

A LATE 15th CENTURY ACCOUNT FOR A WHARF AT VAUXHALL, LONDON

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This article concerns the construction of a timber wharf at Vauxhall by carpenters and labourers over a period of five weeks during the year 1476-7. The building account¹ which itemizes its construction is significant as detailed contemporary evidence of costs of construction and labour. With this evidence and the information gained from recent excavations of wharfs in the City of London, it will be possible to speculate on its construction. The account also throws an interesting sidelight on the type of work performed by the medieval carpenter.

The account belongs to a series of annual account rolls covering the years 1376-1532 kept by a monastic official, the Custodian of the New Work, at Westminster Abbey. Henry III had rebuilt the choir, the transepts and the first five bays of the nave at Westminster Abbey between 1245 and 1272. For over 100 years, the remaining bays of the original Norman abbey church built by Edward the Confessor were joined rather uncomfortably to the new work. It was Cardinal Langham, an ex-abbot of the Convent, who around 1370, gave the initial impetus to the completion of the project started by Henry III. During both periods of building activity, one of the main building stones to be used was quarried from the upper greensand bed which surfaces below the southern slope of the North Downs, in the area around Redhill and Reigate. It can be inferred from the rolls of the New Work that it was taken by cart through the gaps in the North Downs and up to the Thames, and there it was transferred to barges and taken to the Abbey's main wharf near its mill, close to the present site of the Victoria Tower. From there, it would have been dragged or carted to one of the masons' lodges at the building site.

Between 1376 and 1532 there were three main sites along the south bank of the Thames where the stone was handled. The first was at Battersea, which is mentioned as a transfer point between 1376 and 1451²; the second was at 'Wandlesworth' which is mentioned in the accounts between 1461-74.³ These two manors were held by the Abbey. The third site was at 'Fawkeshall' and is the subject of this article. Between 1474-76 it is referred to either as 'Fawkeshall'⁴ or 'Lambith'⁵, but in all probability they refer to the same place. After 1476, it is consistently referred to as 'Fawkeshall'. The fact that the site was used before the new wharf was built would seem to imply that there was an old structure present which had to be taken down or added onto in building the new wharf. Although rent was paid from 1475,⁶ the lease⁷ was signed on the tenth of February 1478, for a term of fifty years, between the Prior of Christchurch, Canterbury, as the Lord of the Manor, and Westminster Abbey.⁸ From this lease we can derive a certain amount of information about the land⁹ (see Fig. 1). In area it was just over three-quarters of an acre, with an annual rent of three shillings and fourpence. Because Vauxhall was a manor of the Priory, we are able to trace further references to it in the Beadles Accounts¹⁰ up to 1528. In one of these accounts, the wharf was said to be at 'Cokkesbrugge'¹¹. Coxbridge spanned a common sewer at the junction of four roads.

Using the Thomas Hill map of 1681,¹² which shows details of the division of the demesne lands in Lambeth, the most likely site has been marked (see Fig. 2). Firstly, the shape of the plot accurately represents the details of the lease, and secondly, a road runs along the south side of the property up to the waterfront. It would have been essential to have had reasonable road access to the river, with a large number of heavy carts using the site each year. Thirdly, this property on its east side backs onto what the lease ambiguously termed the 'via regia' but which Hill specifically calls the Kings high Way.

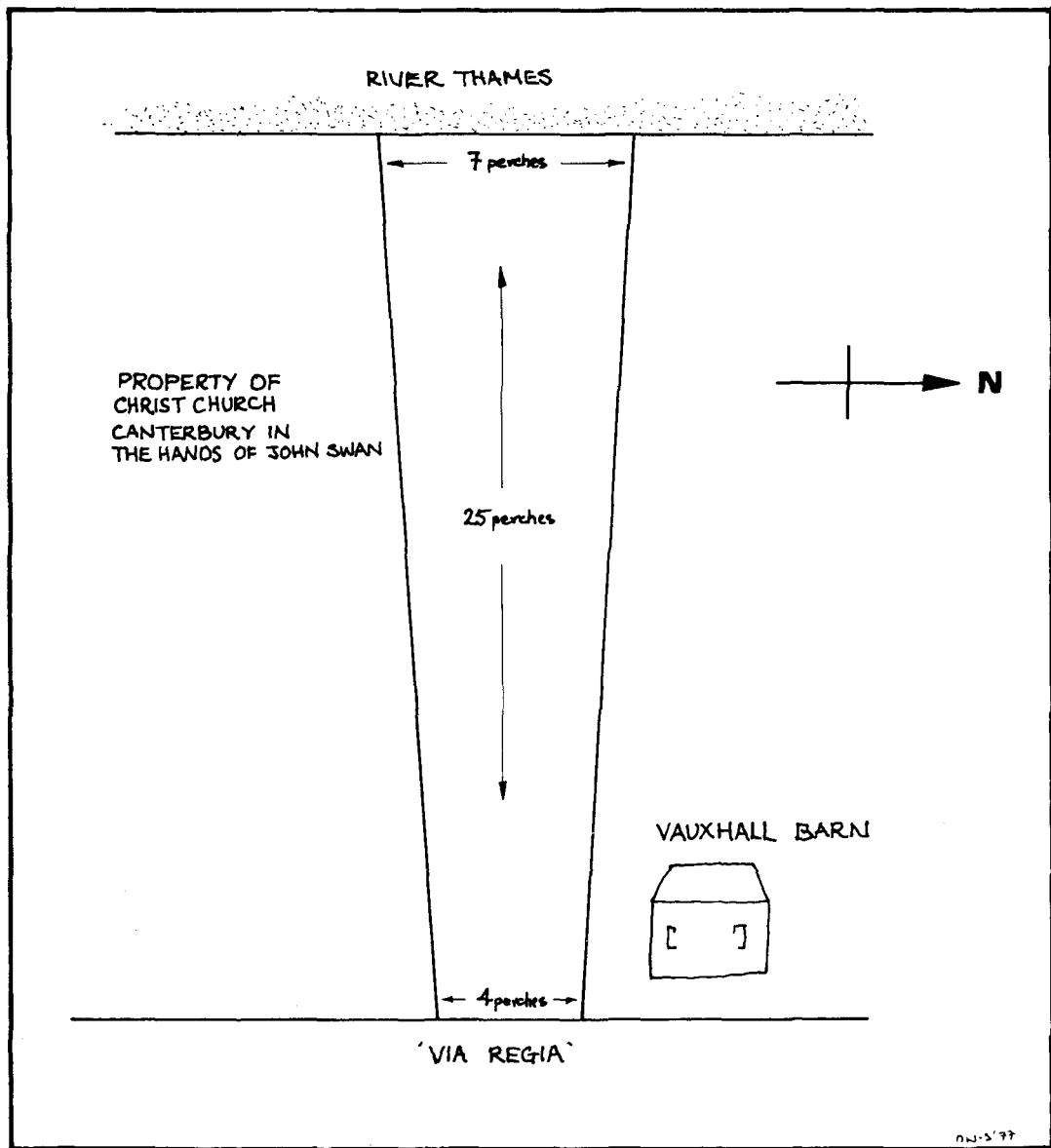


Fig. 1 — A late 15th century wharf account, Vauxhall: Information on wharf in the lease of 1478.

