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BRITISH BRICK SOCIETY

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Cover Illustration:

Kew Palace visited by the British Brick Society after the Annual General Meeting, 10 June 2000. Built in 1631, the Dutch House is an early example of the use of Flemish Bond.

Editorial:
Contrasts from the 1930s

The British Brick Society had a very successful two-part meeting in Sussex on 20 May 2000: Brighton sewers in the morning, a walk round Lewes, the county town of East Sussex, in the afternoon.

Journeying through Sussex, both in getting to Brighton and in going from Brighton to Lewes, involved passing two of the icons of the use of concrete in the 1930s: Shoreham Airport and Saltdean Lido. I did not, on this occasion see the third, the De La Warr Pavilion at Bexhill-on-Sea, to the east of both destinations of the visit. On the return journey, I saw, for the first time in almost thirty years, the excellent brick-built Town Hall and Assembly Rooms at Worthing by Charles Cowles-Voysey which date to 1930 and onwards. In the previous decade, the same architect had designed the Town Hall in Bognor Regis; in the 1930s, Voysey's son would also design town halls in Cambridge, Watford and High Wycombe; the last in conjunction with a local architect, R.G. Brocklehurst. Sons often followed their father's profession in Edwardian England: Cowles-Voysey qualified in 1912. But there is a contrast. Voysey is best-known as a n architect of medium-sized country houses; his son, in the inter-war decades and particularly in the 1930s, is one of a number of architectural firms, both partnerships and individuals, who specialised in schemes for big municipal buildings.

When I thought about it, even more striking is the contrast in materials. Concrete was used for airports and lidos, but only in a restricted geographical area. Going by train between Birmingham and Coventry, one passes Birmingham Airport, one of several designed by another specialist architect, Graham Dawbarn. Like the airport at Shoreham, the 1930s buildings at Birmingham Airport stand out as distinctive. But another well-known set of airport buildings dating from the 1930s, are those in brick at Speke Airport, Liverpool, by A.E.Lakeman. Concrete even for what in the 1930s was one of the most up-to-date of building forms, the aerodrome, had its geographical limitations.

The real contrast, I think, is between the popular image of the 1930s:

> Glass brings us the new age
> Brick-culture does nothing but harm,

to quote again Peter Scheerbart, who appeared in the editorial of the last issue of *British Brick Society Information*, and the actual reality.

Anyone who reads their way through the pages of *Journal of the Royal Institute of British Architects*, which in those days was issued twenty times in a year, or those of weekly periodicals like *Architects' Journal* or *The Architect and Building News* cannot fail to be impressed at the many buildings both brick-built and of the highest quality which dominate their pages.

One should not forget that the London Architecture Medal went to a brick building, more often than not, in the 1930s: St Saviour's church, Eltham, by N.F. Cachemaille-Day, Herbert Welch and Felix Lander; the Royal Masonic Hospital by Sir John Burnet, Tait and Lorne; and Hornsey Town Hall by R.H. Uren. These are but three examples: the diplomates of 1933, 1934 and 1935 respectively.

The RIBA London Architecture Medal was awarded annually; its regional counterparts once every three years. It reflects the balance of building. In contrast to the Edwardian decade when there was as much building in other major cities, building in the 1930s was dominated by activity in London, its environs and the rest of south-east England. This is not to say that during the 1930s there are exceptional brick buildings constructed outside of London.

Equally there are many fine brick buildings of the decade. In the entertainment field, one only has to think of H.J. Rowse's Philharmonic Hall at Liverpool or the cinemas of one of Rowse's Liverpool contemporaries, Sydney Colwyn Foulkes, in his native Rhyl, whose use of brickwork exhibits qualities far superior to that of the cinemas of the mass-produced Odeon chain, one of which also survives in Rhyl. And if you did not know Colwyn Foulkes' work, one would be quite satisfied with that of the architects who served the Odeon chain

Outstanding, both in its brickwork and its sense of mass, is the Royal Shakespeare Theatre at Stratford-upon-Avon of 1928-32 by Elizabeth Whitworth Scott. Seeing it, as I do, if not on a daily basis but certainly once or twice a week, and usually in early morning, when the early Spring light brings out the crispness of the construction, one is struck by the sheer adventure of the building, the exceptional quality of the brickwork, the clean lines. One is astounded that the administration of any theatre company, and certainly a supposedly flagship organisation in this field, should *fail to appreciate* the building in which they work. One knows that for a modern theatre company there are problems with the auditorium but these can be overcome. The actors are supposed never to have liked it, comparing it to acting in a cinema. Even so, they have the privilege to work in one of three or four finest buildings of the decade of its construction.

Part, of course, is attitudes. It is fashionable, still, to be dismissive of the 1930s. The general comment on the decade was given even before it ended:

> As the clever hopes expire
> Of a low dishonest decade

as the poet W.H. Auden so memorably put it. But with Elizabeth Scott's theatre it is more than that. The building was mired in controversy even before the first brick was laid, in fact as the competition result was announced.

Competition entries are reputedly anonymous, which may not always be so, but in this case is true. At least among the three English finalists in the two-stage competition, no obvious favouritism seems to have been practised; I cannot speak for the three American firms who also took part in the final stage. It may have been the local paper or some local worthy who called the architect, educated at the Architectural Association School of Architecture, finalist in the Soane Competition of 1925, and an Associate of the Royal Institute of British Architects, "a mere slip of a girl"; she was aged twenty-nine when she won the competition.

Her second cousin, from 1924 Sir Giles Gilbert Scott, was at least five years younger when he designed the winning entry for the Liverpool Cathedral competition of 1902-04. No-one would have been so presumptuous about him

Reports on the Spring Meeting will appear in *BBS Information* 82, February 2001, where it is hoped to gather together reports on all the society's visits and meetings in 2000.

The society's chairman, Terence Smith, is going to be guest editor for *BBS Information*, 81, October 2000. Having done ten years as editor, I feel that it is to the society's advantage to have a different hand on the moulding bench from time to time.

This was going to be the issue of *British Brick Society Information* when the series on 'Brick and its uses in the Twentieth Century' started. However, to accommodate all the articles whose authors had kindly returned their proofs on time, it seemed fairer to delay this and thus to give time for the illustrations for the article to be properly sorted.

It is anticipated that the series will deal with Britain in five or six articles: two each on the Edwardian period and the inter-war years have been written and are in the processes of final revisions. There will be either one or two articles on post-1945 Britain.

Although the contribution on the Netherlands has already been written and articles on

the U.S.A. before 1941, and on Czechoslovakia and central Europe are in active preparation, and there is the strong possibility of an article on brick and its uses in Germany before 1945, the Editor and the Chairman of the British Brick Society would be delighted to hear of offers to survey developments in other countries, either for part of the century or its whole. There is an especially need for authors who could write authoritatively about developments in the use of brick in the last third of the century. in a country or group of countries. Experience in writing entries for the *Macmillan Dictionary of Art* suggests that some initial familiarity with the literature and/or the buildings concerned together with the requisite enthusiasm is all that is needed to begin an investigation. This is sufficient to get an author started.

At the society's Spring Meeting, two members submitted texts and illustrations of short papers on the use of brick in churches; the editor already holds another such item and a rather longer one which could be used in an issue of *British Brick Society Information* devoted to `Brick in Churches'. It is probable that these articles will be the core of the October 2002 issue.The `Brick and Canals' issue will now appear in October 2001 and for this further contributions would be welcome.

DAVID H. KENNETT
Editor, *BBS Information*
Shipston-on-Stour, Warwickshire, 6 June 2000

MAURICE EXWOOD: AN APPRECIATION

Members of the British Brick Society will be saddened to learn of the death of Maurice Exwood. Maurice was a keen member of the Society, and even in advanced years he remained active mentally and, as far as possible, physically. He was a familiar figure at BBS meetings, where he always impressed by his knowledge and by his good humour: he once claimed to be one of the world's experts on giving up smoking - he had done so many times! The quip was typical of his self-deprecating attitude; he had in fact quit the habit for good several years earlier. He brought the same approach to his learning, which he wore lightly. always being willing to give credit to others. This is seen especially in the foreword to *The Journal of William Schillinks' travels in England, 1661-1663* which appeared in 1993 in the Camden Series of the Royal Historical Society. His co-editor, Dr H.L. Lehmann of the German Historical Institute in Washington D.C., had died while work was in progress. For Maurice, the project was a partial return to his childhood roots: he was bi-lingual in Dutch and English, having been born in Gose, Netherlands, at a time when his father had been working for Willem Marinus Dudok.

An engineer by training, and a Fellow of the Institution of Electronic and Radio Engineers, Maurice published a number of papers in *Vernacular Architecture, BBS Information,* and in the collection of papers, which he also edited, arising from the symposium on mathematical tiles which he organised at Ewell on 14 November 1981. These papers reflected his particular interest in the oddities of our subject: Hiort's Patent Chimney Bricks; large bricks, whether or not intended to `beat the Brick Tax'; and, of course, mathematical tiles. He will be greatly missed by members of the British Brick Society.

TERENCE PAUL SMITH
Chairman, British Brick Society

THE BRICK IN PORTUMNA CASTLE, COUNTY GALWAY, IRELAND

S. Pavia, J. Bolton, G. Walker, P. MacMahon, T. Dunphy

INTRODUCTION

Medieval and post-medieval Irish brick from different locations are currently being studied as an essential part of the research project 'Materials Audits for Building Conservation'. This project involves the characterization of historical material from the National Monuments in the Republic of Ireland. The project was conceived and initiated in 1995 by Mr Gerry Walker, from the Faculty of the Built Environment of the Dublin Institute of Technology, and it is supervised by Mr Walker and Dr Tom Dunphy, both of this institution. The research has been carried out by Dr Sara Pavia and the work has been guided and supported by Mr Paul MacMahon of Duchas the Heritage Service of the Irish Government.

The paper summarises the investigation of seventeenth-century brick from Portumna Castle in County Galway.

THE CASTLE

Portumna Castle is situated in Portumna town, on the shores of Lough Derg, in south-east County Galway. The castle is 103 miles from Dublin and 35 miles from Galway. The site can be reached from Dublin by following the national road N-6 and then taking the N65 some 3 miles (5 kilometres) before Loughrea.

Portumna Castle was built by Richard de Burgo, Fourth Earl of Clanricarde, before 1618. The tempestuous history of the castle has been studied by a number of art historians and architects in Ireland and Britain (summary in Bence-Jones, 1978). Portumna Castle is a fortified house: the house was provided with defensive elements such as machicolations and loop holes, but it was built essentially as a residence rather than as a fortress. It is considered of great architectural interest as it forms a transitional structure between the fortified castle and the undefended mansion house of the eighteenth century. The innovative and expensive design of the castle incorporated new construction trends from Britain and the continent. It is approached though a series of gateways and forecourts: the Jacobean Gate with Tuscan columns which is probably contemporary with the castle, the eighteenth-century Gothic Gate, and the Grand gates attributed to Robert Adam (1728-1792).

