Nicholas Hawksmoor's Building Notebook

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Introduction

Primary documentary sources for research into seventeenth-century building construction are usually drawings, letters, contracts, or building accounts. This article prints for the first time a transcript of an example of a much rarer type of document: an architect's pocket notebook. The book is even more important because it is clearly belonged to one of the period's leading architects: Nicholas Hawksmoor (c. 1661-1736). The unsigned notebook, now in the National Maritime Museum in Greenwich (Manuscript ref. ART/8), is small (measuring just 3in. x 6in.) and fastens shut with a brass clasp. It was obviously purchased for carrying around building sites and taking to meetings where prices would be negotiated (Fig. 1). "Pocket books" are mentioned in the accounts for St Paul's[1] and were thus presumably readily available for purchase at stationers' shops. The cover of this one is parchment and there are letters on the back which are no longer legible. Inside, after a title page, there is a table of contents, which has been partially completed. All the pages in the manuscript were numbered in the top right-hand corner in leaves (or folios). The rest of the book consists of notes on matters to do with building (Fig. 2). As such it is a useful source for the construction historian and indeed anyone wanting to understand the interests of an architect in the seventeenth century. It is also an invaluable resource for architectural historians seeking to understand one of the period's most interesting architects.

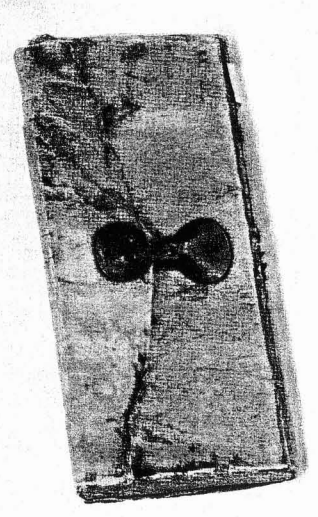

Figure 1. The pocket book

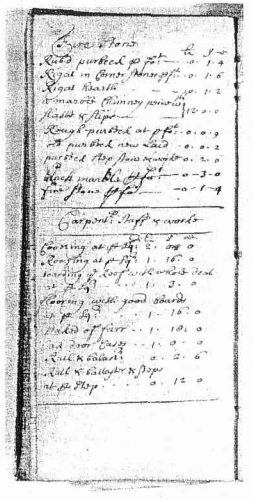

Figure 2. A typical page of the pocket book

Attribution, Provenance and date

Although it is unsigned, leading experts in the field, including Professor Kerry Downes and Sir Howard Colvin, agree that the notebook was compiled by Nicholas Hawksmoor and this is now generally accepted.[2] As Colvin states, "It does not bear the architect's name, but it is written throughout in his hand, and it is characteristically titled in his bad Latin 'Arcana meche in Re Adificattora' ".[3] Moreover the buildings that can be identified in the text are all associated with Hawksmoor and of the two books mentioned in the notebook (presumably as potential purchases) one is listed as having been in Hawksmoor's library. Unfortunately less is known about the history of the manuscript and its date of compilation.

All that is known about its provenance is that was given as a private donation to the National Maritime Museum in 1962 by an individual whose grandfather had inherited both it and a copy of *Parentalia* which had been exhibited in 1923 on the bicentenary of Wren's death. How the family acquired the manuscript is unknown.

There are only four explicit references to dates in the text: on folio 27(r) "Smith Black……Materials used by Him: Domestic: Anno 1698"; on folio 38(v) "Lead at my Lord Leompter's[Easton Neston] This was in Sept.4. 1694", and on folio 40r "April .12. 1700/ Workmanship & nails: Rates proposed by Asa [at a] house in ye county of Hertford 1700" and the same date for works at Hampton Court "called by Mr B—ks" [f.41(v)]. The following buildings are also mentioned, for some of which dates can be ascribed: Winton (Winchester Palace) constructed between 1682-1685; Greenwich Hospital where Hawksmoor held posts between 1696-1733; Kensington Palace (works with Churchill, undated contract c.1689-1695 ; Lord Carl..ls (Castle Howard, Hawksmoor's involvement dates from 1700[4]); King's Bedchamber (unknown, see below); Lds Ashburnh[a]m['s] (possibly No. 3 St James's Square dated 1712 demolished in 1930).[5] It would be foolish to suggest that the entries were necessarily made on the dates mentioned as Hawksmoor would have had access to the accounts long after the buildings in question were completed. Nevertheless the buildings appear in roughly chronological order implying that the he may have started the book at the time of the earliest mentioned building in the mid 1680s and was still adding to it at the time of the last building in 1712. Crucially all the buildings which can be identified in the text are associated with Hawksmoor.

Relevance of the note book to Architectural History

Nicholas Hawksmoor was one of the few English architects of the period who was trained in an architect's office. He entered Wren's service in 1678/9 at the age of 18 and over the following decades acted first as his clerk[6] and then went on to oversee and supervise the construction of many of his greatest works. By 1700, Hawkmsoor was 39 years old and one of the most experienced and talented architects in the country. Like Wren, we know a great deal about his commissions for public buildings and work for surviving institutions such as Oxford Colleges, but very little about his commissions for private clients. The notebook has proved invaluable in this regard.

Easton Neston in Northamptonshire is an important house but tantalisingly little in the way of documentary evidence has survived. For many years it was attributed to Wren almost entirely on the evidence of a single letter from him to Sir William Fermor, Lord Lempster.[7] However Kerry Downes and Avery Tipping noted the contents of that letter (which amount to little more than friendly advice), did not imply that Wren was the designer.[8] Fermor was first cousin to Wren's second wife so it was reasonable for him to ask Wren's opinion on architectural matters. The notebook is one of three documents cited by Howard Colvin in 1970 in an article in Country Life as evidence that Hawksmoor took over from Wren and that as a result most of the design of Easton Neston could be attributed to him.[9] In 1987 the evidence was re-examined at greater length by Kerry Downes who used the notebook to attempt to establish the date of construction[10] and the attribution of Easton Neston to Hawksmoor is now generally accepted.[11]

In view of the importance of the notebook to the history of Easton Neston, it may seem surprising that the rest of the works mentioned in it have largely escaped comment particularly as so few works are linked to Hawksmoor. Sir Howard Colvin's *Biographical Dictionary*, which is generally accepted as definitive, lists thirty-five firmly established attributions and four tentative attributions.[12] However as Colvin notes, the problem with attributing designs to Hawksmoor is that many of his designs were carried out in collaboration with (or while working for) other architects. Thus although it is generally accepted that Hawkmoor's designs rather than Wren's were used for the western towers of St Paul's and that he was probably responsible for many of the towers of the City Churches, these remain attributed to Wren because the latter undoubtedly retained overall control. The case is equally complicated when considering the collaboration between Hawksmoor and Vanbrugh at Blenheim Palace and Castle Howard. The main reason for attributing the notebook to Hawsksmoor is that it lists so many buildings associated with him: Winchester Palace , Greenwich Hospital, Hampton Court, Kensington Palace and Easton Neston. On this basis alone the book deserves closer examination.

For instance, it has previously been assumed that the house in Hertfordshire mentioned in the text [f.40(r)] is Broadfield Hall. Hawkmsoor is known to have carried out repairs to Broadfield for James Forester between 1690 and 1693.[13] However the works listed in the notebook are not repairs; they are for major building works including the construction of new stairs, floors and roofs, suggesting the construction of a new house. They are also dated some seven years after Hawksmoor is known to have worked at Broadfield and for a house which was square on plan (50ft x 50ft) while Broadfield appears from illustrations to have been rectangular and much larger.[14] It is thus possible that the entries represent not Broadfield but another house (as yet unidentfied) whose owners had seen Hawksmoor's work for Forester and decided to use the same architect to improve their own property. Of course the entry in the notebook is for "rates proposed" rather than works carried out, so the house in question may never have been built.

For some works the source of the entries in the notebook can be identified with more precision. For instance, one of Hawksmoor's first posts under Wren was as a Clerk for the construction of Winchester Palace known to those involved as "Winton".[15] The project had been started by Charles II and was abandoned on his death, remaining a half-finished shell for the rest of the century. For Winchester the contracts survive and we can match entries in the notebook [f.37(v)] closely with those in the documents.[16] Sadly few of the sources for entries concerning other buildings are so easy to trace.

