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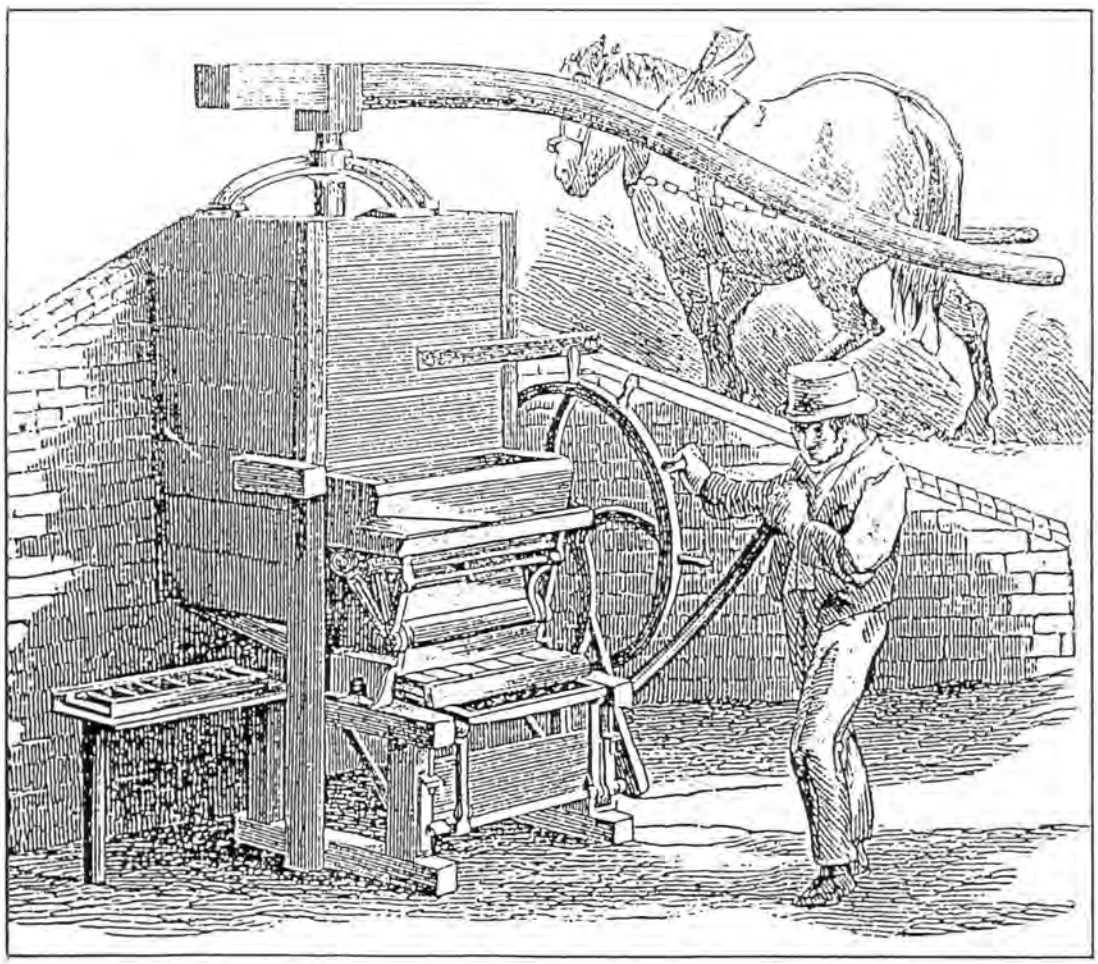

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COVER ILLUSTRATION

Hall's horse-assisted brick-moulding machine, 1846. The picture is relevant to the use of horses in nineteenth-century brickmaking, considered in the editorial to this issue, and to the introduction of machines into the industry, discussed in Part III of 'The Brick Tax and its Effects' in this issue.

Editorial: Brickyard Horses

'"Then," said James, "you don't hold with that saying, 'Everybody look after himself and take care of number one'?"

'"No, indeed," said John.... "No, Jim, no! that is a selfish, heathenish saying, whoever uses it...".'

Those sentiments were expressed by Anna Sewell (1820-78) in a book which has become one of our great 'children's classics', though children were not its original intended audience. The book, of course, is Black Beauty, published just one year before its writer's death. It occupies a worthy position in the long-established genre of animal stories, which reached its most accomplished achievement in Tarka the Otter and other tales by Henry Williamson (1895-1977) and, perhaps, its most magical expression in Nils Holgerssons underbara resa genom Sverige by Selma Lagerlöf (1858-1940; translated into English in two volumes as The Wonderful Adventures of Nils and The Further Adventures of Nils). This Swedish classic begins with the depiction of a boy who is cruel to animals, and many stories in the genre involve this theme of cruelty. Black Beauty is no exception, and includes a chapter on cruelty to horses connected with brick-making.

Often herself in great pain, and writing from her sick-bed, Anna Sewell was genuinely concerned with others and passionately so about the ill-usage of horses. It is a pity that her work is too often judged these days by the bland television series which has nothing to do with the original story. It thus comes to be classed with pony stories for nice little girls, in the manner of those produced by the Pullein-Thompson sisters. And yet in the inter-war period Jarrolds were placing it firmly on their boys list. The book is not only sincere, but also both powerful and morally subtle: Anna Sewell knew then, what some at Westminster still need to learn, that to explain an evil as the result of bad social conditions is not to condone that evil. The book is even, at times, subversive - to condemn fox-hunting and war and the expansion of empire in 1877 took more than a little courage; but then Anna Sewell came of Norfolk Quaker stock.

She put into practice what she advocated in print: as Eleanor Graham writes in her introduction to the Puffin edition of Black Beauty (1954), Anna Sewell 'never used the whip, but merely held the reins loosely in her hands, adjuring the animal to do what he knew to be necessary...'. This love of horses and hatred of cruelty was communicated in her book, and it is in chapter 20 that we find the ill-treatment of horses used to transport bricks. Horses were a mainstay of the Victorian economy, as a few authors have stressed, including our regular editor, David H. Kennett in his fascinating Victorian and Edwardian Horses from Historic Photographs (1980) and the editor of the Oxford World Classics edition of Black Beauty (1992), Peter Hollindale: 'In the 1870s the horse was at its time of greatest economic centrality in English life.... The world of Black Beauty is one in which the varied and mundane necessity of horsepower increasingly begets ill-usage.'

'The note was delivered,' writes Anna Sewell in Black Beauty, 'and we were quietly returning till we came to the brickfield. Here we saw a cart heavily laden with bricks; the wheels had stuck fast in the stiff mud of some deep ruts; and the carter was shouting and flogging the two horses unmercifully. Joe pulled up. It was a sad sight. There were the two horses straining and struggling with all their might to drag the cart out, but they could not move it; the sweat streamed from their legs and flanks, their sides heaved, and every muscle was strained, whilst the man, fiercely pulling at the head of the forehorse, swore and lashed most brutally.

'"Hold hard," said Joe; 'don't go on flogging the horses like

that; the wheels are so stuck that they cannot move the cart." The man took no heed, but went on lashing.

'"Stop! pray stop," said Joe; "I'll help you to lighten the cart, they can't move it now."

'"Mind your own business, you impudent young rascal, and I'll mind mine." The man was in a towering passion.... Joe turned my head, and the next moment we were going at a round gallop towards the house of the master brickmaker....

'"Hulloa! young man! you seem in a hurry; any orders from the Squire this morning?"

'"No, Mr Clay, but there's a fellow in your brickyard flogging two horses to death. I told him to stop and he wouldn't; I said I'd help him to lighten the cart, and he wouldn't; so I've come to tell you; pray, sir, go." Joe's voice shook with excitement.'

Fortunately, there is a just outcome to this incident.

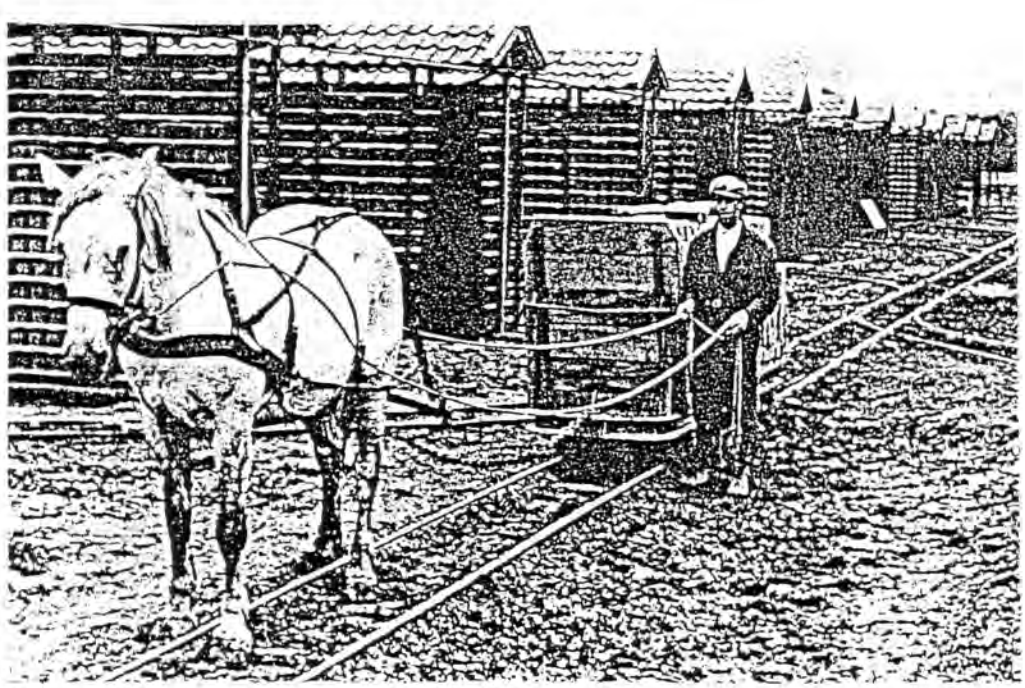
Worse, perhaps, than Anna Sewell's account are the details recalled by a Dutch brickmaker from earlier this century in M. De Koninck and H.Marijnissen (ed. L.Vlind), Steenovensvolk (1988): under the pseudonym 'Jaap', he remembers how a neighbour 'had a thick stick with a nail in it and he used to hit the horse with it.... We lifted up the tail of that animal: it was just a mass of mince-meat there...'. The horses kept by the same man 'got nothing to eat either. The boss kept pigs and the horses were given pig-swill instead of horse fodder.... The horses were reduced to eating rush-mats from sheer hunger, and if they got the chance they used to eat your lunch-bag too. / Ah, it's a good thing for the animals as well that all that's finished with.'