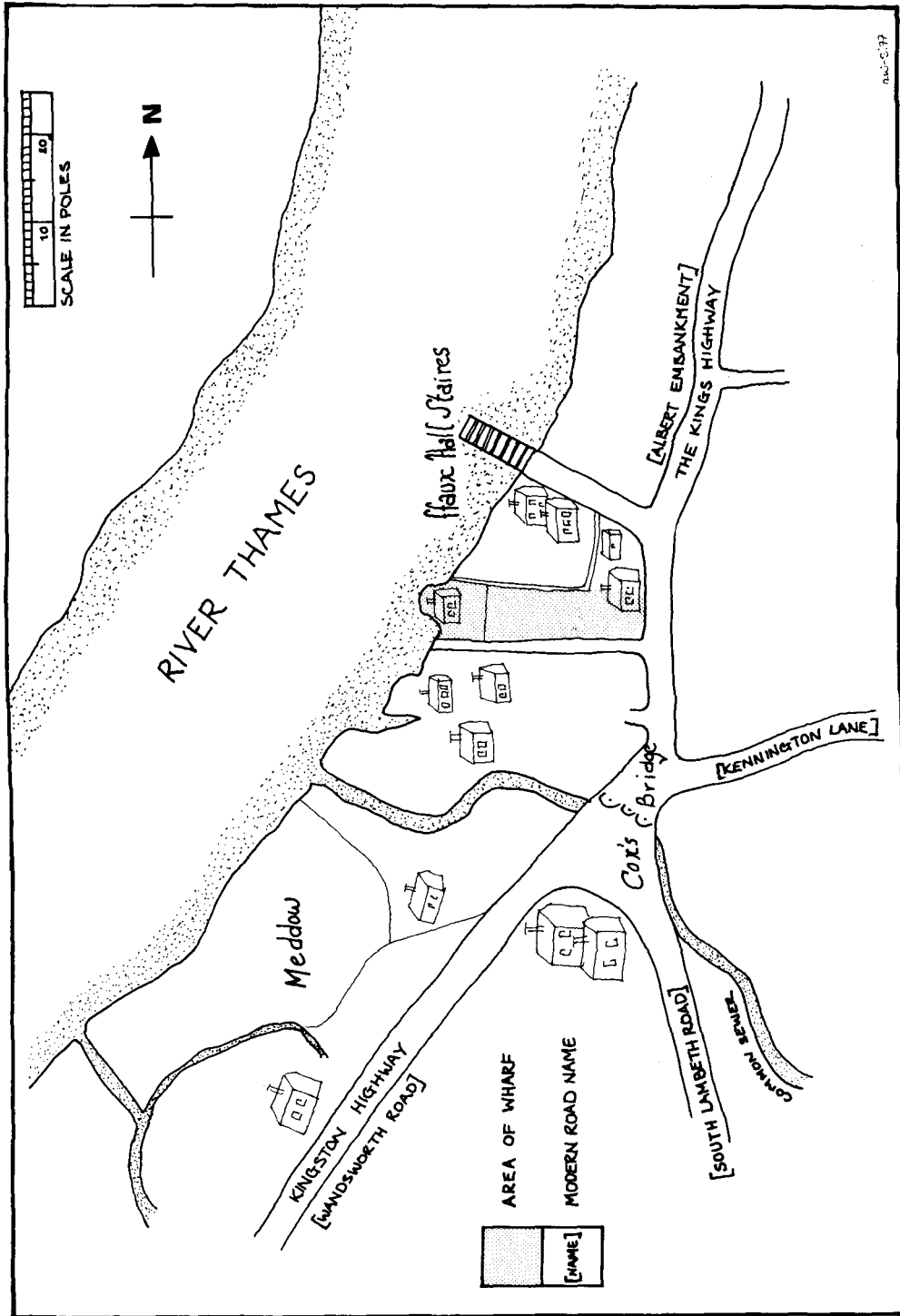


Fig. 2 — A late 15th century wharf account, Vauxhall: Location map for the Abbey Wharf at Vauxhall (Part of Thomas Hill's map 1681 showing the manor of Christ Church Priory in Faux Hall).

The possible reasons for moving the site from Wandsworth to Vauxhall also need to be discussed. There are two separate issues: firstly the reasons for leaving Wandsworth, and secondly why Vauxhall was chosen from among all the possible sites on the south bank of the river for the new wharf. We will concentrate in this article on the first of these issues. It seems unlikely that the move was caused by the expiry of a lease on the Wandsworth site, mainly because the land was in the hands of the Abbey Almoner, who would not have dealt that severely with a brother obedientiary if the site had been ideal for his purpose. One explanation for the move is afforded by the yearly totals of Reigate stone purchased by the Abbey. The handling of this stone is the only activity mentioned in relation to these wharves. The amount of stone purchased in any one year depended upon the stage the building operation had reached, and other variables such as the enthusiasm of both the Abbot and Custodian for this project. The table below (Fig. 3) sets out the yearly totals of cartloads of Reigate stone handled by the wharves together with some of the other factors affecting purchase. It seems likely that the move to Vauxhall was made because larger premises were needed, due to the increase in volume of material handled, and therefore it will be necessary to look briefly at the move to Wandsworth in order to assess the relative size of its wharf. The wharf at Battersea was capable of coping with large volumes of Reigate stone¹³ for they rented a 'garden called Briggecourt' in which they stored the stone. The handling figures for Battersea in the ten recorded years between 1445-60, reveal decreasing activity: the overall average per year was twenty cartloads. However, by taking the average between 1455-60, it dropped to twelve carts, and between 1458-60 no stone at all was purchased. Because of its capacity it would have been far too large for the input during this period. It seems likely, therefore, that the move from Battersea to Wandsworth was a move to smaller premises. Looking at the table, we note that the year before this move, John Redyng was appointed as the Abbey's Master Mason. Under the abbacy of Kirton (1440-62) there was very little practical commitment to the work of finishing off the church, so that Redyng may have decided to choose a site more suitable for the limited activity to be expected. This remained true for the first two years at the Wandsworth site, then the quantities began to pick up when Norwych became Abbot (1462-9). The Abbots seem to have played a considerable role in setting the pattern of activity. For example, under Millyng's abbacy (1469-74) a consistent average of around 60 cartloads per year was maintained, except for the unusually high figure in 1467-8 which must itself have caused problems on a small site. This increase at the