Wren was also responsible for Hawksmoor's involvement at Greenwich Hospital, where he started as Wren's clerk in 1696 then Clerk of Works in 1698-1736 and rose to Assistant Surveyor (1705-1729),[17] but here the contract books[18] contain nothing that can be matched with the entries in the notebook [ff.32(r), 33(v), 36(v), 37(r)]. Similarly the Castle Howard accounts survive but there appears to be nothing in those documents or the letters or other papers related to the project to match the entries in the notebook [f.42(v)-43(r)].[19]

At Kensington some of the records in the vital period have been lost.[20] Hawksmoor's design of the Orangery (built in 1704-5) is generally accepted.[21] For works to the Palace itself where he worked under Wren, while acknowledging his involvement Colvin is, quite justifiably, less willing to give Hawksmoor credit.[22] Nevertheless Hawksmoor was Clerk of Works at Kensington from 1689[23] and John Churchill was responsible for the carpentry in the palace from 1691 onwards.[24] The entries in the notebook [f.38(r)] match those of a surviving undated contract by Churchill for Kensington, but we do not know what this contract was for or when the works were carried out.[25] The corresponding building accounts (which are not complete) list a number of works carried out about this time.[26] It has been suggested that the contract here is for carpentry "Kitchen Building" built "according to the Designe given them signed by Mr Surveyor" in 1700, but this is unlikely as the items listed do not match the descriptions in the accounts for that building.[27] Therefore the works in the notebook (and contract) may be for another building at Kensington, possibly dating from 1696-97 or 1698-99, the periods for which the accounts

do not survive.

Wren's enlargement of Hampton Court, like Winchester, was subject to fluctuations in both Royal enthusiasm and finance. The bulk of the construction was carried out between 1689 and 1694 but the project was mothballed on Queen Mary's death when the King turned his attention to Kensington and it was not until 1699/1700 that work on many of the Hampton Court interiors began.[28] The carpentry work dated 1700 in the notebook [ff.41(v)-42(r)] obviously relates to the later works[29] and so probably do the entries concerning the King's Bed Chamber [ff.45(r) & 46(r)], drawings for which survive in Hawksmoor's hand[30] and the accounts for which are in the National Archives at Kew. However the carvings listed in the Hampton Court accounts[31] for the King's bedroom do not match those in the notebook [f.46(r)]. To add to the confusion there seem to have been works to the King's Bedroom in Kensington Palace around this time, but here (as has already been noted) the accounts are incomplete. There were also works to the King's Bedchamber at Kensington in 1718 for George I for which the accounts are similarly missing.[32] The notebook may thus allude to a project we already know quite a lot about at Hampton Court or one of those at Kensington about which we know very little. On this as, on many other matters, the book turns out to be more difficult to interpret on close examination than it may first appear.

Although it is difficult to identify all the works mentioned, the notebook nonetheless provides a fascinating insight into the thinking of an architect of the period. Architectural historians naturally spend much time of their time searching for the sources of inspiration for an architect's work and it is all too easy to forget that design occupied comparatively little of the architect's time. A much larger proportion was spent on site, supervising construction. Without any formal training and with few printed books to help them, architects had to teach themselves about building construction and site inspection. Their clients expected them not only to be able to design safe structures, but also to be able to protect them against fraudulent practices and to be able to negotiate competitive contracts. For instance, in 1698 the building committee at Greenwich suspected that contractors were over-charging them and asked Hawksmoor to investigate what rates were being charged elsewhere.[33] An architect, then as now, needed to know how much things cost, how long they took to do and how to tell that they had been done well. It is these matters we see illustrated in the notebook, whether it be in prices of iron and steel [ff.26(v)-27(r)], the length of time needed to cut stone [f.31(v)] or notes on how to tell the quality of lead(f.46(v): "Lead Hard or Soft (by Ringing) Lead wether hard or soft is known in the pitt or stricking a tool onto itt"). Like the earlier notebooks of Roger Pratt,[34] Hawksmoor's notebook provides a valuable insight into day-to-day concerns of an architect of the time.

Relevance to the History of Building Construction

As it concentrates on the practical side of building, Hawksmoor's notebook is of obvious interest to construction historians, providing a contemporary account of the divisions of labour; rates of work; historical terms; uses of tools; types of weights and measures; and the prices, uses and methods of manufacture of various materials. It thus sits alongside the notebooks of Roger Pratt and other building accounts and contracts as a primary source for understanding the building methods of the time.

The book provides a useful reminder that seventeenth-century builders were still divided into separate trades. For instance the index of the book [f.18(r)] lists six types of smith: blacksmith (who works iron), white smith (who works tin), lock smith, gun smith, copper smith and anchor smith. Ironmonger's goods are listed separately from blacksmith's works, presumably because they were brought "off the shelf". Hawksmoor seems initially to have intended to deal with each trade in turn starting with "the first I have to hand" which was blacksmith, but this is abandoned in a few pages, notes thereafter being added building by building rather than trade by trade. Nonetheless lists of carpenters', joiners' and carvers' prices make clear the distinction between the woodworking crafts. Joiners are treated late in the book perhaps because most of the earlier works were abandoned before the joiners became involved. It also shows that bricklayers still laid tiles and ironmongers made casement windows.

The book will be of interest to economic historians searching for prices but this aspect needs to be treated with caution. Many of the buildings listed were designed and administered by the King's Works. The Crown was remarkably bad at paying its craftsmen on time and contractors often had to wait many years before they received what they were due. As a result only certain builders could afford to work for the Crown and it was generally accepted that the Crown had to pay higher prices accordingly.[35] It might appear to be a relatively simple matter to confirm this by comparing prices of Royal and ordinary buildings, but in practice it is surprisingly difficult. The first problem is the relatively poor survival of contracts and accounts from outside the Royal Works. Secondly, published books of prices which might seem a good source were scarce and not as reliable as they might seem.[36] Later books often seem to have been content to copy prices from earlier works rather than update them. The third problem lies in comparing like with like. Although it is relatively simple to compare the rates of labour and costs of materials by weight, flooring (which might differ in depth with span), or carving (which might vary widely in complexity) offer greater problems. Of course it is precisely because these difficulties existed that architects like Hawksmoor and Roger Pratt were forced to compile their own notes. A full analysis of the prices in the book is beyond the scope of this article but some comparisons have been made in the notes with the two most important price books from the period: Stephen Primatt *The City and Country Purchaser* (1667) and William Leybourn *Platform for Purchasers* (1668) together with observations from the 1726 edition of Neve's *City and Country Purchaser* and Joseph Moxon's *Mechanick Exercises* (1703). For the most part the prices shown in the notebook match those in contracts surviving for the works in question. The exceptions are the prices in the notebook for Castle Howard which do not match those in the accounts that survive. It may be that the prices quoted here were early estimates provided before work began.

The methods of pay are clearly shown in the book. Much of the building work was paid for by rates (Fig. 3). Thus brickmakers were paid for every thousand bricks produced, bricklayers by the rod of brickwork (272 sq ft assuming a 1.5 bricks thick wall), tilers for tiling by the square (10ft x 10ft=100 sq ft), likewise carpenters for flooring, while masonry was generally paid for by surface area (ft superficial), assuming a 3ft thick wall. Payment of labour by the hour is noticeably missing. The book also clearly shows that the architect needed to have some idea of how long things took and many of the entries in the book deal with the rate at which work could be realistically carried out. Thus it records that a mason can work 30 foot of Oxford Stone [f.46(v)] or make a baluster of a certain length [f.31(v)] in a day.

Another area of interest for the architect was the relation of different commodities to each other. Thus the book records how much lime must be supplied to make the mortar for a rod of brickwork [f.34(r)], how much coal is needed to burn the lime [f.49(v)], how much paint will be required to paint a certain area [f.48(r)], etc. It also contains items on the conversion of one unit to another such as square yards into acres and how many hundred weight in a fodder of lead [f.38(v)]. Architects face just such problems today and various publications have appeared to meet those needs. The notebook's compiler obviously found the literature of the time unreliable or simply found it more convenient to copy what he needed into a single book, to be at hand whenever required.

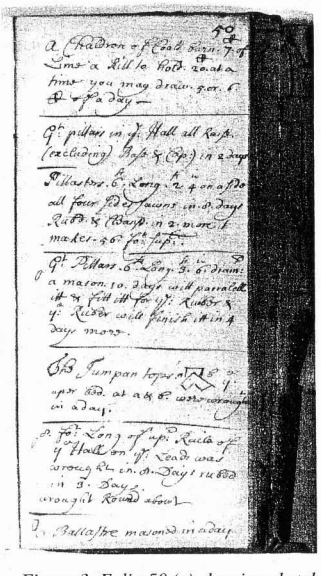

Figure 3. Folio 50 (r) showing sketch of 'tunpan'

Building terms are another area where the book demonstrates that the seventeenth-century architect had similar problems to the architect today. Indeed building terms are even more difficult for the historian because they are numerous, ill-defined (often differing not just regionally, but from tradesman to tradesman) and have tended to change their meaning over time. The pocket notebook is useful in this respect because it contains many terms unfamiliar today the meaning of most of which are clear from the context: terms like lucerne windows; bragetting; modillion cornice; mantells and trussles; scantling; naked flooring and compass railes. Others like "Hassock" and "fodder" are more obscure. Sometimes the book even provides a definition as it does for instance for "broached work" or an illustration as it does for "kirfe" (Fig. 4). The problem of shifting meanings is elegantly shown by the terms used to describe the dimensions of a stair. In the pocket book the two dimensions of a step are defined as "width" and "going" which at first glance appear to be the same the terms used in the modern British building regulations, but on closer examination it is clear that the complimentary meanings of these terms have completely reversed over time. In the 17th century the "width" of a step was its depth in the direction of travel while the going was the dimension across the stair. In contrast today it is "going" that is defined as the depth of the step in the direction of travel and width as the dimension between the baluster and the wall. A little investigation shows that the 17th century definition held true at least until the end of the nineteenth century, so the shift in meanings is relatively recent. Other *faux amis* include "rubbish" and "terrace". The possible traps for the unwary researcher are obvious.

