

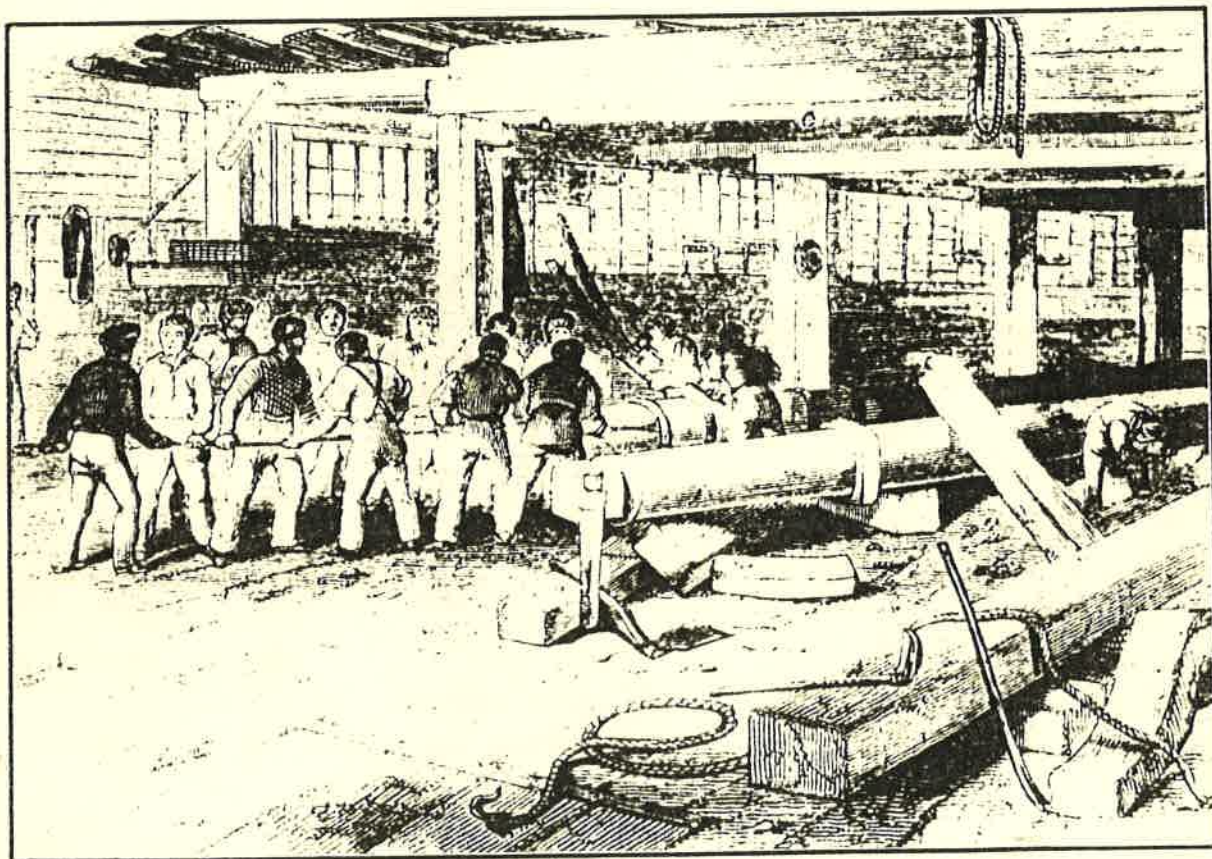
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CHATHAM HISTORIC DOCKYARD TRUST

INVESTIGATIONS IN 'THE WHEELWRIGHTS SHOP', 1995.