YEAR COMMENCING	14 60	61	62	63	64	65	66	67	68	69	14 70	71	72	73	74	75	76	77	78	79	14 80	81	82	83	84	85	86	87	88	89	14 90	91	92
TOTAL CARTLOADS OF STONE	0	10	0	18	31	x	74	115	58	48	56	80	59	169	148	193	120	242	425	206	120	142	87	100	x	x	85	66	x	244	120	132	44
ABBEY MASTER MASON	← JOHN REDYNG →											← ROBERT STOWELL →																					
CUSTODIAN OF NEW WORK	RUSHTON av. 27 carts						MILLYNG av. 74					EASTNEY av. 153																					
ABBOT	KIRTON		NORWYCH			MILLYNG					EASTNEY																						
WHARF SITE	← WANDSWORTH TOTAL CARTLOADS 866 (av. 66) →															← VAUXHALL TOTAL CARTLOADS 2013 (av. 155) →																	

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Fig. 3 — A late 15th century wharf account, Vauxhall: Yearly totals of Reigate stone related to other factors.

beginning of his term as abbot was caused by a large amount of walling that had to be finished off so that part of the nave roof could be started. Then, when Eastney became abbot (1474-98), the volume trebled immediately due to his vigorous building policy. It was perhaps the experience of trying to handle treble the volume of stone on a relatively small wharf, coupled with a new commitment to finish the work on the Abbey by both Millyng and Eastney, that generated the move to a larger site. Taking the total amount of stone handled during the thirteen years at Wandsworth and the total for the first thirteen years at Vauxhall, one can see that Vauxhall coped with well over twice as much stone. It seems likely that it was a considerably larger wharf.

Since this account is part of a sequence of *Novum Opus* Rolls, one or two further advantages accrue in our attempt to understand the context of ownership and use of the Vauxhall wharf. We may deduce both the pattern of work at the wharf, and the methods used for the actual transfer of the stone. When the quantity of stone being loaded and unloaded was large, for example at Battersea in the last decade of the 14th and the first two decades of the 15th centuries, a garden was rented at Bridgecourt in Battersea, near York Bridge, specifically for storing stone. The method of transferring stone from the south side of the river to the north, does not seem to have changed over the time of the accounts dealt with here. At Battersea, in 1393-4, the Abbey built one large structure or a series of smaller ones to shelter the Reigate stone from the rigours of the climate. From the point of view of handling large quantities of stone, the structure must have been a tiled roof supported on timber uprights, without the hindrance of side walls. In the account for this year, some 10,000 tiles were purchased 'pro domo petrarum', while the placing ('ponend') of them was paid for as task work.¹⁴ Also in the account, there are references to the enclosing of the garden and the making of a new gate. All these pieces of evidence suggest that the actual activity of transferring the stone onto barges and taking it up river to the Abbey did not happen every day of the year, but rather that the stone accumulated as the carts made their slow return journeys from Reigate, and that once there was a sizeable quantity of stone, labour and barges were hired for a brief flurry of activity. This interpretation is also borne out by the accounts, where the breakdown of the costs for the stone show that a small number of labourers were employed for a few days each year on this work. This remains the pattern right through the rolls of the *Novum Opus* (1385-1532). It is more explicitly stated in later accounts, where, for example, in 1480-1,¹⁵ three labourers were working with the 'Showtemen' loading the showtes at Vauxhall and unloading them at the mill, ('onerandum le Showtes apud ffawkeshall et exonerandum apud molendinum'), and then loading the stone onto 'le carres' at the mill and unloading them again at the church, for thirty three days, at 4d a day each. How were the labourers able to shift 120 cartloads of stone at least twice in the space of thirty three days? In some years they seem to have been helped by the masons (1436-7), but this was not common.¹⁶ The Abbey buildings make it clear that the stone blocks were large, so some form of mechanical lifting device must have been necessary. Although the accounts are not specific about the type of lifting machine the Abbey possessed, we know from various references, that there was a big 'gynne' at the Abbey mill for lifting stone from the showtes, ('magno gynne apud molendinum').¹⁷ As Salzman says 'the principle of all the 'gins', or machines, was a rope running over a wheel or pulley fixed above the position to which the stone, or timber, was to be delivered'.¹⁸ Since the stone to be raised could be quite heavy, it would be reasonable to suppose that some sort of axle arrangement was used as a winding gear in this case. If a 'gynne' was needed to offload the

stone, another was in all probability needed to load the boat originally. So the Vauxhall wharf must have had a lifting gear on its jetty. The movement of the stone on land was made easier by the use of two-wheeled hand barrows or 'carres', and the occasional use of sledges.¹⁹ Also in the accounts concerning the moving of stone are entries indicating the carriage of baulks of timber ('plancorum') to and from the mill. It would seem that a method of unloading stone which is frequently used nowadays has its provenance at least as early as the 15th century. When lifting or lowering heavy stones, the stone is often made to slide up or down on two thick pieces of timber, so that it cannot swing round. Since the timber forms an inclined slope, it makes it easier to lift. Without this slope a straight upward lift would be necessary and would need far more effort to achieve. It is striking how much effort and organisation went into what was, after all, only one small part of the total operation of rebuilding the nave of the Abbey.