MATERIALS AND METHODS

In order to obtain information on the origin, processing and firing of historic clay brick, samples of brick were taken from Portumna Castle and studied. Conventional methods of examining ancient ceramics were used. The external features of the brick were studied by visual examination. Thin sections were analysed with a petrographic microscope. The mineralogy of the brick was determined with X-ray diffraction.. Scanning electron microscopy was used to record elemental composition and vitrification of clay matrix. The instrumental techniques and methods of study are based on previous work by contemporary authors, mainly R. Firman, M. Maggetti, M.S. Tite, and F. Veniale.

The mineral composition of the brick, the mineralogical transformations during firing and the degree of vitrification of the brick matrix were studied. Based on the information obtained from these investigations, it was possible to draw some conclusions with regard to the type of raw brick clay, the origin of the sediment used to make the brick, the range of firing temperatures, the firing method, and the fabrication process.

VISUAL EXAMINATION OF THE BRICK

Portumna brick is compact and fine textured. The colour varies widely between deep orange and pale yellow.

The most distinctive visual features of this brick are the plastic deformation of the internal fabric, the presence of long pores and a flaky consistency, which is reminiscent of the sedimentary stones called shales (compressed sandstones). Other distinctive features of these bricks include the presence of imprints of grass marks on their beds and the occurrence of striae.

Very fine detrital grains can also be observed with the naked eye and the bricks display a fully oxidised body with a total absence of black core.

ANALYSIS OF THE BRICK MINERALOGY WITH X-RAY DIFFRACTION

The analytical technique of X-ray diffraction can be used to identify the mineral phases present in brick. The main mineral components of the Portumna brick are quartz, calcite, feldspar, clay minerals and mica. Present also are minor amounts of the calcium silicates: diopside, wollastonite and gehlenite. Calcite decomposes at approximately 700-800 °C in a natural clay. Calcium silicates (gehlenite, diopside/wollastonite) and feldspar (plagioclase) appear in the range 850-900 °C (Maggetti, 1991). The minerals recorded allow us to conclude that the Portumna brick was made with an illitic calcareous clay.

Based on the mineralogical associations in the brick samples and on earlier archaeothermometric experiments with illitic calcareous clay carried out by Peters and Iberg (1982), it was deduced that the firing temperatures for the Portumna brick were between 700 and 900 °C. The presence of calcite, clay minerals (mainly illite), calcium silicates and plagioclase were also important factors in determining the range for the firing temperature. The presence of a significant amount of clay minerals and calcite in most of the brick specimens studied suggests that none of the bricks were fired at temperatures greater than 900 °C.

The firing temperature deduced was estimated on the assumption that the phase association present in the bricks were minerals formed during firing and that no important changes occurred during burial or environmental exposure (Maggetti,1982).

PETROGRAPHIC EXAMINATION

The mineral calcite is present in two different forms in Portumna brick: finely dispersed within the brick matrix and as fragments of limestone. A number of limestone fragments partially transformed during firing were also observed with the microscope. In some bricks the calcite in the limestone was partially transformed into the calcium silicates associated with higher temperatures - diopside and wollastonite. As mentioned above, these new crystalline phases formed during firing are diagnostic minerals and can therefore be used to deduce the firing temperature.

The plastic deformation of the internal fabric appears in the form of distorted coloured laminae which give an indication of the great plasticity of the raw material used to make the

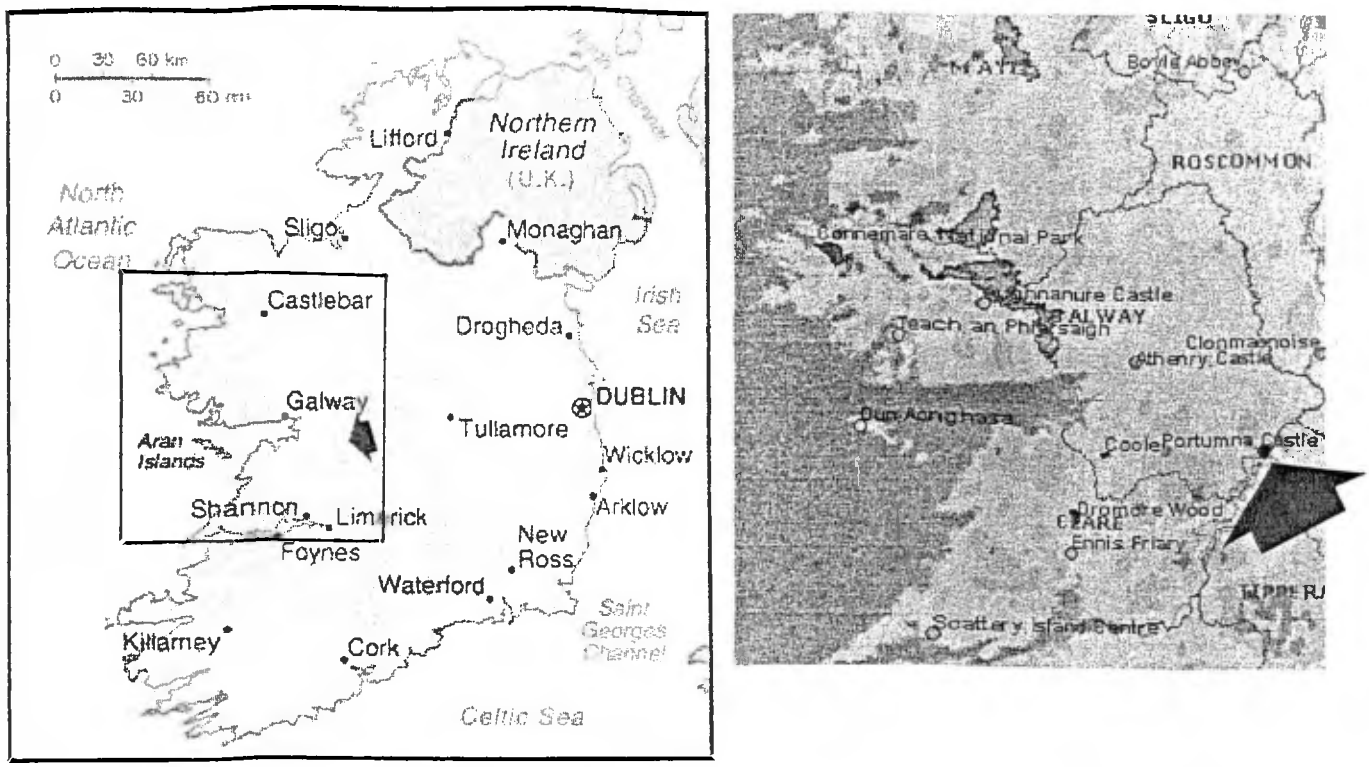

Fig. 1 *Left* Map of Ireland showing location of detailed map (*right)* with Portumna Castle marked by an arrow.
Right West central Ireland showing castles with Portumna Castle marked by an arrow.

brick. Under the microscope, the laminae consist of areas rich in very fine grained clasts alternating with areas rich in matrix. These reflect natural changes in the composition of the raw clay and therefore are a remaining feature of the brickmaking sediment.

With the petrographic microscope it was observed that the brick contains abundant finely grained clastic constituents. These fine sandy clasts are consistent in size and grading with fine river gravels. However, the variety of sizes and the abundance of angular quartz and feldspar both suggest that some angular grains may have been deliberately added as a temper to reduce the great plasticity of the raw clay.

SCANNING ELECTRON MICROSCOPE EXAMINATION

Under the Scanning Electron Microscope, the brick usually showed an open internal microstructure with scarce vitrification. These observations agree with the firing temperature deduced from the brick mineralogy which was originally identified by X-ray diffraction and later observed with the petrographic microscope. Fossils of diatom algae and gold placers were also recorded in two brick specimens with the Scanning Electron Microscope.

DISCUSSION

The brick from Portumna Castle was made from lime-rich earth which could roughly be described as a stoneless raw material rich in lime. The raw material used for brick manufacture was an illitic calcareous clay.

Since the bedrock in the Portumna area is a carboniferous limestone, the presence of a

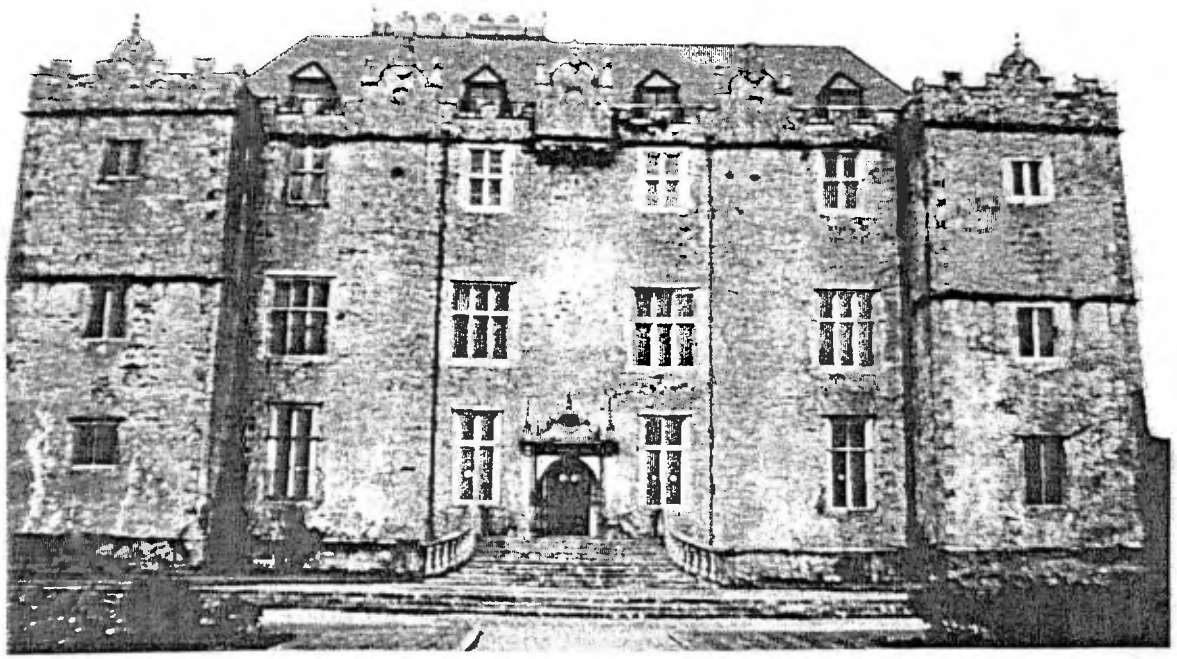

Fig. 2 Portumna Castle, County Galway Ireland Entrance Front
Photo: J. Bolton

limestone temper suggests a local origin of the sediment used for brickmaking.