Horses were used not just for transporting bricks but for haulage within the yards and for working various machines. Doubtless there is other material on the use - and abuse - of horses in nine-teenth- and twentieth-century brickyards. It would make interesting, if at times poignant, reading in these pages.

* * *

It is good to be back, temporarily, in the editor's seat, in order to help out our regular editor, David Kennett, during yet another of his many moves. To do so is to repay, however inadequately, his kindness to me during problematic times of my own in the past year. For he is certainly one who does not live according to the 'selfish, heathenish saying' quoted in the first paragraph of this editorial.

Terence Paul Smith, Guest Editor



A working horse at a Dutch brickyard

THE BRICK TAX AND ITS EFFECTS - Part III*

Terence Paul Smith

(10) More contentious is the extent to which the brickmaking industry itself was affected by the imposition of the Tax. Of one thing we can be sure: the number of bricks manufactured rose dramatically over the period of the Tax as a whole (fig.3). The Tax was collected regionally, and the indexed figures (1830 = 100) for three such regions tabulated below also illustrate the rise in production, especially marked in Kent between 1832 and 1846:[53]

	1830	1832	1834	1836	1838	1840	1842	1844	1846	1848
Hertford	100	60	77	79	78	123	105	117	141	138
Rochester	100	79	92	138	138	195	173	221	333	191
London	100	60	81	103	105	138	136	132	173	100

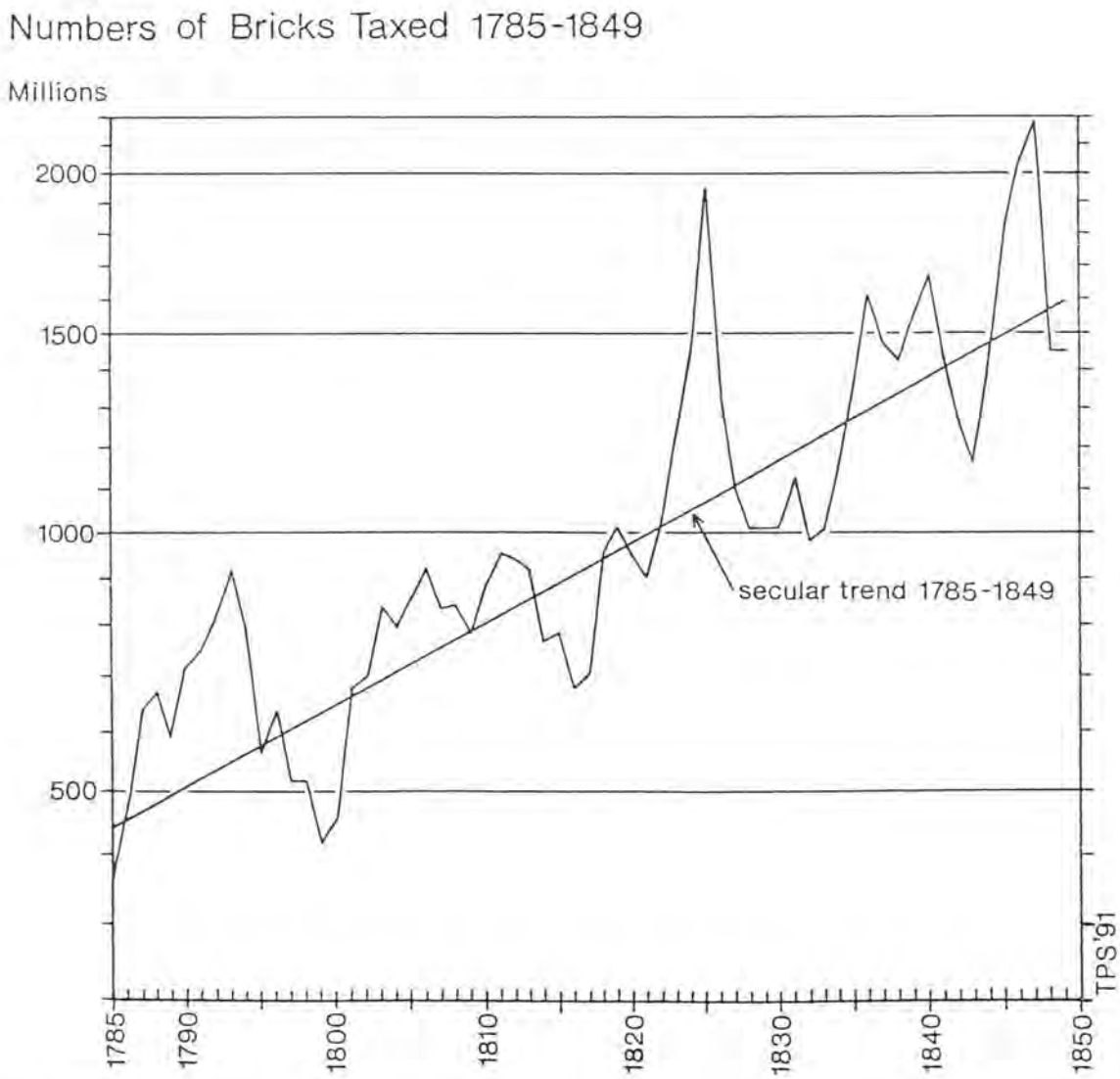


Fig.3

*Parts I and II of this article appear in Information 57 (November 1992) and 58 (February 1993) respectively; notes and references begin at p.11.

What both my graph and Shannon's indices also show is a series of fluctuations, following the general trends in the building industry, and clearly not related in any way to the Brick Tax. It is therefore pointless to compare individual isolated figures, and indeed their citation can be positively misleading. Kenneth Hudson, for example, remarks that in 'the year before the duty was repealed, a charge was made on 1800 million bricks. In 1854 the total [produced, though no longer taxed] was approximately 2000 million...'.[54] Actually, his first figure (more precisely 1,795.58 million) is the quinquennial average for 1845-9.[55] The correct 1849 figure of only 1,462.7 million would have vastly strengthened the case for a rapid increase after repeal of the Tax, but only by failing to notice that the 1849 figure and that of 1848 represent a trough in the fluctuating series, and that only seven years before 1854 the 1847 figure had already topped two thousand million at 2,193.8 million, and the previous year was only slightly lower at 2,039.7 million. There was no rapid increase after repeal of the Brick Tax and it will not do to cite selective figures in support of the alternative thesis. Another way of arriving at a similar conclusion is to look at the rise in the housing stock, since most houses were being built in brick. The following decadal figures from 1801 to 1851 are telling. The Tax was, of course, operative throughout the period 1801-1850.[56]

	Inhabited	Uninhabited	Total
1801	1,575,923	57,476	1,633,399
1811	1,797,504	51,000	1,848,504
1821	2,088,156	69,707	2,095,126
1831	2,481,544	119,915	2,601,459
1841	2,943,945	173,247	3,117,192
1851	3,278,039	153,494	3,431,533

Additionally, bricks were used in quantities of many millions for civil engineering projects, largely connected with the canal network and, later in the period, the railways, as well as for other buildings. 'More building (and civil engineering) appears to have been carried out in brick by 1850 than ever before...'.[57] In London, brick was in such high demand that local brickmakers could not cope and builders had to go beyond the metropolis for supplies, principally, though not exclusively, to the many brickyards of Kent and Essex.[58] None of this suggests a stagnating or even a fettered industry.[59] Moreover, 'there was no sudden and steep rise in brick production immediately following the repeal of 1850.'[60]

Did imposition of the Tax, however, retard the industry by discouraging the introduction of machinery? The charge was made at an early date. Writing shortly after repeal of the Tax, Humphrey Chamberlain claimed that attempts at improvement in the industry, including the introduction of mechanisation such as Chamberlain himself strongly advocated, had been frustrated by the Brick Tax until 1850.[61] And Alan Cox has stated that 'repeal of the Brick Tax in 1850 gave both an impetus to the production and improvement of brick machines and also the incentive for certain brickmakers to invest in large-scale production...'.[62] That brickmakers were slow to adopt mechanisation - despite the quite large number of patents granted - is beyond question: as late as 1867, for instance, Karl Marx could write of 'tile and brick making, in which industry the recently invented machinery is ... used only here and there.'[63] And it would be - has been! - easy to blame this tardiness on the Brick

Tax. What is striking, however, is that precisely the same phenomenon is to be observed in a number of continental countries, where, of course, the Brick Tax and its mid-century repeal was not a factor. Writing at the end of the century, and chiefly concerned with France, Leon Levêfre, for example, commented that 'for a long time the use of machines was very little extended.'[64] In the Netherlands and Germany too machinery came only slowly into the traditional brickmaking industry: '... in both countries,' writes G.B.Janssen, 'brickmaking by hand held its own until well into the twentieth century.'[65] Likewise in Belgium: 'Despite mechanisation, the brick industry remained until long after 1940 an area in which hand-production played an important rôle.'[66] Beyond Europe, a similar situation obtained in North America[67] and in Australia.[68]

Janssen reviews several disadvantages of early machine-making.[69] Bricks pressed with a lever-operated machine lacked the solidity of handmade bricks, although, he adds, a steam-powered machine of 4-6 HP could produce bricks of sufficient hardness and solidity. The machine-made bricks possessed too little resistance to the elements and tended to flake under their influence; the bricks were too smooth and mortar would not adhere to them sufficiently; and the smooth, shiny appearance was aesthetically unpleasing; of this group of three alleged disadvantages, Janssen himself rejects the first two, but underscores the third (in relation to the Netherlands; taste was different in Britain). The sharp angles of machine-pressed bricks caused them to be easily damaged in transit, though this could be overcome by better packing, for example with straw. Initially (in the Netherlands), machine-made bricks were more expensive than their handmade rivals because of the costs of investing in the machinery and because of higher wage costs, since fewer youngsters could be employed than with handmaking; the price differences, however, had become minimal, and in some cases non-existent, by the 1870s. Mechanisation of an existing yard entailed a great deal of re-organisation; with handmaking a fixed profit-margin was certain, but this was not so with machine-making, and this 'restrained the often conservative established brickyards from investing too much money in machines, where the methods already in use still seemed profitable.' There were a great many machines on the market, since none was suitable for all types of clay: 'this was perhaps the most important argument that the brickyards possessed'; failures which occurred through using unsuitable machines were blamed on poor construction of the machines themselves.