EXPEN' CIRCA LE WHARF APUD FAWKESHALL 1476-7
(WAM 23547/8)

Solut' Johanni Russell operanti super le Frame pro dict' wharf pro xxxiiij dies capienti per diem viijd. — xxij. Et solut' Johanni Darry et Johanni Freman operantibus ibidem pro xxxiiij dies capientibus per diem utrique eorum vijd. — xxxviijs. vjd. Et in xxxij poles fossat' in fossand' et hayand' prec' pole ijd. ob' — ixs. ivd. Et in vj carectis Spinarum et Rayles et Stakes prec' carect' xxd. — xs. Et solut' pro uni veteri cumba vocat a Showte pro dict' wharf pro expulsione aque — xxiijs. ivd. Et in ⁱⁱⁱⁱ/_{xx} pedibus meremij empt' prec' carect' vjs. viijd. — xs. viijd. Et in ⁱⁱⁱⁱ/_{xx} pedibus meremij de Hendon de stauro officij. Et in tribus carectis de Scaffold Tymber pro pyles de stauro officij. Et in C plancheborde quercium — ijs. vijd. Et in CCC clavis centena ad vid. — xviijd. Et in C clavis — xd. Et in xx pedibus meremij sarrat' pro le gate postes prec' ped' ijd. — iijs. ivd. Et in viij pedibus meremij querc' pro le spores eiusdem porte prec' ped' ijd. — xvjd. Et in dim' C planchborde et viij legges sarrat' — iijs. Et in iv henges et iv hokes et iij staples ponderant' xxxiiij lib' prec' lb jd. ob' — vs. ivd. ob'. Et in C clavis — vd. Et in j hangynglok et j stoklok — xijd. In Regardis datis ibidem operant' ad diversis vices — xxd. Et in Cariag' dicti meremij et asserum ab ulnis usque molendinum et a molendino usque le wharf — ijs. ijd. Et solut' v laborariis pro xxx dies cuilebet eorum cap' per diem vd. — lxijs. vjd. Et solut' Willelmo Bolebek pro viij dies — ijs. viijd. Et solut' uni Bigatori pro ij dongcartes cum iv equis ad cariend' lutum zabulum et arenam ad perficiend' dict' wharf pro vij dies capient' per diem ijs. ivd. — xvjs. ivd. Et solut' pro una Cumba pro xxx dies — ijs. vjd.
Summa £xj. xijd. ob'

Translated text

Payed John Russell for working on 'le frame' of the said wharf for 34 days at 8d/day — 22s. Payed John Darry and John Freman working on the same for 33 days at 7d/day — 38s 6d. And for 32 poles dug, ditching and hedging it at 3½d./pole — 9s 4d. And for 6 cartloads of spurs, rayles and stakes at 20d/the cartload — 10s. And payed for 1 old barge called a Showte for the said wharf for expelling water — 23s 4d. And for 80ft timber bought at 6s 8d/cartload — 10s 8d. And for 80ft of timber from Hendon from the official store. And for 3 cartloads of 'scaffold timber' for 'pyles' from the official store. And for 100 plancheborde of oak — 2s 7d. And for 300 nails at 6d/100 — 18d. And for 100 nails — 10d. And for 20ft of timber sawn for the gateposts at 2d/ft — 3s 4d. 8ft of oak for the spurs of the doors at 2d/ft — 16d. And for 50ft plancheborde and 8 'legge' sawn — 3s. And for 4 'henge et 4 hokes et 3 staples' weighing 43 lbs at 1½d/lb — 5s 4½d/lb — 5s 4½d. And for 100 nails — 5d. And for '1 hangynlok' and '1 stoklok' — 12d. Payments for the said works at various times — 20d. And for carriage of the said timber and boards of elm to the mill and from the mill to the wharf — 2s. 2d. And payed 5 labourers for 30 days each of them at 5d/day — 62s 6d. And payed William Bolebek for 8 days — 2s 8d. And

- 15 *payed 1 carter for 2 'dongcart' with 4 horses for carrying mud, sand and gravel to finish the said wharf for 7 days at 2s 4d the day - 16s 4d. And payed for a barge for 30 days - 2s 6d.
Total: £11 1s 0½d*

Four men are named in the text but no details are given about them. It is possible however to build up a picture of them and their work from other entries in the rolls. Russell, Freman and Darry were obviously carpenters. The first two are explicitly stated to be so in other accounts, and Darry, since he was linked with Freman and given the same pay, may also safely be assumed to be a carpenter. Russell had been employed by the Abbey during the previous seven years, 1476-7 being the last time he is mentioned for ten years. In 1486-7 he was employed on the construction of five new timber-framed tenements in Tothill Street, Westminster. His name occurs infrequently on the rolls thereafter. There are a number of carpenters called Russell mentioned in the account rolls at the end of the 15th and the beginning of the 16th centuries. John Harvey ascribes family links to two of them: John and Richard Russell.²⁰ If they were related, it is difficult to be certain what their relationship was. Richard's son, John, (not the same as the one mentioned above) became the King's Master Carpenter from 1532-66. Both John Russell senior and John Russell junior worked at Westminster in 1517-18, the former on St. Margaret's church, the latter on the Abbey nave. Freman began a twelve year association with the Abbey in 1476. There is no further mention of Darry in the Novum Opus Rolls.

From the fact that John Russell was employed slightly longer on this job and was paid more, attests both to his experience and known worth, as well as to the fact that he was more likely to have been the designer and foreman of the project. His pay and that of his two men compare well with the rates paid by the King for work to the royal manor of Eltham in Kent, three years later in 1479. There, the chief warden received 10d a day, the under-warden 8d, and the carpenters 6d.²¹ This reinforces the suggestion that Russell was the foreman and would have been expected to shoulder responsibility for organisation of the project and probably the design as well.

It is perhaps worth noting the scope of the carpenters' work when employed by the Abbey. In looking at the other work John Russell performed in its pay, we find him building a bridge, felling and stripping trees, journeying around Kent selecting timber, working on the nave roof, putting up scaffolding and making a 'tymberhaw'.²² John Freman performed an equally catholic selection of jobs. His main work was on making scaffolding and centring for the new masonry vault being erected in the nave of the Abbey around 1481. We also find him making four new ladders, building and placing 'gynnes', felling and stripping trees, and repairing the gable end of the nave roof and the big tread wheel used for raising the heaviest of the masonry for the vaulting. He was employed not only by the New Work but also by the Sacrist²³ in repair and construction work. From an Abbey leasebook of 1499²⁴ we find that sometime earlier John Freman, carpenter, had rented a house and large garden from the Abbey and had also built four cottages within the sanctuary of the monastery. Both men were employed in repairing the Abbey tenements at various times.

The only other name on the account is that of William Bolebeke. From other New Work accounts, he is found as a labourer working for both carpenters and masons. His pay of 4d a day seems low in comparison with the other labourers. When looking at other years in the

accounts as well as glancing at the King's wage rates at Eltham, we find 4d a day to be the usual rate. The fact that five labourers were paid 1d a day more for 30 days, the majority of time taken for the job, must indicate either some extra degree of skill required of them, or, far more likely, the unpleasant nature of their work in the Thames mud.

