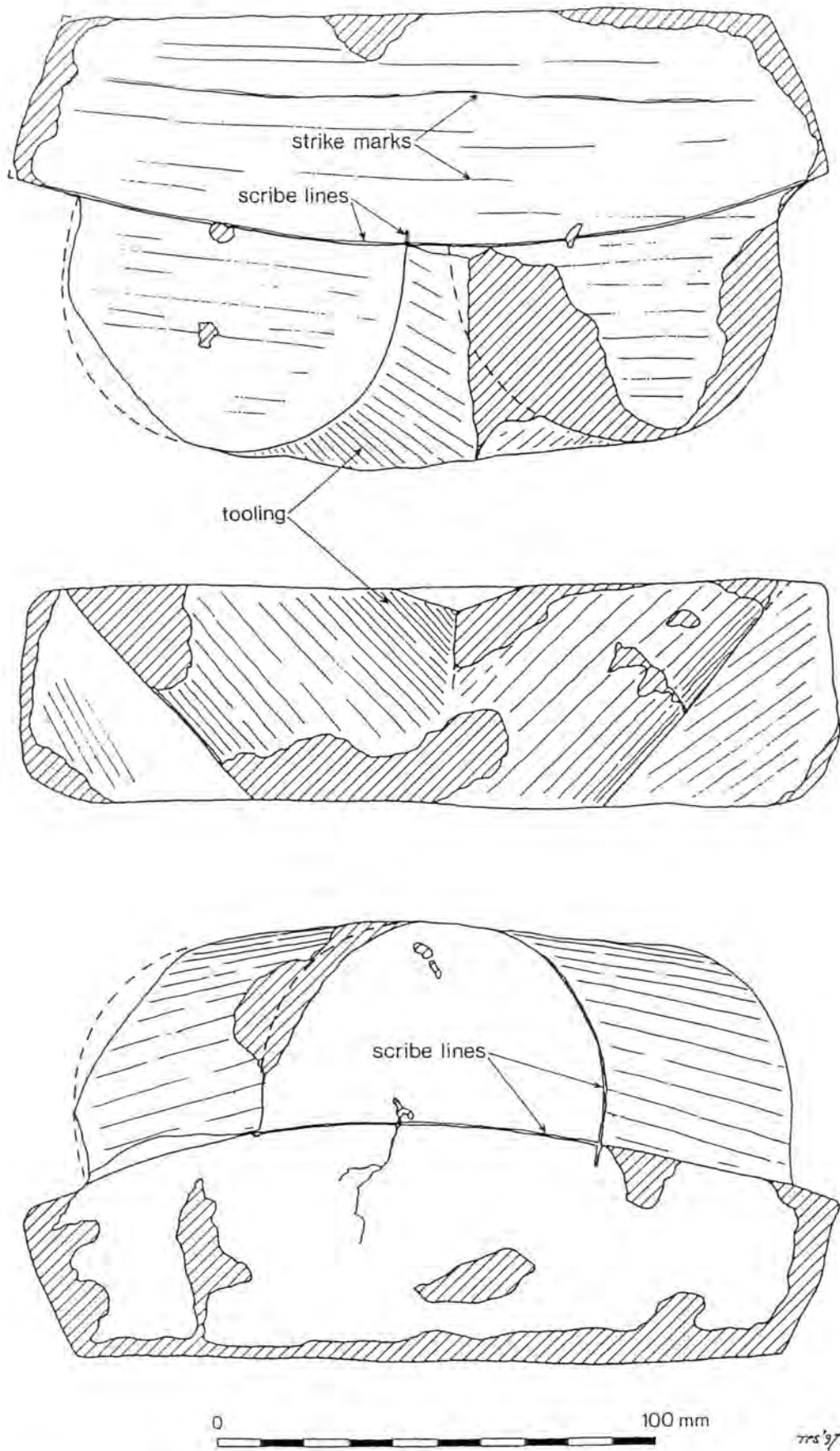


Fig. 1: The early Tudor chimney brick from Bridewell Palace, London  
(damaged portions shown cross-hatched)

chimneys' (my italics);<sup>11</sup> but a reference of two years earlier in the same source specifically mentions bricks: 'the hewing of 50 tonnells in brycke for chimnes and ventes for jaxys [sc. jakes or latrines], which hath byn hewyn thys wynter by taske',<sup>12</sup> and this makes it extremely likely that the later reference too was to *brick* chimneys. The word 'tunnells' might suggest the flues of the chimneys although it more probably refers to the shafts: etymologically, 'tunnel' means 'little barrel', and is thus entirely appropriate to such a usage. The Bridewell estimate itself uses the (now) more familiar term 'shafts'.

Such 'hewing' of chimney bricks was, then, quite normal at the time, and it is within this context that the Bridewell chimney brick needs to be seen, although it has so far received surprisingly little attention in the literature. The brick itself (fig.1) shows tool marks which 'indicate that the brick was shaped by cutting rather than moulding'.<sup>13</sup> These tool marks are somewhat coarse in their execution (fig.2), suggesting the use of a brick-axe. Brick-axes are mentioned frequently in the accounts for Kirby Muxloe Castle, Leics. (1480-84); in 1533-4, 8*d.* was paid for a brick-axe at Windsor Castle; and at Lincoln's Inn, London in 1567-8, 1*s.* 4*d.* was paid 'for a gryndyng stone for the brekelayers' and 8*s.* 'to the brekelayers for the new eggyng [edging] of ther hewing axes all the somer'.<sup>14</sup> The scribe-lines on the bedfaces of the brick (considered more fully below) also imply, of course, cutting rather than moulding. These scribe-lines also show that the work of cutting was carried out on the *fired* brick. The brick thus provides visual confirmation of the reference to 'hewing for shafts' in the Bridewell estimate.



Fig. 2: Rubbing of part of the Bridewell brick, showing the rather coarse tooling

It is also clear, both from the fabric and from the dimensions that the shaped brick was cut from one of the standard bricks used for the palace, and which are also described and illustrated by Frances Pritchard in her report. This accords well with a reference to bricks used for chimneys at Pleshey Castle, Essex in 1449/50, when Peter Ducheman 'prepared brick from the castle store for use on a number of chimneys "round the Dongeon"'.<sup>15</sup> Perhaps he did this as task work, as did the brick hewer concerned with the Westminster chimneys in 1530.<sup>16</sup>

Even more significant are the scribe-lines on both bedfaces of the Bridewell brick. The cutting or carving of brick chimneys could have been done either by shaping the individual units and then laying them or by carving them *in situ*. It is likely, in fact, that a combination of both techniques was used (see below), but at any rate it is clear that at least the initial shaping of the Bridewell brick was carried out at the workbench. The scribe-lines define the outlines on the bedfaces as a guide to cutting the correct shape - a chevron of roll-mouldings which in the finished chimney would have formed part of a chevron or lozenge design. It is not, of course, certain how these lines were formed, although it seems likely that the principal arc which is preserved almost complete on each bedface was scored using a pointed metal scribe around a template, and that the subsidiary semi-circles defining the roll-mouldings - two on the upper bedface and one on the lower bedface - were struck

from points on the principal arcs using a pair of dividers. These subsidiary scribe-lines survive only in part since the cutting of the brick tended to cut them away too. Doubtless further scribe-lines marked the oblique-angled cuts at each end of the brick – necessary to enable the bricks to fit together to form the shape of the chimney-shaft.

Cutting by following scribe-lines is, of course, a mason's technique, and gives point, therefore, to the not infrequent mention of 'brickmasons' (variously spelled) in contemporary documents. Not all workers in brick would have been capable of such work. John Harvey has remarked that bricklayers were normally the equivalents of 'setters rather than hewers':<sup>17</sup> their work, that is, consisted of laying the standard bricks. Some, however, would have possessed skills beyond this and would have been able to cut the bricks required even for the most elaborate of chimneys. It is not clear whether they were masons who adapted their skills to the alternative material or whether they formed a separate group of craftsmen. The similarity of technique involved perhaps suggests the former, and certainly there were leading master masons capable of working in both materials. In the 15th century, for example, John Cowper trained as a mason at Eton College, a building which, significantly perhaps, combines both brick and stone; his first recorded work is on a stone bridge at Bramber in Sussex and later he was involved in completing the stone-built church at Tattershall, Lincs. But he was also master mason in charge of brick building at Kirby Muxloe Castle, Leics. and at other brick buildings.<sup>18</sup>