Some at least of these points are found in the British debate on machine-made versus handmade bricks. On the matter of quality, Humphrey Chamberlain claimed that bricks 'made by hand are generally inferior to machine-made ones';[70] but others disagreed: replying to Chamberlain, Charles May spoke of the bricks made at 'Rutter's manufactory, down the Thames' (that is, at Crayford, Kent): 'They are, perhaps, the finest stock bricks in the neighbourhood of London.'[71] A Nottingham brickmaker, giving evidence before the Royal Commission on Labour, exhibited genuine pride in his skill and also referred to the poor ability of machine-made bricks to withstand the weather: 'This brick is made by hand. That is what I call a bit of good English oak.... This is the latest style of machine made brick .... Now, this brick has not been made six months and ... when it gets wet and the first frost gets into it, [it] spliches [splits] it off.'[72]

Dobson made the point about mortar not adhering properly to smooth bricks, although he was writing specifically of those made 'under great pressure'; he also mentioned the problem of additional weight of these denser bricks, which 'increases the cost of carriage, and renders it impossible for a bricklayer to lay as many in a given

time as those of the ordinary weight'; but he conceded that 'for some purposes, dense bricks are very valuable.'[73] These arguments, however, concerned bricks of a particular type and were not generally applicable.

More relevant were worries about relative costs. 'Some were disappointed at the failure of machinery to make more than 2s. per thousand difference in the retail price of machine over hand-made bricks. Doubts were expressed about the worth of the capital outlay for all but the largest engineering works.'[74] Dobson was amongst the doubters: 'The actual cost of moulding bears so small a proportion to the total cost of brickmaking, that in small brickworks the employment of machinery would effect no ultimate saving...'. This would be, we may suppose though Dobson does not state it, because of the large capital outlay, as well as the costs of maintenance and repair. With more confidence than we can now see was warranted, he continued: '... it is not to be expected that machinery will ever be generally introduced for brickmaking.'(!) But he adds: 'in works situated near large towns, or in the execution of large engineering works, the case is very different, and a contractor who requires say 10,000,000 of bricks, to be made in a limited time, for the construction of a tunnel or a viaduct, can employ machinery with great advantage.'[75]

Others shared with their continental counterparts bad experiences with machines. Replying to Chamberlain's complaints, W.Dennis insisted that the London brickmakers were not apathetic (as Chamberlain claimed), but that many of them had expended 'large sums in experimenting with the various patents, and yet all failed...'.[76] Dobson too maintained that 'although a great number of inventions have been patented, there are very few of them that can be said to be thoroughly successful.'[77] Joseph Gwilt's 1867 edition of The Encylcopædia of Architecture looked forward to a time when 'brick-making machines become more useful and certain in their operations'.[78] Clearly, he considered that that happy state of affairs had not been achieved in his own day.

There was, others maintained, no advantage in moulding by machine since the larger numbers of green bricks thus produced could not be coped with at later stages of manufacture. 'Mr Chamberlain's machine,' stated Frederick Lawrence, 'could only be worked just as fast as one boy could remove the bricks. An ordinary hand moulder could make bricks nearly as fast as a boy could carry them away, in fact, some moulders made as many as 8,000 to 10,000 per day.'[79]

In some areas, notably Manchester, there was even resistance to the introduction of machinery which expressed itself in luddite-like machine-breaking. In part this was the usual fear about loss of jobs, but it also involved what appears to have been a genuine sense of craft tradition, of valued skills which were being threatened by the machines and their need for merely unskilled labour. Not all violence in the Manchester area, which reached its height in the period 1859-67, was connected with the attempted introduction of machinery, and indeed such disputes were largely confined to the city itself.[80]

We have then a barrage of reasons why the introduction of machinery into the brickmaking industry was so tardy. What matters for our purposes is not whether those reasons were sound or not - probably some of them were not - but that they were offered at the time in justification of the maintenance of the largely traditional methods of the brickyards. These reasons have nothing to do with the Brick Tax, and - significantly - were propounded both before and after repeal. And indeed in some areas - notably the North Kent Stock Brick yards - methods remained almost wholly those of hand-production well into the twentieth century. 'In the Stock Brick field,' writes Sidney Twist, 'everything was done by manual labour or by horse

transport. In 1880 a brickmaking machine was invented called a "Monarch" although very few were in use before the turn of the century. The machine ... employed the same labour force as hand making, the only advantage being that the old skills were no longer required and the bricks ... were generally of better shape.'[81]

What finally (but then only gradually) induced brickmakers in many areas to adopt machinery seems far from clear. But the development of the Hoffmann continuous kiln (1858 in Germany; introduced only slightly later into Britain),[82] preventing 'bottle-necks' in the production process; the growth of the railway bulk freight system in the 1850s and '60s; the various restrictions on child labour; and technological pride following the Great Exhibition of 1851 (at which several brickmaking machines were exhibited) may all have played a part. At any rate, they offer a more promising field for research than the repeal of the Brick Tax.

Repeal of the Tax has also been suggested as a part-cause of an increase in the number of small brickmaking concerns in the second half of the century. 'It seems likely that the repeal of the excise tax in 1850 and the building boom encouraged the formation of small firms which replaced a small number of "large and old established brickmakers" who had worked within a well-defined labour context. The really big increase in the number of firms occurs in the late '50s and early '60s...' in the Manchester area.[83] A similar growth has been claimed for Bedfordshire.[84] Such claims are well supported so far as they go. What is more questionable is that there is any significant change of pattern around 1850. The choice of the year seems arbitrary, if not tendentious, for what is happening is no more than a continuation of a pattern already established in the first half of the century. This is clearly brought out in a study of Oxfordshire brickmaking, where large-scale growth begins in the 1820s,[85] and Lincolnshire, where again growth, especially on the south bank of the Humber, is from the 1820s.[86] So too for the North Kent brickyards.[87] Besides, my own analysis of the data contained in Cox's Bedfordshire gazetteer does not bear out his assertion. My analysis is shown in Fig.4: this charts the

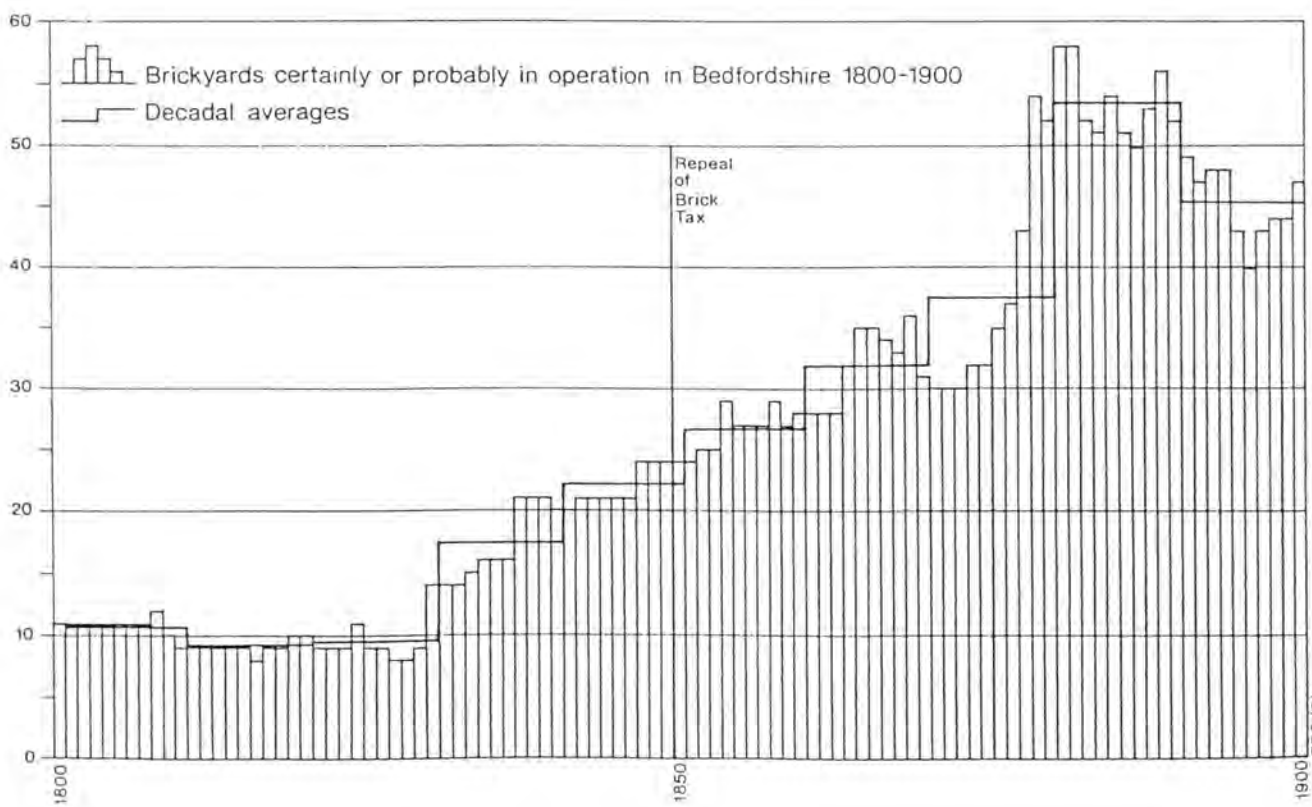


Fig.4

numbers of brickyards which were certainly or probably operating in each year between 1800 and 1900; despite incomplete, and sometimes uncertain, evidence, the general trend is both clear and acceptable. (The figures, however, it ought to be stressed, will probably not support more refined statistical analyses.) There was an increase in numbers of brickyards after 1850, but, as in the other areas already mentioned, this was simply a continuation of a pattern already established - in this case in the 1830s. The decadal averages shown in the figure help to iron out the fluctuations (which in some cases are probably reflecting inadequacies in the evidence). The steady growth from 1830 to the late '70s, cutting clear across the repeal of the Tax, is evident enough, as is the sharper increase in the late '70s and the '80s (though this was not sustained). This latter spurt may be explained in terms of demand fostered by urban growth - in Bedford and Luton especially.[88] It is, in any case, far too late to be accepted as an effect of the repeal of the Brick Tax.