As we have already noted, the mineral calcite is present in two different forms in the brick: finely dispersed within the brick matrix and as fragments of limestone. There are, therefore, two possible sources for the calcite in Portumna brick.

1. The fragments of limestone temper probably derive from the erosion of the local limestone.
2. The finely grained and dispersed calcite probably formed from chemical precipitation in a lacustrine environment since hydrologically closed lakes are sites of evaporite and limestone deposition.

The dispersed calcite would seem to suggest a lacustrine origin for the brickmaking sediment. On the other hand, the brick contains abundant finely grained clastic constituents. These fine sandy clasts are consistent in size and grading with fine river gravels which would suggest and alluvial origin for the brickmaking sediment.

Combining these two suggested origins - lacustrine and alluvial - it would appear that the source for the raw clay was probably a muddy alluvium in the flood plain of a river, as such an environment would combine both alluvial and lacustrine episodes. Likewise, the presence of fossils of diatom algae (micro-organisms typical of lacustrine environments) suggests a Lacustrine origin, whereas the presence of gold placers indicates an alluvial origin. Both of these features can be interpreted as further evidence that a muddy alluvium was the origin for the brickmaking sediment.

The presence of internal lamination in the fired brick reinforces the this hypothesis. As mentioned before, the internal lamination in the brick is a surviving feature of the raw sediment used to make the brick. Finely laminated sediments can be deposited in lake-basins from low density currents and the settling out of clay from suspension. Tidal episodes caused by a river

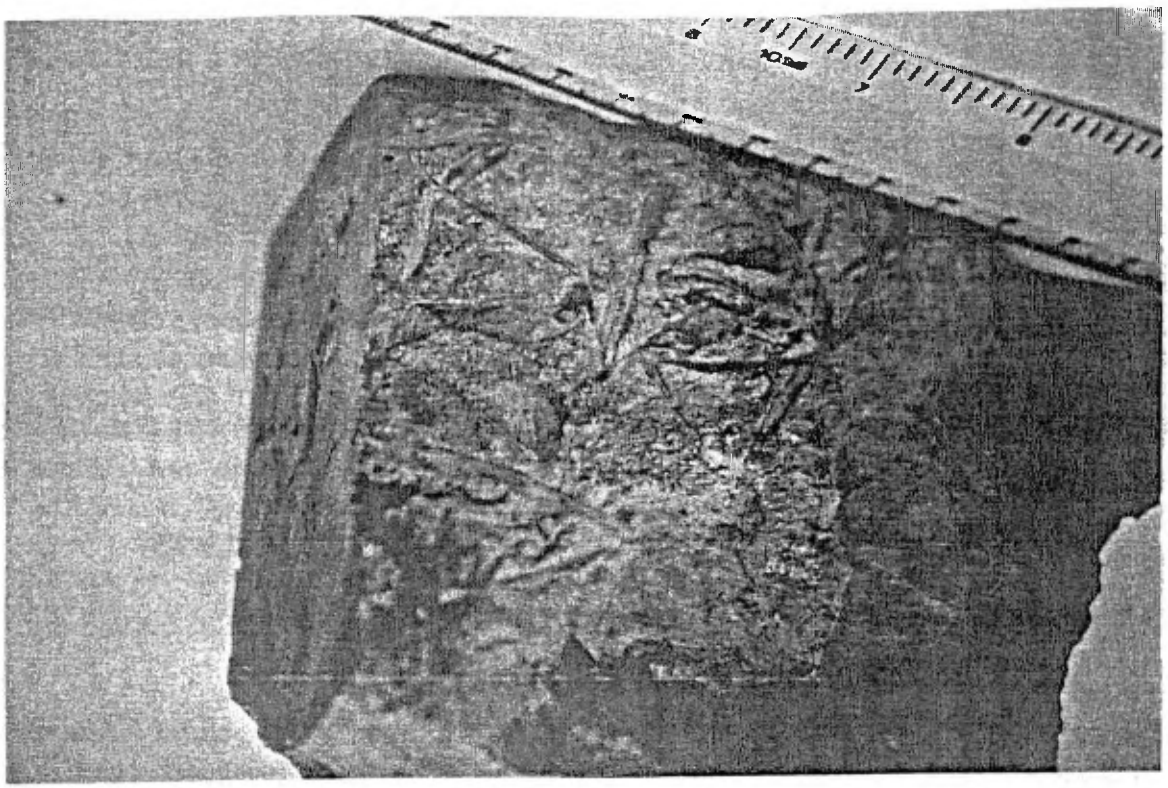

Fig. 3 Grass impressions on the bed of the brick from Portumna Castle
Photo: J. Bolton

flooding and draining into the lakes could have been responsible for the generation of the laminae.

Documentary evidence and fieldwork research also supports the above conclusions. In research project by Bolton (1997), twelve ancient brickfields were located north and east of Portumna with a distance of seven to eight miles from Portumna Castle. Four of these brickfields were located along the banks of the River Shannon, which enters Lough Deg beside Portumna Castle. These brickfields were reported in documentary sources of the early nineteenth century and could have been in use at the time the castle was being built.

The Portumna brick displays a fully oxidised body with a total absence of black core. Scarce reducing haloes and isotropic areas of organic matter were found with the petrographic microscope. These observations together with the deduced firing temperature can be interpreted as evidence of kiln firing. In a kiln, the firing temperature can be controlled so that the entire firing process is oxidising. Furthermore, the fuel is separated from the brick thereby allowing the production of fully oxidised brick. Kiln firings are typically characterised by slower heating rates and much longer times at maximum temperature. The maximum firing temperatures reached span the range from 600 to 1000 °C with a high proportion in the range 750-950 °C (Tite, 1995).

In relation to the shaping and drying processes, the smooth surface of the Portumna brick suggests that water was used during moulding to prevent the clay sticking to the moulds. The brick was therefore slop moulded rather than pallet (or sand0 moulded. Parallel striae along the bed indicate the probable use of a wooden stick to remove the excess clay from the top of the mould. The impressions of grass acquired during drying indicate that the brick was slop moulded and left in the grass to dry. this agrees with previous studies on medieval British brick by Firman (1967):

Medieval brick in Britain was usually moulded. Slop moulding was preferred to sand moulding for the most plastic clays. Such brick were laid on hay to dry whereas sand moulded brick were often put directly into a hack (drying platform).

CONCLUSION

The brick of Portumna Castle can be described as finely textured, yellow to orange clay brick showing plastic deformation of the internal fabric, with imprints of shaping moulds on the face and of grass on the bed. The brick was locally made with a calcareous clay of alluvial origin which was probably extracted from the nearby flood plain of the River Shannon. The raw clay was processed to a certain extent before the brick was made. Some angular quartz and feldspar were probably deliberately added to the raw clay as a temper. Moulds were used to make the brick, and the shaping method was probably slop moulding. The brick was fired in a kiln, in an oxidising atmosphere at a temperature ranging from 700 to 900 °C.

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Paper received:- June 1999.

SIGNED WITH THE MARK OF A BRICK MOULD: A HAMPSHIRE BRICKMAKER'S WILL OF 1606

Bryan P. Day and Joan Harries

The will which prompts this note is that of Richard Maybank of Dippenhall, a hamlet within the parish of Crondall, Hampshire. Richard Maybank made his will on 5 August 1606. The original in Hampshire Record Office, Winchester, reference 1606B/37, shows that Maybank made his mark rather than signed his name, using as the mark a brick mould. The mark is illustrated in figure 1.

There are at least two other near contemporary examples of the use of a brick mould as a man's mark. The first is that of Austin Browning of Barcombe, Sussex, who made a deposition in 1598: the mark is illustrated by Molly Beswick, *Brickmaking in Sussex: a History and Gazetteer*, 1993, fig. 30. Browning was established his brickyard in Barcombe in 1584, made his will in 1603 and his son is still a brickmaker there in 1620.

In Essex, Daniel Richardson of Messing made his will in 1641 also using the mark of a brick mould. This is illustrated by Pat Ryan, *Brick in Essex: Clayworking and Craftsmen*, 1999, fig. 10. One of the witnesses to his will, another brickmaker Robert Bundick, used a spade as his mark, thus clearly distinguishing the two men.

The will as transcribed below is given in with modern English spelling and punctuation has been added. It was transcribed by Joan Harries in December 1998.

While it gives some specific possessions: a cow, sheep and hives of bees: no mention is made of brickmaking tools, stock or equipment. Presumably they are within the residuary estate.

David Kennett tells me that he cannot recall seeing mention of brickmaking tools, stock or equipment in the brickmakers', builders' and bricklayers' wills from Bedfordshire dating to between *c.*1660 and 1857. These were examined some years ago by him; unfortunately the extensive abstracted notes remained boxed and are currently unavailable for checking.

Fig. 1 The mark of Richard Maybank on his will made on 5 August 1606.

THE WILL

In the name of God amen. The fifth day of August in the year of our Lord one thousand six hundred and six. I Richard Maybank of Dippenhall in the parish of Crondall in the county of Southampton, brickmaker, being sick in my body but of a perfect mind and good rembrance, paraise be to God, do ordain and make this my testament and last will in the manner and form following, that is to say, first I bequeath my soul into the hand of Almighty God my only Creator and Maker and my body to be buried in the churchyard of Crondall aforesaid.

Item, I give to the Trinity Church of Winchester - 2d

Item, I give to John Maybank my son one brown heifer two years old and 40s in money.

Item, I give to William Maybank my son two of my best ewe sheep and two hives of bees.

Item, I give to Edward Maybank my son two ewe sheep.

Item, I give to Mary my daughter one flock bed, bolster, one pair of sheets, one coverlet, one pillow and the bedstead and 40s in money.

Item, I give to Elizabeth my daughter two ewe sheep, money 10s.

Item, I give to Anne my daughter one hive of bees.

Item, i give to Pratire [?] my daughter 12d and if any of the said children chance to die before they come of age their part remains amongst the rest and all the rest of my goods and chattels moveables and unmoveables not given or bequeathed, my debts legacies and funeral first done and paid, I give and bequeath to Elizabeth my wife and Philip my eldest son whom I do make my full and sole executor to see the rest of my children brought up and they to use the same until the children be of age or married. Also I desire my neighbours John Bicknall, William Goodyer, John Tigge to be my overseers to see that this my will be performed wherefore I give to each of them fourpence to see my last will and true meaning thereof performed.