The involvement of a 'Dutchman' at Pleshey in 1449/50 (above) is interesting, since northern Europeans, with their greater experience of brickwork, had a high reputation for such work in the mid-fifteenth century. The letter concerning Havering-atte-Bower, Essex (undated but probably of the 1440s) has been printed more than once, most recently by Pat Ryan: 'Ye well [= will] ordeyne me a Mason that ys a ducher or flemyng that canne make a dowbell [double] chemeney of ye brykke ... & yf ye may no fflemyng have then I wold have an engelesche man & [sc. an = if] he were a yong man for a yonger man ys sharpest of wittes & of cunnyng [sc. skill, rather than cunning in the modern sense]'.<sup>19</sup> Some of us may be of an age not to appreciate the last sentiment! But the letter is interesting, both in its use of the word 'mason' for a worker in brick and for its emphasis on the qualities of north Europeans; such craftsmen were, as is well known, frequently involved in fifteenth-century English brickwork other than the construction of chimneys. Whether they were so prominent in such work by the early sixteenth century is, however, another matter; it may well be that by that time Englishmen had learned the craft and that the Bridewell brick, with others of similar date, is the work of an English craftsman.<sup>20</sup>

As noted, the tooling on the Bridewell brick is somewhat coarse. This, obviously, would hardly have been visible once such a brick was in place. But it is worth remembering that the Bridewell brick appears, from its archaeological context, to have been superfluous or sub-standard (above). It is not at all unlikely, therefore, that such bricks were given a finer finish, probably by rubbing with another brick or with a suitable stone. There are instances of this on other brickwork features, such as the bricks of c.1525 at Wallington Hall, Norfolk, cited by Nicholas Moore.<sup>21</sup> There are documentary references to the practice too, such as the 'roubed [rubbed] bryck' used c.1530 at Hengrave Hall, Suffolk, for 'all the schanck [shaft(s)] of the chymnies'.<sup>22</sup> Some of this at least is likely to have been done *in situ*, once the chimney was built. And if the Westminster reference of 1532 refers (as has been suggested above) to *brick* rather than to stone chimneys, then the word-order may be significant, for it mentions 'setting up and fenysshing of ... tonnellis of chymneys...'. This 'finishing', done after the 'setting up', would then refer to the final rubbing of the bricks to give a precise and refined finish. In many cases too the chimneys would have been treated with red ochre and size or other substances to enhance the redness: at Collyweston, Lincs. in 1504, for example, there is reference to 'stuff for the coleryng of the cheney [= chimney] of Brike: vij lb. of red ocker w<sup>t</sup> j bz. [*sic* in transcript: for 'oz.?' ] of the offalles of the glovers lether, xijd. Item to John Bradley wiff for xiiij galons of small Ale for the said cheney of Bryk, vjd.'<sup>23</sup>

It remains to consider *why* this method of working was adopted, when, at first sight, it might seem that 'brick embellishments can be made easily and cheaply using moulds'.<sup>24</sup> In his discussion of this issue, Nicholas Moore plausibly suggests one reason, although there may be others too: 'The answer,' he writes, 'probably lies in the nature of the clay used, its



ability to keep a moulded shape and to fire with little shrinkage'.<sup>25</sup> Although differential shrinkage during both drying and firing was probably of less consequence than Moore supposes for certain simpler features, especially if they were to be rendered in imitation of stone, there can be little doubt that he is correct with regard to the often complex forms of the chimney (and similar) bricks, which would need to be quite precise in order for the particular pattern to be built up.

Other reasons which probably determined the method employed concern modes of firing. Most medieval and Tudor bricks in England were still fired in clamps rather than in permanent kilns, this having the advantage that the bricks could be made as close as possible to the building site, so long as suitable raw materials were available, and with very little in the way of plant. Clamps, however, are stacks of regular rectangular units (standard bricks) and it would not be possible to build elaborately shaped bricks into such a structure. Moreover, whichever method was used – clamp- or kiln-firing – close control of the process was impossible before modern methods of manufacture, so that there was always a good deal of wastage.<sup>26</sup> So far as standard bricks were concerned, this could be allowed for, but things would be otherwise with elaborate chimney bricks: moulding these would have been an involved and hence an expensive procedure, one that did not allow of wastage. It was far safer to select good quality fired standard bricks and cut the desired forms from them.

Nor was moulding bricks necessarily an easy task. Forming simple patterns, such as cants, was indeed straightforward enough: the brickmould could be modified by insertion of a suitably shaped block of wood and the brick moulded in the normal way. But once undercutting was introduced, as on the chimney (and related) bricks, this was no longer the case: the moulds would have to be made with removable 'negatives' in more than one piece, otherwise it would be impossible to remove the newly moulded brick from its mould! Using moulds modified in this manner was difficult and time-consuming. Further, it is not always the case that making the bricks for chimneys involved manufacturing a series of replicate units. The simpler spiral forms and some others did involve no more than this, and it may well be that the Bridewell brick is an instance of a single replicate unit. But some chimneys – the more intricately designed ones, such as those at Thornbury Castle or (rebuilt) at Hampton Court Palace – in fact used a number of *different* forms even for a single shaft. Often, too, the individual members of groups of shafts differed one from another, again involving a number of different units. Moulding, in fine, did not have the advantages which at first sight it seems to possess.<sup>27</sup>

There were, then, good reasons for making chimney (and similar) bricks by using the mason's technique of marking with scribe-lines – using templates and dividers – and then cutting to shape. The Bridewell brick, because it is *ex situ* and therefore able to be examined on what would be unexposed faces in a finished chimney, is an important piece of evidence for specialist building techniques in early Tudor England.

## Notes and References

1. D.Gadd and T.Dyson, 'Bridewell Palace: Excavations at 9-11 Bridewell Place and 1-3 Tudor Street, City of London, 1978', *Post-Med. Archaeol.*, 15, 1981, 1-79; the site codes are BRI78 and TUD78; for the history of the palace see also H.M.Colvin *et al.*, *The History of the King's Works*, vol.IV, 1485-1660, Part II, London, 1982, pp.53-8; for the general context: S.Thurley, *The Royal Palaces of Tudor England: Architecture and Court Life 1460-1547*, New Haven (USA) and London, 1993; more recently, parts of the palace have been revealed in excavations at 19 New Bridge Street (site code: NBR98) by the AOC archaeological unit; for a report on the bricks (many of them much later than the Tudor palace): T.P.Smith, 'Assessment of Bricks and Paving Tiles from 19 New Bridge Street, City of London EC4 (NBR98)', unpublished archive report, copies held by AOC and by Museum of London Specialist Services.
2. F.Pritchard, 'The Bricks', in Gadd and Dyson, 1981, 63; illustration at 64, fig.43; this gives a good impression of the texture of the brick; my own fig.1 is taken from the brick itself and is drawn using different conventions in order to bring out the features of significance for the present paper; the brick is in a soft orange fabric with few inclusions (Museum of London Archaeology Service [and now also Museum of London Specialist Services] fabric 3033; for such bricks see I.M.Betts, 'Appendix 3: Building Materials', in J.Schofield, P.Allen, and C.Taylor, 'Medieval Buildings and Property Development in the Area of Cheapside', *Trans. London & Middx Archaeol. Soc.*, 44, 1990, 227-8 and N.Crowley, 'The Ceramic Building Material', in C.Thomas, B.Sloane, and C.Phillpotts, *Excavations at the Priory and Hospital of St Mary Spital, London*, MoLAS monograph 1, London, 1997, p.200.); the overall dimensions of the Bridewell brick are 190 × 104 × 51 mm, but most edges are slightly worn; the standard bricks sampled from the site, from one of which the shaped brick was cut (see text below), range from 209 × 95 × 44 mm to 234 × 114 × 60 mm, the average dimensions being 218 × 103 × 51 mm; the brick is Museum of London accession BRI78[224]<99>.