That two carpenters could turn from framing the roof of Westminster Abbey to the building of a small wharf confirms the theories of Cecil Hewett, that the timber jointing of cathedral roofs and timber water fronts spring from the same tradition and were designed and cut by the same craftsmen.²⁵

The materials mentioned in the account fill in some of the background to the construction of a timber wharf of the general type found at several sites along the northern bank of the Thames in the City of London, further downstream: Custom House, Seal House, and Trig Lane.²⁶ The Vauxhall account may be interpreted by comparing the archaeological evidence from these three London sites with the terminology of construction described in L. F. Salzman's *Building in England down to 1540*, the prime source book for such terms.

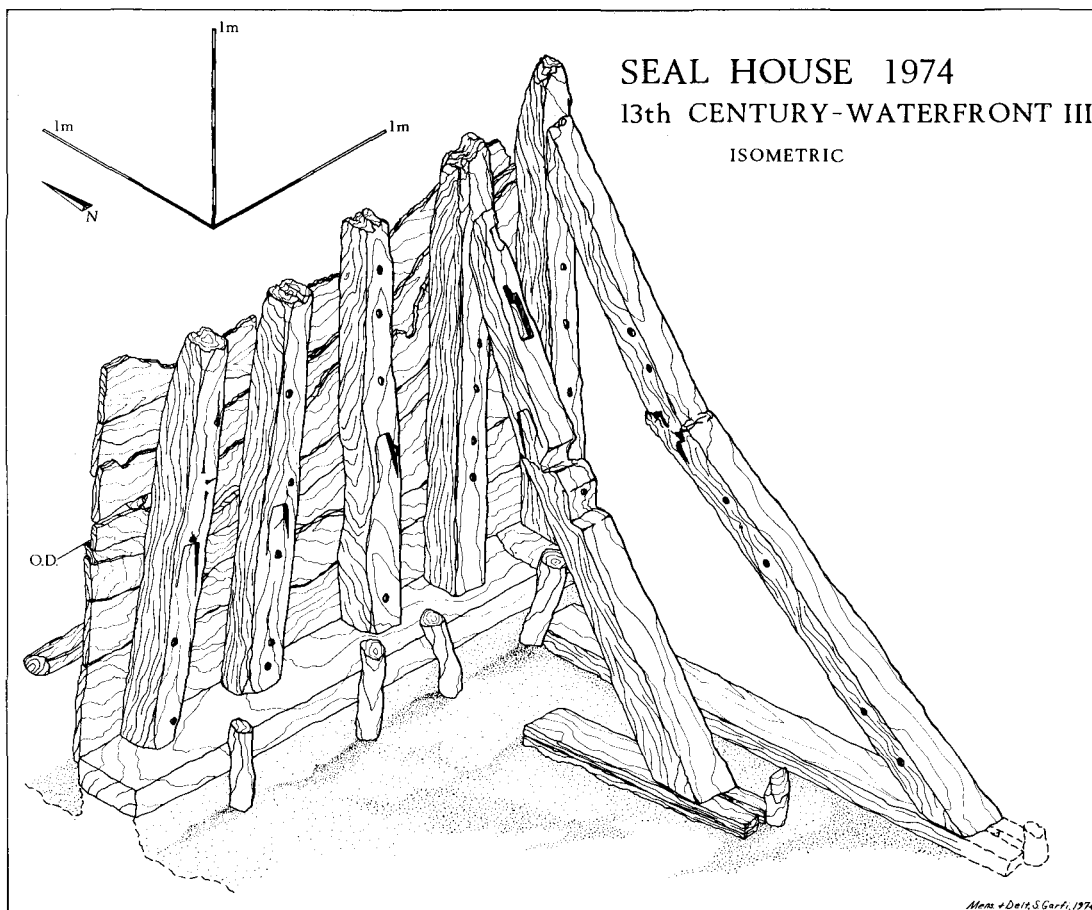


Fig. 4 — Seal House, City of London: early 13th century diagonally-braced waterfront.

Unfortunately the terms of the account are not consistently specific as to the dimensions, number or function of the timbers, and thus reconstruction may take at least two forms. One suggestion is that the wharf was of the diagonally braced type found in the 13th and 14th centuries on all three waterfront sites in the City, and in the 15th century also at Seal House.²⁷ The wharf at Seal House dated by dendrochronology to 1220 ± 5 years²⁸ is here reproduced for comparison (Fig. 4). The type consisted of a sillbeam held by piles, into which vertical posts were jointed at regular intervals; these held back domestic rubbish by means of planks pegged or nailed against their landward side, the rubbish acting as an anchor for the whole structure. The posts, and the inevitable riverwards pressure of the backfill, were in turn supported by diagonal braces going down to piled soleplates in the river gravels. This type of structure may not have been a wharf for mercantile traffic, but the revetted end of a riverside property; certainly boats would have lain at anchor outside the diagonal braces, and the cracks seen on the surviving braces in excavation may be the result of boats moving against them.

The second possible reconstruction would have been braced internally, thus removing the obstruction of the diagonal riverward braces: the example is the early 14th century wharf at Trig Lane (Fig. 5). This type shares the basic structure of piled sillbeam, here with an edge-halved scarf for continuation of timber, vertical posts and planks pegged from the rear (north). The manner of bracing was by anchor-beams, incorporating at their northern ends a technique for steadying timber structures in soft ground known as far back as Viking times in cruck house building.²⁹ The anchor beams were pegged with stakes into the backfill itself — a circular process which probably contributed to the frequent collapse and need of repair of the wharves. At the riverward end, opposed trenching of the beam fitted between slightly trenched verticals. This type of wharf superseded a diagonally-braced type at Trig Lane, and probably reflects the increased mercantile use of the wharf in the early 14th century.³⁰

With these two possible models in mind, we may return to the account of building the Vauxhall wharf. Immediately we come upon a problem: the interpretation of 'ditching and hedging' the wharf (line 3); a length of 32 poles (156m or 528ft). This must mean establishing the boundaries of the property, but there is no immediately evident combination of distances on the available maps (Figs. 1 & 2) to equal this distance. It is possible it refers to the east and south sides, a total of 29 poles, with 3 poles along the north side, i.e. some were already hedged and ditched.