NORFOLK SKINTLING SURVEY: A Progress Report

Edwin J. Rose

Terence Paul Smith's paper on the church of St Benet, Paul's Wharf, City of London, in *British Brick Society Information,* 79,[1] draws attention to the mixture of diagonal and horizontal skintlings, hack-marks or pressure marks on the bricks and states that this indicates a "little earlier" date for the transition from diagonal to parallel arrangements than previously suggested.

As Elizabeth James wrote in *British Brick Society Information,* 64,[2] in Norfolk the transition appears to be in the period 1770-1780. She mentioned Catfield Hall,[3] the one exception known at the time , where red-brick stacks have horizontal skintlings: the Hall dates from the 1840s. Mrs James questioned whether this might be due to an antique method of making white bricks.

Two other examples of post-1780 diagonal skintlings have since been recorded: one, a twentieth-century garage at the sixteenth-century Paridise Farmhouse, Stradsett, seems to be a deliberate attempt at making bricks of antique appearance. The other is a brick lining to the interior of the flint tower at Haveringland, which was heightened in the 1850s. Mr A. Mackay who discussed the adjacent hall in *Norfolk Archaeology* 43, 1998,[4] believes that these in fact may be re-used bricks from the demolished, earlier hall.

The Royal Naval Hospital at Great Yarmouth has yellow bricks, some bearing diagonal skintlings and some horizontal. The hospital was built in 1809 but it is believed that the bricks were brought in from outside Norfolk.

Colleagues at Essex County Council tell us that the changeover from diagonal to horizontal skintlings takes place in that county around 1800, but diagonals may be seen as late as the 1840s, witness the brick chancel at St Andrew's church, Greensted-juxta-Ongar.[5]

It is therefore not surprising that a few examples of diagonal skintlings may be found in

post-eighteenth-century contexts. What is more surprising is the complete absence, until recently, of securely dated examples of horizontal skintlings before 1770.The earliest known example was the Mitford and Launditch Union Workhouse at Gressenhall (now the Norfolk Rural Life Museum) of 1775, where the bricks were made on site. However, more recently a house in Shipdham, Lavender Cottage, has been noted in which the date `1773' occurs in two places, on timbers and bricks, suggesting it is indeed a construction date, and which has horizontal skintlings. This is, however, still in the 1770s.

A more uncertain case is West Bradenham Hall which has horizontal skintlings throughout its brick structure; it is said to be dated by documents to the period between 1753 and 1766 but the actual documents have not been produced. the Listed Buildings description simply calls it mid eighteenth century.

However, one more interesting example has come to light. At Hall Farm, Halvergate, are a group of eighteenth- and nineteenth-century barns. Amongst these is a barn of completely different appearance, built of brickwork one would normally assign to the seventeenth century. Yet the bricks have quite large and prominent central ridges, much deeper than the normal skintling.

It would be very interesting to establish the earliest date for horizontal skintlings in other counties. Can members help with this?

If the society does visit King's Lynn, Mrs James and the writer will show examples of buildings with skintlings to illustrate the dating.

Notes and References

1. T.P. Smith, `The Church of St Benet, Paul's Wharf, City of London, and its Brickwork', *BBS Inf.*, 79, February 2000, 9-18, esp. 16 with notes 33 and 34.

2. K. Faithful and E. James, `Brick Terminology', *BBS Inf.*,64, February 1995, 5-7.

3. E. James, in Faithfull and James, 1994, 7.

4. A. Mackay, `Haveringland Hall', *Norfolk Archaeology*, 43, 1998.

5. This is, of course, the famous log-built church; brief account, N. Pevsner, revised E. Radcliffe, *The Buildings of England: Essex*, Harmondsworth: Penguin Books, 2nd edition, 1965, 215.

BRICK KILN AT ACTON SCOTT HISTORIC WORKING FARM, NEAR CHURCH STRETTON, SHROPSHIRE

Martin Hammond

The brick kiln at Acton Scott Historic Working Farm, near Church Stretton, Shropshire, (grid ref. SO 455898) was built in 1998 to the design of local building conservation officer, Colin Richards; it was fired for the first time in July of that year. This article records the second firing in October 1999.

The design of the kiln is based on that of a surviving example of an `oven' or `cupola' kiln at Oreton, near Cleobury Mortimer, Shropshire, (grid ref. SO 653804). The Oreton kiln was built *c.*1870 and was last used in 1912 by the father of the present owner George Sutton. Intact and in fair condition, it is almost identical to examples illustrated by Edward Dobson in *A Rudimentary Treatise on the Manufacture of Bricks and Tiles,* 1850,[1] and Antoine Brongniart in *Traite des Arts Ceramiques,* 1844,[2] except that the sill of the doorway is at ground (chamber floor0 level and the buttresses rise to the springing of the dome. This type of kiln was used in the early nineteenth century in Staffordshire for firing blue bricks and roofing tiles because of the high temperature obtainable in them, around 1150 ℃. With no damper to control the draught, the kiln temperature and atmosphere must have been regulated entirely by the amount of air passing over and through the fires.. According to Dobson;

> the heat is determined by the sight of the fireman directed to the mouths and the top outlet,[3]

and at the end of the firing

> before the fires burn hollow the mouths are stopped up with ashes to prevent the excess of cold air passing through the over.[4]

It would also give the reducing conditions required for finishing blue bricks. Such kilns held 8000 bricks or 2000 bricks and 7000 tiles. Much of the hemispherical dome was empty. Firings lasted 36 hours for red bricks and 38 hours for blues, using three and a half or four tons of coal respectively. Slow firing in the first five hours, but for the blue products the fires were kept

> much sharper and hotter.[5]

A kiln could be fired three times in a fortnight; the quick turnround accounting for the short firing times so it never cooled down completely.

The Acton Scott kiln is a scaled-down version of the Oreton kiln, with a nominal capacity of 5000 bricks. It was built of hand-made red sand-faced bricks made from red marl dug at Bromfield gravel pit, near Ludlow, Salop, and fired by Northcot Brickworks, Blockley, Moreton-in-Marsh, Glos. The firebricks for the lining came secondhand from the former Coalmoor Refractories works near Telford. It was built by Colin Richards and his colleagues from the Institute of Historic Building Conservation (IHBC): Dave Baxter, Noel Knight and Charles Donovan, with some advice from one of Northcot's kiln builders. It is approximately 2.3 metres (6 ft 4 in) internal diameter, and 1.7 metres (4 ft 9in) high inside to the springing of the dome just above the wicket arch. The lower walls are 0.8 metres (2 ft 2 in) thick, the dome and upper walls between the buttresses are 0.34 metres (11 inches) thick. The centre vent is about 1.5 metres (4 ft 1 in) diameter, 2.5 metres (6 ft 10 in) above the floor, which is of firebricks laid on sand. The dome is tied round at the springing with two circles of chain with bottle screws for adjustment.. There are eight fireholes.

For this firing 4500 bricks were loaded in; setting was advised by Steve Williamson, formerly manager of Northcot Brickworks. Some of the bricks were still damp; these were put

in the north-east quarter of the chamber. They would probably crack up, would be ground up as pozzolanic aggregate for rendering. The eighth firehole is formed when the wicket is built up with firebricks laid dry, on edge, and plastered over with clay. A spyhole with a loose brick in it was left at about eye level with the top of the setting. It would be possible to see right across the chamber. Seger cones for 1000 ℃ were put in the setting to tell if that temperature had been reached. The bricks had been made during the summer by museum staff, members of the IHBC, and visiting school children, using red marl from the Bromfield gravel pit, where it underlies the gravel. Permission exists to extract the clay as part of the quarrying operations. Four tons of coal, two to three inch cobbles, were delivered. There was some breeze left over from the 1998 firing and a small quantity of firewood.

Fig. 1 Shropshire, England, showing sites mentioned in the text and major local towns.

The fires were lit at 12 noon on Friday 15 October 1999; this reporter arrived on site at 3.15 p.m. The fires were burning well all round, but bricks could be heard exploding. The initial burst of heat when the fires were lit was too much and the residual moisture in the bricks was turning to steam causing them to shatter. The breeze could be used at this stage to give a gentle heat. I returned at 4.00 p.m.; by then things had quietened down. Each fire was supported on a grate, apparently pieces of an old pan-mill grid, raised on two two-inch firebricks set on end. This gave just about enough room to run a poker in between them to clear the ash. A 40-gallon oil drum with the ends knocked out had been placed over the vent in the dome and luted with lime putty, forming a chimney, the top of which was just above the corrugated iron roof erected over the kiln to protect it from the weather. A sliding panel in the roof sheeting covers the opening when the kiln is not in use.

The `firing squad' comprised Charles Donovan, Ian McCaig, Rob Simpson (who made the bricks), Dave Baxter, Dave Cheetham, and myself, with Colin Richards directing operations. We also had visits from potters Mark Griffiths and Peter Fletcher and his wife Sheila. There was also a party of Romanians here to learn about building conservation: Dorottya Makay, Csilla Hegeda, Mercea Sabau, and Calin Maris. The two men were builders familiar with traditional methods.

The fires were stoked steadily through Friday night and into Saturday. Late on Friday afternoon, I took a brick out of the wicket and rigged my pyrometer. As the thermocouple sheath was only 6 inches long it would not reach right through the wall, so I had to make a recessed hole for it to sit in. By chance there was a brick right behind the hole I had made, so I would not be getting much circulation of flame around it. As a result the needle on the dial was very reluctant to move. The most we recorded was about 450°C. Throughout the firing the weather was fine and often sunny. On Friday and Saturday, it was quiet and a bit misty, but on Sunday an easterly breeze got up, blowing against the side of the kiln where the wicket was and also the damp bricks. So we had to rely on the state of the fires to judge the state of the firing.

After an early night, I arose at 4.00 a.m. on the Saturday to relieve the night shift. At this time of the night, fatigue sets in: Colin Richards would lie on the tarpaulins and snooze for half an hour. At 5.30 a.m. a kiln-burners' breakfast was cooked over coals raked out of one of the fires.

By 11.45 a.m. on Saturday, the pyrometer was still reading 60°C. The fires were constantly poked, for the coal was `caking', running together in tarry masses some while after being put on the fire. These could easily be broken up with a slice or heavy poker, giving a burst of flame. Fortunately, it did not make much ash, and no clinker was seen. It was important to keep the grates clear of dead ash, giving a bright red glow.

When I returned to Acton Scott on late Sunday afternoon[6] I was told that the temperature rose when the fires were banked up. This was difficult to do as a lot of the fire tended to fall over the front edge of the grates. So I built a brick chequer in front of each of the fireholes, as would be done in a scotch kiln; firebricks and bats were collected for each chequer. A six-inch gap was left at the top of each firehole. The fires were quickly built up behind them, cutting down considerably the amount of cold air being drawn in. During Sunday night the top of the oil drum was half-covered with an iron sheet. This slowed down the draught and held back some of the heat. Before leaving home, I had read accounts of firing scotch kilns at Whaddon near Salisbury, Wilts.,[7] (believed to be the last coal-fired scotch kiln in Britain), South Ferriby, Lincs.,[8] Sandleheath, Hants.[9] These mentioned building up chequers and controlling the draught by moving around the loose bricks which covered the top of the setting.