3. Pritchard, 1981, 63.
4. Gadd and Dyson, 1981, 74; transcript of complete document by Howard Colvin at 72-4.
5. E.Sandon, *Suffolk Houses: a Study of Domestic Architecture*, Woodbridge, 1977, p.128.
6. For this point see N.Lloyd, *A History of English Brickwork...*, London, 1925, re-issued Woodbridge, 1983, pp.81-2, and J.A.Wight, *Brick Building in England from the Middle Ages to 1550*, London, 1972, pp.98-102.
7. N.J.Moore, 'Brick', in J.Blair and N.Ramsay, eds, *English Medieval Industries: Craftsmen, Techniques, Products*, London and Rio Grande, 1991, pp.227-8 and caption to fig.104, p.225.
8. J.A.Gotch, *Early Renaissance Architecture in England*, 2nd edn, London, n.d. but preface dated 1914, p.57 and fig.51 between pp.58 and 59.
9. The best are those in Lloyd, 1925, pp.339-44.
10. W.D.Simpson, ed., *The Building Accounts of Tattershall Castle 1434-1472*, Lincs. Rec. Soc. vol.55, Lincoln, 1960, pp.26 (transcript), 65 (translation); the stable chimneys no longer survive at Tattershall; an equally early example of a shaped-brick chimney survives at Rye House, Herts. (c.1443): T.P.Smith, 'Rye House, Hertfordshire, and Aspects of Early Brickwork in England', *Arch.J.*, 132, 1975, 123, 140, although this unfortunately describes the chimney-bricks as 'moulded' and, even more unfortunately, supposes that they actually *are*! There is an excellent photograph of the Rye House chimney-shaft in Lloyd, 1925, unnumbered p.341.
11. L.F.Salzman, *Building in England down to 1540: a Documentary History*, 2nd edn, Oxford, 1967, p.100.
12. Salzman, 1967, p.145; this also gives other examples of hewn bricks used for chimneys.
13. Pritchard, 1981, 63.
14. A.H.Thompson, 'The Building Accounts of Kirby Muxloe Castle, 1480-1484...', *Trans. Leics. Archaeol. Soc.*, 11, 1913-20, *passim*; W.H.St John Hope, *Windsor Castle*, vol.1, London, 1913, pp.263, 264; *The Records of the Honourable Society of Lincoln's Inn: The Black Books*, vol.1, 1422-1586 (hereinafter *Black Books*), London, 1887, pp.446, 447; and cf. T.P.Smith, 'Lincoln's Inn and Brickmaking and Bricklaying in Tudor London', in prep.; there is a photograph of a traditional brick-axe in Lloyd, 1925, p.389.
15. P.Ryan, *Brick in Essex from the Roman Conquest to the Reformation*, Chelmsford, 1996, p.57.
16. On task work in the medieval building industry see D.Knoop and G.P.Jones, *The Mediaeval Mason*, 3rd edn, Manchester, 1967, pp.101-2.
17. J.H.Harvey, *Mediaeval Craftsmen*, London, 1975, p.144.
18. For an outline of Cowper's career see J.H.Harvey, *English Mediaeval Architects: a Biographical Dictionary down to 1550*, revised edn, Gloucester, 1984, pp.73-4; for other instances see Harvey, 1975, p.144.
19. Ryan, 1996, p.57.
20. Moore, 1991, pp.214-16, where it is noted that foreign-inspired architectural details do not occur after the later decades of the fifteenth century; see also M.Howard, *The Early Tudor Country House: Architecture and Politics 1490-1550*, London, 1987, p.172; 'By the early sixteenth century evidence for the involvement of foreigners disappears. Where documentation does survive, particularly in the case of the Royal Works [of which Bridewell Palace, of course, was an example], those involved in the making and use of bricks appear to have English names'; the remarks by Simon Thurley on the surname Johnson (or Jonson) as evidence for a 'Doche' origin need to be treated with considerable caution: Thurley, 1993, p.105; on alien craftsmen in England see also T.P.Smith, *The Medieval Brickmaking Industry in England 1400-1450*, British Archaeol. Reports, British Series 138, Oxford, 1985, pp.7-10.
21. Moore, 1991, p.228, with fig.101 at p.219.
22. Transcript of contract printed in Salzman, 1967, pp.574-5.
23. Salzman, 1967, p.144; at Lincoln's Inn in 1567-8 payments were made for 'redd owker and sysse for the funnelles' (chimney shafts); *Black Books*, 1897, p.447; and cf. Smith, in prep.
24. N.Cooper in N.Cooper and M.Majerus, *English Manor Houses*, London, 1990, p.135.
25. Moore, 1991, p.228.
26. Before the seventeenth century, too, nearly all brick firing used wood as fuel and this would have made the firing less easy to control: cf. M.Airs, *The Tudor and Jacobean Country House: a Building History*, Stroud, 1995, p.116.
27. In the Greater Netherlands in the Middle Ages there were regional variations between areas where it was normal to cut bricks to shape and those where it was normal to mould them to shape: J.Hollestelle, *De steenbakkerij in de Nederlanden tot omstreeks 1560*, 2nd edn, Arnhem, 1976, pp.58-9, with brief English summary at p.273; for various methods in East Friesland, Germany in the Middle Ages see R.Noah, 'Zur Architektur der Klosterkirche', *Berichte zur Denkmalpflege in Niedersachsen*, 4th quarter, 1984, 129.

## BRICKMAKING TERMS

### Some Additional Sources

#### Martin Hammond

Having received *BBS Information*, 75, October 1998, I have some additions to make to the list of books given by Roger Kennell in his article on 'Brickmaking Terms A List of Sources'.

F.M. Clews, *Heavy Clay Technology*, 1955

*Notes:* A traditional hand book in the same vein as A.B. Searle, *Modern Brickmaking*, which also deals with roofing tiles and salt-glazed drainpipes, and it has more information about the chemistry of clay.

Edward Dobson, *A Rudimentary Treatise on the Manufacture of Bricks and Tiles*, 1850.

(London: John Weale, 59 High Holborn).

Facsimile reprint of First Edition with an introduction, biography, notes, bibliography and index, edited by Francis Celoria, 1971.

(Stafford: George Street Press, issued as *Journal of Ceramic History* No. 5.)

*Notes:* Describes in great detail brick manufacture in Nottingham, Staffordshire, London, and Suffolk. Illustrated with scale drawings.

W. McKay, *Building Construction*, 1944; Third Edition, 1968.

*Notes:* Before getting down to describing bricklaying, the opening chapter describes in detail the various types of bricks and brick clays, manufacturing methods, and machinery and kilns (shown in illustrations), and also the manufacture of lime and cement.

Alfred B. Searle, *Modern Brickmaking*, Fourth and last edition, 1956.

*Notes:* Describes in just over 700 pages how to make a brick the modern way, with notes on good practice and mistakes to avoid. The manufacture of virtually every type of brick, clay, machinery, and kiln in use at the time is described, including firebricks, sand-lime and concrete bricks.

A.B. Searle lived 1877 to 1967.

Unknown author, *Practical Masonry*, c. 1835

(Title page of my copy is missing)

*Notes:* This has several chapters dealing with brickmaking methods, particularly in the London area, bonding, construction of walls, foundations, arches, tunnels and drains, domestic coppers and ranges, gas retort settings, and various metallurgical furnaces. Illustrated with engravings.

As a postscript, I might add that, as far as I know, I am no relation to Adam Hammond, author of *Brick-cutting and Setting*, 1903, although I do have a copy of his book.

## Meeting the Brick Challenge

During the Summer of 1998, the British Brick Society held its Annual General Meeting in Cambridge on Saturday 13 June 1998 with a brief tour of colleges in the north of the city, a Summer Meeting in Essex on Saturday 25 July 1998, and an Autumn Meeting in Dorset on Saturday 26 September 1998. Organisation for each of these meetings was respectively the work of Terence Smith, David Kennett and Martin Hammond. The society's thanks are due to each.

Reports of these follow. Included also in this section is an account of the society's appearance on 'The Big Breakfast' television programme on Monday 29 September 1998 and note of brick entries on the Internet.

### CONNECTING THE VISITS

Visits in early Summer 1998 had links within themselves and between visits, sometimes going back to previous years.

The third Earl of Sussex altered the south front of the north range of New Hall, near Boreham, in 1573, a decade after he had built the brick church at Woodham Walter. The earl's widow, Lady Frances Sidney, Dowager Countess of Sussex, left funds to found a new college in Cambridge in 1594. An early addition to the college was Sir Francis Clerke's range of 1628. Clerke, a Bedfordshire gentleman, founded a school in the village of Houghton Conquest, but no building survives; the schoolmaster was to be appointed by Sidney Sussex College. He was also a neighbour of Lady Mary Sidney, Countess of Pembroke, who in 1615 began the large brick house, Houghton House, which the society visited in 1994. The Dowager Countess of Sussex was the aunt of the Countess of Pembroke.

A comparative indication of the size of these three buildings is given by the Hearth Tax levied in the reign of Charles II. New Hall, Boreham, as befits a former royal palace, was the second largest house in Essex at 117 hearths: only another former royal palace, Audley End, was larger at 129 hearths. Houghton House was the fourth largest house in Bedfordshire at 52 hearths but Sidney Sussex one of the smallest of the Cambridge colleges with 55 hearths.

DAVID H. KENNETT

### CAMBRIDGE

The 1998 Annual General Meeting was held on 13 June at Sidney Sussex College, Cambridge: it was well-attended and minutes have been sent to all members. Following a break for lunch, our Chairman, Terence Smith, assisted by David Kennett, treated us to a guided tour of college buildings which included brickwork of great diversity. Although the weather was atrocious, with almost all of our walk in the rain, the combination of an interesting itinerary, a knowledgeable guide and a dedicated group of members ensured an enjoyable and rewarding afternoon.

We began in Hall Court, the oldest part of Sidney Sussex College, designed by Ralph Symons. His sixteenth-century brick buildings were faced with Roman cement rendering in the nineteenth century when Sir Jeffry Wyatville added crow-stepped gables, battlements and a stone-faced porch to the centre of the east range. Leaving the college, our attention was drawn to Blundell Court in King Street, built in rat-trap bond brickwork; designed by Howell, Killick, Partridge and Amis its plum/brown facing bricks and dark grey aggregate concrete window surrounds are redolent of 1960s British architecture.