The published data for the neighbouring county of Buckinghamshire lend themselves less well to such analysis,[89] so I here offer (fig. 5) a graph of those brickyards which were probably in operation within the county from 1820 to 1899; because of the nature of the evidence, however, they are presented as quinquennial averages. Despite the inadequacies, the graph shows a strikingly similar pattern to that of Bedfordshire, though with growth beginning perhaps just a little earlier, in line with several other parts of the country (supra); there is the same unsustained spurt in the late '70s. Once again, growth of the industry cuts clear across repeal of the Brick Tax in 1850, and it is evident that that event had little, if anything, to do with expansion of the local brickmaking industry.

Brickyards probably in operation in Buckinghamshire 1820-1899
(quinquennial averages)

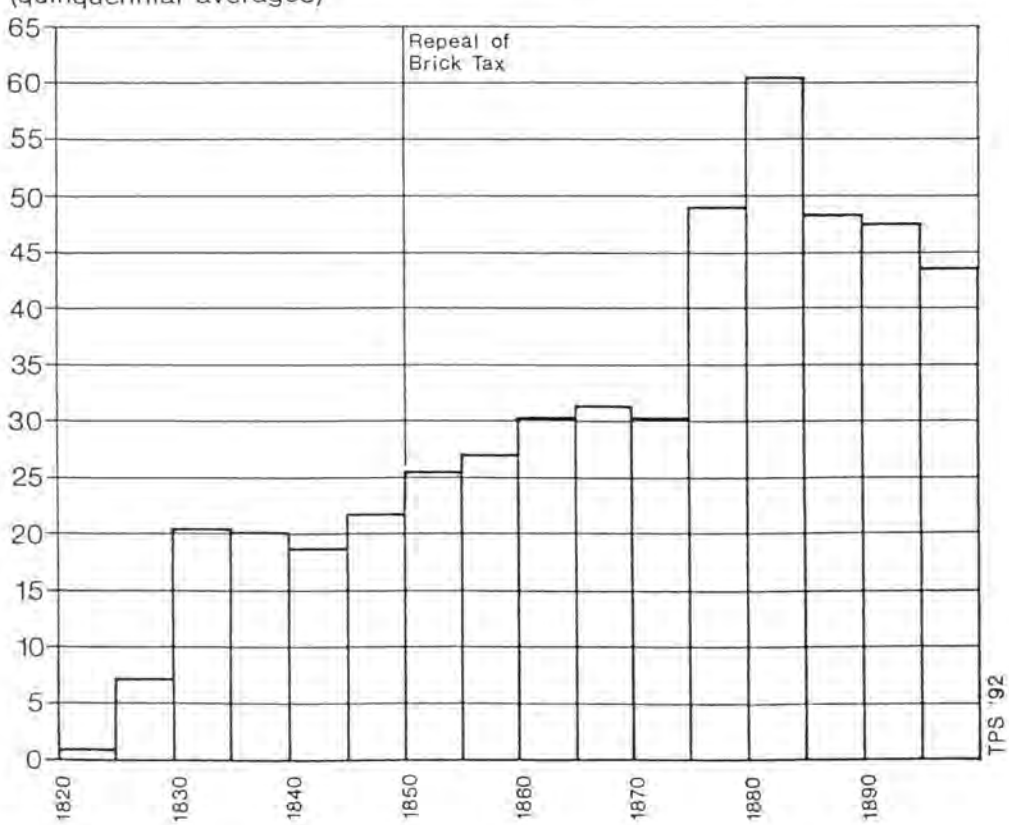


Fig. 5

The published data for a very different region - the county of Somerset - are even less susceptible of such analysis.[90] Brian Murless does indeed mention repeal of the Brick Tax as one factor in the growth of the industry after 1850: 'Freed from taxation, the Brick Duty finally being abolished in 1850, trade knew no boundaries and Somerset goods "followed the flag" to the far-flung reaches of the British Empire.' On the other hand, writing of the late eighteenth and early nineteenth centuries, he notes that 'bricks and tiles were traded comercially on a greater scale in spite of a nationally imposed Brick Duty from 1784,' and he also notes change in the industry from the 1840s, not just the 1850s.[91] Any connexion with repeal of the Tax would seem to be at least dubious.

The date of the growth of the industry in several areas (Somerset possibly excluded) may be significant, for the decade 1821-30 saw the greatest percentage increase (20.6%) in house building in the whole of the century.[92] So far as the mid-century is concerned, it has been cogently suggested that from 'the 1850s demand for bricks (and drain-pipes) was fuelled by the work of the local Boards of Health, which pressed for better housing and drainage standards...'.[93] It seems, in conclusion of this section, that the building boom, which Price identifies as a part-cause, along with repeal of the Brick Tax, of the increase in numbers of brickmaking concerns, was in fact the principal cause, with repeal of the Tax playing a very minor rôle, if any rôle at all.

III. Conclusions and Proposals[94]

On some of the matters examined in this essay, certainty is possible.

(1) The Brick Tax did encourage the use of larger bricks than normal, especially in the North of England. It also encouraged experiments with extra-large bricks such as Wilkes' Gobs, and it was probably other factors - basically the inconvenience of handling them - which led to their restricted manufacture and use.

(2) Tiles of all sorts, including brick-tiles (mathematical tiles) were taxed from the beginning in 1784. Brick-tiles were not a response to the Tax, nor was their use increased by its imposition. Plain and decorative tiles for ordinary tile-hanging were similarly subject to the Tax and were mostly used on existing buildings, at least in towns. It is highly unlikely that tile-hanging was ever resorted to in order to circumvent the Brick Tax.

(3) Continued use of timber-framing and other inferior materials behind a brick façade - and it was just a continuation of an already established practice - is best seen as part of the stock-in-trade of speculative builders, prompted indeed by the relatively high cost of bricks but owing little, if anything, to the Brick Tax.

(4) Assessment of bricks by volume from 1839 and eventual repeal of the Tax in 1850 may have removed some of the inconveniences of making moulded and ornamental bricks, but their manufacture was already established before 1839. The growth in their use in later decades was part of general architectural fashion - prompted in part by the published works of writers like Ruskin. The use of stucco too was prompted by fashion, and by a new concern for architectural morality, not by a desire to avoid the Brick Tax.

(5) The brickmaking industry was not seriously affected in terms of output, production figures rising - if erratically - in response to building booms and slumps throughout the period of the Brick Tax. And there was no sharp increase in the production of bricks immediately after repeal of the Tax in 1850.

In other areas of inquiry there is room for further research, to which members of the British Brick Society, with their several fields of expertise, may well be able to contribute.

(1) Although it is certain that the Brick Tax did prompt the manufacture and use of large bricks, more research is required, as Maurice Exwood has pointed out, into the precise effects of the various phases of the Tax period.

(2) We still need that research, which Norman Nail called for a decade ago, into the extent to which the Brick Tax encouraged the use, or continued use, of alternative materials such as clapboard. John McCann's demonstration that clay lump is not a traditional material invites further work on the question of how far this too was an effective means of beating the Tax. I think it unlikely, but the matter is worth further inquiry.

(3) In Hertfordshire Rat Trap Bond was certainly not resorted to because of the Brick Tax. The same is probably true of other areas - of Bedfordshire almost certainly, for example - but it would be good to have careful surveys, along the lines of Dr Perrins' survey of Hertfordshire, to investigate the matter.

(4) Further research is also required into the extent to which the brickmaking industry itself was affected by the Tax. That production continued to rise has already been stressed. Price-rises seem to follow general trends without owing much specifically to the Tax: the Tax itself was simply too small to account for the steep price-rises of the last two decades of the eighteenth century. Mechanisation came only slowly to the brickmaking industry, both in Britain and elsewhere. There are numerous factors to account for this. The contribution of each of them would be worth further investigation; the Tax may then seem to have made at most a very small contribution - perhaps (as I think likely) no contribution at all. So too, the increase in the number of brickmaking concerns in the 1850s and '60s is no more than a continuation of a trend already established earlier in the century; once again, the rôle of the repeal of the Tax seems to have been at most a minor rôle. But further research is desirable into this issue, particularly at local level.

In conclusion, let me repeat what I said at the outset: I am far less concerned that the views argued for in the course of this essay should be accepted than that they should prompt further research and discussion.

Notes and References

53. The complete series of annual production figures is conveniently available in B.R.Mitchell and P.Deane, Abstract of British Historical Statistics, Cambridge, 1962, p.235. For the regional (indexed) figures: H.A.Shannon, 'Bricks - a Trade Index, 1785-1849', reprinted in E.M.Carus-Wilson, ed., Essays in Economic History, 3, London, 1962, pp.194-5; figures are given for some fifty centres for 1829-49; 'almost everywhere', he comments at p.192, indices rise to a peak in 1847.

54. Hudson, 1972, p.31.

55. J.Burnett, A Social History of Housing 1815-1970, London, 1978, p.27 gives a not-quite-correct figure of '1,794 million in 1845-9', suggesting that this is the total production over that five-year period rather than the quinquennial average. Statistics can be treacherous things!

56. Source: Burnett, 1978, collating tables at pp.14, 15.

57. C.G.Powell, An Economic History of the British Building Industry, 1815-1979, London, 1980, p.37.

58. A.Cox, 'Bricks to Build a Capital', in H.Hobhouse and A.Saunders, ed., Good and Proper Materials: the Fabric of London since the Great Fire, London, 1989, p.11.

59. As early as 1808, C.Gray had remarked that 'The consumption of brick for the purposes of building in England is astonishing; and this species of artificial stone brings a considerable revenue to the government.' C.Gray, essay in W.H.Pyne, Microcosm: or a Picturesque Delineation of the Arts, Agriculture, Manufactures, &c. of Great Britain..., Part 1, Early Trades and Industries, London, 1808, reprinted ed. P.Smith, Luton, 1974, p.3. The very success of the Tax in raising revenue depended, of course, on its not seriously discouraging manufacture and consumption of the product - as with alcohol and tobacco in our own time.