In addition to these general points the book contains a interesting information for the individual crafts. Thus in stonemasonry it provides some useful evidence for the use of saws for cutting stone [ff.31(v)-32(r)], a practice which is well recorded in the 18th century and we know was carried out earlier, but is largely missing from the literature of the period.[37] Similarly the references to the use of the axe for cutting stone [ff.42(v)-43(r) & 46(v)] are noteworthy as that use of the tool seems to have fallen out of use in the 18th century.[38] In brickmaking the division of labour between the various members of the brickmoulding team is clearly delineated and their various names (earthmaker, upstriker, molder, off bearer) are given [f.32(v)] and can be easily compared with definitions from elsewhere. In ironmongery the use of "jappaned" work appears [f.46(v)]. In carpentry different types of flooring are illustrated for the first time [f.41(r)] (Fig. 5), while in joinery we can see the use of doors (both manufactured on site and purchased off-the-shelf) and "Italian" picture frames. There is, no doubt , much more to be gained from closer inspection.

Lastly the book is interesting for what it omits. There is, for instance, no information on glass. One can only speculate that either its specification was of little interest to the architect of the period or that the writer had had little experience of it at the time the book was

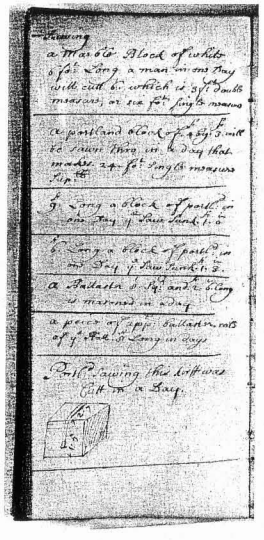

Figure 4. Folio 31 (v) showing sketch of 'kirfe'

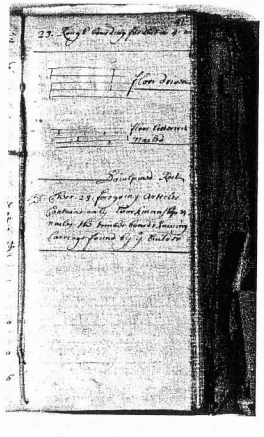

Figure 5. Folio 41 (r) showing different types of flooring

composed. Likewise there is nothing on structural calculation. We know that architects of the time, including Hawkmsoor, did specify the sizes of structural members and produce designs for structural elements such as roof structures. It is assumed that they used rules of thumb to calculate depths of floor beams and sizes of the members of the trusses.[39] Tables were included in the Acts for Rebuilding and reprinted frequently but these did not cover every eventuality. Unfortunately the book is disappointingly silent on the subject. The only weights of materials supplied are to do with the problems of transportation and all sizes of timbers have been omitted (even though they are typically included in the contracts from which the figures are taken).

Notes on Editing of Transcript

The following pages provide a complete transcript of the text of Hawksmoor's notebook broadly following the directions laid down in Michael Hunter's "How to edit a Seventeenth-century Manuscript: Principles and Practice", *The Seventeenth Century*, X, No.2 (Autumn 1995), 277-310. The notebook is written in fine handwriting using a number of abbreviations for speed in common with most seventeenth-century manuscripts. For instance, "the" is written as "y^e^" throughout using "y" according to typical seventeenth century custom as thorn (a runic character standing for "th"), "per" is shortened to "p" and "foot" becomes "fot". Likewise, inches are shown in the original by a small "i" above the number. All such simple abbreviations have been expanded. Where there is possible ambiguity I have signalled it in the notes. Insertions and deletions are likewise relegated to the notes unless they made the text nonsensical. The text uses a letter made by a "C" (so curved as to become an "O") with "x" over it. This stood for "a hundred" signifying either the number or the unit of a hundredweight. The text has been altered to "cwt" or one hundred (with a note) according to the context. Long "s"s and double "f"s have been regularized according to modern usage, but otherwise the capitalization and spelling of the original have been retained. The symbol "|" is used to show line breaks which have had to be omitted to reduce the length for printing. "|--|" indicates that there is a line separating this entry from the next. The intention has been to produce a readable and useful text rather than a "quasi-facsimile", but the nature of contents of the notebook has prevented it being translated into flowing prose and in some parts it remains difficult to interpret. In the transcript the convention of recto (r) and verso (v) has been used, although it should be noted that in many cases the writer obviously intended two facing pages (eg. 1(v) and 2(r)) to be considered together.

[First leaf has 19th century notes (dated 1897) in pencil of contents and important points, not copied here. Folios are numbered in the original hand in the upper right corner of each page starting with the page after the frontispiece]

Arcana Mecha | in | Re Adificattora | nec non | altri scientiis[40] [Frontispiece]

A,[41] | Attick mould Winton: [*p.*] 34 | Ashlar under the base: [*p.*] 34. Acres Statute [*p.*] 40. [f.1(r)]
B. | Bricks burnt: [*p.*] 32: bar upright: [*p.*] 35= | Brick feild [*sic*]. [*p.*] 33= bar sadle. [*p.*] 35= | [f.2(r)]
Barr Iron. [*p.*] 28=
C. | Chalk at Greenwich. [*pp.*]32.33 | Chalk ashlar. [*p.*] 33 Collums at winton. [*p.*]33 | [f.3(r)]
Capitells at winton: [*p.*] 33 = Coines at winton [*p.*] 34 | Capittells flat: [*p.*] 34 Stop locks brase:
[*p.*]35= | Casmt: [*p.*] 35 Carpenters[42] at winton. [*p.*] 38 | Carpenters prises for workmanship
& | nails. [*pp.*]40=41=42-account of | Carpenters prises. [*pp.*] 36=38 | Concerning Joyners[43]:
matteralls: [*p.*] 49= | Carvers. [*p.*] 46
D. | Dorick pillars. [*p.*] 34 [f.4(r)]

E. | Entablament at winton_ [*p.*] 33 [f.5(r)]
F. | facia at winton [*p.*] 33 | fire stone. [*p.*] 36. [f.6(r)]
G. [*no entries*] [f.7(r)]
H. [*no entries*] [f.8(r)]
J. | Joyners propos. [*pp.*] 45 [,] 46: [&] 48 | Ironmonger. [*p.*] 49. [f.9(r)]
K. | kentish ashlar. [*p.*] 37. | kentish Rag. [*p.*] 37 [f.10(r)]
L. | Lime. [*p.*]34 Laths [*p.*]34 Lead [*pp.*]34.[&]35 | Locks. [*p.*]35: Lead. Lime tre[*e*]s plank per foot. [*p.*]49: lathing. [*p.*] 44 Lime burning [*p.*] 50 [f.11(r)]
M. | Mason vid. [*p.*] 43 [f.12(r)]
N. [*no entries*] [f.13(r)]
O. [*no entries*] [f.14(r)]
P. | Paper prices in the Exchequer as | the King used to pay. p.120[44] | portland work sup. [*p.*] 38 | portland ashlar. [*p.*] 33 portl[*an*]d. block | plastering. – [*p.*] 34 | pipes of Lead. [*p.*] 35. painting [*p.*] 35 | painting. pantyles- [*p.*] 36 | plaistorer. [*p.*] 34 Pillar Raising. [*p.*] 50 | pillaster working sawing & rubbing. [*p.*] 50 [f.15(r)]
Q. [*no entries*] [f.16(r)]
R. | Rubble at Winton works. [*p.*] 33 Rag at Greenwich works [*p.*] 34 [f.17(r)]
S. | Smith| Black. [*p.*] 26 Smith White | Smith Lock Smith Gunn | Smith Copper Smith anchor |Sawing stone. [*p.*] 32 Sand [*p.*] 34 [f.18(r)]
T. | tyles worth. [45] [*p.*] 36 Terrace . [*p.*] 37 | Tyles to tunn. [*p.*] 32. [f.19 (r)]
U. [*no entries*] [f.20 (r)]
W. | Window molds at Winton [*p.*] 33 [f. 21(r)]
X. [*no entries*] [f.22(r)]
Y. [*no entries*] [f.23(r)]
Z. [*no entries*] [f.24(r)]
[*Blank pages*] [ff.24 (v)-25 (v)]

Comenses | I treat of the first that Comes to my Hand which is a |Blacksmith | [f.26(r)]
1.A Smith per day at London.[*no price given*] | 2. The tools used.1.Bellows. anvill | hammer. file. vice. sledges. drill