Six cartloads of *spurs*, *rayles* and *stakes* (lines 3-4) were now supplied. *Spurs* are mentioned in a contract to build a landing-place on the sea shore at Tilney in Norfolk, for the Abbot of Bury, in 1434;³¹ they were long poles, the shere-legs of the ram used to knock in the piles. If these were for making a ram, the other component parts would have been noticed in the account. The purchase or hire of one is not mentioned either, and the small piles for the excavated waterfronts could be knocked in with a sledgehammer. The amount of timber accords with diagonal braces, if anything, which were often of old or re-used timber. The Seal House figure shows one of the braces bearing a 'scotch' or rearing mortice from its former use, possibly in a building on dry land. The use would then be similar to '17½ft of tymbre for to spore the walles in the garden' of the Carpenters' Company in 1486.³²

An old barge 'called a showte' (line 4) was bought; not hired, like the ordinary barge for 30 days at the end of the account (line 16). A shout, scout or schuit was a flat-bottomed river boat, possibly of Dutch origin, used for short sea voyages, but more often for carriage of bulky cargoes inland.³³ In the London Eyre of 1244 every shout (*shuta*) putting in at

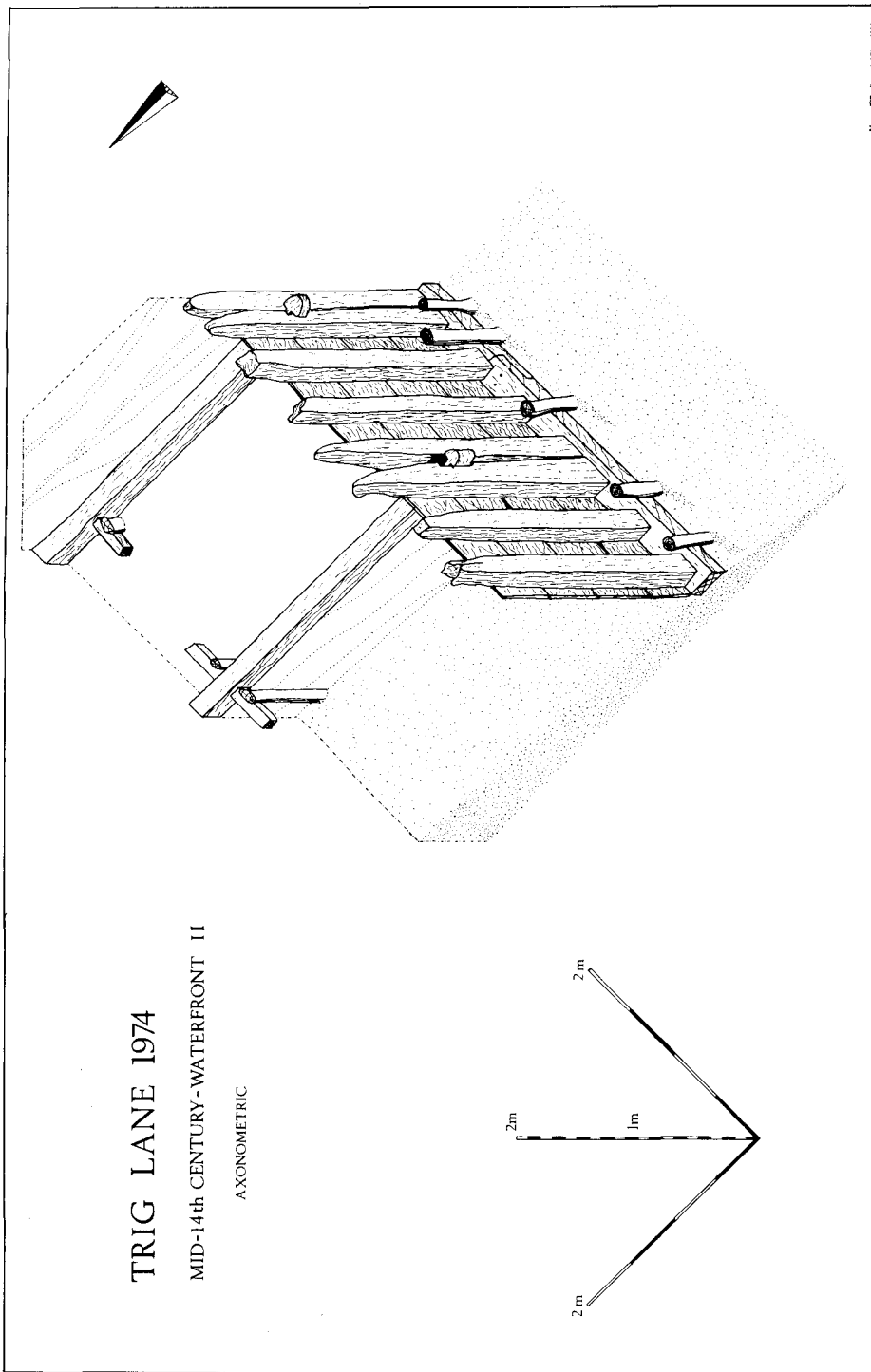


Fig. 5 — Trig Lane, City of London: early 14th century anchor-beam waterfront.

Queenhythe with corn was charged 3½d; if laden with brushwood without corn, 1d.³⁴ In 1384 piles for London Bridge were brought from Waltham in a showte,³⁵ and in 1386 two shipwrights were paid for working on one belonging to the Bridge itself.³⁶ Old boats have been found re-used for planking in medieval waterfronts at the Custom House and Trig Lane sites, and at Lincoln;³⁷ but here it was specifically bought 'for expelling water' (line 5). Possibly the barge was broken up and used as a crude coffer dam as work progressed between tides.

Timber, unspecified, was brought from two sources, one the Abbey oak-wood at Hendon. Two kinds of timber were specified: three cartloads of scaffold timber for piles (line 7) and a hundred plancheborde of oak (line 7). The scaffolding timber could have been oak or alder, which was extensively used for scaffolding in the medieval period, or elm,³⁸ alder and elm, especially the latter, have been found as piles for the waterfronts so far excavated. *Plancheborde* were standard size oak planks, first mentioned (according to Salzman) at the Tower in 1324, 10ft x 1ft 6in, about 1½in thick.³⁹ Two such boards, cut from the same tree, formed the base of the planking on the Seal House waterfront (Fig. 4) with lighter, probably re-used timber higher up. The planks behind the Trig Lane wharf were regular but not quite of the standard size. If the Vauxhall planks were the standard size, a hundred would give 1,000ft of timber; since the length of wharf has been reconstructed from the map (Figs. 1 & 2) as about 7 poles (115½ft, about 35m), we may suggest that the boards would give a height to the wharf of about ten feet. This is however presuming that all the boards were used on the face. There is a possibility that some were used as flooring for the structure, especially since a heavy commodity such as stone was to be loaded. There is at present no evidence for wooden flooring on the excavated quays, the surface being of beaten earth or gravel.