DRAFT REPORT



OXFORD ARCHAEOLOGICAL UNIT
DECEMBER 1995

INVESTIGATIONS IN 'THE WHEELWRIGHTS SHOP', 1995

DRAFT REPORT

NMR DATA	
Site Name	The Wheelwrights Shop
Address	Chatham Historic Dockyard
Town	Chatham
District	Rochester upon Medway
County	Kent
NGR	TQ 761 694
SAM No.	Kent 231
Visit/Survey Date	April-November 1995
OAU Site Code	CHWWS 95

Chatham Historic Dockyard Trust Investigations in the 'Wheelwrights Shop', 1995

Draft Report

SUMMARY

Between April and November 1995 the Oxford Archaeological Unit supervised and recorded the removal of numerous floor layers in the western and central aisles of the 'Wheelwrights Shop' at Chatham Historic Dockyard, a Scheduled Ancient Monument. The building was constructed c.1780, and the lowest level of floor boards was laid on c.169 ships timbers from an 18th-century warship. This unique and quite unexpected find is of undoubted national significance, and will require a further study and investigation to determine the future of the material.

The study has revealed the phases of development and change within the building: In Phase 1 there were two sloping floors resembling those of a mast house, supported on the warship timbers. This floor and the as yet unexamined detritus beneath would appear to relate to manufacture of trenail, pump and capstan making, plank storage and probably mast making or storage. In Phases 2 & 3, late 19th and early 20th century, the building was probably divided with a light ephemeral wall. At the south end an office was constructed with a substantial level floor in the south end of the central aisle, and much patching of the floor of the western aisle; ramps and platforms connecting the two aisles were also made. These probably all relate to use as a loan tool store. At the northern end the western aisle was concreted and three parallel platforms were made in the central aisle, in all probability relating to firehearth storage. The last Phases 4-11, around the 1960s saw the construction of multiple floors and platforms apparently starting in the southern half then spreading into the northern half, all related to the repair and manufacture of packing cases.

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Chatham Historic Dockyard Trust

Investigations in the 'Wheelwrights Shop', 1995

1 Introduction

The Oxford Archaeological Unit (OAU) was commissioned by The Chatham Historic Dockyard Trust (CHDT) to remove and record a series of floors from the eastern two aisles of 'The Wheelwright's Shop', a Scheduled Ancient Monument within the Historic Dockyard complex, as part of a program of refurbishment with the eventual aim of commercial reuse. The floor boards were numbered and stacked for possible reinstatement. With the agreement of CHDT and English Heritage, the board-lifting was sub-contracted to the CHDT team normally engaged in the restoration of Victorian sloop HMS Gannet. The removal and recording work was chiefly carried out over a twenty-two week period between April and September 1995, the site work being undertaken by R. Kinchin-Smith.

2 Historical Background

There has been a naval presence at Chatham since 1547, with the maintenance and repair of royal ships commencing in 1570 following the construction of the first mast pond. Shipbuilding soon followed and the dockyard became one of the most important royal yards in the country, successive enlargements enabling it to undertake the construction of all classes of ship until the launch of its last battleship in 1905. After this time the yard continued to build smaller classes of vessel and developed a speciality in the building of submarines. The last of these was completed in 1966. Investment in a nuclear refit centre reprieved the site but closure was finally announced in 1981, following in 1984. That same year over 80 acres and over 100 buildings (including 47 SAMs) were transferred to the CHDT for conservation interpretation and reuse. The building which is the subject of this report is one of these.

The history of this building is somewhat obscure at present. It is built on land acquired in the late 17th century, adjacent to the Old (South) Mast Pond, dug in 1696.⁽¹⁾ Its site was originally an arm leading off this pond, (later a separate pickling pond), which appears to have been filled in c.1772-3.⁽²⁾ Built primarily of reused ship's timbers, in layout and detail it is almost identical to the adjacent Upper Mast House, constructed 1753-5.⁽³⁾ Though it is known that John Montagu, 4th Earl of Sandwich and First Lord of the Admiralty from 1770-82, was implacably opposed to wooden buildings in dockyards⁽⁴⁾ following the disastrous Portsmouth fire of 1760, it first appears on a plan dated 1795, and at present it is tentatively dated to c1780. During a recent programme of renovation later asbestos and iron cladding was removed and the flaking paintwork on the wooden structure beneath revealed the following titles over the doorways in each gable:-

West Aisle - south gable : 'CAPSTAN MAKERS'
West Aisle - north gable : no legend

Central Aisle - south gable : 'PUMP MAKERS'
 Central Aisle - north gable : 'COAK & TRENAIL MAKERS'
 Eastern Aisle - N & S gables: no legend (lintels replaced)