[*Table across two pages with most of the prices missing*] [ff.26(v)-27(r)]
Smith Black [*heading on top of both pages for a table of prices*]
Matterialls used by Him |--| Domestick Anno 1698 . 16 |--|
at the forge Landcar[*iage*]. Wat[er]. Car[*riage*]. Price at London per. £[lb]

Iron	@ 2½ per £[lb]
Steell	
Old Iron	@ 1 [per] £[lb]
Old Steel	
Whelch [Welsh] plate	@ 6 per £ [lb]
Foreign Iron	
Steel [46] |--|	

Smith Black |Severall Workes [*table across two pages*] | [ff.27(v)-28(r)]
1. Casements at per £ [*lb*] work & Matt[*eria*]lls well performed 7d per | Work only 4½ d[.][47]
2. Grates for sewers 5d (Work only) 2½ d
3. New working old iron Comon Workes 2½ d
4. Cross garnetts: dognails. Thirty penny | and fourty penny[;] nails at per £[*lb*] work &

materialls 4½ d. so spikes [48]
5. 2d 3d 4d 5d 6d 10d 20d Nailes ares reconed att 2d. 3d. 4d per hundred[49]. Estimating for a hundred (120 / and the same of Brads and Spriggs. [50]
6. Common Smoothfiled[51] hinges at per (Doz pair) Estimated at per Doz 18s [*sketches of two hinges*]
7. Rough filed 8[*s*]
8. 1. foot Long of Iron Bar being 1 Inch sq[*ua*]re weighs 4lbs | £27 10s per tunn for wrought |ship iron |or per cwt 27s and 10d |An Inch bar of Iron 4 feet 2 inches Long w[*eigh*]t: 13 lb

Smith Black Severall Workes [*Blank except for title*] [ff.28(v)-29(r)]

Smth Black | Weighing & Time Compted [*otherwise blank*] [ff.29(v)]

[*totally blank*] [ff.30(r)-31(r)]

Sawing [ff.31(v)]
a Marble Block of white | 6 foot Long a man in one Day |will cutt 6 which is 3 foot double | measure or six foot single measure |--|
a portland block of 4 feet by 3 feet will | be sawn thro in a day that makes 24 foot single measure | sup[*erficia*]ll |--|
9 foot Long a block of portl[*an*]d in | one Day the Saw Sunk 1 foot 0 inches |--|
6 f[oot] Long a block of portl[*an*]d in | one Day the Saw Sunk 1 foot 8 inches |--|
A Ballaster 8 inches Sq[*uare*] and 2 feet 6 inches long | is masoned in a day |--|
a piece of app: balaster rails | of the Hall 8 feet Long in days |--|
Portl[an]d Sawing this kirff was | Cut in Day [*sketch of block of stone inserted here*]

Workmen. Materialls. Workmans[*hi*]p | promptly | taken, as in wast book to be | [f.32(r)]
afterwards reduced to the [*crossed out illegible*] method | afore ofered at | vid Smith |--|
1. Mason . a Block of portl[*an*]d | 4 feet 6 [*inches*]. by 3feet. 4 [*inches*]. on one | Day was sawn lengthways which made 15 foot sup[*erficia*]ll in the kirfe[52]| single measure |--|
2. Brickayers 1000 tyles plain[53] makes | a tunn |--|
3. Mason kentish Chalk d[*elivere*]d at | Greenw[*i*]ch : per tun. 4[*s*]. 6[*d*][54] and 11 tunn | makes rodd and 5 cwt of lime |--|
4 Brickmaker 8½ Chaldron of Coals | will burn m/100[55] of Bricks at | Hammersmith |--|

in a Chaldron are loads are (36) | Winchester bushells or a tunn wt and $^{1}/_{4}$[56]

5. Brickmakers [*a table*] [f.32(v)]

	[price in] d
Earth maker. per m[*thousand*].	5 [d]
Molder per - m[*thousand*].	5 [d]
Clay cart per m[*thousand*].	4 [d]
upstriker or he who lays the Earth | on the Stool at | p[er] m 3 [d]	
off bearer at p[er] m [*thousand*]	3 [d]
up ganger lays them in Rows at | per mill. [*thousand*]	5 [d]
letting [*setting*] in the kell [*kiln*]	18 [d]

6. A field at Winton for Brick | Earth per acre[57]: £15 to be opened | and Diged and for £2 per

acre | per anum for ground to sett | & dry the brick on.

[7.] Ruble work at Winton (having | rough Stone, Lime, Sand, & screend | Rubish[58] found the mason) he finding only Workmanship | & making & beating the mortar | at per Rodd (272 feet= 9s |--|

8. Sqd Portl[an]d worke at per foot sup[*erficia*]ll | in Window jambs at Winton 9d |--|
9. Portl[*an*]d Chaptering mould[59] all mesurd | that is Extant at per foot sup[*erficia*]ll 14d | --|
10. Chalk ashlar at per foot sup[*erficia*]ll 4d. |--|

11[.]Portland Ashlar for winton one | half 12 inches courses and the other 16 inches| Courses and end stones at every 12 feet |not less than 20 inches bed[,] the bed of ashlar to hold 9inches at least [,] at the quarr[y] 4 1/2d[60] |--| [f.33 (r)]

12. Portl[*an*]d Block Stone not exceed 2 tunn | in a stone at per tunn 8s 6d at the quarry | and if supplied to a molding 12d more at the Quarry[61] |--|
13. The g[*rea*]t Portland Coll[*u*]ms at winton | 3 foot diametter bases measured in at per foot sup[*erficia*]ll 16d[62] |--|
14. The Capittells of the Composite order | for a 3 foot pillar ¼ out of the walls| £6 each |--|
15. G[*rea*]t Archit[*rav*]e freeze & Cornice for 3foot pill[*e*]rs | that measured for the Cornice on the hanging | Square and the suffitta[63] of the archit[e] | measured in also half up or side | of the Cornice at per foot sup[*erficia*]ll 18d |--|
16. For each pannell between the Cauthett[64]| or modillion of the Said entablature | to a 3foot pillar at Each 20d |--|
17. first story Wind[*o*]ws measured on the | nose of the mould and girting from | the wood to the wall as per foot sup[*erficia*]ll | the sum of 14d[65] |--|
18. Second Story windows measured as | the former at per foot sup[erficia]ll 15d |--|

19. Third Story Wind[o]ws 18d |--| [f.33(v)]
20. Facia[66] for what is moulded | on the bed at per foot sup[*erficia*]ll 18d | For what is plaine 12d |--|
21. For the sup[*erficia*]ll break [?] of Coines at | winton at per foot sup[*erficia*]ll 12d |--|
22. Attick moulding on the top of the | Capitt[a]ll of Winton per foot sup[*erficia*]ll 18d |--|
23. Ashlar on the attick mould and | the base of the parapett 12d |--|
24. Dorick pillars 1 f 8 inches Diam[*et*]er midling | base & capittell at per foot sup[*erficia*]ll 15d |--|
25. plaine works on[67] the attick over | the protico at per foot sup[*erficia*]ll 14d |--|
26. Flat capittalls at each £3 10s | a quarter out of the wall[68] |--|
27 Winton | Lime to have not above 1 bushel | of coal[*or coar?*] in a load each load | to contain 40 Bushells. |--|
28. Ragg at Greenwich per tun 5s |--|
29 Chalke at Greenwich 2s |--|

30. Lime at my Ld Leompsters |reckoned by the Quarter | Each Quarter makes . 32 pecks | 6. Quarters & 8 pecks is to | 2 cwt of Lime at 4s per quart | enough for one Rodd of Brick |worke |200 cwt Limeslacked. makes 50 feet Cub[69] | 6 Quarts 8. pecks. 50 [cubic ft][70] | 4 Load of sand in a Rod: 80 [*cubic feet*] |--| [f.34(r)]
31. In a yard of Lathing you | put 20 Laths | ½ hundred[71] of Lath nails | In 60 yards of Lathing & plaist[72] | put 2 hundred [*weight*] of Lime. 2 Bush[e]lls hair |--|
200 of Lime 1 load of sand | 1 Load of loome makes good stuf[73] |--|

In the Casting and melting down[,]| Losse ⅛ part of Lead |--|
Sand from Woolwich to Greenwich | at the works there d[*elivere*]d at the key | at per Load 1s 6d a load to cont: | 36 basketts. Or. 18 Bushells |

Lead | [f.34(v)]
Lead round Cast pipe 1 Inch | at per yard Laid Digging exceptd 2s 6d |
Ditto casting. 2½ inch at per yard | cast & laid 7s 6d | Fod[e]r[74] per £[lb] 9d |
Lead Cast only & laid per cwt 9s 6d |Lead & workmanship per cwt 14s 0d |
Brassworke at ¾ Inch Cock and boss|
Cock and Boss 4s 0d |
Stop Cock 2in at 0.5.0 |
Square pipe at each 10f[oot] Long | besides lead 0.15.0 |
⅛ or ⅓ inch and ½ pipe at per yd 0.3.6 |
3. inch washer 1.5.0|