Eric Rowden in *The Firing of Bricks*[10] recommends baiting alternate fireholes with fresh fuel as a way of reducing smoke emission. Usually we found ourselves mending the fires as and when needed. When they looked a bit dull we would give them a poke and put one two or three shovelfuls of coal. I tried to avoid baiting adjacent fireholes at the same time. The fireholes are about 0.24 metres wide at the outer end and 0.75 metres high, but they taper to about 0.15 metres wide at the inner end, where also the top of the arch drops by one course of brickwork. This must restrict the passage of flame to the kiln chamber. Most of the fire lies in a heap on the floor of the firehole. There are channels formed in the setting which lead the heat to the centre of the chamber, but a solid mass of bricks, `the dead man', deflects it upwards and stops fire on the leeward side from blowing back in gusty conditions. Dobson says that a protective wall of waster bricks laid dry, about 1.80 metres high and far enough out to give the kiln burners room to work, was usually built around such kilns.[11] Examination of the fireholes at the Oreton kiln showed that there was an opening in the top of each firehole about 0.23 metres square in the `shelf' above them between the buttresses. This arrangement allowed the front opening, which might be used for stoking in the early stages of the firing, to be closed completely with a chequer, and coal to be fed in through the top opening, completely filling the firehole opening and cutting off the air supply over the top of the fire. This would give the reducing conditions in the kiln chamber and the heat necessary to produce blue bricks and tiles. I have suggested modifying the firehole before next season. At Oreton the top opening was closed with a slab at the end of the firing. The illustration in Dobson[12] shows a top opening, into which ashes were probably shovelled and

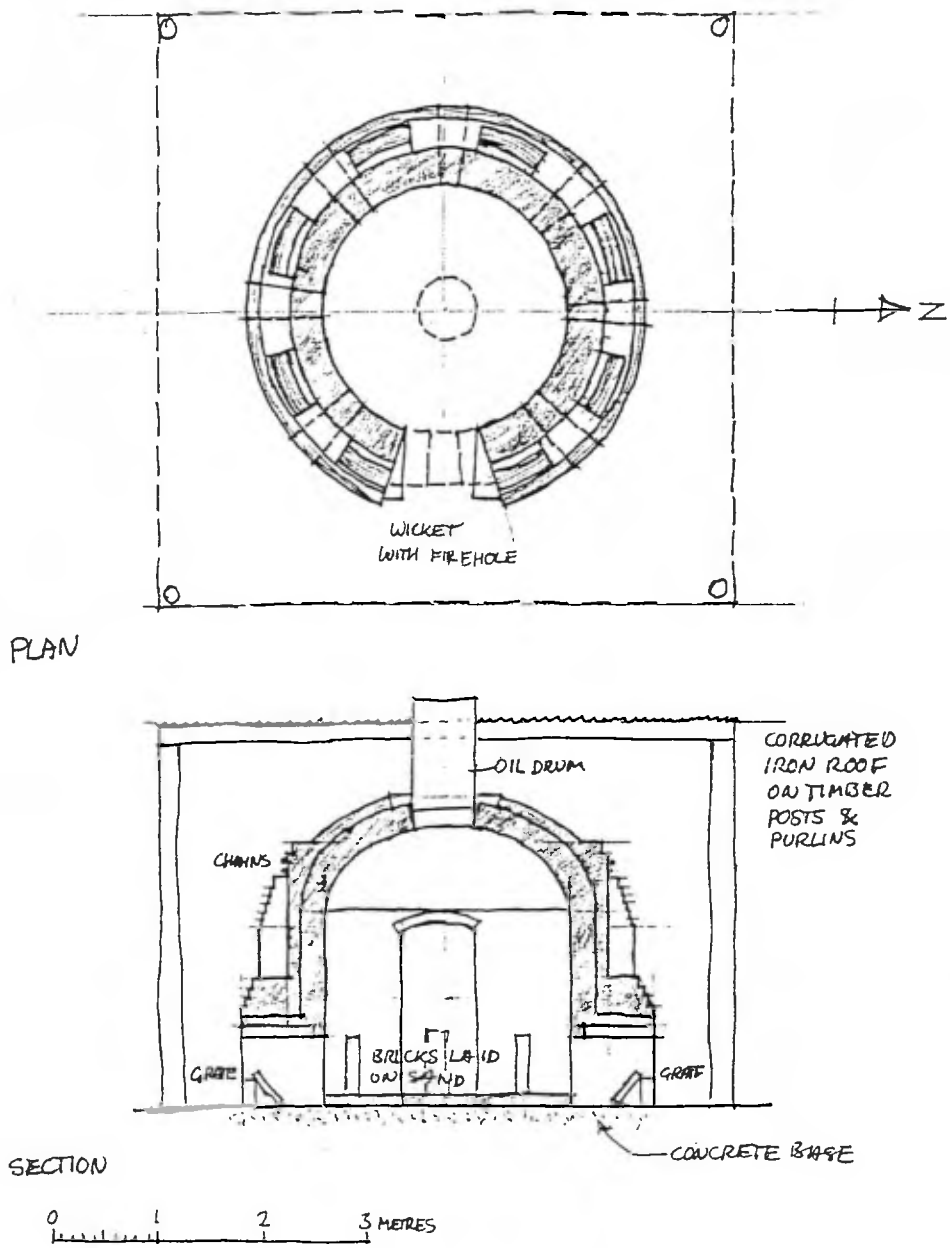

Fig. 2 Brick kiln at Acton Scott Historic Working Farm, near Church Stretton, Shropshire, as built 1998
Drawn by Martin Hammond, Parkstone, Poole, November 1998

beaten down to seal it. At the end of our firing at 6.00 p.m. on Monday, we used up the last of the coal in the barrow and then sealed the front of the fireholes with a stack of bricks laid dry and sealed round the edges with handfuls of wet clay thrown on. The top of the chimney was covered with the iron sheet except for a small gap. One firehole was left open, and the Romanians on their return from Whitley Court roasted chestnuts on a shovel in it, and shared their plum brandy with us. In spite of our efforts, we had not got the kiln as hot as we would have liked, but there was a good red glow showing in the fire channels.

The museum blacksmith had made four special tapering shovels for stoking, also several pokers, rakes and slices. Coal was brought from the heap a few metres away in a wooden barrow, in which it was either left or tipped on to the floor. Traditionally, one would have had

small heaps of coal ready for use. Fireirons, too, were placed handily round the kiln. I found the shovels a bit unwieldy and preferred to use my little hand shovel straight from a light barrow which was also available. At night we has a 100 watt inspection lamp on an extension lead from a nearby shed, hung on a bar stuck in the eaves of the roof. This gave sufficient light to work by, including fetching coal. The west side of the kiln was rather in the dark.

There were never less than two people on duty, out of a team of seven, one of whom had to be competent to direct the firing. There was, however, no formal rota of shifts: people seemed to come and go as they pleased. One or two did not turn up when they said they would but there was enough enthusiasm to see the operation through.

It was for me an interesting and useful experience. I wanted to know what it was like to fire a large kiln from start to finish. Previously, I had only fired comparatively small pottery kilns on my own within a day. Apart from the visit to Oreton on Monday morning and the break from Saturday to Sunday, I was at the kiln more or less all my waking hours: early mornings were preceded by early nights.

This type of kiln is a direct descendent from the multi-flue updraught pottery kilns which first appeared in the Midlands in the thirteenth century and culminated in the `bottle oven' of the Potteries and the beehive downdraught kiln. Indeed, some may have been converted to downdraught operation by the addition of bag walls, an underground flue and a separate chimney. I first read about cupola kilns in 1962 in a late edition of Dobson held by the library of the School of Architecture of the University of Nottingham.[13] I never thought I would see one, let alone fire one.

It will take several firings to get to know the kiln, and even longer to become really expert. Old skills will have to be re-learned, often by trial and error. The Oreton kiln was last fired in 1912. It was the last of its kind - until we came along. As we learn how to manage the kiln, firing times can be shorted and more economical on fuel, giving better yields of more usable bricks. Already we are producing bricks almost indistinguishable from the slop-moulded Keuper Marl bricks used throughout the Midlands. Nobody makes a product like that commercially nor the ubiquitous blue hand-made roofing tiles which the kiln would be capable of producing given the right clay (Eturia Marl) and firing conditions.

Last Summer, I started practising my tile-making skills at Bursledon Brickworks, near Southampton, and I have made a set of moulds for British Standard sized tiles but not the old Midlands format of 11 in x 7 in (280 x 180 mm). At Acton Scott, it is proposed to step up brick production in 2000, with two or three firings in the year.

It was through British Brick Society members John Cooksey of Halesowen and Rob Simpson of Craven Arms that I became aware of the Acton Scott project. John told me about the Oreton kiln initially and I have had much correspondence with Rob during the summer. culminating in the site visit in October. Rob emptied the kiln on 26 October 1999 and reported by letter the next day:

> The pyrometric cones at the top of the kiln hadn't bent, so we never reached 1000°C up there, and hence why the top 5 layers or so of bricks were underfired. I've found some well fired bricks from the central and lower layers of the kiln and overfired, vitrified, split and partially melted bricks beside and above some of the flue holes. The firehole on the left hand side of the wicket as you enter the kiln was particularly bad in this respect, with most of the bricks set around the firebox entrance into the kiln having collapsed into a broken, twisted vitrified mass. Solid bricks next to this part of the kiln came out yellow, so some reduction must have taken place in that small area of the kiln.[14]

All of what is given in the above account is typical of the behaviour of Keuper Marl in firing. It burns red but it quickly melts into purple-brown slag at 1050-1100°C. Just before then, the