No date could be ascribed to these titles, though it is thought likely that the building was originally clad to combat the fire risk posed to its timber structure by the expanding No.1 and No.2 smitheries, around the mid 19th century. In much more recent times, the eastern aisle has been converted into a franchised museum cafeteria. One of the CHDT's duties has been to find new uses for many of the structures within the historic dockyard and commercial letting has been proposed for the central and western aisles. As this would entail the removal of all the timber flooring within these two aisles, an English Heritage condition of Scheduled Monument Consent involved the recording of each floor removed and the compilation of a complete archaeological record and archive. Given the paucity of documentary evidence, this record was to cover the entire history of the building. This aim coincides with the CHDT's remit to interpret the history of the dockyard down to its closure in 1984.

3 Documentary Evidence for the 'Wheelwrights Shop'

Although a documentary search was not included as part of the brief, a short search was carried out in the published sources (principally Coad J.G. 1972, 1982 & 1989) and in the archives of the Chatham Historic Dockyard Trust and the Chatham Dockyard Historical Society. The results of this were as follows:-

- | | |
|----------|--|
| 1698 | Site shown as an arm off mast pond. Plan also shows precursor of present Upper Mast House. ⁽¹⁾ |
| 1719 | As above. ⁽²⁾ |
| 1724 | As above but precursor of present Upper Mast House not shown. ⁽³⁾ |
| 1752 | Arm of mast pond shown as separate 'Pickling Pond'. Present Upper Mast House shown. ⁽⁴⁾ |
| 1756 | As above. ⁽⁵⁾ |
| 1771 | As above but also showing 'Bricklayer's Compound' to east. ⁽⁶⁾ |
| 1774 | Model of Chatham Dockyard shows blank area with Pickling pond infilled. ⁽⁷⁾ |
| 1795 | All three aisles shown as 'Plank Shed' adjoining 'Bricklayers Pound'. Northern half of western aisle shown walled off. ⁽⁸⁾ |
| 1812-14? | All three aisles shown as 'Plank Shed' adjoining 'Bricklayers Pound'. 'Capstan House' shown to south on site later occupied by the northern extension of the No.1 Smithery. ⁽⁹⁾ |
| 1817 | As above but capstan house shown demolished and relocated and adjacent to 'Pumpmakers Shops' on land later to be occupied by No.2 Smithery. ⁽¹⁰⁾ |

1821	As above. ⁽⁶⁾
1859	All three aisles shown as 'Capstan House' with 'Hoop Furnace' adjacent. Bricklayers pound now shown as 'Firehearths Patterns etc'. Site latterly occupied by capstan house and pumpmakers shops now occupied by 'Metal Mills' (No.2 Smithery). ⁽¹¹⁾
1879	As above. ⁽¹²⁾
1918-19	Eastern aisle shown as 'Wheelwrights Shop' Southern half of central and western aisles shown as 'Loan Tool Store'. Northern half of central and western aisles shown as 'Firehearth Store'. ⁽¹³⁾
1943	As above. ⁽¹⁴⁾
1956	All three aisles shown as 'Loan Tool Store'. ⁽¹⁵⁾
1961	As 1918-19 & 1943. ('Casemaker's shop' located on ground floor of Upper Mast House.) ⁽¹⁶⁾
1976	Eastern aisle shown as 'Wheelwright's Shop'. Central & western aisles as 'Timber Store'. ⁽¹⁷⁾
1983	Eastern aisle occupied by North Kent Joinery. Central and western aisles used as 'Salvage Store'. ⁽¹⁸⁾