There is no mention of timber for either the sillbeam or the verticals, which must have formed part of the design; perhaps they were among the load of timber from Hendon or bought separately. Since the first load of 80ft of timber took one and a half carts to carry, it would have been fairly substantial and may have contained the sillbeams. The verticals may also have come from the load of spurs.

Boards were attached to the verticals with 400 nails in two sizes. The cheaper nails, at 6d a hundred, were probably 'plank nails', well known in many medieval accounts.⁴⁰ The more expensive nails at 10d a hundred which follow cannot be specified further, as the nomenclature for medieval nails is confused. They might also have been bought by the long hundred, of 120.

In lines 13-18 follow items necessary for building a gate. The twenty feet of gate post timber must have been sawn in two to make a gate ten feet high, of two leaves, since four hinges were required. The fifty foot of plancheborde needed for its surfacing indicates an area of 75 sq. ft. or a gate 7ft 6in wide if the leaves were one board thick. At the back were the eight *legge*, square sectioned bars crossing either at right angles or diagonally on the inside of the leaves.⁴¹ The *henge at hokes* (line 10) are of the type universal on church doors. The hook, an iron wedge, has a round iron pin rising from its broader end, carrying an eyed piece of iron attached to the door, and is itself inserted into the door frame.⁴² The three *staples* were also of iron, and may have been staples in the modern sense of binding together the planks of the gate; Salzman presumes this word to mean the side pieces of the framing,⁴³ but since the three staples, the hinges and the hooks together weighed 43lbs, perhaps lighter pieces are meant. A hundred nails were used; presumably the type well-known as doornails.

Two locks were employed. The '*bangynglok*' (line 11) was a padlock, as at London in 1490 — where *ij stapulis* are also mentioned.⁴⁴ A '*stoklok*' (*ibid.*) was the type buried under a block of wood fastened to the door itself.⁴⁵

The mention of the carter and his two *dongcart* (line 15) is of great value to the archaeologist. The carter must have backfilled the space behind the plank-wall of the wharf with mud, sand and gravel, and — if the archaeological examples from the crowded city are anything to go by — a good deal of rubbish including horse manure, cobblers' clippings, broken pottery and a whole range of objects in wood, leather and bone. This would be rammed down and used as the working surface of the quay. It is of importance to learn that although the rubbish would be collected from many places, and be of varying dates, it would be laid down as a deposit behind the quay in as short a time as a week. It may be possible in future excavations to sort out one cart load from another, if the soil or rubbish-types are radically different.

Apart from the 1476-77 account, there are six further mentions in the *Novum Opus Rolls* of the wharf at Vauxhall and its repair. In 1479-80⁴⁶ the substantial sum of £6 was paid for the wharf, some on constructing 'le pale', presumably a boundary fence. Possibly these repairs were occasioned by the heavy traffic in stone of 1476-9 (see Fig. 3). A new door was made in 1492-3;⁴⁷ the remaining references⁴⁸ do not specify the nature of the repairs, except that in 1481-2,⁴⁹ details of materials and labour are given. "Repairs made at 'lambuthe' on the wharf. 90ft of oak — 6s 8d. 100ft of plancheborde — 2s 6d. 100 nails — 10d. 20 'spikyng' — 20d. 2 carpenters for 6 days at 7d — 7s. 2 labourers for 6 days at 4d — 4s. River transport for carpenters and labourers at various times — 8d. Total £1 3s 4d."

The account can be compared with other documentary information about the construction of medieval wharves in the London area. Three contracts are so far published, all by Salzman. In 1347 the Dean and Chapter of St. Paul's contracted with a carpenter, Richard Coterel, to rebuild part of their wharf near Brokenwharf in the City. The instructions for building are scanty, but mention vertical posts or 'needles' (which had a hole in the upper end to receive a transverse timber) 12 feet in height, a bridge with steps down to the water in the middle of the quay, and a shed at each end.⁵⁰ A wooden fence 10 feet high was to surround the whole plot, and this may be analogous with the length of ditching and hedging required at Vauxhall and the later reference to 'le pale'.

A contract of 1387-8 describes work to be carried out in rebuilding two water-mills belonging to Henry Yevele, the master mason, and John Clifford, also a mason, near the mills of the Abbey of Battle in Southwark. A wharf is to be built east of the dam of the mill-pool; and the carpenters '*pitcheront mettront & seieront*' the timbers, which Salzman translates as 'they will pitch (i.e. drive in the foundation piles), assemble and ?saw, but the translation of the third word is not certain'.⁵¹

A further contract of 1389 describes a length of stone wharf to be erected for the King at Tower Wharf. The walls, 8 feet thick at the base diminishing to 5 feet at the top, were to be 16½ft high, based on piles.⁵² This is very similar to the construction of the stone quay wall at the Trig Lane site which eventually replaced the timber quays, and is dated by documentary evidence to 1481/2.⁵³ This kind of stone quay wall has been found at the Baynard's Castle, Trig Lane and Seal House sites in the later medieval period, and seems eventually to have replaced timber at many points along the City bank of the Thames, since it can be seen on 16th century drawings and panoramas,⁵⁴ and also perhaps on the Southwark bank.⁵⁵

The two reconstruction figures show both diagonally-braced and internally braced (anchor-beam) alternatives, and it is difficult to suggest which is the more likely from the internal evidence of the account. While the nature of the traffic suggests, on the whole, a straight-fronted anchor beam structure of the Trig Lane type (Fig. 5), we must ultimately remain uncertain as to the precise nature of 'le frame' on which John Russell worked.⁵⁶