To members who had been to Williamson Cliff brickworks on the BBS Lincolnshire outing in May 1998, Cromwell Court in King Street was pointed out as an example of the use of their



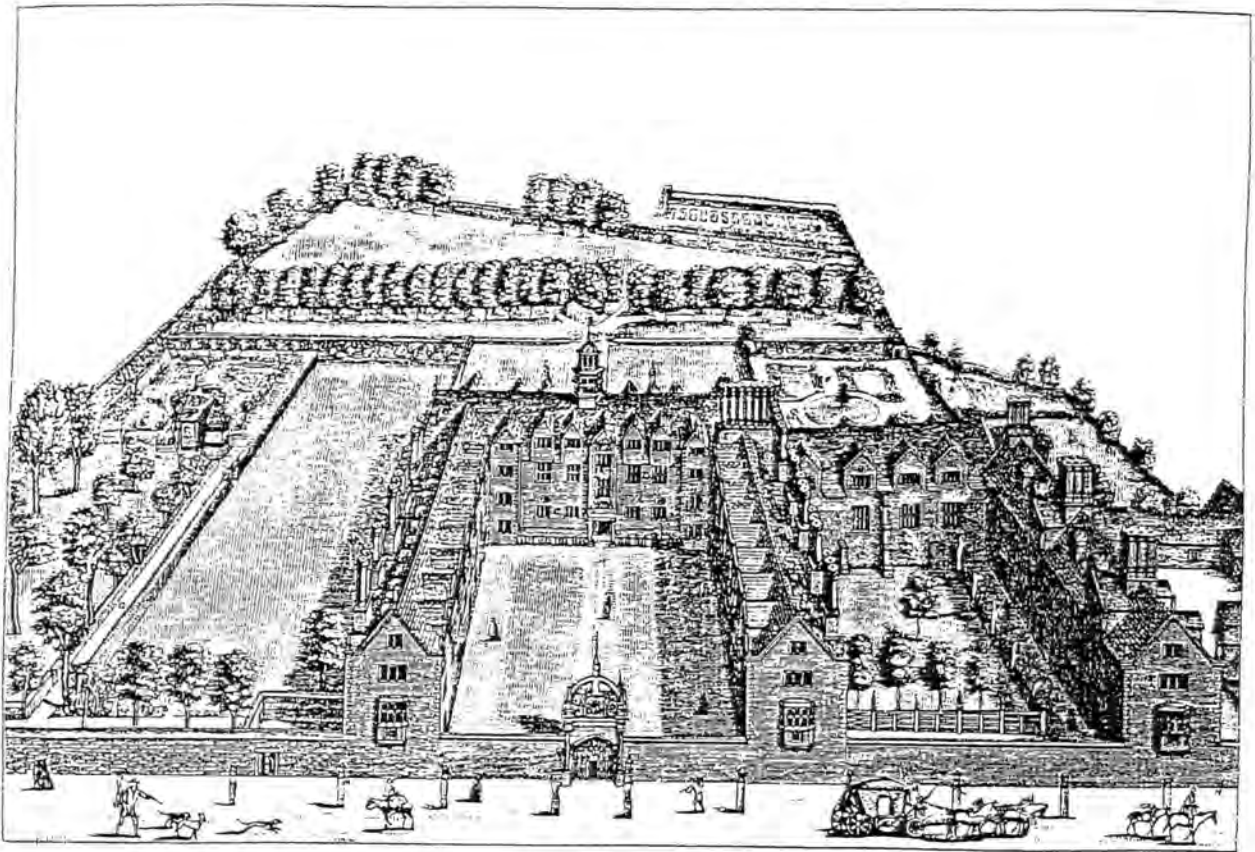


Fig. 1 Sidney Sussex College, Cambridge, as it appeared in the late seventeenth century. The original buildings paid for by Lady Frances Sidney's benefaction are the ranges on the left and in the centre with the hall at the back of the court. Sir Francis Clerke's range is on the right and the chapel, modified from the surviving Greyfriars buildings in 1600 is the rear block on the right.

From David Loggan's print of c.1688 (courtesy T.P. Smith)

hand-made facing bricks. Passing good nineteenth-century terrace housing of Cambridge gault bricks in Malcolm Street, we next visited Jesus College, pausing to note the features of the late-fifteenth-century brick gatehouse. Within the college we saw remains of earlier monastic stonework as we passed through the oldest part of the college to the twentieth-century additions to the east. Enclosing the south-east corner of Chapel Court is a 1922-23 and 1931 building of dog-leg plan designed by Morley Horder. Its robust, brick architecture with decorative brickwork features at door and window openings formed without the use of specially shaped bricks is reminiscent of the work of the Amsterdam School, but rather more restrained.

Some time was spent in admiring the meticulous brickwork detailing of the recently-completed Library building designed by architects Evans and Shalev. The pale buff Williamson Cliff hand-made bricks were of a specially made thin format (c.41 mm) and purpose-made specials had been produced to maintain the bonding pattern at the corners of the building and the freestanding walls to the external stairs without conventional closers or on-site cutting. The mortar jointing also caught our attention. It had a fine groove in the centre of the bed joints formed using a straight-edge and drawing the edge of a steel jointing tool along it when the mortar has started to set, or had "hazelled". Such a joint is called a "scribed" or "ruled" joint. The mortar colour was unusually light and subsequently it was found that this had been obtained by

specifying a rather special mix of crushed French limestone (instead of sand), lime and white Portland cement.

From Jesus we walked to Magdalene College passing more attractive nineteenth-century brick housing in the Portugal Place area. By now the rain was heavy and curtailed our enjoyment of Magdalene's fifteenth- and sixteenth-century brickwork. Attention to Edwin Lutyens's Benson Court of 1931-32 was necessarily brief, but we were able to muster beneath the awnings being erected for the May Ball in the quadrangles of St John's College to hear of early diaper work originally evident there, the tour ended with a vote of thanks to our stalwart guides on the steps of the chapel overlooking the splendid new library in red hand-made stock bricks designed by Edward Cullinan.

MICHAEL HAMMETT

## NEW HALL, BOREHAM, ESSEX

It was oft espied from the train, speeding into London Liverpool Street on the second stage of the weekly journey from Great Yarmouth to Bristol; it was last seen as my cat and I went from Norfolk on 1 April 1994. Four years later, the front one has seen from afar so many times came into view: seven great bows inserted into the façade of the private range of the Tudor palace. The north wing is all that survives of what Henry VIII built in 1517 and the third Earl of Sussex altered in 1573.

Our visit began with coffee in the east range of the new north court. This and the adjoining north range, very skilfully done for the school run by the canonesses of the Order of the Holy Sepulchre; it is modern but very good brickwork in multi-coloured bricks. The work of the 1920s adding a block west of the celebrated range gave it a front in keeping with its much older neighbour. In 1800, the canonesses had constructed a red brick block to the east of the surviving front.



Fig. 2 New Hall, Boreham, Essex. Six of the seven bows of the 1573 front to the 1517 of the north range of Henry VIII's quadrangular palace. The seventh bow is hidden behind the 1920s range on the left.

Brick at New Hall goes back many centuries. The undercroft of an early L-shaped range has central octagonal pillars of brick. The site is first called 'New Hall' in 1301 when it was the summer residence of the Abbot of Waltham Abbey. The brick pillars reminded me of those of the arcades of the churches of Gorleston-on-Sea and Reedham, both Norfolk, and both dating to around 1300. The pillars at New Hall are less elaborate than those of the undercroft of St Olave's Priory, Herringfleet, Suffolk (now administratively Fritton, Norfolk) also c. 1300.

What we see now is the north range of the main courtyard of the Tudor structure. Eighteenth-century prints show the gatehouse range and those connecting this to the present building. A plan made between 1697 and 1717 is remarkably accurate: excavations for drains have shown walls in predicted places and where the ground is parched on the front lawn reveals the principal walls. We were able to see a modern enlargement of the plan in the school's archives.

Striking in the centre of the surviving range is the bow with the door above which are the arms of Elizabeth I who granted the manor and its appurtenances to her cousin, Thomas Radcliffe, third Earl of Sussex. The stone arms show the supporters as the lion and the dragon, emphasising the Welsh origins of the Tudors: there is a magnificent stone dragon in the grounds which dates to Henry VIII's time. Inside there is one small portion of late Tudor decoration in the upper room of the easternmost bow.

Equally distinctive is the present use of the Tudor range as the school chapel which occupies the central portion of the range. The interior has decoration of the 1660s done for General Monck, altered in the 1740s for Lord Waltham and in 1799 for the Canonesses. It is a room in which an Anglican who prefers the liturgy to be that of *The Book of Common Prayer* would have felt at home in the observance of the Eucharist.

Our thanks are due to New Hall for allowing the society to visit and for providing coffee. The society is particularly indebted to Sister Mary Stephen of the Order of the Holy Sepulchre who was a most excellent and gracious guide.

DAVID H. KENNETT

## ST MICHAEL'S CHURCH, WOODHAM WALTER, ESSEX

The church is a revelation: brick, not unusual for Essex, and built in the reign of Elizabeth Tudor, unusual for any county, as there are only six in England.