60. Brunskill, 1990, p.193, contra, e.g., C.Powell, Discovering Cottage Architecture, Princes Risborough, 1984, p.73: 'Brick output increased vastly, being helped by the lifting of the brick tax in 1850.'

61. H.Chamberlain, 'The Manufacture of Bricks by Machinery', J.Soc. Arts, 4, 185, 1855-6, 493.

62. Cox, 1989, p.13; cf. Burnett, 1978, p.27: 'The important technical developments were ... post-1850, when the removal of the excise duty on bricks in that year had the effect of encouraging experimentation.'

63. K.Marx, Capital, vol.1, trans. B.Fowkes, Harmondsworth, 1976, pp.593-4. Later in the century Henry Ward noted 'the extraordinary tenacity of life exhibited by hand brickmaking': H. Ward, 'Brickmaking', Minutes of Proceedings of Inst. Civil Engineers, 4, 1885-6, 36. The first edition of Dobson, 1850, deals almost exclusively with traditional handmade bricks and is generally dismissive of machinery. See also R.Samuel, 'Mineral Workers', in R.Samuel, ed., Miners, Quarrymen and Saltworkers, London, 1977, pp.44-5 and refs. therein.

64. L.Lefêvre, Architectural Pottery, trans. K.H.Bird and W.Moore Binns of La Céramique du Bâtiment, London, 1900, p.95.

65. G.B.Janssen, Baksteenfabricage in Nederland 1850-1920, Arnhem, 1987, p.107 (my translation). For valuable, and often moving, firsthand accounts of brickmaking in the Netherlands in the early part of this century: M.de Koninck and H.Marijnissen, ed. L.Vlind, Steenovensvolk: verhalen om te onthouden, Amsterdam, 1988.

66. G.Peirs, Uit Klei Gebouwd, vol.1, Baksteen architectuur van 1200 tot 1940, Tielt and Amsterdam, 1979, p.143 (my translation). The book is also available in a French edition.

67. Woodforde, 1976, pp.113, 114: '... even the Clippert Brick Company of Detroit - according to a study of its records by Joseph E. Zias - had no brickmaking machinery until 1909.' See also K.Gurcke, Bricks and Brickmaking: a Handbook for Historical Archaeology, Moscow, Idaho, 1988.

68. R.Irving, 'Mostly about Walls', in R.Irving, ed., The History and Design of the Australian House, Melbourne, 1985, p.195.

69. Janssen, 1987, pp.105-7 (my translations throughout).

70. Chamberlain, 1855-6, 491.

71. C.May, replying to Chamberlain, 1855-6, 500.

72. Quoted in R.W.Price, 'The Other Face of Respectability: Violence in the Manchester Brickmaking Trade 1859-1870', Past and Present, 66, February, 1975, 114.

73. Dobson, 1850 (1971), vol.1, p.31.

74. Price, 1975, 123.

75. Dobson, 1850 (1971), vol.1, p.30.

76. W.Dennis, replying to Chamberlain, 1855-6, 500.

77. Dobson, 1850 (1971), vol.1, p.30.

78. Gwilt, 1867, p.527, art.1832.

79. F.Lawrence, replying to Chamberlain, 1855-6, 500.

80. Price, 1975, 110-32, esp.123-9. For an example of opposition in Philadelphia, USA see Woodforde, 1976, p.113.

81. S.J.Twist, Stock Bricks of Swale, Sittingbourne, 1984, p.10. For other accounts of the traditional North Kent industry see: F.G. Willmott, Bricks and Brickies, Rainham, Kent, 1972; R.-H.Perks, George Bargebrick Esquire, Rainham, Kent, 1981.

82. M.D.P.Hammond, 'Brick Kilns: an Illustrated Survey', Industrial Archaeology Rev., 1, 2, Spring 1977, 181; M.D.P.Hammond, Bricks and Brickmaking, Princes Risborough, 1981, pp.23-4. The Hoffmann kiln as 'one of the causes of the development of machinery in brickworks' is noted in Lefêvre, 1900, p.102.

83. Price, 1975, 116; cf. Samuel, 1977, p.25.

84. Cox, 1979, p.34.

85. Bond, Gosling, and Rhodes, 1980, p.17.

86. N.R.Wright, Lincolnshire Towns and Industry 1700-1914, Lincoln, 1982, pp.76-7.

87. J.P.Preston, Industrial Medway: an historical survey, Rochester, 1977, pp.51-4: 'Between 1820 and 1850 there was a marked expansion of shipments of especially yellow stock bricks...'. (p.51). Cf. Twist, 1984, p.3. In Kent as a whole the number of brickmakers recorded in directories between 1847 and 1851 actually goes down: from 63 to 56: T.P.Smith, The Medieval Brickmaking Industry in England 1400-1450, British Archaeological Reports, British Series 138, 1985, p.125, n.505. This is, however, a 'freak' occurrence, and the secular trend is upwards as elsewhere throughout the century.

88. J.Godber, History of Bedfordshire 1066-1888, Bedford, 1969, pp.494-5.

89. Buckinghamshire County Museum, Gazetteer of Buckinghamshire Brickyards 1800-1980, Buckingham, 1980, pp.5-40.

90. B.Murless, Somerset Brick and Tile Makers: A Brief History and Gazetteer, Supplement to SIAS Bulletin, 58, Taunton, 1991, pp.16-26.

91. Murless, 1991, pp.7, 3, 6 respectively.

92. Burnett, 1978, p.16.

93. Bond, Gosling, and Rhodes, 1980, p.15.

94. This concluding section originally formed the final part of a four-part series, as promised in the editorial to Information 57, November 1992, 2. Subsequently, it seemed preferable both to the editor and to the author to include this section in Part III, thus reducing the series to one of three parts only.

Obituary

KENNETH BEAULAH

Members will be saddened to hear of the death of Ken Beaulah on 3 March 1994, aged 83. Ken's interest in tiles and bricks began at the age of seven when he discovered some medieval tiles on the site of the Cistercian Abbey of Meaux, Yorkshire, which was on his father's land, just half a mile from his home. In an interview in 1991 he recalled that 'my mother had a great reverence for old things. I think some of it must have rubbed off on me.'

In 1925, at the age of fifteen, he remembers being taken as a boarder at school in York to see the remarkably preserved tile panels at Byland Abbey, and following the gift of a motorbike shortly afterwards he toured the country looking for other examples of medieval tiles. He started to hunt in antique shops for tiles to collect and discovered that the Victorians had copied many of the old medieval tile patterns for their new church floors.

His first attempt at creative writing was an account of the Byland Abbey tiles for his school magazine, but he admitted to cribbing his description of the tiles from the Encyclopaedia Brittanica! Since then his articles have graced many a scholarly publication and his original research became the basis for much of our present-day knowledge of medieval tiles.

Ken also collaborated with Elizabeth Eames of the British Museum on the investigation of a number of archaeological sites and her encouragement in 1957 revived his interest in tiles at a time when family and business matters were uppermost. In 1981 he was one of the founder members of the Tiles and Architectural Ceramics Society, remaining an active member until his death, and a regular contributor to its publications. His other works include the Shire Album Church Tiles of the Nineteenth Century and, most recently, an article on Samuel Wright which was published in the Journal of the Tiles and Architectural Ceramics Society, vol.3, 1990. An in-depth interview with Ken was published in the Spring 1991 edition of Glazed Expressions.

All who knew Ken have happy memories of him. Visitors to his collection were always received with warm hospitality by him and his wife Mollie. Ken was a courteous man who always gave freely of his time and extensive knowledge. His death is a great loss to the Society and a personal loss to his many friends in it.

CB
7 July 1994

'"I expect I shall have the bulk of the paper to contribute myself," said Ingleton...' when a new magazine for Minister School is being planned in Charles J. Mansford's school story Prefect and Fag (1910). Our regular editor, David Kennett, must often find himself close to that unenviable position. So, please, if you have anything to contribute - however short it may be, however insignificant you may consider it - do not hesitate to send it to David. Items, especially from new contributors, are always welcome.

TPS

NOTICE

J.Boutwood, 'Bricks of Distinction', Period House and its Garden (ISSN 0966 1530), May 1994, pp.28-33.

This short article surveys the history of English brickwork from the thirteenth century to the Victorian period. The article manages to include much detail in very short compass, and forms a useful first introduction to its subject matter. A dozen colour photographs illustrate the text; many of the buildings are not identified, but all the pictures are of a high quality. There is also a reproduction of an illustration from W.H.Pyne's Rustic Vignettes for Artists and Craftsmen and a diagram showing eight different brick bonds; these drawings are not always large enough to show the distinctive features of the bonds being illustrated and should have been better prepared. There is a short bibliography for those who wish to pursue the topic further. The historically sound text and the attractive colour illustrations make this an article worth adding to one's collection of brick literature.

Photocopies of back features may be purchased at £2.50 each; alternatively, whole back issues may be purchased at £3.20 each; both prices include p&p. Contact: Period House and its Garden, Channel 5, PO Box 1111, London W3 9ZF; telephone: 081 752 1003.

TPS

Meetings reports . . .

In 1994 the British Brick Society has held two Spring Meetings - in Essex at Collier's Brickworks, Marks Tey, and Colchester; and in Bolton. The Annual General Meeting was held at Cattybrook Brickworks, Almondsbury, near Bristol, and was followed by a visit to Bridgwater, Somerset. These various meetings are reported here.

Opportunity is also taken to record participation in the British Archaeological Association's 150th Anniversary Meeting held in Utrecht in the Netherlands in 1993. Members who participate in meetings/visits/conferences organised by groups other than the British Brick Society are invited to send a report of such to the editor for inclusion in future issues of Information.