4 Building Description

Located towards the northern end of the present Historic Dockyard, the three aisles of the so-called Wheelwright's Shop once formed part of a complex of timber buildings laid out around the north and south mast ponds during the late 17th and 18th centuries. Apart from the structure under consideration, by 1795 these works comprised 25 aisles of mast houses, 30 aisles of boat houses, saw pits and various sheds and open areas for timber seasoning.⁽¹¹⁾ From the organised layout of these buildings and similarities to those found in other yards, it would appear likely that the Surveyor of the Navy Board would have had a distant hand in the design of this building. It would seem that the practical details of construction were left to the dockyard officers and that it was built by internal dockyard labour.⁽²⁾ The building itself is of ten bays forming a rectangle roughly 37 by 23 metres, divided longitudinally into three aisles. The easternmost of these is separated by somewhat ephemeral infill of reused sawn softwood boards. It is constructed as a series of post and truss frames with connecting plates at eaves/valley level, each truss being formed of a tie-beam, principal rafters, king-post and short collar-beams. The last pair of trusses at one end have additional diagonal braces giving longitudinal stability. There are diagonal braces between each post and the adjacent valley beams and transverse bracing is provided by reused ship's knees between each post and tie-beam. Much of this structure is of reused oak, in all probability from long-scrapped warships. Between each aisle the uprights bear onto padstones of limestone, sandstone and granite, which in turn rest on brickwork footings. The uprights of the external walls are carried

by oak or concrete sill beams resting on brick stub walls with infill of softwood studs and feather-edge boarding. The old asbestos roof has recently been replaced with red clay roof tiles. Each alternate bay is illuminated with a large window (apparently original) and two later rooflights. Internally, whereas most of the floor area was boarded, the northernmost five bays of the western aisle (corresponding to the walled-off area shown in the 1795 plan) are at a lower level and floored with concrete. The southern face of the trusses at the mid-point of the western and central aisles are clad with thin boarding, patched with later perforated steel sheets. This could suggest that the building was constructed in two phases. It would appear more likely, given the evidence of the modern patching and those areas of the ties and posts which lack the last coat of light grey paint, that it had been divided transversely with an ephemeral partition at some later stage. This would accord with the documentary evidence. It was hoped that this question might be resolved in the course of this investigation.

5 Description of Flooring Sequence in Centre & Western Aisles.

5.1 *Methodology*

The building was gridded into 1 m squares using moveable strings and permanent wooden battens fixed to the walls and posts. Each floor layer was then photographed, planned, levelled and drawn at a scale of 1:20 then divided into discrete contexts which were recorded on OAU proforma context sheets. The boards were labelled, numbered by context (e.g. 271.12 being the twelfth board of context 271) and analyzed, individually where appropriate, on the relevant context sheets. This particular numbering strategy was adopted because an EH requirement on CHDT was that any floor layer could be exactly replaced in situ at a later date. The battens have been left in place with this in mind. The boards were lifted by the CHDT Gannet labour force under the supervision of the OAU, de-nailed and stacked by context, samples of the nails used being recorded, bagged and retained for CHDT. The furring and detritus beneath a context were each issued context numbers, described and photographed before sweeping or vacuuming, sieving and magnetically sorting the detritus by grid square. As the job progressed this was often enlarged to areas up to 4 m sq within the larger contexts but a 100% sampling strategy was maintained throughout. All finds were bagged by context and area and will be given to CHDT for analysis and archiving. They are not further reported here. Samples of the detritus were also bagged and retained and will also be archived by CHDT. The cleaned furring was photographed, drawn (at least in section and often in plan also), and labelled by context before being lifted and stacked. All the 20th-century furring was stacked out of doors prior to decisions being made about its future. This methodology was repeated for each floor layer until the ships timbers were reached and work suspended. These timbers have been recorded in plan at 1:20 and catalogued (Appendix A). Further study of the ships timbers has been

postponed until a methodology has been agreed in the light of decisions about their future. The reader is referred to Appendix B for a simplified list of the archive of plans, sections and photographs which will be deposited with CHDT. The finds have not been dealt with as their cataloguing and storage remains the responsibility of the CHDT.

5.2 Summary

Since the following description of the findings is necessarily somewhat technical, this section is prefaced with a summary:

Phase 1 (probably late C18th): construction of two sloping floors resembling those of a mast house, supported on large warship timbers. This floor and the deep unexcavated detritus beneath would appear to have related to trenail, pump and capstan making, plank storage and probably mast making or storage as well as, in places, the later use of the building as a store for loan tools and firehearths.