Thomas Radcliffe, Earl of Sussex, succeeded to his father's estates in 1557 and within five years had obtained from the new queen a licence to build a new church. Consecration was on 30 April 1564.

Externally, the bricks were new, with attractive stepped gables to the nave, chancel and north aisle. Internally, major fittings were re-used from an earlier church. The arcade belongs to a church enlarged in the 1450s or 1460s; a benefaction for a north aisle of 1454 is known. The aisle roof is of that date and that over the nave and chancel is more than a hundred years older. The windows were also brought from an earlier building.

The society's thanks are due to its member, Patricia Ryan, for her guidance at Woodham Walter, and to her husband for working out how to turn the door handle at the church so that we could see inside.

DAVID H. KENNETT



## MALDON TOWER

Our visit to Essex concluded with a tour of Maldon Tower, originally known as D'Arcy Tower, Maldon, after its builder Sir Robert D'Arcy. It was built c.1435-40 as the defensible part of D'Arcy's town house, the rest of which was timber-framed and demolished many years ago. D'Arcy was knight of the shire for Essex eight times between 1416 and 1445 and Burgess in parliament for Maldon in 1422. He was also among the half dozen richest landowners in Essex in 1436.

In 1575-76, the brick tower, by now in poor repair, was purchased by Maldon Town Council and at various times fitted out as the town gaol on the ground floor, the court room on the first floor and the council chamber on the second floor. In connection with these uses a porch with four Tuscan columns was added in about 1830.

The building retains its original brick newel stair in a small turret to the north-east; the stair rises anti-clockwise. The moulded brick hand-rail survives on the ground floor and from the second floor to the roof.

The interior, the stair and the view from the room all excited much comment. The society is grateful to Mr John Silverwood of Maldon for giving up his Saturday afternoon to show us round the tower and for his helpful comments on its uses.

Our visit to both Maldon and Woodham Walter was much assisted by the provision of a coach through the good offices of and personal expense of BBS member John Sears. It was a most kind thought.

DAVID H. KENNETT

## BEACON HILL BRICKWORKS, CORFE MULLEN, DORSET

A group of about twenty members and guests visited Beacon Hill Brickworks, Corfe Mullen, near Poole, Dorset, on Saturday 26 September 1998, where they were welcomed with coffee and biscuits by managing director David Ballam, works foreman Jeff Lambert and visit organiser Martin Hammond. After inspecting the model of the works and the adjacent landfill site and waiting for the heavy rain to ease off, we split into two groups for a tour of the works.

The sand is dug on site, and the quarry is subsequently back-filled. The blue clay of the Poole Formation (Bagshot Beds) found below the sand is used to form a watertight lining to the landfill site, two metres thick, compacted by the heavy earth-moving equipment used, with a waterproof butyl rubber sheet. The clay, a Dorset ball clay, contains too much iron to be useful for a fine earthenware. In the late nineteenth century, it was once mined and used for making firebricks at a works which stood near the present factory site.

The sand is used as dug and mixed thoroughly in batches with six percent quicklime powder from Buxton, Derbys., and enough water to hydrate the mix. After two minutes mixing it is moved by conveyor to the hydrating silos where it remains for twenty-four hours, by which time the lime has slaked. From there it passes by elevator to the secondary mixing pans where coloured oxides - based on iron oxide, reds, browns, yellows, greys - and 6 mm crushed flint from Ringwood, Hants., for flint-lime bricks are added as required. The prepared mix is conveyed to a feed hopper over each of five presses, all except one of German manufacture and hydraulically operated: three by Bruck-Schlosser, Osnabruck, and one by Dorstener Eisengiesserei, Dorsten, Westphalia. The odd one is a Sutcliffe-Speakman 'Emperor' duplex rotary-table press used for standard specials. The Dorstener is used for multi-coloured bricks, produced by feeding two different-coloured mixes into the moulds.

The presses for eight bricks at once, on-edge, where there is no frog: pressure of 2000 psi is applied. One press can produce an autoclave trolley load of 960 bricks in 16 minutes. The bricks



are of the consistency of mortar which has not fully hardened. For facing the aggregate can be exposed by brushing a stretcher and two header faces with a stiff brush as they come off the press. Stacking of the trolleys is done automatically.

The sand-lime process resulted from research in Germany into making artificial stone. It was patented in 1881 and the first sand-lime brickworks in Poole went into production in 1905. Besides Beacon Hill, which was established in 1937, there were four other sand-lime plants working at various times in the area.

The bricks are set tight, on edge, in four walls across the trolley, which runs on 18-inch gauge track. They are taken to the press house on a transfer car from which they are loaded into the autoclaves for curing. Each of the five autoclaves is an insulated steel pressure vessel 60 ft (18 metres) long, 6 ft 6 in (2 metres) in diameter, holding 16500 bricks on seventeen trolleys. Steam is generated in a Cochrane 'Chieftain' boiler fired with heavy fuel oil and is fed into the autoclave at 200 psi and 200°C. Pressure is maintained for five hours for the common bricks and for eight hours for facings; it is then released into an adjacent autoclave just loaded, or "blown down" into a sixth, dummy autoclave with an open chimney. The door, of inch-thick steel, secured with massive bolts, is released and swung open and the train of trolleys winched out on a cable. One brick from each trolley is tested for crushing strength in a nearby test house.

The trolley packs are taken by tractor-mounted grab to the de-stacking sorting and packing shed. There the bricks are placed on a conveyor and pass before sorters who pick out imperfects and throw them into a skip. The others are dipped in a 1:9 dilute hydrochloric acid bath to remove surface lime scum and made up into fork-lift packs. The packs are then shrink-wrapped and stored outside ready for dispatch.

Specials are made in a separate plant. Besides the 'Emperor' press, purpose-mades are formed in heavy steel moulds with hinged sides, hand-filled with mix which is then compacted in the two Gosling and Gatensbury presses or, as preferred, a modified stone-cutting guillotine. An output of a hundred per day per man is considered reasonable.

One problem with sand-limes is air-drying after pressing which changes the surface colour slightly and remains even after curing. It can be avoided by getting the bricks off the press and into the autoclave as quickly as possible.

The disastrous consequences of not shutting the autoclave door properly is shown by an article from *The Poole and Dorset Herald* reproduced in V. Stout, *Around Kinson Pottery*, 1993. William Carter was the son of Jesse Carter, founder of Carter Tiles and Poole Pottery. Kinson Pottery made salt-glazed stoneware and hand-made clay facing bricks. William's son, Herbert, introduced the sand-lime process in 1905 to use up the large amounts of sand found in association with the clay in their pits. Apparently an asbestos-rope seal around the door had not been fitted properly. Istock suffered a similar incident at the Superbrue Weeford plant, near Lichfield, Staffs., on 31 July 1971, which happened during a thunderstorm and left one night-shift worker dead.

The tour concluded in the works canteen where David Ballam brought this part of the meeting to a close. Our thanks are due to him and Jeff Lambert for giving up their Saturday morning to show us the works.

MARTIN HAMMOND

## THE OLD TOWN, POOLE, DORSET

After the tour of Beacon Hill Brickworks, a smaller group visited the old town of Poole. On the way we stopped first at St Michael's church, Hamworthy, where John Barham opened the church for us. After twenty minutes we moved to the Old Manor House (1610) where we met the new owner, Peter Luck. He is putting together a package of measures with the local conservation

officer to "put it back as it was". Some repairs have been done over the years, not always to the highest standard, and much needs to be done.

After lunch, a depleted party met outside Poole Pottery for a guided walk round the town centre, looking at buildings mostly of the eighteenth century with some Victorian and modern buildings. Fortunately, the rain held off for this, starting again just as we completed the day. Those who did come to Dorset did not, I fear, see the county at its best or enjoy the superb view over the town and harbour from Beacon Hill. It was overcast and damp when not actually raining. But the society's previous visit to the area in February 1978 was in the wake of one of the worst snowstorms the county had experienced this century.

Copies of the historical notes on the buildings visited are available from the undersigned at St Annes, 13 Jackson Road, Parkstone, Poole, Dorset BH12 3AJ; please enclose an s.a.e. (a second class stamp will suffice for the 3 sheets). Tel: 01202-746102.

MARTIN HAMMOND

## THE BIG BREAKFAST

It all happened so quickly really. First, a telephone call from the society's secretary to ask if I would be prepared to appear on 'The Big Breakfast' in a slot called 'Join our Club' and then a call from Channel Four's programme controller Caroline McKay to arrange pick-up by taxi. I must admit, although I had heard of 'The Big Breakfast', with Johnnie Vaughan and Denise van Outen, I had never actually watched it (07.00 a.m. to 09.00 a.m. is too busy for tv) and was just a little apprehensive. No chance of a preview: it was the weekend; so it was a case of going with the flow, as they say.

It was 04.45 a.m. on Monday when the taxi arrived to drive me to the London studios. Of, yes, by the way, the show goes out *live*.