Painting | [f.35(r)]
Window Lights at Each on | both sides 0.0.6 |
Casm[*en*]t.....6[d] |
upright.....1[d] |
Sadd[*le*]. barrs 0 1/2 d |
Sash frames both sides 0.1.0 |
Sash lights on side 0.0.1 |
painting works 0.0.9 |--|
Casm[*en*]ts: each w[*eigh*]tt: 16 lb at per lb 8d |
Inch barrs |
barrs upright Inch 3 foot w[*eigh*]tt 8 lb at 5d |
Large hinges at 10s per pair |
80 Sadd 0 cwt. 3q.11 lbs at 5d[75] |
6 new Locks in all £4 4s 0d |--|

Fire stone [*Hearths*][76] [*table*]	£ s d	[f.35(v)]
Rubd purbeck per foot	0.1.4	
Rigat[*e*] in Corners Stones per ft	0.1.6	
Rigat[*e*] hearth	0.1.2	
a marble Chimney Piece wth slabs | and slips	12.0.0	
Rough purbeck at per foot	0.0.9	
old purbeck new laid	0.0.2	
purbeck step stone & worke	0.2.6	
[*in another ink is added:*]		
black marble per foot	0-3-0	
fire stone per foot	0-1-4	
|--|		
Carpenter's stuff & worke |--|	£ s d	
Covering at per sq[*uare*].	2.0.0	
Roofing at per sq[*uare*].	1.16.0	
boarding the roof with whole deal | at per.sq[*uare*].	1.3.0	
flooring with good boards | at per.sq[*uare*].	1.16.0	
naked of furr[77]	1.18.0	
Oak door cases	1.0.0	

Rail & ballast[*e*]rs	0.2.6
Rail & basllaster | & steps at per.step	0.12.0

Carpenters | Workmanship only [f.36(r)]

Roofing per sq[uare]	00:18:00
Naked floor	00:18:00
Timber partitioning	00:06:00
Rough Boarding	00:06:00
Guttering per.foot.	00:00:04
Covering per.sq[*uare*].	01:00:00
hips and Riding posts	00:00:02
Doors att	[*no price given*]
Door Cases Large	01:00:00
Moderate Cases	00:10:00

|--|
Tyles in One Square. 700[78]
pinns in a Sq[*ua*]r[e], ⅛ of a Bushell | at per Bushell. 2s.
Lath in a Sq[*uare*]. 1 ½ per Bundle | at 2s a Bundle
Tyles worth per thousand 01.00.00 [79]|
Nailes per thousand for tyles. 0.1.3|
Pantyles |at per hundred 8s 0d |
in a square 156 pantyles |
in a load 500 of pantyles |--|

Terrace[80] at London is at | per Bush[*e*]ll 2s 0d | [f.36 (v)]
10 bush[*e*]lls | makes a tunn |
the measure | stricked off |--|
Kentish Ashlar |

1. 30 foot running measured on the | facia is called a Line vid fgure| [sketch 2] (a Line 30 foot |--|
2. that is a Course of ashlar | extending [81]30 foot in length which weighs sometimes (1 tunn 1/4) | a tunn (and 1 ⅓ tunn) Sometimes | more or less as the ashlar is of Deeper bed. |--|
3. 12 End or bond stones makes | (a tunn) a tun ¼ (1 1/2 tunn) more |or less. |--|
4. Ashlars are in hight 9, 8, 12, 13[82] Inches | and sometimes has 3 inches of | hassak[83] bed which is the Lighter Collour | than the hard part of the stone | this ought to be Cutt off[f] |--|

Ashlar d[elivere]d at Greenwich is 8d a | foot Carriage & Materialls|--|

1 End stone 2s 6 Carriage & material | [f.37(r)]
Carryage for Maudton[*Maidstone?*] to London |
at per Line (or Tunn) 5s bringing |80 miles |--|
and 5s for 12 Bond Stones to | London Carriage only = to a tunn |
Ragg[84] is 4s per tunn dd at Greenwich viz 2s materialls & 2s Carriage from thence (Maidstone to Greenwich.. |--|

[*followed by a table:*]
In a Rodd (272 foot) Suppose

11 tunn of Rag at 4s-	02: 04:00
3 cwt of Lime	01:04:00
2 Load of sand	0.3.0
Workmansp	1.0.0
	4.11.0

Carpentry at Winton[85] | [f.37(v)]
Workmanship , Sawing and nailes |

1. Ground Floor Oak over | arches per sq[uar]e. 00.13.00[86] |
2. Ground floor not over | arches per sq[uare]. 00.15.00[87] |
3. The 2 midle floors per.sq[uare]. 00.17.00 |
4. floor under the Roofe per. sq[uare]. 00.15.00 |
5. Roofe itt self per sq[uare]. 1.02.00 |
6. Windw stuff Standing edges at per windw 00.10.00 |
7. For Clear light windws each 00.07.06 |
8. For partitions at the 20 foot story | at per sq[uare]. 00.10.00 |
9. partitions in the Lower storry 0.8.0 |
10. Stepps of stairs of wch risers & | strings of Oak , Steps of 2in | Norway plank wth astragal | at per foot running 7½ d |
11. Rails & Ballusters, rail kneeled | of Oak 7 &5 Carpenters finding | turners worke at per foot running |
12. Guttering 4d per foot Lesser |
13. Centring x Groines & vaults | at per sq[uare]. 10s[88]
14. Doorcases Scantl.[89] 6 & 8 at per foot | running 3½ d
15. Mantles & trussells[90] for sawing | and setting at per chimney 2s 6d

Churchill at Kensington[91] | [f.38 (r)]
Workemansp only |
Roofing per sq[*uare*]. 0.18.0 |
Naked flooring :12 inches deep 0.18.0 |
Timber partitioning 0.6.0 |
Ceiling joyst 0.5.0 |
Rough boarding per sq[*uare*]. 0.6.0 |
flooring straight joynts 0.14.0 |
lintelling at per window 0.3.0 |
modilln cornices plain 20inches deep |
at per foot. running 0.2.6 |
window lights moderate at each 0.2.6 |
Lutherans with pedim[*en*]ts each -10.5.0 [92]
steps rials [*sic*] & baslusters 3' 9' going per step 0.5.0
balluster & stringboard | at per ft. 0.3.0 |--|
Workmansp only |
extraordinary floor doublepinned | demanded - XX [*20*]s |
garret flooring foulding joyst 5s[93] |
indifferent floors fr bedchamb |straight joynted at 8s |--|

Lead at my Lord Leompter's[Easton Neston] [f.38(v)]

This was in Sept.4. 1694. lead brought 8 mille beyond darby. |
good soft morning lead at per fodder |each fodder weighing 22 1/2 cwt [94] |
Carriage from darby to Easton 08 . 02. 00 | being 50 miles at per mile 6d |--|
The plumber having the said lead | and fewell [*fuel*] brought to him on the place |
Cast itt into pipes 1½ Inch watter |way (or Bore) also Layes, burns | & |foders [*solders*] the same (having 18 Ib of lead in a yard) at per yd [*unreadable*] d .
My Ld finding Diging & filling | in the Groound. And the plumbers[95] |
standing to all wast & loss for | having fodder of lead delivered |
to them. He returned the same in | a fodder of pipe Cast | ut Supra |
Casting Burning fodding | Laying at per yard 1½ bars £0.0s.6d |
A fodder makes 140 yds of 1½ Inch pipe

Ditto places Easton Northamp. [Easton Neston] [f.39(r)]

Oak pipes board hoopd & laid at per yd |12d. My Ld finding O[*a*]k felling |
hewing Carriage diging and filling | itt again from 4 to 2 bore |
at the Conduit House they lye viz |
1 foot up to the : Cabl | they lye 4 miles waterway dimin |
into 1½ where they join with the lead. |

In wood	600 yds
Lead	*1400 yds*
	2000 yds

Acres Secund Statut:[96] [f.39(v)]

In a Statute acre there are | 4 & 40 Sq[*ua*]re yds |
By having the Length & breath | of a Sq[*ua*]re in yards (whose product |
gives the Single area in yards) |so find Readily the Content in |acres. |
[*rhyme to remember conversion method:*]
Double yards, & those third add | Sloaping way
Butt with these third begin to sloape | I pray
Always by (100000) divid this Last | you may
The quote will single acres give |I say
[*example*]

Sq[ua]re Lenths	321 yds
Its breadths	*123 yds*
	963
	642
	321
The Sq[ua]re:area	
in Sq[ua]re yards	} 39483
Double Yards	78966
there thirds	*26322*
Facitt[makes]	*815982*

or ac. R. Sq[ua]re
8 00 25 [ie. 8 acres, 0 rods and 25 sq yds]

April .12. 1700/ Workmansp & nails. [f.40(r)]