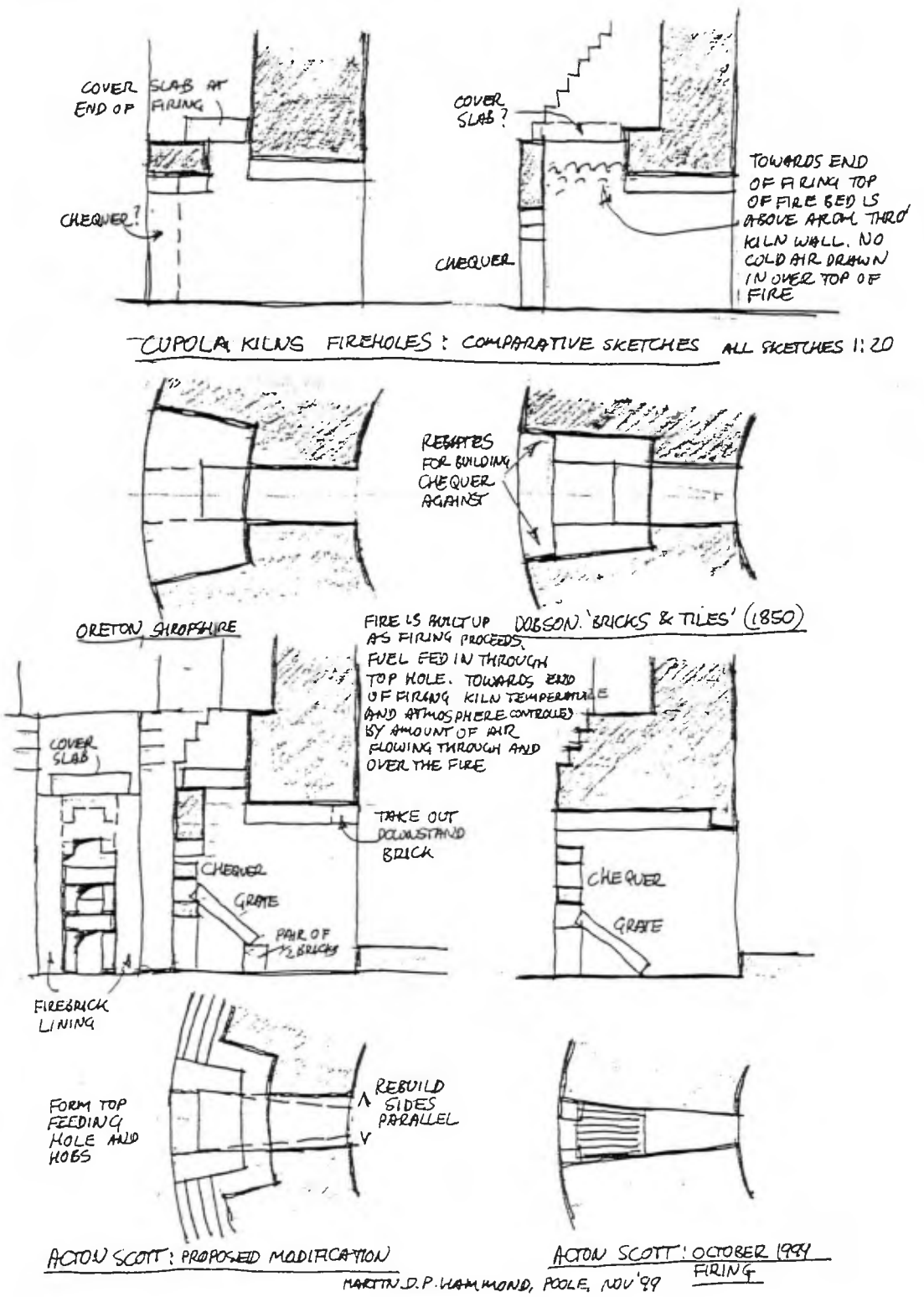

Fig.3 Sketches of fireholes to cupola kilns: Oreton and Acton Scott, Shropshire.
Drawn by Martin Hammond

lime in the clay has a bleaching effect on the iron oxide, giving the buff colour. Reduction may play some part in it also. We had what Nottingham brickmakers called a `wreck'.

Colin Richards has visited Romania and seen how itinerant gypsy brickmakers worked. A hole was dug 3 feet deep and the clay in it pugged to a suitable consistency by treading, often done by children. Water from a small borehole sunk within the pit was added. Bricks were hand moulded in triple moulds and fired in wood-fired clamps of 7000 bricks, built with inter-laced channels of fuel and plastered with clay. These claps were fired on a three week rotation. The bricks were sand-faced and turned out on to pallets. There is not much facing brickwork in Romania: usually it is rendered. An agreement is made first with the landowner to work the clay, and when the bricks are sold the profits are split 50-50 between him and the brickmakers. The bricks are sorted after firing into external and internal grades.[15]

Notes and References

1. E. Dobson, *A Rudimentary Treatise on the Manufacture of Bricks and Tiles,* London: John Weale, 1850, two volumes. Reprinted, with an introduction, biography notes, bibliography and index by F. Celoria, as *Journal of Ceramic History,* No. 5, Stafford: George Street Press, 1971. For illustrations of the `oven' or `cupola' kiln see Dobson, 1850, vol. 1, chapter 4, Brickmaking as practised in the Staffordshire Potteries, pp .95-114, esp. pp.104-105, section 10, figs.6, 7, 8, 9. Chapter 4 was contributed by Richard Prosser, inventor of the dry dust pressing process for floor tiles.

2. A. Brongniart, *Traite des Arts Ceramiques,* Paris, 1844, volume III, pl.xvi; reproduced in *British Brick Society North Midlands Bulletin,* 1, 1974.

3. Dobson, 1850, p. 110.

4. Dobson, 1850, p. 110.

5. Dobson, 1850, p. 119.

6. I had an engagement in Staffordshire from late Saturday afternoon to late Sunday afternoon.

7. Kevin Stubbs, `Whaddon Brickworks, Wiltshire (SU 198262)' Typescript for Hampshire County Council Historic Buildings Group, April 1974.

8. Stuart A. Holm, *Brick and Tile Making in South Humberside,* 1978.

9. M.D.P. Hammond, `Brick Kilns: an Illustrated Survey', *Industrial Archaeology Review,* vol. 1, no. 2, Spring 1977, pp. 171-192.

10. E. Rowden, *The Firing of Bricks,* Wingfield, Berks.: The Brick Development Association, 1963,

11. Dobson, 1850, p. 110.

12. Dobson, 1850, p. 105.

13. Dobson, 1850, revised edition of 1936; revised by A.B. Searle.

14. Letter from R. Simpson to M. Hammond, 27 October 1999; original in possession of M. Hammond.

15. Paper completed 17 November 1999. I thank Rob Simpson for telling me about the October 1999 firing of the Acton Scott kiln who also told me of the July 1998 firing.. I owe knowledge of the Oreton kiln to BBS member John Cooksey of Halesowen

BOOK REVIEW

John A. Loomis, *Revolution of Forms Cuba's Forgotten Art Schools.*
220 pages, 44 colour plates, 122 black and white illustrations.
New York: Princeton Architectural Press, 1998; ISBN 1-56898-157-0; paper £19-95.

From California to Cambridge, in the bedrooms of the politically aware were hung the portraits of the bearded two. Fidel Castro and Che Guevara destroyed for more than a generation an American obsession: to re-fight Teddy Roosevelt's Caribbean War and turn Havana and, indeed, the whole island of Cuba, into an off-shore Las Vegas with the connivance of a local brigand masquerading as head of state. Under Fulgencio Batista's regime Cuba had one of the highest Gini co-efficients even a dictatorship has ever mustered. Income inequality reached over .0.6, on a par with Ian Smith's Southern Rhodesia's 0.629, and higher than Mexico's 0.567 a decade later. [For a western social democracy, like Sweden or the Netherlands, the Gini co-efficient is in the order of 0.3, with Britain historically nearer 0.35, and the U.S.A. exceeding 0.4 and nudging 0.45 or higher].

Chiquita, Dole and Del Monte were banished; Castro also managed to reduce inequality to a Gini co-efficient of around 0.38. Health and education provision increased: all mothers have access to maternity care, school take up is one hundred percent at primary level and ninety percent at secondary level. Literacy in Cuba is the highest in Latin America, exceeding that of countries in the region with a much longer history of universal education.

Tertiary education levels in Cuba in 1999 compare with those of a western democracy. In this context the five schools for the arts would seem unremarkable but half a century ago in a country where education for all and provision for the arts were both minimal, the idea of the equivalent of the Royal College of Music was a remarkable statement of faith. With open access to children of all citizens, the commission given to Ricardo Porro was eagerly taken up by the building workers who worked on the construction of the unfinished project. Between 3 January 1961 and 26 July 1965, Porro and collagues worked on designing what Fidel Castro opined was "the most beautiful academy of arts in the world".

Porro himself designed the completed School of Modern Dance and the School of Plastic Arts, also completed and in use. Italian colleague Roberto Gottardi was responsible for the School of Dramatic Arts, most of which excepting the performance thatre was built; and another Italian architect, Vittoria Garatti, did the designs for the School of Music, of which a third is in use, and the School of Ballet. This building, when ninety percent completed, was rejected by its client, the directrese, Alicia Alonso, a famous prima ballerina.

These buildings were, and even in their tropical creeper-encrusted state still look, remarkable structres in brick, tile and terracotta.

Materials choice was dictated by the economic blockade of the U.S.A. on Cuba: steel and cement were impossible to obtain. Consequent to the materials choice was the principal construction device: the Catalan vault. The Catalan vault is two layers of thin tiles, often of terracotta but brick could be used; one layer is placed orthogonally and the second diagonally with a thick bed of mortar between them. It is derived from historic practice in Mediterranean countries, not least in Catalonia. In Barcelona and other cities of the seaboard, it becomes part of the cultural heritage, the separateness from Castile. In 1870s, Rafael Guastavino y Moreno a leading exponent of the building technique moved from Barcelona to the U.S.A. where he and his son (also Rafael) were responsible for the roof structures of more than one New York masterwork. Pennsylvania Station by Mead, McKim and White is no more: the main waiting room and its original concept, the Baths of Caracalla in Rome, were both similarly roofed. Ralph Adams Cram adopted the Catalan vault for the dome of the Cathedral of St John the Divine.

The Catalan vault has the tremendous advantage that it exerts no lateral thrust. This feature of the Catalan vault is exemplified by one English variant known to this reviewer: the great hood over the door to the former Public Library in Leamington Spa, Warwickshire. Designed in 1902 by a little-known architect, J. Mitchell Bottomley, the building is in red brick and red terracotta. The barrel-vaulted hood at the entrance has two visible layers of thin terracotta slabs and extends out unsupported for over a metre.

The vault is an accepted device but the architects of the Schools of Art, in choosing to employ the "revolutionary" technique, sowed the seeds of the ultimate abandonment of the beautiful concept. The Catalan vault is from the craft tradition in architecture not the engineering one and is both labour intensive and requiring skilled masons.

It is the story of what was done and how much more was not done that is the subject of Loomis' book. A series of uncaptioned colour photographs form the opening pages; they demonstrate how beautiful the brickwork really is. The brick pillars of the central entry and the colonnade of the School of Plastic Arts rival those of Folly Farm, Sulhamstead, Berkshire, by Lutyens. The interior streetscapes of the School of Dramatic Arts remind this reviewer of the campus of the University of Lancaster. The brick colour here, of course, is different. The effect is very similar: somewhere it is pleasant to be.