Fellow BBS member Gerard Lynch was already supplied with coffee and was being briefed when I arrived and we were soon joined by Francis Cherry. Part of the preparation for the three of us was to be "wired up" for sound; before long we were led off to the 'house' where the action would take place. It was chaotic. As a fat-bristled make-up brush was swished over my face, I asked "which one's Johnnie?" The make-up artist burst out laughing at the very thought of *anyone* not knowing. This was when I suddenly felt my age: the place was teeming with young people and they were in party mood. The living room, with vividly coloured furnishing, was our 'set' and we were asked to take a seat on the sofa and, as countdown began, offered yet more coffee. It was warm under the lights. Whatever might be imagined, one couldn't really be prepared for the laid back nature of the presentation; it seems almost anything goes, but somehow it was impossible not to be caught up in the whole atmosphere. The fast-talking Johnnie Vaughan soon had everyone feeling involved. Some of the jokes were appalling, but it really didn't matter. On air or off air, it was a job to tell the difference. Camera operators reported on their weekend, football match headlights, newspaper headlines and other stories were reviewed. Questions were posed on crazy statistics, a so-called reported 'via satellite from Hawaii' came in for an unexpected drenching from a wave (bucket of water) and the time the heavy-looking camera, slung over shoulders were swinging round the room. It was clear that whatever we had been led to expect, anything could happen here.

Following a commercial break, the build up to our interview came: "Bored? get no hobbies? no friends? plenty of time on your hands? ... .. don't just sit at home 'Join Our Club'."

A few basic questions came first: why and when did your society begin? How much does it cost to join and what do you get? and then "dim the lights" and a look at a few slides. Francis did a pretty good job extolling the virtues of a crinkle-crankle wall, despite the inevitable interruptions and sound effects. Gerard got into his stride over Henry VIII and moulded or carved

Tudor chimneys just before a rogue slide appeared on the screen; someone suggested the subject (blond, bikini-clad, female) was the President of the Society. The next slide showed a member trying her hand at throwing a brick and Gerard skilfully brought the interview back in line with his description of the process. My contribution as the 'non-expert' was to show the brick I had made at the Williamson Cliff visit (May 1998). But there was a problem. I had been expecting to be asked about making a brick by hand and Johnnie Vaughan had already quizzed Gerard about that. Sorry, guys, if I let the side down but before I knew it I heard myself relating the process of tuck pointing restoration (in the manner described by our Chairman on my first BBS outing - ask him if you haven't heard it). Before we knew it our time was up and the show moved on: from bricks .... to an undergraduate from Sussex University who had discovered a new planet 156 light years away.

We were invited to stay till the end of the show and then we were rewarded with the *actual* big breakfast in the canteen - yes, the works - it was good. Then, taxi waiting outside, cruising down the motorway ... back in Cambridge .... and it was all over. What a way to start Monday morning. I don't imagine too many regular viewers will have joined the society as a result of our two minute appearance on this crazy programme but I certainly found I was talking brick with more than one curious backstager on the day and work colleagues and others who did not see the programme but heard I was there and wanted to know "so what is this fascination with brick, then?" Now there's a question.

MARY LOCKWOOD

## BRICK ON THE INTERNET

Two members each report that they have set up a homepage on the Internet to include brick interests.

David Cufley of Dartford, Kent, has set up a homepage for both the CUF(F)LEY one name study and his 'Brickmakers Index'. The address is:

[http://ourworld.compuserve.com/homepages/david\\_cufley/](http://ourworld.compuserve.com/homepages/david_cufley/)

The brickmakers index is to both brickmakers and other brickyard workers and primarily aimed at genealogical research.

Sandra Garside-Neville of York has set a 'Brick and Tile Noticeboard' whose address is

<http://ourworld.compuserve.com/SGarside/bt.htm>

Included in the 'Brick and Tile Noticeboard' are details of BBS meetings and any others which she has come across. It is the source of the query from Lynne Dore of Victoria, Australia, printed elsewhere in this issue of *BBS Information*.

DAVID CUFLEY

SANDRA GARSIDE-NEVILLE



## BOOK REVIEW

Susan Tunick, *Terra-Cotta Skyline New York's Architectural Ornament*.

xvi + 160 pages, 168 figs.

New York: Princeton Architectural Press, 1997; ISBN 1-56898-105-8; price £30.00.

Introductions to cities come in many forms. My own to Manchester came with a view of Robert Mackison McNaught's 1927 design for the second phase of the UMIST building between Whitworth Street and Granby Row: the building was not opened until 1957 stayed faithful to the orange and buff-brown terracotta originally envisaged.

New York has a similar slender tower covered with blue-green terracotta, the McGraw Hill Building designed by Raymond Hood and opened in 1931. Of it, *The New Yorker* opined:

What do they do with that building when it gets dirty? It's all green tile. They don't paint it. They don't sandblast it. They just run over the whole thing with a damp cloth just the way you would the inside of a bathroom.

There is a close similarity in the profiles of these two buildings as well as in their external covering: I do not know if Raymond Hood was known to either R.M. McNaught or J.B. Gass, both of the Bolton architectural practice, Bradshaw Gass and Hope. By co-incidence, I first partly became aware of terracotta in New York through the McGraw-Hill Building as illustrated in *Skyscraper Style: Art Deco New York* by Cervin Robinson and Rosemary Haag Bletter.

Susan Tunick who has already given us *Terra Cotta Don't Take It For Granite 3 Walks in New York City Neighbourhoods*, 1995, and 'Architectural Terra Cotta: Its Impact on New York' and other articles in *SITES 18*, 1986, has brought her researches together in a beautifully produced book, *Terra-Cotta Skyline New York's Architectural Ornament*. If the guide book and her articles are difficult to find, the book from a major publisher is easy of access and easy to read.

The thirteen chapters are grouped in four parts. The five chapters in Part One 'America's Early Terra-Cotta Industry: A Struggle for Acceptance' describe the use of terracotta for decoration and as a walling material between 1848 and 1900. A single chapter in Part Two, 'The Factory: From Start to Finish' is concerned with the manufacture of terracotta. Part Three is entitled 'Color, Design, and Iconography in Terra-Cotta Architecture'; its five chapters include two on glazes that stimulate stone and colour and iconography in small buildings and three on discrete historical periods, respectively 1891-1906, 1910-29 and 1927-31. The second of these periods is concerned with the evolution of skyscrapers and the third with innovative colour. Part Four explores 'The Business of Terra-Cotta' in two chapters. There are five appendices: they occupy a quarter of the text.

The illustrations, including those in colour, are superb: very crisp in the resolution of their detail. One, however, is reproduced too small: the photograph of two two-horse wagons laden with straw-packed terracotta blocks for the Woolworth Building appears in larger format in *SITES 18*.

Prefacing each part is a double page spread. That to Part Four is a detail from "Group Photo of America's Finest Buildings" which was produced in 1937 for the catalogue of the Northwestern Terra Cotta Company. This reviewer had great fun identifying the *Chicago* buildings featured: as their name implies Northwestern were based in Chicago. Sadly, like the Atlantic Terra Cotta of New York, who clothed the Woolworth Building, just as one of that firm's constituents, the Perth Amboy Terra Cotta Company, had clad Louis Sullivan's Bayard-Condict Building and so many more firms, the Northwestern Terra Cotta Company is no longer in business. Tunick's final Appendix lists only four manufacturers currently working, two of



whom, Ibstock Hathernware at Normanton-on-Soar, Leics., and Shaws of Darwen, Lancs., are not in the U.S.A. Incidentally, the British Brick Society has visited both of these: in 1988 before the Annual General Meeting and 1995.

Reading *Terra-Cotta Skyline* one is reminded throughout by English parallels. The arcaded lobby of the Charlesgate residential hotel in Boston, Mass., of 1891 struck me as very close to the interior of the banking hall of the Refuge Assurance Building, Oxford Street, Manchester, also of 1891, by Paul Waterhouse, newly installed as a partner of his father's firm. Certainly the 1910 central tower of the Manchester edifice in its brickwork echoes the great tower of Solon Beman's Grand Central Station in Chicago of 1889-90.

On the other hand, there are things no English architect had the audacity to produce: the mural on the top of the Fred E. French Building, Fifth Avenue, New York: Progress, Integrity and Watchfulness.

Terracotta ornament was meant to be seen: witness the black and white top to the Fuller Building, East 57th Street, New York. If it was not used, it was not seen, and the use of terracotta declined with the near cessation of construction following the Great Crash. Skyscrapers were a natural environment for the cladding: none were building in Chicago between 1935 and 1955 and the Rockefeller Center in New York was clad in stone. Similarly in Manchester, there was a move to Portland stone in the 1920s: Edwin Lutyens' Midland Bank and Harry Fairhurst's Ship Canal House signify the change.

It has been a long haul to again have terracotta accepted and as the demise of the Federal Seaboard Terra Cotta Company in 1968 illustrates the future of the material became uncertain. This society's visit to Shaws of Darwen showed how restoration work can make a firm profitable and it is a contrast with the U.S.A. that two English firms can compete with their American rivals, Gladding McBean and Company of Lincoln, California, and Boston Valley Terra Cotta of Orchard Park, New York.