Rates proposed by Asa [*name of the carpenter?*] |house in the county of Hertford |
being about 25 Sq[ua]re on the flatt | or 50ft by 50 ft[97] [*next entries all separated by lines*] |--|

1. Taking down partions[98] , |Roofs , floors, boarding wind[o]ws |
   and other old carpenters work at |per flat Sq[ua]re for each 00:04:00 |--|
2. Lintelling per foot. 00.0.03 |--|
3. Naked flooring with binding joyst | & ceiling joyst and rough| boarding between the joyst |(in the best floors) at per sq[*uare*]. 00.16.0 |--|
4. Naked ground flooring framed| the Common way 0.9.0 |--|
5. Partioning wth dorscases in= |=cluded at per sq[*uare*]. 0.5.0 |--|
6. Roofing inc. trusses | braces & letting down in irons |
measure on the back of the Rafter|per sq[*uare*]. 0.18.0 |--|
7. Flat form [*platform*] including | furring and currant [?] 0.12.0 |--|
8. Lucern wind[*o*]ws including |Cheeks, & pedim[*en*]ts & propor |
cornices at each 0.18.0 |--|
9. Guttering at per foot Sup[*erficia*]l 0.0.4 |--|turn over [*to next page*]
10. hip & bridge pole Common | att per. foot running 0.0.2[99] |--| [f.40(v)]
11. Ashlaring & Ceiling joysts[100] |in garrets per.Sq[*uare*]. 0.4.6 |--|
12. Modillion cornices per foot | running 20 inchesprojection 0.2.6
13. Bragetting[101] for Coved Ceilings | per yd Sq[*uare*]. 0.1.6 |--|
14. [*blank*]
15. Cellar windows wth: 2 lights | barred per each wind[o]w 0.4.0 |--|
16. 4 light windows each. 0.6..0 |--|
17. Steps of stairs 5 ft going with | bearers bragetts and return at up[*pe*]r |
    end at per step 0.5.0 |--|
18. Steps of stairs 4ft going of the usual | incum per step 0.2.6 |--|
19. Rails & ballaster 3.7inch | postes caped at per fo. 0.2.6 |--|
20. flooring with Do[*w*]lpins fine at per sq[*uare*]. 1.4.0[102] |--|
21. flooring nailed wth straight | joynts at per sq[*uare*]. 0.12.0 |--|
22. Garret floor driven at 0.7.6 |--|
23. Rough boarding for lead 0.5.0 |--| [f.41(r)]

[*then three little sketches showing different ways of fixing joists*]
floor driven [*sketch shows straight joints*]
floor bettersort nailed {*sketch shows staggered joints with six nails per board*}
Dowlpinned [*sketch is just a line*]
[*picture of pointing hand*] Those 23 foregoing articles | Contains only workmanship & | nails, the timber boards Sawing| carriages found by the builder. |--|

April 12 1700 | Workmansp & nails | At Hampton Court Called by Mr B__ks[103] |--| [f.41 (v)]

1. Oak post & rail the post 6 & 5 | rail of fur 1/5 sq[uare]. at per. Rod [104]iiis Xd |
   finding all both workman ship and | matterials |--|
2. flooring with streight joynts | finding all 32[105] |--|
3. Partioning finding sawing work |& nails at per sq[*uare*]. 6s |--|
4. middle naked flooring 12s |--|
5. Ground naked flooring 10s |--|
6. Lintelling 3d |--|
7. Window boards 3 d |--|
8. Steps of Stairs wth Strings | bearers and bragetts 3&4 | going each 2s 4d |--|
9. plaining floors per.sq[uare]. 3s |--|
10. firring Celing per.sq[uare].7s |--|
11. Steps 3ft going Each 2s |--|
12. Solid Steps of oak 4 ft going each 4s |--|

13 Guttering per foot Sup[*erficia*]l 4d |--|
14. 4 window lights 6s. Each window |--|
15. flat forme[106] per sq[*uare*]. 15s |--| [f.42 (r)]
16. Oak Steps of Stairs 4 ft going 3s 6d |--|
17. Rail and baluster 4 Sq[*uare*] at per foot. 2s 6d |--|
18. taking down pertioning[107] pr sq[*uare*]. 5s |--|
19. Roofing per sq[*uare*]. 10s |--|
20. Every board per foot. iid |--|
21. shedding[108] per sq[*uare*]. 6s |--|
22. Roofing per.sq[*uare*]. 15s |--|
23. Midle naked flooring per.sq[*uare*]. 14s |--|
24. Cornice plain 18i project[*ion*] |per.foot running 18s |--|
25. Boarding brought to thick | ness wth straight joints at 16s |--|
26. Slitt dealing per foot. sup[*erficia*]l. 2s 6d |--|

Masons Workmans[hi]p |Ld Car—ls [*Castle Howard*] [f.42(v)-43(r)]
1 Ashlar finding rasing working | & setting at 5½ d per foot sup[*erficia*]ll |
& Estimating quite through | the wall being 3ft thick
2 party walls of stone work=|=manship at per Rodd 7s there |
Rodd is 21 foot by 3 foot |quite thro the wall intending
3 Broached Work (or axed as | we call itt) per Rodd 14s per rodd |
as before accounted

[*Bricks*} In[*ches*] [*set out as a table*] [f.43(r)]
Dimensions 8½ [x] 2¼ [x]4
76 Cubicall Inches in a Brick
5¼ lbs Weight lbs averdupois in a brick
¼d . 20s Prices each and per mill [thousand][109]
21½ br[*icks*] Bricks in a dry Cub foot 12 [*x*] 12 [*x*] 13 [*inches*]
15½ br[*icks*] Bricks in a Cub foot in walling as commonly measured 12 [*x*] 12 [*x*]13 [*inches*]
4500 br[*icks in a*] Rodd [of] brickwork[110]

Oak laths hart [*heart wood*] are long 5 or 4 ft [111] [f.43(v)]
Deal long 6 or 5
2 men in a day lath 13-0
7-0
Laths 30 makes 3.0
5.0
Each lath has 5 nails[112]

[*two blank pages*] [f.44 (r)&(v)]

Joyners prop: | [f.45 (r)]
Standards of Deal 2i thick | wth Rt wainsct 3/4 inch stuff at per foot running 0.01.4 |
all above started with bracket { freeze 3/4 .Stuff 0.1.4 |
Partition & wall worke at |of whole deal 0.2.6 |
Front next the wind[o]ws | Rt [*wrought?*] wainsct 0.7.0 |
Italian moulding & Cornice |at per inch deep 0.0. 2 3/4 |--|

Cha: dLit Du Roy [*King's Bedchamber*] |
Rt wainst per yd 0.9.0 |
Rt wainst in presens[*Presence Chamber?*] 0.7.0 |
Cornices 11in deep as per foot 0.2.6 |
picture frame 6 i deep per foot 0.1.0 |
ditto 4½ broad 0.0.9 |
Doves 1½ Stuff at one| measured per yd 0.18.0 |
Slitt deal work per yd 0.1.10 |
Whole deal at per yd 0.2.6 |--|

Sashes [*windows*] at per foot 0.1.10 | [f.45(v)]
Rt Wainst door 2 inches thick | once measured 0.18.0 |
Molding 7 inches deep 0.1.2 |
Archit[rav]e 8 inches deep per foot 0.1.4 |
Shelfes deal per foot 0.0.4 |
Deale wht Callex per ydd 0.5.0 |
Wainst shutters for windows | once measured 0.13.6 |
Deal worke Sq[uare]d 0.3.0 |
Compass [*curved on plan*] Rails & ballast[*e*]r | at per foot 0.6.0 |
pickture frame 1d an inch in depth |
Cockle Shells per load at 00. 05.0

Carver | K's bedchambr [f.46(r)]
Cornice carved wth Racking [*Raking*] Leaves| in the K. Bed Ch per foot running 00.03.00 |
Large Italian picture frames over|Chimneys at per foot running 00. 03.00 |
picture frames over dores 00.02.00 |
ArcRetts [?] & Lace 00.00.07 |
Hollow Cornice Carved wth Crownes & |Cyples[113] at per yd 00.03.06 |
Modill. Cornice in The Qu[een]s Gallery|inriched at per foot 00 04 06 |

Lead Hard or Soft | [f.46(v)]
(by Ringing) Lead wether | hard or soft is known in the pitt | or stricking a tool onto itt |--|
A mason will work (Hand & | axe) 30 foot of Oxford Stone | in a day |--|
Locks at Greenwich |
Large & Jappaned[114] Iron Rimm | & brass knobbs 01.10.0 |
Windw Shutter Hinges pp 4s 0d |
A Cupboard Lock 0.4.0 |

Wainscott [*otherwise blank*] [f.47(r)]