Integral to the story of the National Schools of Art is Loomis' chapter four, 'Crime and Punishment', echoes of Dostoyevsky and tragic Russian farce, in this case overlaid both by professional and class jealousies and by a peculiarly Cuban dimension of the tripartite conflicts between native, Spanish and African elements in the island culture. The influence of Russian ideas of standardised building, gaining increasing ground in Cuba after 1961 were allied with increasing centralization of approval in the building process; and Cuban higher education was among the first to adopt the notion of the architect as mere technician and not the lead professional. That meant a subordinate or non-existent role for aesthetics and for the specifics of site and context.

The abandonment of the "revolutionary" concepts inherent in the National Art Schools was, if not inevitable, at least likely given these pressures. But how much more pleasing as an environment for study appear these buildings than one English contemporary. The Royal Northern College of Music, Oxford Road, Manchester, by Bickerdike, Allen, Rich and Partners, is a concrete box, with both street frontages on stilts: humans walk above traffic in an unfinished vision of the car led city. Externally it is dull grey slabs: now vulgar beside MMU's beautiful new Humanities Centre in clean red brick.

DAVID H. KENNETT

BRICK IN PRINT

Between Summer 1999 and Spring 2000, the Editor and the Chairman of the British Brick Society received notice of a number of publications of interest to members of the society. The articles are given in author order. It is hoped to make this a regular feature of *BBS Information*, with surveys appearing usually twice a year. Members who are involved in publication and members who come across books and articles of interest are invited to send brief summaries to the Editor.

DAVID H. KENNETT

1. Paul Barnes and Ron Firman, 'The gypsum, brick and associated industries of Newark', *East Midland Historian*, 8, 1998, 23-28.

Because gypsum is interbedded with and overlain by clays suitable for brick, tile and rain

manufacture, the two industries often developed under one management. Until 1860, operations were small scale and often owners were in dual occupations. Because of the exceptional quality of the raw material Newark's gypsum products achieved national reputation whereas the brick industry teneded to serve only local needs. In the late nineteenth century, both industries expanded. Two companies were predominant: Vale of Belvoir and Cafferata & Co. Both had large brickworks and the latter could produce 100,000 bricks a week in the 1930s.
PAUL BARNES, RON FIRMAN (Author's conclusions, adapted)

2. Molly Beswick, `53. Brick, Tile and Pottery Manufacture', in K. Leslie and B. Short, (eds.), *An Historical Atlas of Sussex*, Chichester: Pillimore & Co., 1999, 106-107.

The map based on parishes shows the number of known brickyards operating at some point in the eighteenth or nineteenth centuries in each Sussex parish. Six parishes have records of over ten yards working while others, mainly on the Downland, have no recorded brickyard.

The essay valuably makes the point that the Brick Tax, imposed 1784-1850, had little impact. Each of the Martello Towers built in the Napoleonic Wars required over half a million bricks. The railway had a major impact because of cheaper transport of the finished product and this led to sources of clay in the Weald at Burgess Hill, Plumpton, Partridge Green and Southwater, near Horsham, becoming the sites of important new brickworks; the last-named being the source for many of the bricks from which Worthing was built.

Peak numbers of brickyards dates to the 1890s but the maximum volume of production belongs to the twentieth century. The large-scale works at Warnham Station, north of Horsham, was a major centre of production able to distributed large numbers of bricks by rail.
MOLLY BESWICK, DAVID H. KENNETT

3. Michael Dumbleton, `54 Brickmaking' in J. Dils (ed.), *Historical Atlas of Berkshire*, Reading: Berkshire Record Society, 1998, 108-109.

Berkshire is defined as the historic county, thus including Abingdon and the Vale of the White Horse but excluding the temporary addition of Slough.

Brickmaking sites, in 1851 from the census and in 1870 from the Ordnance Survey first edition, were on London Clay and the Bagshot Beds to the south-east of Reading, on the Reading Beds to the north-east, on each of these to the south-west, and on old but not on chalk deposits to the north-west. In contrast to west and north-east Berkshire where few yards opened after 1870, the industry flourished in the south-east of the county; an exception is the large Pinewood Estate Brick and Tile Works at Hermitage, near to the old Didcot to Newbury railway line.Opened before 1912 and closing only in 1967, this had three beehive kilns and a Hoffmann kiln.

Notable Berkshire brickworks are those of Thomas Lawrence and Sons whose products were used at Royal Holloway College, Egham, just over the Surrey border, and whose yard at Eastheath, Wokingham, supplied the facing bricks for Westminister Cathedral. Hand-made bricks from Warfield as laste as the 1980s were used for restoration work at Downing Street, Hampton Court and Windsor Castle.
MICHAEL DUMBLETON, MARY BENTLEY, DAVID H. KENNETT

4. Gwen Heeney. `The Creative Brick ornament and architecture', *Studio Pottery*, 36, Summer 1999, 34-41.

Brick as ornamentation goes back to the Babylonians but the article concentrates on the last fifty years beginning with Henry Moore's sculptures on the Bowcentrum Building Centre, Rotterdam. The geographical range is wide: England is represented by the cones of the Landmark Entertainment Centre, Ilfracombe, Devon, and Anthony Gormley's `Brick Man' in Leeds; the

U.S.A. by Archie Bay Foundation, Helena, Montana; Denmark by Ulla Viotti Telemuren, Aathenae; and Wales by Heeney's own work at the Branwen Arena, Welshpool, Powys.

In part the article was a taster for the University of Wolverhampton's conferenece in July 1999 `Creating the Yellow Brick Road', held at the Telford Campus.

DAVID H. KENNETT

5. Michael Lee, `Heritage Havens for Animal Life', *National Trust Magazine,* 97, Summer 1999, 42-44.

A pair of Egyptian geese nesting in the eyrie of Tattershall Castle, the brick keep as a roost for bats, the range of butterflies in pesticide-free lawns and adjacent meadows are just some of the animals which now use the fiteenth-centuryt tower house and its surroundings.

Something else to look out for on visits to brick buildings.

DAVID H. KENNETT

6. Robin Lucas, `Neo-Gothic, Neo-Tudor, Neo Renaissance: The Costessey Brickyard', *Journal of the Victorian Society,* 1997. 25-37.

This is a useful account of the Costessey Brickyard, Norfolk, which produced the well-known and widely used `Cosseyware': Costessey is pronounced and often spelt `Cossey'. The yard was active from the 1830s until 1915, and was operated by the Gunton family. The wide variety of decorative bricks produced there, and especially their Neo-Tudor chimneys, were much in demand in the Victorian period. However, the yard was also able to supply decorative brickwork in the Italian, Dutch or French Renaissance styles. In many cases these were expressly made to the architect's designs for a specific building. The Norwich architect, George Skipper, in particular, often worked closely with Guntons, and the surviving upper storeys of his own office at No. 7 London Road, Norwich, are one of the best examples of this collaboration. After the Guntons surrendered the lease on the Costessey yard in 1915, they continued to operate other brickyards in Norfolk, at Little Plumstead, West Runton, and Barney, until 1939.

The article is fully referenced, and the black-and-white photographs not only illustrate buildings where Costessey products were used but also some of the special moulds employed, a view of the Costessey brickyard about 1900, and a group photograph of the same date showing the directors and workers. The selct list of buildings which used decorative bricks from Costessey shows that, while the majority were in Norfolk itself, the bricks were used as far afield as Brighton, Reading, Leicester, Knutsford, and Salford.

ROBIN LUCAS, ALAN COX

7. E. Williamson and N. Pevsner, with M. Tucker, *The Buildings of England: London Docklands,* London: Penguin Books, 1998, price £11-99.

Members who joined the coach tour after the society's 1991 AGM might like a reminder of the day. Many of the illustrations are of places visited: the new shopping centre in the former New Tobacco Warehouse of 1811-14; the former St Paul presbyterian Church of 1859; the Roman Catholic church dedicated to the Most Holy Trinity of 1951-61 in Bermondsey; and also in Bermondsey, The Circle in Elizabeth Street, not unfortunately in colour so we have to recall the blue brick.

The text is valuable and wide-ranging. My copy has been much used for tracking brick warehouses built during the period when the Brick Tax was levied.

DAVID H. KENNETT

8. D. Yeomans, *Construction Since 1900: Materials,* London: Batsford, 1997. Paperback, £20.00.

British Brick Society member, David Yeomans, offers six chapters. Brick is most prominent in ch. 2, 'Traditional construction' but ceramic building materials are found elsewhere, as with the contemporary drawing of the Harrods Depository in Barnes which has a reinforced concrete frame like all large Edwardian Post Offices, which are likewise brick-faced.

In addition to the text about brick and mortars, there are useful tables on limes, wall thicknesses, brick strengths, LCC regulations, and damp proof courses.

One mall caveat: the reporter's copy was purchased at a bus station boksellers and not at full price. It may be not easy to obtain a copy.

DAVID H. KENNETT

BRICK AT RISK

Most of the English broadsheet newspapers have an architecture correspondent and architectural features appear once or even twice a week. Two in *The Times,* published as the final editing of this issue of *British Brick Society Information* was in progress, each drew attention to a remarkable brick building. Each of these buildings, I suspect, may be little-known.

On 30 May 2000, the subject of Marcus Binney's article was Serle's House, Southgate Street, Winchester, built about 1720 and attributed to Thomas Archer. It is two-and-a half stroreys with giant Doric pilasters defining the two outer bays either side of the three-bay centre whose two outer bays project by means of quadrant curves. Since 1796, Serle House has been connected with the Royal Hampshire Regiment, first as the regimental headquarters and subsequently as the regimental museum with the memorial garden open daily. The owners, Ministry of Defence, have invited offers for the freehold, causing more than a little disquiet in Winchester.

On 6 June 2000, Marcus Binney wrote on the chapel of 1881 by Henry Woodyear at the Convent of St John the Baptist, Clewer, on the outskirts of Windsor. The whole convent is on the market for no less than £10 million. Designed to preserve young women in a garrison town from the evils of prostitution, founded by a remarkable woman, Mrs Mariquita Tennant, in 1838, and with the new venture backed by the outstanding fund-raising skills of the local rector, Canon T.T. Carter, Woodyear began work on the convent in 1853, providing a small chapel in 1857. The present chapel of five bays to the nave and aisles and a five-bay chancel with a polygonal apse. The bricks look exceptional in their quality and the bricklaying skills match. No expense was spared: the stained glass was by Hardman.

That the need for the convent remained is shown not only by the chapel but also by extensions by Woodyear in 1874 and by Cecil Hare in 1926. A university contemporary was accepted as a postulant in 1964.