The Federal Seaboard Terra Cotta Company did create some memorable pieces. Cleveland Zoo's Pachyderm Building of 1955 is a more humane than its English equivalent, the Elephant House at Whipsnade Zoo of 1935 by Lubetkin and Tecton. Gritty concrete is of infinitely less appeal than a rough-surfaced orange brick with mother and child elephant in grey-buff terracotta on the outside. It is small wonder that Victor Schrenckengost's mural is so popular.

Tunick uses her Appendix D to list two hundred significant terracotta buildings in New York. Sadly, her Appendix A lists recent losses. One of these was the Marine Grill Room in the McAlpin Hotel. Here, among other things, was shown the *RMS Mauretania* docking in New York. The Blue Riband vessel is shown against the blue riband skyline. It is that skyline which was Susan Tunick's principal focus but her book goes far beyond the brief implicit in the title.

DAVID H. KENNETT

## BRICK IN PRINT

In the second half of 1998, the Chairman and the Editor of the British Brick Society received notice of a number of recent publications with items of interest to members of the society.

Articles in this round-up of recent publications are given in author order, with a multi-authored item at the end.

It is hoped to make this survey of articles and reports a regular feature of *BBS Information*. The next survey will appear in *BBS Information* 78, October 1999. Members involved in publication or who come across articles are requested to send brief summaries to the Editor.

DAVID H. KENNETT

1. Mary Liquorice, *The Hartleys of Fletton Tower*.

Cambridgeshire Libraries, 1996, ISBN 1-870724-54-2, price £5-95.

This is principally a history of the Hartley family and their home, Fletton Tower. H.B. Hartley became Chairman of the Whittlesea Central Brick Company which was formed in 1898 and existed until the 1960s when it was bought by the National Coal Board and afterwards (1974) by the London Brick Company. Another member of this family was the novelist, L.P. Hartley, who wrote *The Brickfield* in 1964 and its sequel *The Betrayal* in 1966. The most famous of his novels was *The Go-Between*, published in 1953. *The Brickfield* is based on the Crowland area, north-east of Peterborough.

Copies of the booklet are available from Peterborough Museum which includes exhibits and information about the brickmaking industry in and around Peterborough.

ADRIAN CORDER-BIRCH

2. H. Rombaut and P. de Niel, 'De Steenbakkerijen Verstrepen omstreeks 1875', *Het Wiel*, III, 1, 1993; III, 2, 1993; V, 1, 1995; VI, 1, 1996.

Four parts of an extended article (in Flemish) on labour conditions and the organisation of a brickyard in the Rupel region of Belgium at the end of the nineteenth century. Two main sources are combined: the archives of the brickyards of Michael Charles Verstrepen and Sons at Hoek-Boom and a fascinating interview conducted by Roland Baetens with a former workman, Jan Van Reeth, who gave considerable information concerning the brick industry before 1914. The first part deals with work contracts and conditions, and subsequently with factory organisation. The three following parts detail the journey of the clay from excavation through preparation to production. Products such as bricks, tiles and roof tiles are distinguished. The work of loading the kilns is described. All four articles have copious references and many excellent illustrations.

*Het Wiel*, *Tijdschrift voor de Geschiedenis van de Rupelstreek en Klein-Brabant*, is the journal of the Ecomuseum en Archief van de Boomse Baksteen, Niel, Belgium, whose address is Dorpsstraat 33, 2845, Niel, Belgium. The price per issue is 150 Belgian Francs.

P. DE NIEL

3. C. Thomas, B. Sloane and C. Phillpotts, *Excavations at the Priory and Hospital of St Mary Spital, London*.

London: Museum of London Archaeology Service Monograph 1, 1997.

Although not primarily concerned with ceramic building materials, this important publication refers to them throughout and also includes documentary references to brickmaking in parts of Tudor London. Naomi Crowley contributes a specialist report (pp.195-201) on ceramic building materials - floor tiles, roofing tiles, and medieval and post-medieval bricks, all with clear fabric descriptions. The result is a useful short account of many early ceramic building materials in the nation's most important city. But her conclusions should be read with some caution: pantiles never "superseded peg-tiles as the more common form of roofing in the south-east"; and since she recognises that the earliest examples are from the Netherlands, it is odd that she should regard those from the Royal Mint as perhaps suggesting early-seventeenth-century English manufacture when all they prove is early-seventeenth-century use.

T.P. SMITH

4. J. Thrift, 'Life is Sweet', *Guardian Weekend*, 8 August 1998.

Tecton, principally Berthold Lubetkin, designed the three tower blocks of Spa Green for the London Borough of Finsbury in 1948. With brick and tile façades, they were initially built to a very high standard; refurbished in the 1990s, they show the idealism which motivated Lubetkin's

practice. When the foundation stone was laid, Lubetkin said:

Architecture is, and always has been, primarily an art, and the ability to produce a certain emotional response in the beholder is an integral part of its contribution to human civilisation.

DAVID H. KENNETT

5. Various Authors, 'Brick', in J. Turner, ed., *The Dictionary of Art*, vol. 4, *Biardeau to Bruggermann*, London and New York: Macmillan, 1996.

Volume 4 of this multi-volume publication includes thirty pages (pp.767-797) in double columns of quite small print on the subject of 'Brick'. There are three major sections: Materials and Techniques; History and Uses; and Conservation.

Under 'Materials and Techniques', BBS member Martin Hammond outlines *Manufacturing methods* and Margaret Henderson Floyd adds a brief note on *Terracotta* (the subject is given more extended treatment elsewhere in the dictionary) before Martin Hammond resumes with a consideration of the *Finishing* of bricks. Anthea Brian succinctly describes the principal *Bonds* and former BBS president, the late Nicholas Moore considers *Nogging* and medieval and Tudor (but not Victorian) *Diapering*.

Under 'History and Uses', by far the longest of the principal sections, Yves Calvet gives an account of brick in the *Ancient World* and Robert Ousterhout considers brick in the *Byzantine World*. A larger section follows on the 'Post-Classical World ... *Before 1600*' beginning with BBS member David H. Kennett giving a fairly long account of brickwork in *Italy*. Somewhat shorter sections follow on *Germany, Austria and Switzerland* by Robert Noah and on *The Low Countries* by G. Berends. Nicholas Moore deals with *The British Isles* and David H. Kennett contributes shorter considerations of both *France* and *Spain and Portugal*. Slightly longer is the section on *Scandinavia* by BBS member Terence Paul Smith, and this is followed by a long piece on *Eastern Europe and Russia* by Maria Brykowska. 'The Western World ... 1600 and after' - from America through Europe to Australia - is dealt with in a six-page essay, sub-divided by century, by Terence Paul Smith. Outside the Western World, *Islamic Lands* are considered by Sheila S. Blair and Jonathan M. Bloom and *Africa* is examined in a shorter section by Margaret Carey. *The Indian Subcontinent* is dealt with by Michael D. Willis, *Central and East Asia* and *South-East Asia* by Sian E. Jay, and the *Pre-Columbian Americas* by Daniel M. Jones.

In the final principal section, matter concerning 'Conservation' of brickwork are considered by A. Elena Charola.

Each contribution has cross references to the rest of *The Dictionary of Art* and each carries a select bibliography. There are three line drawings, sixteen photographs, and cross references to illustrations elsewhere in the work. To this reader (and contributor) it seems that there is a certain imbalance in the relative lengths of the essays: surely, for example, the Low Countries before 1600 warrant *more*, not *less*, space than the British isles before 1600? It ought to be added, in fairness to the authors, that this is no fault of theirs: contributors were given a non-negotiable allowance of space by the editors. This reservation aside, the extensive entry on 'Brick', considered as a whole, constitutes an extremely valuable general survey of the subject - a judgement which I hope may, even perhaps, include my own contributions. It is gratifying that several BBS members have been involved in the project, whilst others - Richard Harris and Tim Tatton Brown - have contributed non-brick entries to the work.

The price of this multi-volume publication will put it beyond the pockets of most individuals, but good reference libraries should possess copies, as do, for example, Birmingham City Library, the Guildhall Library, London, and Luton Public Library.

T.P. SMITH



## NEW HOME FOR BRICK COLLECTION

I am pleased to report that my substantial brick collection has a new home. In response to the plea in *BBS Information*, 74, June 1998, Chelwood Brick came to the rescue.

John Sandford, Chelwood's Technical Director, reviewed the displayed collection before its impending removal from a friend's outbuildings. He was very impressed and suggested that although there was not sufficient storage space at the nearby Cheadle Works, he could accommodate the collection at the Denton works in east Manchester.

Tony Woods, Environmental and Safety Officer of Chelwood, next came to view the 'pile' now at the front of my house. Equally impressed, he confirmed available storage space and offered transport to Denton, whereby two men spent all day palleting two lorry loads of brick, tiles, pavers, and other items and their removal.