Joyners a[t] Lds Ashburnhm[115] | [f.47 (v)]
Ballexion [bolection] Work out of 1½ Stuffe | pannells ¼ stuffe at 11s per yd |--|
A man will frame such works | per yard iis xi [?]d Workmanshp |
only per yd quando facitt into to | Worke & materialls at per yard 6s |--|
60 yards of wainscott (out of 1½ | stuff & ¼ panlls) makes a tunn |--|
Workanshp & framing Sq[*uare*] worke |out of ¼ stuf at 20d per yd |finding only worke |--|
finding Workmansp & materlls | 6s per yd |--|
Dores made in town out of 1½ stuf at 14s per yd |--|
Above town alsorts of sq[uare]d | work at per yd 6s viz 2s 6d work | & 3s 6d materials |--|

Sash frames & workmanshp only 5s |--|
Sash frames out of 2i stuff [*no price*] |--|

Line [*sash cord*] for a sash ordinary 4 yds at per yd 3d |--| [f.48(r)]
Wt for a sash ordinary lead lb 16 [d?] |--|
framing a sash line frame | workmanshp only at per foot 4d |--|
Linseed Oyl 4s 6d per Gall[*on*] | White Lead lb 6d[116]
3lbs to a gallon will do yards 36[117]

Concerning Joyners matt[*erial*]lls | [f.48(v)]
Glew per lb 0.0.6 |
Inch 1½ brads per Qt in number 0.0.4 |
1 brads per Hundred 0.0.3 |
2 brads per Hund[*red*] 0.0.5 |
lime tree plank per ft. 0.1.0 |
a pair of sawyers per week 1.10.0 |
wainscot /boards
thick |
In[ch] 2 per ft 0.0.8 |
1' at per board 0.4.0 |
1¼' per board 0.5.0 |
¾' per board 0.3.0 |
½' per board 0.2.6 |
¼' wainscot at per ft. 1d |

Ironmongers goods | [f.49 (r)]
Splinter Padocks at each 0.4.0 |
plate stockocks at each 0.2.0 |
ditto Larger 0.2.6 |
ditto Larger 0.3.6 |
Stocklock Staples each 00.0.3 |
4 new Chimney Irons 0.14.0 |
a pair of Large Hinges 0.2.0 |
fine imported locks | at Greenwich 1. 10 .0

Burning Lime & Bricks [f.49(v)]
5 Chaldron of Coals burns | Lime 34 loads of shells

A Chaldron of Coals burn 7 hundred weight of | [f.50 (r)]
Lime[,] a kill [*kiln*] to hold 20 hundred at a |
time you may draw 5 or 6 hundred of[*f*] a day |--|
Gt Pillars in the Hall all Raise |(excluding) Base ad Cap) in 2 days |
Paillasters 6 ft Long 2 ft 4 in on side | all four sides sawne in 8 days |
Rubbd & Cleaned in 2 more it | makes 56 foot supp[*erficia*]ll |--|
Gt Pillars 6 ft Long 3ft 6i diam[*ete*]r | a mason 10 day will parralell |
itt & fitt iitt for the Rubber & | the Ruber will finish itt in 4 |days more |--|
The Tumpan tops [*sketch*] the | upon bed at a & b were wrought |in a day |--|
8 foot Long of up[*pe*]r Raile of the Hall on the Leads was |wrought in 8 days rubed in 3 Days wrought
Round about | a Bastastre masond in a day. |--|

[*blank pages thereafter: all numbered*]

[Last page]

[*Written Upside down:*] An Italian Dictionary is named | Toriano 15s[118] | I think | Lecioni Donnee |dans l'academie Royale | De la Pienture |& sculpture par | A.Bosse |this book is but small | but in french it show | preportion/art of shading | & other useful formes the perspective | scalle[119] |
so no signifie rien

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1 December 1689 "Pocket Books for Oliver's man and Russells. & 1 for L.S [Lawrence Spencer]. 9sh 3d.", St Paul's accounts reprinted in *The Wren Society* (hereafter WS) (1923-1943)WS, XIV, p.69.

2 The notebook is accompanied by a letter dated 30 November 1927 from a Mr Hall of the British Museum Manuscripts Department to an unknown recipient(presumably the then owner) stating that the handwriting does not match the samples of Hawksmoor's handwriting in the Museum (presumably the Blenheim letters, BL Add Mss. 19607) which is true, but Hawksmoor's writing varied greatly over his lifetime and it is now believed that the notebook is in his "account book" hand.

3 Howard Colvin, "Easton Neston reconsidered", *Country Life*, 148 (1970), p.70.

4 Charles Saumarez Smith, *The Building of Castle Howard* (1997), pp.50-52.

5 Howard Colvin, *A Biographical Dictionary of British Architects 1600-1840* (1995) hereafter referred to as Colvin,*Biog. Dict.*, p.476; *Survey of London,* XXIX, p.84.

6 Kerry Downes, *Hawksmoor* (1959), p.1.

7 The letter is reprinted in Kerry Downes, "Hawksmoor's House at Easton Neston", *Architectural History,* 30(1987), 50-67 (hereafter Downes, (1987)), p. 52.

8 Ibid.

9 Colvin(1970), pp.968-971.

10 Downes (1987).

11 Downes (1987); Colvin, *Biog. Dict.*, pp.475-76.

12 Colvin, *Biog. Dict,* pp.475-478.

13 Colvin, *Biog. Dict.*, p.475. R.L.Hine, *Relics of an Un-Common Attorney* (1951) pp.6-7, 19 and endpapers.

14 Hine, *Relics*, plate on p.19.

15 WS,VII, p.12.

16 Royal Institute of British Architects Manuscripts Collection (hereafter RIBA), now at the Victoria and Albert Museum, WRE/1/1 reprinted in WS, VII, pp.23-67.

17 Kerry Downes, *Hawksmoor,* p.3. For an account of the buildings see John Bold, *Greenwich: an Architectural History of the Royal Hopsital for Seaman and the Queen's House* (2000).

18 National Archives (hereafter referred to as PRO) ADM 80/2 (Greenwich Contracts 1696-1717).

19 The accounts, together with letters from Hawksmoor, remain in the archives at Castle Howard.

20 A list of the surviving account books for the Office of Works extracted from the index volumes at the National Archives can be found in Howard Colvin, J.Morduant Crook, Kerry Downes, and John Newman, *The History of Kings Works Volume V 1660-1782* (1976), hereafter: Colvin, *King's WorksV,* pp.461-462.

21 Although Wren and Vanbrugh are also involved see Colvin,*Biog Dict.*, p.476. The case for Hawksmoor was first made in Downes, *Hawksmoor* (1959), p.82.

22 Colvin, *Kings Works V*,p.190.

23 Downes, *Hawksmoor,* p.2.

24 First entry see WS, VII, p.159.

25 Contract in PRO WORK 5/146, reprinted in WS, VII, p.148.

26 For 1699 works including Earl of Albermale's Lodgings there see PRO WORK 5/50 ff.378(r)-434(v).

27 Colvin, *King's WorksV,* p.191. The relevant entry in the accounts is PRO WORK 5/51 f.475(r).

28 Colvin, *King's WorksV*, p.155-170 and Simon Thurley, *Hampton Court* (2003), pp.127-209.

29 I have been unable to trace the entry in accounts. Mr B—ks is Matthew Banckes, Master Carpenter of the Office of Works: see Colvin, *Biog. Dict.*, p.98. It is not clear whether "called" meant that he was providing an estimate or checking the carpenter's accounts. James Groves was the acting carpenter at Hampton Court.

30 Thurley, *Hampton Court*, fig.162.

31 The accounts are in the National Archives (PRO WORK 5/50 ff.345(r)-363(r)).

32 Colvin *King's WorksV*, pp.196-97.

33 WS, VI, p.39.

34 Reprinted in R.T.Gunther, *The Architecture of Sir Roger Pratt* (Oxford, 1928).

35 Colvin, *King's WorksV*, p.39-46.

36 See "Price Books" in Eileen Harris and Nicholas Savage, *British Architectural Books and Writers 1556-1785* (1990), pp.43-45.

37 The use of the saw in cutting stone is entirely omitted from Peter Hill, "Traditional handworking of stone: methods and recognition", in John Ashurst and Francis Dimes, *Conservation of Decorative Stone*, 2 vols. (Oxford, 2001), vol. 2, 97-106, despite the fact that its use in the Middle Ages is noted in Salzman, *Building in England* (Oxford, 1952), p.336. A number of 18th century examples and its omission from contemporary literature are noted in James Ayres, *Building the Georgian City* (1998), pp.76-92.

38 The existence of the axe is noted in Peter Hill "Traditional handworking of stone", p.101-102 and Salzman, *Building in England*, p.334, but references to it are noticeably absent in Richard Neve, *The City and Country Purchaser* (1726), hereafter Neve (1726), and Ayres *Building the Georgian City*.

39 David Yeomans, "Designing the Beam:from Rules of Thumb to Calculation", *J. Inst. of Wood Science*, 11, 1 (1987), 43-9.