DAVID H. KENNETT

Heritage Open Days, 1999

The second weekend in September each year has come to be treated in recent years as 'Heritage Open Days' for most of England. It began in the late 1970s as the annual cycle ride round Suffolk churches to raise money in the Diocese of St Edmundsbury and Ipswich for individual churches and the diocese. By the time I was living in Norfolk (in 1981), a second diocese had joined the scheme and both the nonconformist denominations and the Roman Catholic Church had begun to participate. It gave an opportunity to gain entry to churches normally kept locked.

By 1999, more than twenty years after the scheme had started, it had been enlarged to include secular building often not open to the public. The church fund-raising scheme still survives, as I discovered at St Bartholomew's, Moreton Corbet.

A further innovation is to hold separate 'London Heritage Days' on the third weekend in September, when government buildings often closed to public access are open to scrutiny.

Other members doubtless have visited little-known buildings, either in 1999 or earlier years; part of the intention behind these brief notes is to encourage others to contribute short notes of buildings they see on 'Heritage Open Days, 2000' which will be Saturday 9 September, with the cycle ride, and Sunday 10 September 2000.

DAVID H. KENNETT

THE SUMMERHOUSE, EYTON-ON-SEVERN, SHROPSHIRE

The Summerhouse at Eyton-on-Severn, Shropshire, is the most visible surviving relic of a major house, rated at 28 hearths in 1670, built for Sir Francis Newport in the 1590s and subsequent decades. It is one of two garden buildings joined by a wall of red sandstone blocks; the second is now the octagonal drawing room of the farmhouse which ultimately replaced the mansion at Eyton. When built, the Summerhouse and its twin were used for the banquet, or dessert course, of a substantial meal. This, served in the enclosed first floor, would have been eaten overlooking the gardens of the house.

The Summerhouse is octagonal with four walls of red brick with dark blue brick diaper pattern and four walls originally of red Severn sandstone, but repaired in red Grinshill sandstone. The inner walls of sandstone were originally an open arcade on the ground floor. On the south-west is an octagonal stair turret, with three walls in red brick and the others in sandstone.

In 1981 the Summerhouse was derelict but has since been restored by the Vivat Trust for use as a self-catering holiday cottage. The building is of considerable interest and a full account is being prepared for inclusion in a future issue of *BBS Information*.

DAVID H. KENNETT

MARLBOROUGH HOUSE, LONDON

In the first volume of *Vitruvius Britannicus,* Colen Campbell attributes Marlborough House in Pall Mall to 'Mr Wren' - that is not to *Sir* Christopher Wren but to his son, also named Christopher. Wren *pere,* the only architect trusted by Sarah, Duchess of Marlborough, was engaged to design her new house, next to St James' Palace; he seems, however, to have passed the commission to his son. The house was built in 1709-11 of orange/red bricks (imported from the Netherlands) with Portland stone dressings. The heavily rusticated stone quoins are not typical of Sir Christopher's own domestic architecture, though they were a mannerism that Wren *fils* may well have picked up from Nicholas Hawkesmoor's Orangery at Kensington Palace (1704), where they are of cut brick. There has been alteration to the house, including the addition

of attic storeys, the work of Sir James Pennythorne in 1861-63.

The brickwork of Marlborough House and particularly its colour were displayed in television news reports of the meeting of Commonwealth Foreign Ministers in October 1999.
T.P. SMITH

MORETON CORBET CASTLE, SHROPSHIRE

Moreton Corbet Castle is of two distinct periods: a stone-built medieval castle of *c.*1200 and a stone-faced range, the earlier of whose builders, Sir Andrew Corbet, died in 1579. His sons continued but did not complete the work. The Elizabethan range was burnt by parliamentarian forces in 1645.

Substantial portions remain. However, well-known photographs give only the slightest hint that the shaped gables and Renaissance style decoration, all of which are of stone, are walls backed by solid red brick, five and six bricks thick, which would have been thought necessary to carry the structure of basement, two main floors and an attic storey. The depth of the brickwork can be seen where joist holes remain.

For photographs see N. Pevsner, *The Buildings of England: Shropshire*, (Harmondsworth: Penguin Books, 1958), pl 44a., and S. Porter, *Destruction in the English Civil Wars*, (Stround, Glos: Alan Sutton, 1994), plate on page 124.
DAVID H. KENNETT

WALTER RITCHIE: BRICK SCULPTOR

A retrospective exhibition of the work of the sculptor Walter Ritchie was held at the Museum and Art Gallery, Royal Pump Room, Leamington Spa, Warwickshire, from 1 April 2000 to 14 May 2000.

Like many true artists, Walter Ritchie seems to have been an intensely private man and essentially a lone worker. Among the literature available to peruse at the exhibition was a piece which appeared in *The Sunday Telegraph* on 12 May 1996 by Byron Rogers entitled `Sculpture - Do's and Don'ts' at the time of the only previous retrospective, held in Ramsgate Library Gallery. Walter Ritchie exemplified `the Don'ts': non-metropolitan, unexhibited, with some uncertain patrons, without assistants, and above all a craftsman.

Walter Ritchie is best known to brick enthusiasts for `The Creation', five panels on the exterior walls of Bristol Eye Hospital and the relief of Sir Leonard Hutton at the Oval commemorating the score of 364 runs in one innings. Brick was not the only medium for his sculpture; there are the two panels of `Man's Struggle' in Portland stone, now on the south wall of the Herbert Museum and Art Gallery at Coventry. These were originally commissioned for a different public site in the city but moved from the shopping precinct during reconstruction work. There is also work in marble, metal, perspex, stone and wood.

Born in Kenilworth, his sculptures were meant to be seen out of doors. The retrosepctive in Leamington Spa included smaller pieces, such as the signboard for the `Sir Isaac Newton' public house in Cambridge, and models and test pieces for large works; these included the head and hands of Hutton and `Anumal Life' from ¬the Creation'.

Much of the material was not in brick and from private collections: the only named lender, Brian Bush, the architect of the church of Our Lady of the Wayside. Shirley, leant`The Cockrell' a fearsome dragon-like piece in wood, a material with which Walter Ritchie showed an equal sympathy to brick. Included also was some very exquisite jewellery in a variety of. metals

Two useful pamphlets were issued in conjunction with the exhibition: *Walter Ritchie - a man and his work* and *Walter Ritchie - Sculpture Trail.* Both of these were unavailable by the final weekend.

In his lifetime, Ritchie published two books on his art: *Walter Ritchie - Sculpture in Brick and Other Materials* in 1978 and *Walter Ritchie - Sculpture* in 1994.

Ritchie's work appears in an amazing variety of places:the earliest (1939) are stone fittings for the interior of Eric Gill's only church, St Peter's, Lowestoft Road, Gorleston-on-Sea, Norfolk; the church and accompanying cloister and presbytery are brick-built..

Between 1949 and 1991 there was work in other churches, in banks, and especially in schools in Warwickshire and Coventry. Notable brick pieces are `The Fireman' outside the fire station on Mason's Road, Stratford-upon-Avon, and Hanley Girl for the NatWest Bank, 1 Upper Market Square, Hanley, Stoke-on-Trent, as well as the powerful representation of `The Crucifiction' at the Church of Our Lady of the Wayside, Stratford Road, Shirley Other pieces for the same church use different media. Unknown to me before the exhibition are three pieces in the garden of Delapre Abbey, Northampton, showing lovers, boxers and a lady with kittens.

A final point: quite by chance, barely twenty-four hours after I visited the exhibition for the second time, in the television series `Tate Modern' broadcast on BBC2 in May 2000, the notorious piece by Carl Andre known as `Experience VIII' appeared. Walter Ritchie's `Atlanta Contemplating her Toilet' uses about the same number of bricks as the Andre piece. In one of this series of five panels commissioned by the Brick Development Association, Ritchie used inaglio and high relief carving. Not only did the Fletton bricks require careful bricklaying, and the sculptor was always generous to those who prepared the canvas, but the carving required superlative skill.

In a hundred years time, I have no doubt that Walter Ritchie's work will continue to be appreciated *and to give pleasure.*

DAVID H. KENNETT

THE LATE MAURICE EXWOOD

Members will have noticed the appreciation of the late Maurice Exwood on an earlier page of this issue of *BBS Information.* During his lifetime, Maurice accumulated a great many notes on a variety of brick subjects, notably the Brick Tax and its ramifications, including oversized bricks and their manufacture and uses, and mathematical tiles.

Often a person's working papers in their hobby or even those connected with the paid occupation become difficult to trace after death. In view of the importance of the papers accumulated by Maurice Exwood for our subject, the British Brick Society became most anxious to trace their whereabouts.

Through the good offices of Ian Exwood, Maurice's son, we have been able to locate the papers. They have been passed in complete files to Bourne Hall Museum, Ewell, Surrey.

DAVID H. KENNETT,

BRITISH BRICK SOCIETY IN 2000

Six visits and meetings have been arranged for 2000. The list of remaining meetings is given below. Details of July Meeting were included in the last mailing. Full details of the Autumn and November Meetings are in this mailing.

July Meeting
Saturday 22 July 2000
Essex, including Bulmer Brickworks, Cressing Temple and Faulkbourne Hall .

Autumn Meeting
Saturday 23 August 2000
Nottinghamshire, including Dorket Head Brickworks and Kingshaugh Hall, Darlton.

November Meeting
Saturday 11 November 2000
Afternoon viisit to Glyndebourne Opera House

Further details of the society's meetings in 2001 will be included in the next mailing. Provisional arrangements are:

Spring Meeting
A visit to rural south-east Warwickshire is planned for March 2001 and this will include the brick kiln of the Oxford Canal at Fenny Compton, where there was a tunnel at the canal's highest point.

Annual General Meeting
Saturday 9 June 2001
King's Lynn

July Meeting
Basingstone area including Lutyens' offices for the Old Basing Brickworks of 1905, Old Basing church of post 1659 and the site of Basing House, demolished in 1645 after a siege.

Ideas for urban venues in future years include Blackpool, Boston, Burton-on-Trent, Coventry with a brickworks visit, Halifax with brickworks visit, Oxford including Keble College, Rugby including Rugby School, Scunthorpe, Stafford, Warwick, Wolverhampton, and Worcester.

A further visit to the City of London, centred on its eastern part has been suggested. Two visits to outer London are in preparation: one in the Chiswick area including Voysey's factory building for Sanderson Wallpapers and the other in St John's Wood to include Lord's Cricket Ground with the terracotta pavilion by Frank Verity.

Ideas in preparation for 2002 include a Western Spring Meeting in Gloucester, based on Gloucester Docks with a rare opportunity to view the major maps of canals and brickworks, a Spring Meeting at Stratford-upon-Avon while the theatre still stands, and a July Meeting in southern Suffolk.

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