I called recently to add thirty or so brick from the Barrow area, via BBS member Angus Glasgow, and discussed with Tony Woods and Wilf Burton, Works Manager, the present thoughts on the collection, these being that the majority of items will be used to line a new reception building at the plant whereby builders, architects, D.I.Y. enthusiasts, and other visitors can view and evaluate as desired from their relative standpoints.

I am indeed very grateful to Chelwood Brick not only for their interest and considerable generosity in solving my storage problem but for their enthusiasm in keeping the collections together, built up over many years, for the benefit of others in the future. I am sure that British Brick Society, as a body, will join me in thanking Chelwood Brick.

ALAN HULME

## HIORT'S PATENT CHIMNEY BRICKS

Mention in *BBS Information* 75, October 1998, of Hiort reminds me of another example of their use. When the London Custom House was conserved and adapted for modern use and access to the roofs was available, we saw a number of stretchers in the chimney stacks above the west wing stamped 'HIORT PATENT'. They were few and far between, at random, in no discernable pattern.

The west wing is the sole survival of Laing's building (1812-17) but it was completely underpinned and also altered by Robert Smirke following the foundation failure which caused the partial collapse of the centre-block in 1825. (RCHME's booklet on *The London Custom House*, 1993, outlines the story and provides references).

At the time we concluded that these stacks must have been included in Smirke's alterations, because Laing's building was too early to have incorporated Hiort's patent bricks.

Maurice Exwood's paper in *BBS Information*, 34, November 1984, and Hiort's own *Practical Treatise on the Construction of Chimneys*, 1826, imply that there should be a vertical band of half width bricks outside the patent flue, so perhaps only a few were stamped.

None of the works involved breaking into or taking down any of the flues, so we did not see any of Hiort's shaped bricks nor discover how extensively Smirke used them.

B. LAWRENCE HURST



## Brick Queries

From time to time the British Brick Society receives enquiries and queries about bricks, brickmaking, other ceramic building materials and brick buildings. These are printed with responses as space is available in *BBS Information*.

Replies are welcome.

DAVID H. KENNETT

## TERRA COTTA LUMBER BRICKS

Terra Cotta Lumber is a combination of two parts clay and three parts sawdust; when first this produced a porous brick known as Terra Cotta Lumber or Brickwood. It was said to be fireproof, vermin proof and sound proof. As an extruded product it was capable of being cut to any dimension and, as a porous material, it could be cut, sawn or nailed. The lightweight properties made it ideal for use in constructing walls or ceilings.

Terra Cotta Lumber was first developed in Britain, but its popularity may be due to its re-invention in the U.S.A. in 1876. Rights to manufacture this product were distributed on a global scale by the International Terra Cotta Company of Chicago. In Australia, its manufacture by the Victorian Terra Cotta Lumber Company of Brunswick, Victoria, was referred to as "Gilman's patented process for making Terra Cotta Lumber".

The rights for manufacture of the product were transferred to Melbourne, Australia, in 1885, and the bricks were used in a number of Melbourne's newly constructed buildings: some of these still stand today. The company subsequently moved its operations 60 km north of Melbourne to a small hamlet where it continues to operate until 1896. This move co-incided with the well-known depression of the 1880s, which produced a general collapse of the building industry, together with a rationalisation of the brick industry and the creation of a combine. The owner of the operations sold his majority shareholding in the company and commenced another, similar operation some 200 km further north.

In late 1996, I completed a thesis on a late 1880s brick site in north-eastern Victoria, Australia. I followed the transfer of the technology from the U.S.A. in 1885 to Australia and the operations of the company that manufactured it in Victoria.

My thesis examined why the company re-located its operations to the country and attempted to understand the economic impact of this re-location on the company's economic viability. It looked at the structure of the company, pricing of bricks, the competition, the sizing of the brick, and its use in structures.

The thesis contains maps, photographs, statistical analysis of brick size, colour range (using an Munsell colour chart), brick prices, graphs of building construction, numbers of brickyards over time, site by site description of brick finds or foundations, and capital structure of the company. Also included is a copy of a paper read before the Victorian Architectural and Engineering Association, published in *Builders & Contractors News and Building and Engineering Journal* of 1888-89.

I am looking to publish an extended account in due course.

I am keen to source any other information concerning this brick and particularly its origins in Britain.

LYNNE DORE

Research Assistant, School of Tourism and Hospitality, La Trobe University, Bundoora, Victoria 3083, Australia

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## DRAINPIPE MACHINE AT BURSLEDON BRICKWORKS, HAMPSHIRE

On open days at Bursledon Brickworks, the undersigned can usually be found demonstrating the hand-powered 'stupid' drainpipe extruder. This machine has a set of dies for 2 inch, 3 inch, and 4 inch pipes, and it is believed to have been made about 1860 and works as well as ever provided that the clay is of the right consistency. On the maker's plate John Whitehead of Preston, Lancs., describes himself as an agricultural implement maker, though later he specialised in brickmaking machinery. Can anyone shed any light on this man and his work, to get a more precise dating for the machine.

MARTIN HAMMOND

St Annes, 13 Jackson Road, Parkstone, Poole, Dorset, BH12 3AJ

## MONKHAMS, WALTHAM ABBEY - A CORRECTION

In the response to a query from Mrs Irene Buchan, Adrian Corder-Birch provided a detailed explanation of yellow stock bricks with a crown in the frog in *BBS Information* 75, October 1998. The bricks were found at Monkham's, Waltham Abbey, Essex.

Regrettably the Editor picked up an uncorrected page of proofs when doing the final paste-up for *BBS Information* 75, October 1998.

DAVID H. KENNETT

## BURSLEDON BRICKWORKS IN 1999

Bursledon Brickworks, Hampshire, have produced a list of their 1999 Open Days.

These are:

Sunday 14 March 1999	Science, Engineering and Technology
Sunday 18 April 1999	Traditional Crafts
Sunday 16 May 1999	Railways
Sunday 20 June 1999	Tractors and Stationary Engines
Saturday 11 September and Sunday 12 September 1999	Historic Building Construction

Opening times on each day are 10.00 a.m. to 4.00 p.m.

Otherwise, Bursledon Brickworks will be open to the public on Thursdays from 21 May to 23 September 1999 between 1.00 p.m. and 4.00 p.m.

On Open Days, the single-cylinder horizontal steam engine of 1885 which drove the machinery now restored to working order, is usually in steam, supplied by a modern oil-fired boiler. Regular visiting exhibitors bring traction engines, small stationary engines, and display traditional building crafts:: bricklaying, carpentry and joinery; wood turning, pottery, stained glass, and replica 'medieval floor tiles'. There is also a hands-on hand-made brickmaking session for children. A narrow-gauge quarry-type tramway is being constructed round the site, with two petrol-driven locomotives and side-tipping wagons. On sale are copies of the new, fourth edition of *Bricks and Brickmaking* signed by the author, who is the undersigned.

MARTIN HAMMOND

## BRITISH BRICK SOCIETY IN 1999

Five visits and meetings have been arranged for 1999. Full details of the first two are enclosed with this mailing. Details of the second two will be sent with the Annual General Meeting papers.

### Northern Spring Meeting

Sunday 25 April 1999

Leeds: walking tour of the city centre.

This meeting is being held on a *Sunday* to enable members to view the brick buildings of the city in more comfortable surroundings.

### Spring Meeting

Saturday 15 May 1999

South Buckinghamshire with visits to the sixteenth-century brick house at Chenies and the H.G. Matthews brickworks at Boddington.

### Annual General Meeting

Saturday 12 June 1999

Gainsborough, Lincolnshire

Annual General Meeting at Trinity Arts Centre, Gainsborough, with an afternoon visit to Gainsborough Old Hall, an important brick house whose earliest brickwork dates to the 1480s.

### July Meeting

Saturday 17 July and Sunday 18 July 1999

Beverley and Hull

The society wishes to take advantage of the Open House weekend in Hull in connection with the Seven Hundred Years of Brick Exhibition. There will be an opportunity to view the Ann Los brick collection at Woodmansey, Beverley, on this weekend.

### Autumn Meeting

Date to be confirmed: a Saturday in late September 1999

The western part of the City of London.

Future meetings are in preparation. Probable venues for 2000 include Wigan, Lancashire; Essex, including either Layer Marney Tower or Coggeshall Abbey; and Kew Palace.

Ideas for urban venues in future years include Blackpool, Coventry with a brickworks visit, Oxford, Stafford, Stratford-upon-Avon, Warwick, Wolverhampton, and Worcester.

A visit to rural south-east Warwickshire is being planned and will include the brick kiln of the Oxford Canal at Fenny Compton, where there was a tunnel at the canal's highest point. A visit to places of brick interest in central Staffordshire is a possibility for a future visit.

It is probable that the society will visit sites in south Suffolk in the near future.

The British Brick Society is always looking for new ideas for future meetings. Suggestions please to Michael Hammett, David Kennett or Terence Smith.