Phases 2 & 3 (late C19th & early C20th): construction of the office and a substantial level floor in the south end of the central aisle (both of which remained in use until the closure of the dockyard), substantial patching of the original floor at the southern end of the western aisle and probable construction of ramps and platforms connecting the two aisles. All probably related to use as a loan tool store. At the northern end this phase was represented by the concreting of the western aisle and the construction of three parallel platforms in the central aisle, in all probability relating to firehearth storage. The building was probably divided with a light ephemeral wall during this period.

Phases 4-11 (c.1960s): construction of multiple floors and platforms apparently starting in the southern half then spreading into the northern half, all related to the repair and manufacture of packing cases.

5.3 Phase 1. (late 18th century)

Western Aisle (southern end):- Context 271.

Fragmentary remains of probable original floor, formed of heavily worn oak boards, c.90-100mm thick, in widths between 155 - 325mm. laid on closely spaced reclaimed warship timbers. These timbers must be the subject of detailed individual further study as artefacts in their own right and at present remain in situ. Structurally speaking they form massive bearers for the floor and in general alternate between rib segments ('futtocks' and 'riders') and deck beams with smaller sub-beams ('carlines') at the edges. A full inventory of these will be found at the end of this report. The boards were secured onto these with large hand-made square-headed wrought-iron spikes (head type A) and the gaps between each contained remains of 'orange twist' oakum and pitch. The boards themselves contained regularly-spaced holes, 1½" - 1 5/8", generally still containing truncated oak dowels ("trenails") whilst many also had regular rows of copper clouts spaced at c.30mm centres, all with their heads broken

off. Where the boards were laid with the clouts on the underside, an overall coating of pitch was apparent on that protected face. Otherwise the undersides were natural in colour. It is certain therefore that these timbers originally served as the hull planks of a wooden ship (or ships) with a likely keel length of c.150' (1) apparently broken up after the introduction of copper sheathing (see below). This sort of dating evidence must remain circumstantial however as the many instances of old square spike holes plugged with softwood wedges must imply prior reuse, either within this building or elsewhere.

As found, these boards, and the more extensive supports beneath, rose from the north (mast pond) to the south, inclined at an angle of 1:41.6 over the remaining 15m. The differential between the north and south thresholds indicates an overall gradient of 1:60. It would appear likely that this floor was laid for a process involving water. In the western aisle, despite the caulking, fine sawdust had penetrated between the boards to the ships' timbers beneath and its solidity and disposition would appear to bear out this hypothesis. Two further distinct later deposits of dark grey, slightly ferric, dust and dirt followed by coarse splinters and other case-makers debris would appear to relate to the slate-grey colour (black size?) and white 'tramlines' (Ctx 257, 305 & 307) painted on this part of floor.

Central Aisle:- Context 422.

Fragmentary remains of caulked floor of trenailed boards as above, generally remaining around the periphery of this aisle. A very few still had the copper clouts intact (head dia. 14mm, length 39-42mm, square shank) still holding small torn vestiges of thin copper sheet. The majority of boards had 1 1/2" - 1 5/8" trenails and had been cut in random widths from 240-300mm with lengths up to 8.4m. There were also some boards with 1 1/8" trenails in widths of seemingly more regular increments of 175, 190, 230, 255 & 270mm, the longest of these being 9.79m and broken off at the end. Despite the fragmentary nature of the trenailed floor, the packing beneath, again of massive C18th warship timbers alternating as before between deck beams and futtocks, was completely intact and though heavily decayed in places, in many areas the timbers were still in superb condition. As found the floor was inclined in three sections, again rising from north (mast pond end) to south. The northern 12m was inclined at 1:71, the central 14m at 1:466 and the southern 10m at 1:40. The overall gradient between thresholds was 1:100. Comparative measurements could be made of the building itself to allow some correction to be made for settlement although the building and floor were separate structures, the former exerting a point loading, the latter a spread load, both on reclaimed and built-up ground.