40 Should read "Arcana Mechanice In Re Aedificatoria Nec Non aliis scientiis." which translates: "Secret (or abstruse) artisanship (or skill) in building and other branches of knowledge". Hawksmoor read and wrote Latin and it is the inclusion of this line that has persuaded many that it is his book. It could however be considered as a dedication by him to another.

41 The opening pages form an alphabetical index compiled as the book was written by the author, a page being devoted to each letter. Most pages are blank (awaiting entries) or have only a couple of lines of text. Letters I and U are omitted in Latin tradition.

42 The contraction "Carpent^{rs}" is used throughout the original.

43 The contraction "Joyn^{rs}" is used throughout the original. The spelling with a "y" was typical in the 17th century.

44 This reference is unclear as no entries are included in the book for paper prices.

45 "Caridge" inserted here is crossed out.

46 Steel was expensive and used mostly for blades of tools. A contemporary account of working steel is found in Joseph Moxon, *Mechanick Exercsies*, (1703) hereafter Moxon, pp.57-62.

47 i.e. Casement windows per lb for work and materials 7d, work only 4 1/2d.

48 In original "x garn^{ts}". Cross garnets are a type of hinge, illustrated in Moxon, plate 2, fig.1. Dognails are special nails designed for fastening hinges to doors (see Neve (1726), pp. 120, 161, 206).

49 Shortened to symbol for hundred.

50 The terms brad and sprig are both used for a type of nail without a head used for floorboards and such work.

51 "side" has been inserted with ^ below the line. A contemporary account of filing hinges can be found in Moxon, p.20-22.

52 Neve (1726) says "the saw-way slit in a piece of Timber or Bord, the way made by the Saw is called a Kerf." See also "Kerf " in the *Oxford English Dictionary* (OED).

53 Plain roofing tiles, flat roofing tiles to be fixed with wooden pins or iron nails, as opposed to pantiles.

54 The original reads "per tun. 4. 6.". This only makes sense as a price.

55 100 000

56 The standard Chaldron was made 36 bushells in 1664 but had been 32 in the 16th century (Colin R.

Chapman, p.38). Coal was replacing timber for burning bricks and lime in the 17th century.

57 Abbreviated as "acr" in original.

58 Ash, dust and other building rubble.

59 Chaptering mould = chaplet, a moulding resembling a string of beads.

60 This price matches the one given in a contract dated 11 July 1683, with Thomas Wise and Thomas Gilbert for the supply of Portland Stone to Winchester (RIBA WRE/1/1 pp.24-25, p.24).

61 Agrees with RIBA WRE 1/1 p.24.

62 This and the following two entries agree with figures in contract dated 19 November 1683, with William Bird, mason, RIBAW RE1/1 pp.29-31.

63 The meaning of suffitta here is unclear. Perhaps it simply means area of the face.

64 Unclear what this word is meant to be but it appears to refer to a particular type of modillion.

65 The entries on 17-25 match those in RIBA WRE1/1, pp.29-31, p.31.

66 facia=fascia, meaning any vertical plain surface, but particularly those in the architrave of an entablature.

67 "over" crossed out.

68 This entry matches and entries 17-25 prices given in contract dated 21 November 1683 with William Wise and Samuel Fulkes, masons, RIBA WRE 1/1 pp.35-41; contract dated 6 November 1683 with John Thompson, mason, RIBA WRE 1/1 pp.43-47; contract dated 13 December 1683, Edward Strong, mason, RIBA WRE 1/1 pp.49-54; and contract dated 18 December 1683 with Christopher Kempster, mason, RIBA WRE 1/1 pp.55-59.

69 200 hundredweight of slaked lime makes 50 cubic feet.

70 Quarters (8 bushells) rather than quarts (2 pints). This repeats what has already been said i.e. 2cwt/6 quarts 8 pecks makes 50 cubic feet of

71 Here the symbol for one hundred is not cwt but the number a hundred, with half a hundred meaning 50.

72 plaist=plaster.

73 "good stuff" is fine interior plaster as opposed to "coarse stuff" which is used for exterior work or the undercoats.

74 Solder- a mixture of lead and tin. For an explanation of soldering in this period see Neve (1726), pp.189-190.

75 Probably saddle bars for windows.

76 Neve (1726), p.131 notes that Rigate stone was commonly called FireStone and used for Hearths.

77 Naked flooring of fir; that is unboarded floor structure made out of fir rather than oak. Priced here per square (10ft x 10ft).

78 Number of roof tiles in a square followed by the number of pins to fix them and the number of lathes, agrees with Stephen Primatt, *The City and Country Purchaser* (1667) hereafter Primatt(1667), p.57.

79 Primatt (1667), p. 57, quotes £1 5s per 1000.

80 Terrace was a form of pozzulan added to mortar to make it harden quicker.

81 "into to" crossed out.

82 The inches against these numbers are indicated by a small "i" above each as well as by the word following.

83 Hassak=hassock, defined in the OED as the "soft calcareous sandstone which separates beds of ragstone in Kent".

84 Ragg stone is rough stone or rubble, typically used for infilling walls.

85 The prices agree with the more detailed contract dated 3 April 1683 with James Groves survives in the RIBA Manscripts collection at the Victoria and Albert Museum (WRE/1/1, pp.17-21), edited version reprinted in WS, VII, p.55. Each numbered entry on this page is separated from the next by a line.

86 That is an oak floor over brick or stone vaults.

87 That is a floor with a timber structure.

88 Timber centering for making masonry vaults and domes.

89 Scant=scantling, meaning cross-sectional size.

90 Mantles are the horizontal shelves that sit upon the twin vertical pillars called trussells which together form a mantlepiece.

91 Figures match PRO WORK 5/146 [not paginated] undated contract for John Churchill at Kensington.

92 Lutherans= luthern or lucarne, meaning a window in the roof. The modern distinction between luthern and dormer does not appear to have been made in the seventeenth century.

93 What is meant by "foulding" here is unclear .

94 Fodder is a lead measure. Neve says "Mr Wing tells us, That a Fodder of Lead is 22 1/2 hundred weight (I know not how he reckons; for I am sure , most Authors reckon a Fodder of Lead but 19 _ hundred," (p.190).

95 The contraction "plumbrs" is used in the original.

96 A method for converting yards into statute acres.

97 ie. the house is on plan 50ft x 50ft which equals 2500 sq ft = 25 "squares".

98 Partitions: internal timber framed walls.

99 Hip and bridge pole- ridge pole.

100 Ashlaring here means the insertion of vertical posts to take the walls in the attic.

101 Braggetting=timber brackets for holding a plaster cornice.

102 Leybourn, *a Platform for Purchasers*(1668), hereafter Leybourn(1668), p.122 noted that boarding was always charged separately and cost between 12 and 20s a square, with plaining, jointing and laying costing "4-5s besides nails" per square.

103 Mr B—ks= Matthew Banckes, King's Master Carpenter. The carpenter at Hampton Court during this period was James Groves. This was either an estimate provided by Banckes or an account approved by him. The accounts for April 1700 survive (PRO WORK 5/51 ff.283(r)-293(r) but neither the rates nor the entries match those here.

104 Rod=16 ½ feet.

105 Flooring with straight joints: see above.

106 Presumably a "platform" as in a platform roof.

107 i.e. partitioning. Compare price here with 4s for taking down partitioning above.

108 Shedding is temporary building work for site huts or covering up the works to protect it from the weather.

109 Agrees with Primatt(1667), p.52.

110 Agrees with Primatt(1667), p.52, Leybourn (1668), p.106.

111 Leybourn (1668) says of lathes "There are principally two sorts of Lath allowed by Statute, the one of 5 foot long, the other of 4 foot.", p.108.

112 Agrees with Leybourn(1668), p.109.

113 "cyples" is probably "clypeus', a disc-like ornament resembling a buckler shield fixed to an architrave or frieze.

114 Jappaned= laquered or painted gloss black: see Ian Bristow, *Architecture Colour in British Interiors 1615-1840* (1996), pp.26-28.

115 Probably No.3 St James's Sq. dem .1930. see Colvin, *Biog,Dict.*,p. 476.

116 Although the term "white lead" was sometimes used to refer to tin, here it clearly means lead paint which is white in colour.

117 Note in pencil after text reads " 324 foot".

118 Giovanni Torriano wrote a dictionary of proverbs in the late seventeenth century but it is more likely that this refers to John Florio's English–Italian Dictionary which Torriano revised in 1659 with

further editions in 1688 and 1690. An undated copy of Florio's dictionary is recorded in Hawksmoor's library (D.J. Watkin (ed.), *Sale Catalogues of Libraries of Eminent Persons: Vol.4* (1972)pp.45-106, p.102).

119 Presumably Abraham Bosse, *Traité des pratiques geometrales et perspectives, enseignées dansl'Academie Royale de la Peinture et Sculpture* (Paris, 1665). Hawkmoor owned A.Bosse, *La Pratique du Traite à Preuves, de M.Desargues Lyonnois pour la Coup des Pierres en l'Architecture* (Paris,1643).