DHK

BRITISH ARCHAEOLOGICAL ASSOCIATION CONFERENCE, UTRECHT, 1993

Whilst the British Brick Society remembered its coming of age at twenty-one, the British Archaeological Association celebrated its one-hundred-and-fiftieth year by holding its summer conference in Utrecht in the Netherlands. BBS is, of course, affiliated to the BAA through the latter's Brick Section. The conference was held in late July 1993 in the Music School at Utrecht, although there was also a brief excursion into Germany, to Emmerich with its fine brick church and surrounding area; this excursion also included a 'walkabout' (in the rain!) around the old Dutch town of Deventer. Although the conference was not devoted to bricks and brickwork, they were difficult to avoid in these particular locations! They were also much in evidence in Utrecht itself and in the medieval castle (now an international co-educational

boarding school) where accommodation was provided. Amongst the lectures given in the Music School that by BBS Chairman T.P.Smith was on medieval town defences in the Netherlands and was, therefore, largely concerned with historic brickwork. Mr Smith emphasised that only in the far south, at Maastricht and Valkenburg, were there wholly stone town defences; elsewhere, stone might be used for building or facing isolated elements of a town wall, but otherwise brick was the material used. The speaker contrasted this with the situation in Britain. Particular thanks are due to the conference organisers: Tarq Hoekstra at the Dutch end and BBS member Richard Morris at the British end.

SR

BBS SPRING MEETING AT MARKS TEY, ESSEX

The meeting began in the main office of the Marks Tey Brickworks, which is built as a bungalow, and our warm welcome was followed by coffee and biscuits. A display of information about the works and a handout about the history of the works whetted our appetites for the site visit.

Work began on the Marks Tey site in 1863 by the Wagstaff family who sold out to William Holman Collier in 1879 when he moved from the S. and E. Collier family of brickmakers in Reading. At this time there would have been over a hundred brickmakers in Essex and Suffolk, working in the old traditional methods. Production at Marks Tey at this time was 50,000 to 70,000 brick per week, drying in outside hacks; the bricks were fired in clamps and, later, in two updraught kilns which were eventually adapted to downdraught working by the addition of a chimney.

Our first stop in the yard was to take in the views across the fields to the claypit, which is affectionately known as 'The Blue Hole' because of the blue colour of the clay. The moulders do not like the fresh blue clay, and prefer to leave it to weather to a pleasant brown colour before they use it. The brickpit cuts through a sequence of clay deposits which spans the whole of the Hoxnian interglacial periods thirty to fifty thousand years ago - the last but one of the warm periods that occurred between the successive advances of the glaciers during the last Ice Age. The clay is a Pleistocene Laciestrine deposit in a narrow trough formed during the Lowestoft Glaciation. Breeze is added to the clay for some products, as also are different sands from local pits at Stanway, Ardley, and Clayton.

The clay was originally won by hand before hawser-drawn trucks delivered the clay from the 70 feet deep pit, and one of the winding wheels still remains in the yard, though now unused. The pugging machine used to be located in the claypit and the prepared clay was delivered to the works on a 700 feet conveyor-belt. Today the clay is dug by contractors using hydraulic diggers, and between twenty and thirty dumper trucks deposit a year's supply of clay to the yard, where it is left to weather for just two weeks following the extraction operations! A box-feeder trickle-feeds the clay onto the old, shortened conveyor-belt, on which it passes to the pugging-mill inside the works; this is not subject to the vagaries of the British weather as it was when located in the claypit.

The old 18-inch rail track and the side-tipping clay-tubs move the clay about in the works. The skills of the brickmaker and the feel of the clay enable the correct consistency to be achieved, using perhaps three, four, or five old red buckets of water added to one old skipful of clay. As the manager, Mr Page, pointed out, the rails and skips are old-fashioned and simple - but they need little maintenance and do not go wrong!

cont./

The prepared clay is extruded onto the moulder's bench, where the moulder's trained eye helps him to form the correct sized clots for the three-brick mould. The mould is dusted with sand, as is the clot itself, before, with a quick wrist action, it is thrown into the mould. The brick industry has been trying for years to invent a method of producing handmade-type bricks by machine, but this attempt has met with only limited success, as reported by Peter Catchpole, a co-director of Marks Tey in 1974. He went on to state that every handmade brick has a character and that each one is as individual as a fingerprint. The moulds are left to rest, whilst three more clots are made, and are then turned out onto a brick bat with the aid of a simple table that pivots and uses the weight of the wet bricks to empty the moulds. The brick bats, with their wet bricks, slide into the shelves of the drying-cars, which hold 396 or 432 and are moved along to the drying area on the old rails.

The magazine Essex Countryside reported in 1974 that Cecil Wendon of Fordham had worked at Colliers for thirty-six years and could turn out 1,300 to 1,400 bricks a day. The firm employs eight moulders at the moment and most have fifteen to sixteen years experience; and there is always someone to take a moulder's place. The full-size brick moulds are now made of plastic and brought in from local firms or from Holland. A plastic mould can be used for half a million bricks, but traditional wooden moulds for only two hundred thousand. Traditional wooden moulds are, however, still made on site for the special shapes. They cost £60 to £70, the same price as the plastic moulds.

In the old days the bricks were dried outside on hacks in the summer months only, so that production was seasonal. A unique system of drying the bricks is used today. The bricks are taken by hydraulic lifts to a platform in the roof above the kiln, and waste heat from the uninsulated kiln passes up to the roof and dries the bricks. The roof platform is built on the old Manchester tram lines which were purchased in the 1950s and are still going strong. The drying-trucks are moved slowly on ten tracks over a period of ten days with twenty-five cars, about 100,000 bricks being in the dryer at any one time. Extra propane gas-bins provide more heat if needed.

The hydraulic lift deserves mention here for its simplicity and its low maintenance and working costs. A large cylinder of diesel oil is topped by a large heavy weight balancing the full drying-car of bricks coming down - a principle similar to that which has moved holiday-makers up and down the cliffs at Lynton, Scarborough, Redcar, and elsewhere. An extra drop of diesel oil and a bit of grease now and again has kept the old system running trouble free since the 1950s.

The home-made metal drying-cars are unloaded by hand onto the kiln-cars, and the full-size bricks and the small briquettes are intermixed as they are carefully stacked ready for the kiln. The present tunnel-kiln was purchased secondhand from a pottery in the 1950s and was converted from oil-firing to propane-gas-firing in the early 19y0s, resulting in a 20 per cent saving in fuel costs. The kiln is only one car wide and a push-in of a car of dried bricks takes place every two hours, pushing out a car of fired bricks at the other end. Four men work a twenty-four hour shift when the kiln is being fired but they are able to shut the kiln down for bank holidays and the like and start it up again without any detrimental effect on the products. Rails are used to move the kiln-cars to the adjacent packing area.

The standard bricks are packed in stacks of 350 but specials are packed in stacks of 350, with straw between. The small briquettes are boxed in forties with bubble-wrap replacing straw, to collect the sand as well as to protect the bricks. I was most

interested to note the use of straw as being very 'green' in today's conservation-conscious environment. The old brickmakers of the Humber area also used straw to load their sloops and keels as the weight of the bricks caused the boats to 'change shape' as they sat on the mud or floated in a high tide, and the straw compensated for this.

The code in the frog since 1991 has included a C for Colliers, a second letter to indicate the month, a figure to show the week, and a further figure to signify the year.

The stockyard contains about 200,000 standard bricks and 100,000 briquettes, which, when one considers this product range, is not too great nowadays. The briquettes are produced in three colours - Golden, Antique, and Georgian Red - and in twelve shapes to produce four different fireplace designs and, of course, to the customer's own design. The standard bricks and the specials are available in eleven colours - Antique, Colchester Red, Georgian Red, Golden, Light Brown, and Light Grey, as well as five colours made at Marks Tey but marketed as part of the Flag Ship range of their parent company: Ascot Red Multi, Eton Grey, Newbury Red Multi, Richmond Gold, and Sunbury Red. A report in 1974 stated that Colliers no longer made pottery, tiles, or agricultural pipes, but that their handmade bricks were available in seven colours. Their impressive range of handmade bricks and briquettes shows that the works have met the challenge of the architect and builder of the 1990s.

We left the stockyard for a closer look at the old bottle-kiln of about 1880, on land now used by a haulage company. The old settling-pits were still available; they were used to allow the stones to settle to the bottom as a cheap way of sorting and also to layer the clay and ash and breeze to make bricks in early days. A hope was expressed by all concerned that the bottle-kiln would be preserved as a memorial to the craft of the brickmaker. The old kiln was able to fire the bricks to a lovely primrose yellow which is not possible in the new tunnel-kilns.

Colliers employed about a hundred men before World War II, but this was down to thirty by 1974. A total workforce of twenty-two keeps the name of Colliers alive in the brick world of toady. They work a forty-hour week, from 7 am to 4.30 pm Monday to Thursday and 7 am to 1 pm Friday, with a twelve-minute stop for breakfast and a thirty-minute break for lunch. It was a pleasure to see one of the moulders working a Saturday morning shift to enable us to enjoy watching a true craftsman at work. It gives one a little confidence in today's unsettled world to know that W.H.Collier have been supplying bricks for a hundred and thirty-one years to the local areas of Essex, Suffolk, and Norfolk, and - in more recent times - much further afield to places like Aberdeen. Two and a half million bricks from this yard went into building the South Dene Power Station at Great Yarmouth, and the yard also supplied bricks for the Mercury Theatre, swimming pool, and sports complex at Colchester.

It was a delight to see the name of the old W.H.Collier Ltd firm used, even though they have been taken over by Salvesen Brick. Congratulations to the Christian Salvesen PLC group for letting W.H.Collier Ltd continue to produce its excellent individual products under its own name. Long may it be a leading producer of the small briquettes to build fireplaces for our homes for future generations to enjoy. Long may the lovely colours of the handmade bricks grace the buildings of our countryside and towns, for they are certainly worthy of their place in the Flag Ship Salvesen Brick range. Brick keeps Britain beautiful, so build a better life with brick for future generations - with Collier's bricks, of course!

W. Ann Los

BBS SPRING MEETING AT COLCHESTER, ESSEX*

Following the visit to Marks Tey Brickworks, the party of BBS members spent the afternoon looking at the buildings of Colchester. The following buildings were visited:

The Norman Castle. This is one of the earliest square keeps in England and also the largest in existence. Its planning is similar to that of the White Tower at the Tower of London, and it belongs to the same period, namely the late eleventh century. Its fabric contains much re-used Roman brick and tile from the city of Camulodunum. A folly built in the castle grounds contains old bricks. To date, forty-one Roman kilns have been found in Colchester.