NOTES

- The authors wish to express their gratitude to the Dean and Chapter of Westminster for allowing them to publish the account (Westminster Abbey Muniments (hereafter referred to as WAM) 23547 & 23548). They also wish to thank the following for their help: Mr N. McMichael, especially for help in checking the original transcript, and Mr H. Nixon at the Westminster Abbey Library; Miss A. M. Oakley of the Cathedral Archives & Library, Canterbury; and Dr Caroline Barron, Tony Dyson and John Clark for their criticism. Figs. 4 and 5 are the work of Sal Garfi, John Burke-Easton and Chrissie Milne.
- Between 1451 and 1460 either no Reigate stone was purchased or no mention is made of which wharf was used.
- WAM 23526-23542.
- WAM 23543/4.
- WAM 23545/6.
- It is noted under 'Necessary Expenses': "In regard date J Pargrave collect' reddite prioris ecclie' Xte Cantuar' pro suo favore habend pro terris conducend' apud ffawkeshall ad faviend' unum wharf ad imponend' petrae de Reygate — 3s 4d" WAM 23545/6.
- Canterbury Archives (hereafter referred to as CA), F.55.
- The land was later leased to Robert Brandon, Goldsmith, who was Chamberlain of the City of London, on 29 March 1587, for 21 years. By this lease, the City of London could discharge its rubbish on this site, "landinge, bestowinge & laying of the donge, myer, rubbishes & soyle to be conveighed from the cite aforesaid by water thether, which is not onlye to the fermors & tennents of the said Dean & Chapter but also of others nere there inhabitinge for the dongynge & compostinge of their grounde" (CA). It can be traced down to the 18th century through various leasebooks.
- "... unam peciam terre iacentere infra dominu' de fawkeshalle in parochia de Lambith in Com' Surr' et dicta vacua pecia terre extendit et continuet in longitudine a via regia ex parte orientali usque ripam Tamisie ex parte occidentali viginti, & quinque perticas et latitudine ex parte boriali juxta orren' de ffawkeshalle quattuor perticas et ex parte australi juxta terra date Prioris et conventus modo dimiss' John Swan in latitudine super ripam Tamisie septem perticas". CA F.55.
- CA Misc. Accounts 15 Pt 1 (18 to 22 Henry VIII).
- CA Misc. Accounts 31 f 39v.
- This map is catalogued as Map 18 in the Cathedral Library, Canterbury. Our figure 2 is a selected version of Hill's map only showing information relevant to our discussion.
- e.g. 1394-5, 585 cartloads of Reigate purchased. WAM 23464.
- WAM 23463.
- WAM 23554.
- e.g. WAM 23508.
- e.g. WAM 23571.
- L. F. Salzman *Building in England down to 1540* (Oxford 2nd ed. 1957) 324.
- e.g. WAM 23551 & 23520.
- J. H. Harvey *English Medieval Architects* (London 1954).
- Salzman *op.cit.* (in Note 18) 77.
- J. Harvey suggests that John Russell senior also worked on the construction of the centring for the vaults on Kings College Chapel, Cambridge, c.1513 under another member of the family, Richard. See Harvey *op.cit.* (in Note 20) 231.
- e.g. 1478-9: WAM 19727.
- Lease Book I; 114-114b.
- Forthcoming reports on the Trig Lane waterfront; cf. also C. Hewett's *Development of Carpentry 1200-1700* (Newton Abbot 1969); and *English Cathedral Carpentry* (London 1974).
- T. Tatton-Brown 'Excavations at the Custom House site, City of London, 1973' *Trans London Middlesex Archaeol. Soc.* 25 (1974) 117-219 Figs. 12-18; J. Schofield 'Seal House' *Current Archaeology* 49 (1975) 54-7; Mark Harrison 'Trig Lane' *ibid.* 57-9.
- On the watching brief of early 1976. The full site report is forthcoming as a special paper from the London and Middlesex Archaeological Society.
- Analysis by Ruth Morgan; for interim, see 'Tree-ring dating of the London Waterfronts', *London Arch.* 3 no. 2 (1977) 40-5.
- F. W. B. Charles 'Scotches, lever sockets and rafter holes' *Vernacular Architecture* (1974) 21-4 and Fig. 2b; reference to work of I. F. Saefal in NW Europe.
- Full report on Trig Lane forthcoming from G. Milne of the Museum of London.
- Salzman *op.cit.* (in Note 18) 504 (B M Add Ms 14848, f 74v).
- B. Marsh (ed.) *Records of the Carpenters' Company: II, Wardens Accounts 1438-1516* (Oxford 1914), 72.
- D. Burwash *English Medieval Shipping 1460-1540* (London 1947) 138-40.
- The London Eyre of 1244* ed. H. M. Chew and M. Weinbaum, London Record Society 11 (1970) no. 261.
- C.L.R.O. Bridge Accounts Roll 4/6/vii.
- ibid.*, 6/6/i-iv, xxvii. We are grateful to Brian Spencer for these two references.
- Tatton-Brown *op.cit.* (in Note 26) Figs. 12-13; on Trig Lane, information from Peter Marsden. On Lincoln, information from M. Jones, Lincoln Archaeological Trust; at Dickinson's Mill.
- Salzman does not mention oak as a scaffolding timber; but it is used in 1413-16 at the Abbey (WAM 23492) and throughout the 15th century; elm is first mentioned as scaffolding in 1461-2 (WAM 23526), brought from Abbey woods at Hyde and Knightsbridge.
- Salzman *op.cit.* (in Note 18) 242.

40. *ibid.* 304-17.
41. *ibid.* 254.
42. *ibid.* 295.
43. *ibid.* 258.
44. *ibid.* 303.
45. *ibid.* 302.
46. WAM 23552.
47. WAM 23568.
48. WAM 23559 (1483-4); 23570 (1493-4); 23579 (1500-1).
49. WAM 23556.
50. St. Paul's MSS nos. 980, 1239; Salzman *op.cit.*, (in Note 18) 43-5.
51. Magdalen Coll MSS, Southwark 33; Salzman *op.cit.* (in Note 18) 467-9, n.6.
52. Exch. K. R. Accts. 502, no. 10; Salzman *op.cit.*, (in Note 18) 469-70.
53. Documentary evidence for forthcoming report by Tony Dyson, Museum of London.
54. e.g. the copper plate map of *c.* 1558 attributed to Wyngaerde (M. Holmes 'An Unrecorded Map of London' *Archaeologia* 100 (1966) 105-28); Norden's view of the Bridge *c.* 1600 (G. Home *Old London Bridge* (London 1931) P1. opp. p.136).
55. See the background of the drawing *The Procession of Edward VI from the Tower of London to Westminster* (in Society of Antiquaries; Sharf Add. no. 71 [Hist. Print no. 4]).
56. The authors have located the site of the wharf, immediately to the north of the present Vauxhall bridge on the 'south' side of the river. At the time of writing (May 1977) the site is open ground.