Holly Trees House (now a museum). This is one of the finest of Colchester's Georgian houses; it was built c.1716 of red brick with rubbed brick trim.

Various red brick houses in East Hill, of Queen Anne and Georgian date, including The Minories (now an Art Gallery), built in 1776.

New doctor's surgery. Built in 1993 using off-white bricks.

Eastgate Brewery. Built 1828, with restoration in 1888, using Suffolk Reds and Whites; the architect was H.Stopes, the contractor F.Dupont.

Roman wall with added Norman bastions re-using Roman material. This is part of a three-mile stretch of Roman walling still surving at Colchester. It was built in the common manner in rubble-stone concrete with ashlar facing and bonding-courses of brick.

St Botolph's Priory. This is built of flint but with many re-used Roman bricks; the ruinous state allows internal details of wall construction to be examined, for example in the large columns. Most impressive is the west front, of the later twelfth century, with its double row of intersecting arches constructed from brickwork.

St Botolph's Church. Adjacent to the Priory, this church was designed by W.Mason of Ipswich and built in 1837. The bricks came from Nottingham. It is an extremely exuberant use of moulded brick to create the impression of a Romanesque stone building.

St Giles' Church. The earlier parts of this contain re-used Roman bricks and tiles, whilst the south porch is of sixteenth-century brickwork; there is a good deal of later work, including the brick north and south arcades and south chapel by Sir Arthur Blomfield and Son, 1907.

St John's Abbey Gatehouse. Probably of fifteenth-century date, the building is a fine example of stone and black-flint flushwork; it is also a good exemplar of the late medieval tendency to hide brickwork behind other materials for ecclesiastical buildings - churches and associated structures - in what David Kennett has termed 'structural brickwork'; the contrast with much of northern Europe is very striking.

Holy Trinity Church (now a museum). Most of the church was rebuilt in 1886, although the chancel and some other parts are medieval. But the most impressive survival is the late Anglo-Saxon west tower. For the most part, the Anglo-Saxons did not favour brick, although they used it where supplies were plentiful, as here. The detailing is fine, particularly in the triangular-headed doorway, whilst the blank arcading at the top presumably means that the brickwork was exposed and intended to be seen - most unusually for an Anglo-Saxon church, in which any brickwork was normally hidden behind render.

Tymperleys House (now a clock museum). This is a fine Tudor

* This contribution has been edited, with additional notes on the buildings and other matters, by I.P.Smith.

timber-framed house with brick nogging. Members visited the clock museum, which contains old church clocks amongst others.

Town Hall. This was designed by Sir John Belcher and built 1898-1902; it displays Belcher's typical Edwardian exuberance, and the tower is especially striking. It is erected in Portland Stone with Hedingham Red bricks, manufactured at Sible Hedingham, Essex.

Various brick houses in Stockwell Street. There is much Georgian brickwork here and a good deal of earlier timber-framing. Numbers 11 and 12 West Stockwell Street, though architecturally unremarkable, once formed the home of Ann and Jane Taylor (1782-1866 and 1783-1824 respectively), who were responsible for some of the best children's poetry and nursery rhymes of the nineteenth century; Ann's My Mother became, for a while, one of the best-known of English poems, whilst Jane's Twinkle, Twinkle, Little Star is still recited, its authoress generally forgotten, of course.

St Martin's Church. Mostly Norman and including a great deal of re-used Roman brick and tile. The early Victorian schoolroom in a corner of the churchyard has some very unusual roofing tiles.

Stockwell Chapel. This belongs to the Society of Friends (Quakers) and is a simple red brick structure.

Blue Coat School. This again is a red brick building - and a reminder of the early days of school uniform, when its purpose was to keep the poor in their proper place!

Chapel of St Helena. This is basically medieval, with bands of re-used Roman bricks.

Site and remains of Roman Theatre. This was discovered fairly recently. The lines of the buried theatre are marked out in the road using modern bricks.

The tour ended with a visit to Colchester Castle, built over a Roman Temple.

Our sincere thanks for both the visits go to Maurice Page of W.H.Collier Ltd and to Adrian Corder-Birch for an excellent day.

W. Ann Los

BBS SPRING MEETING AT BOLTON, LANCASHIRE

Arriving at Bolton Town Hall at 10 am, I was surprised to find the steps crowded with possibly a hundred or so people. As our meeting time was not until 10.45, I found it hard to believe that these vast crowds were 'Brick People'. The reason for the huge number of people was made clear when I realised that a five-aside football game was in progress in the square. This posed a problem - how to find the real 'Brick People'. I had no idea how many bona fide 'Brickies' were to assemble for the walk around Bolton. Eventually, I saw a man who looked familiar; thankfully, it was David Kennett. With my daughter, we formed the nucleus of the group. We were shortly joined by another member and were told by David that we were 'all here'. So it was a small but enthusiastic group which set off to sample the delights of Bolton's Brick Heritage.

David had provided us with very concise notes, but these were unnecessary on the walk, as he was more than capable of explaining the various interesting points in all of the buildings, old and new, whether brick, stone, or terracotta. The day was divided into three 'walks', two of which were accomplished in the morning. Bolton, in common with many northern towns, has many old mills still standing, besides the many interesting public and domestic buildings. Something that particularly appealed to me was the extensive use of fruit and flowers in terracotta which embellished many of the buildings, both large and small. Another detail was

the different patterns of air-bricks, mostly in terracotta but also in other materials.

Wood Street was a particularly pleasing array of houses, often of the late 1700s, in one of which the first Lord Leverhulme was born. This street, like many others in Bolton, is still paved with its original cobbles.

After lunch, David's interpid little group set out to view the northern part of the town, determinedly negotiating the mass of traffic which seemed to appear every time we wanted to cross the road!

We were suitably impressed by the size of the Old Fire Station, now - alas - in a sad state of disrepair, and by the oldest cotton mill nearby, built mainly c.1780. The walk continued through some attractive late eighteenth-century developments, before we finally reached the Market Hall of 1851. To say that we were thrown off the balcony would be literally inaccurate, but suffice to say that we were moved on by a worried-looking security man as we were viewing the attractive recent refurbishment.

During the day, we saw so much and so many good buildings with their varying use of brick design, that it is difficult to single out any one. However, mention must be made of the old Bolton Pupil Teachers Cantre of 1903. An imposing building, it was formerly topped by four terracotta lions. David had promised us two remaining, but sadly by the day of the trip only one remained. One wonders where the others have got to; decorating someone's garden, perhaps? The building was designed by J.B.Gass of Bradshaw and Gass (later to form Bradshaw, Gass, and Hope, and responsible for many civic buildings up and down the country).

Altogether, this was a really interesting day out, with notes to read at leisure at home, whilst perhaps making plans to visit Bolton again for another look. Thankyou, David, for organising such a splendid day. It is a pity that there were not more members to take advantage of your expertise.

G.Homans

AN AFTERNOON IN BRIDGWATER

Bridgwater gets its name not from any crossing of its prominent river but from the Norman knight Burgh Walter, to whom the estate was given by William The Conqueror. Nevertheless the river has played a significant role in the history and development of the town. Although Bridgwater lies some six to eight miles from the sea the River Parrett is navigable to the town by seagoing craft and in the Georgian period the town aspired to rival Bristol as a major west country port. It became the main port for much of central and west Somerset, barge traffic going many miles up the Parrett and its tributaries and by canal to Taunton.

In the 19th and early 20th centuries large quantities of clay tiles and bricks were made locally and exported from the town to ports around the British coast and also to Europe. There are villages in Brittany where almost all the buildings are tiled with Bridgwater tiles. The Bridgwater company, Colhurst Symons & Co Ltd., were awarded Prize Medals for roofing tiles at the Paris Exhibition in 1867 and 1875, and also at Vienna in 1873. The head of Napoleon III was always embossed on tiles produced by the company as a trademark from then onwards until they ceased trading in 1950.

No brick or tile making is carried on locally today but the importance of the once flourishing industry to the development and prosperity of the town is acknowledged.

Our visit was originally proposed at the Society's 1992 AGM when we anticipated that by mid-1994 the Somerset County Council would have opened their new museum dedicated to the county's brick and tile

industry, but due to financial restrictions during the intervening period, its completion has been delayed. However, restoration and conversion of the buildings on East Quay to house the new museum were approaching completion by mid-summer.

When he heard of our visit the County Museums Officer, David Dawson, not only generously offered to meet us and show us the restored buildings, but also arranged for Brian Murless of the Somerset Industrial Archaeology Society (and also a BBS member) to join him as a guide. Together they gave us a most informative introduction to brick and tile making in Bridgwater and a conducted tour of the restored kiln and workshops. Members were impressed by the promise of the facilities being prepared. The exterior and interior of the kiln is clearly displayed and the work inside it exhibits its functional characteristics and the manner in which this particular kiln was modified from updraft to downdraft firing.

A few tiles (including some with the Napoleon III's portrait), some special shaped bricks, moulds and hand tools were to be seen about the building, but display fittings for the collection proper were not in place. The majority of exhibits were in store, but a core selection relating to the local industry was on show in the Admiral Blake Museum and so we were subsequently taken there to see it.

The Society is often blessed with beautiful weather for its trips and this one was just such an occasion. Our guides took us over the River Parrett via the remains of a telescopic iron and steel bridge designed to permit large vessels up stream. We paused at the ruins of a large circular kiln which we learnt had been for the manufacture of glassware during the Georgian period and was one of the enterprising Duke of Chandos's ventures. Our route took us through the streets adjacent to the quays. Georgian brick architecture characterizes this part of the town and "The Lions", a large house on West Quay, and its neighbour the Custom House attracted our admiration.

Sarah Harbige, also of the County Museums Service, met us at the Admiral Blake Museum. She introduced us to the display of photographs, artifacts and catalogues relating to the local brick and tile industry. Also on display there was an excellent model illustrating the town's substantial port facilities in its hey day when it provided the opportunity for the development of extensive trading links with other British ports and the Continent

Our excellent guides made our visit to Bridgwater a memorable one and many of us resolved to return to spend more time in this very nteresting and attractive town.

This visit followed the Society's 1994 Annual General Meeting held in the morning of Saturday 10 June at the Cattybrook Brickworks, Almondsbury, Nr.Bristol. The Minutes, sent to members with the July mailing, give full details of the proceedings.

Michael Hammett

David Dawson, County Museums Officer responsible for the new Somerset Brick and Tile Museum in Bridgwater would be very pleased to hear from any member with ideas of material that might contribute to the establishment of the new museum. He can be contacted at:

Somerset County Museums Service, Weir Lodge, 83 Staplegrove Road, Taunton TA1 1DN
(tel: 01823 25510/325761 - fax: 08123 351998)

CATTYBROOK BRICKWORKS

John Powell

The existence and location of the brickworks at Cattybrook, just north of Bristol, were dictated by the railway which runs alongside the site and by the Severn Estuary, a couple of miles to the west. The early history of the works is closely linked with the career of a civil engineer named Charles Richardson. Born near Chester in 1814,[1] he became apprenticed to Isambard Kingdom Brunel at the age of nineteen, working under him on some notable projects such as the Thames Tunnel and the Great Western Railway. He also helped put the iron bar across the Clifton Gorge during early work on the Suspension Bridge, which was eventually completed after Brunel's death. As he matured, Richardson was entrusted with the post of resident engineer on various railway projects, such as the Cheltenham & Great Western Union Railway and the Bristol & South Wales Union Railway,[2] both ultimately absorbed by the Great Western. The Bristol & South Wales Union Railway was constructed to enable passengers to reach South Wales from Bristol using a ferry across the Severn Estuary, and it was during the construction of this line that Charles Richardson first became aware of the quality of the clay in the Cattybrook area, the line involving the excavation of a (single-bore) tunnel at nearby Patchway.

Some years later, the Great Western Railway - partly in response to gibes about its initials standing for the 'Great Way Round' on some of its circuitous routes such as that to South Wales - decided to build a tunnel underneath the River Severn, and Charles Richardson was appointed Chief Engineer. Parts of the Bristol & South Wales Union Railway were incorporated in the route. Work started on the Welsh side of the river at Sudbrook in 1873, and it was some time after this that Cattybrook Brickworks was established, specifically for providing the bricks to line the tunnel. Unfortunately, geological problems proved greater than anticipated, resulting in slow progress and, after the workings were flooded in 1879, Richardson was relieved of his post and replaced by Sir John Hawkshaw. The brickworks continued to prosper, however, and apparently remained in the hands of the Richardson family for several generations. Thomas Walker's history of the building of the Severn Tunnel[3] gives some remarkably detailed statistics concerning the numbers of bricks used in the project: the total was 76,400,000. Of these, we are told, 19,125,440 were vitrified bricks from Cattybrook; 7,229,100 were supplied by the Fishponds and Bedminster Company from Bristol; 21,944,460 were Staffordshire bricks, and 28,101,100 are described by the author as 'our own'. This is a reference to the sizeable brickyard established at Sudbrook during construction (a plan of the layout of the buildings appears in Walker's book) and its use of material from the tunnel workings to make the bricks which then lined the tunnel. Walker states that 'the shale from the tunnel, which was brought up in skips, was run straight to the crushing-rollers, and, within half an hour from the time the shale was got into the tunnel, it was made into bricks, and the bricks placed upon the floor of the drying-shed to be dried for the kiln.'

Following completion of the tunnel, the Cattybrook bricks continued to be widely used throughout the Bristol area, particularly for industrial buildings such as W.D. & H.O.Wills' cigarette factory in East Street, Bedminster (now converted into an Asda store and shopping mall) and their equally extensive premises in Raleigh Road,

Bedminster, which are being demolished at time of writing. After an existence of some ninety years, the works were lying disused by the late 1960s,[4] but were purchased by Ibstock in 1972, together with a mothballed works at Shortwood, north-east of Bristol. At that time Cattybrook had 'three ageing Guthrie kilns',[5] but has since been extensively modernised by Ibstock.

Participants at the 1994 BBS AGM did not look round the modern plant, but one or two interesting features could be observed on company property. The single-storey office/security building adjacent to the carpark bears a dated brick from 1876, so could be from the earliest phase of the works' history. Interestingly, this date is on the south or railway side of the building, indicating that access to the works may originally have been by level crossing over the line. Another dated brick from 1902 appears on the west side of the structure, showing that it was later enlarged. In bushes adjacent to the carpark, the ruins of what appears at first glance to be a single-storey building are in fact those of a two- or three-storey building in a deep overgrown pit. Rusting pipework inside suggests that it may have housed pumping machinery from some of the earliest workings on the site. Apparently discarded alongside the public footpath which runs through the site was a wooden bogie with four substantial flanged wheels which would once have seen service in the nearby quarry or in the kilns.

Notes and References

1. Detailed obituary of Charles Richardson appears in Proc.Inst.Civil Engineers, 124, 1895-6, part II, 417-19.
2. J.Norris, The Bristol and South Wales Union Railway, Railway and Canal Historical Society, 1985, is dedicated to Richardson's memory.
3. T.A.Walker, The Severn Tunnel: its Construction and Difficulties, 1872-1887, 2nd ed., 1890.
4. Brief mention of Cattybrook's history, 1954-78, is in S.B.Pippard, 'Hollybrook Bricks', J.Bristol Indust.Arch.Soc., 15, 1982.
5. M.Cassell, Dig It, Burn It, Sell It: the Story of Ibstock Johnsen, 1825-1990, 1990.

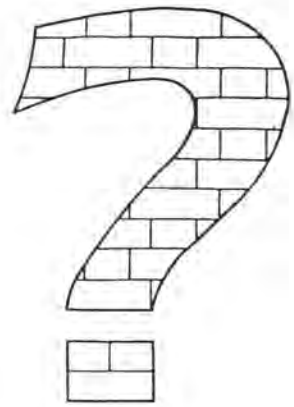
1995 IN PROSPECT

The British Brick Society is currently preparing its 1995 programme of Spring Meetings and the Annual General Meeting. Dates for members' diaries are as follows:

8 April 1995	St Albans, Hertfordshire: a walk around the city, including Roman brickwork in Verulamium, re-used Roman bricks in St Michael's Church (Anglo-Saxon), re-used Roman bricks and the Chapter House of 1982 at St Albans Abbey, and the Marlborough Almshouses of 1736. Guide: T.P.Smith.
13 May 1995	Salford, Lancashire: Nineteenth-century brick churches by Bodley, R.B. Pearson, Paley & Austin; late Georgian brick terraces; late nineteenth-century civic buildings. Guide: D.H.Kennett.
10 June 1995	Annual General Meeting in Lincolnshire, with visit to Tattershall Castle, a fifteenth-century tower-house of brick. Guide: to be announced.

Full details of these and of the 1995 Autumn Meeting will follow with the mailing accompanying Information 64 (February 1995).

BRICK QUERIES



From time to time the Society receives queries concerning bricks, brickworks, or brick buildings.

To facilitate the dissemination of information, these queries are included in issues of Information; some issues will be without a queries list, either because none has been received or because the editor has only a single query to be included.

Answers to, or comments on, these queries are encouraged.

RAT-TRAP BOND

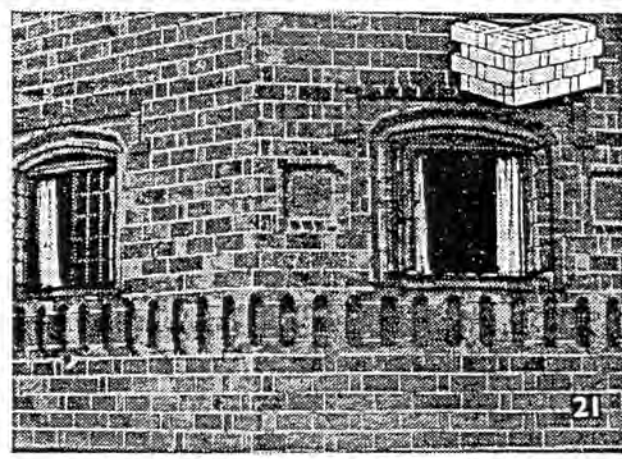
BONDING
and Bonds in Brickwork

21: RAT-TRAP BOND

IN this bond the bricks are laid on edge instead of on their usual beds. The appearance on the face of the work is similar to Flemish Bond. The 4½in. x 3in. face of the bricks act as headers and the 4½in. x 9in. beds of the bricks act as stretchers. The middle bricks in the wall behind the "stretchers" are omitted and thus there is some saving of bricks when Rat-Trap bond is used. Because of the omission of these bricks the wall is really a honeycomb structure and is, therefore, weaker than a wall of solid construction. Thus the use of the bond is confined to 9in. walls for comparatively light structures.

Rat-Trap Bond may be resorted to when an external wall is to be tile hung, the mortar joints forming the correct gauge for the nailing.

Care must be taken to see that there are no openings in the wall which will permit vermin to use the hollow spacing as nesting cavities.



(This series of articles is based on a film and lecture notes by Educational Productions, Ltd.)

The item reproduced above, concerning Rat-Trap Bond, is from The Illustrated Carpenter and Builder, vol.cxlix, no.4306, 11 March 1960, p.832. The Rat-Trap Bond illustrated in the photograph is not of the normal Flemish Bond type, but a variation of Flemish Garden Wall Bond, though with two stretchers per header in one course and four stretchers per header in the other. Does anyone recognise this (Victorian? Edwardian?) building? If so, I should be glad to learn of its whereabouts. T.P.Smith, Flat 6, 6 Harthill Drive, Luton, Beds. LU2 OAX.

AN EARLY FILM OF BRICKMAKING

At various dates in the five years before World War I The Builder records, often in some depth, lectures given at the Architectural Association. For example, in the issue for 24 February 1911 (pp.234-6) there is a lengthy account of W.G.Newton's paper, 'That Brick is Eminently Suitable for Large Town Buildings'. The Builder for 13 March 1914 (p.318) reports the showing of a film on brickmaking at the AA on 6 March 1914; this featured Damshill Brickworks, Basingstoke, Hants. Does anyone know if the film is still in existence? Does anyone know of other films of brickmaking, especially in the period before 1914? Does anyone have any information on Damshill Brickworks? (For reference to a much later film on bricks see the caption to the photograph in the previous item. TPS) David H. Kennett, 3 Melmerby Court, St James' Park, Eccles New Road, Salford, Lancs. M5 4UG. Tel.: 061-743-0640.