There was no apparent sign of any walls or partitions having existed during this phase, however the fragmentary nature of the remains and almost total piecemeal replacement of the boards beneath the (leaky) roof valley between the aisles make this impossible to state with any certainty. The only coherent structures associable with either area of floor were the mortices Ctx.373-378, 381, 454 & 453, each c.100 x 65 x 30mm and forming two rectangular structures, 4580 x 620mm and 1600 x 640mm, probably workbenches. Little work has as yet been carried out on either the ships' timbers or on the archaeological deposits between them but given the form and position of this building adjacent to the former South Mast Pond, together with slope and caulking of the floor, it would seem safe to assume that this building was constructed as a mast house and that this floor relates to this function.

It is noted that the Navy made all its masts itself and that there was a major expansion in mast-making capacity in the 1770s and 1780s, Portsmouth for example almost quadrupling its capacity.⁽²⁾ At 37m, the length of this building closely corresponds to the 117' length of the main mast of a 100 gun ship c1790.⁽³⁾ Coad mentions that there were two kinds of masthouse, working masthouses and those used for storage. The apparent difference was that whereas those for storage were fitted with racks or old knees bolted to the columns, working masthouses had uncluttered floors and sawpits at one end.⁽⁴⁾ This building displays signs of neither. Unlike the Upper Mast House, this building shows no sign of rooflights in the Farington painting of 1804⁽⁵⁾ and therefore mast storage would seem a more likely option. Its relationship to the mast pond is also awkward and if it ever was used as a mast house this must have been very short-lived as it was clearly in use as a plank shed by 1795. Such a transmutation would have been logical and straightforward if the storage hypothesis is accepted.

Central aisle:- Context 424.

A series of much less worn reused oak boards infilled the central area of ctx. 422 above. There were simple timber marks on the undersides of some of these boards and it would seem probable that they were imported, perhaps of Baltic origin. In places these boards were so little worn that on one piece the timber marks were still visible on the upper face. These boards were up to 7.08m long, 70-75mm thick and up to 415mm wide at their widest point, fixed as above with large square-headed iron spikes (head type A). These were very similar to those of ctx. 271 & 422 and again additional empty spike holes, this time very regularly spaced, had been filled with softwood wedges. The layer of detritus overlying the ships timbers beneath and the nail holes in them have yet to be analysed to determine a) whether this area of floor was contemporary with the treailed boards (the closer fit of these boards perhaps explaining their lack of caulking, like barrel-staves) and b) if not contemporary, with what type of process was this floor associated. Preliminary investigation reveals little in the way of compacted sawdust on the supporting timbers (grey dust and dirt predominating) and from the slight wear and the way these boards cut the bench mortices of ctx.422, it at first appeared that this flooring post-dated the treailed boards and perhaps related to plank storage. If this hypothesis is correct, these boards must be contemporary with the futtocks beneath as these are laid 1" higher than the deck beams, obviously with 3" boards in mind. At this stage it would seem more likely that all the sub-floor was laid together, the availability of timber and the projected use perhaps dictating the layout of the worn 4" and less worn 3" boards. As with the contexts above, this area was painted slate grey. This was quite thin in those areas later overlain by ctx.42, 60, 61, 250 and especially 447 & 448 where it had been almost worn away in more recent times. It was in the latter two areas that very dark grey or black 'tramlines' (ctx. 360) were visible, continuing onto ctx. 422. It is possible that these were of early date. Numerous in-situ mortices of note were recorded but without documentary evidence most cannot be interpreted except ctx. 392, 394, 396 & 399 which form a rectangle 1.7m x 1.78m and may have formed another bench.

5.4 *Phase 2: Major reorganisation (late 19th to early 20th century)*

The next phase may have taken place over some considerable length of time. Unfortunately most of the contexts in this next section neither overlie nor cut one another making precise phasing difficult. Nail analysis has proved of little value as

nail types B - E usually occurred in combination.

Western aisle.

Context 438, 277-278. This period is marked in the western side of the building by the construction of the brick stub-walls and oak kerb pieces (ctx 438.4-438.8) now forming the step between the lower concrete floored area and the higher wooden floored areas. Ctx 277-278 represent further areas of floor patching, using 288-345 mm x c75 mm virgin softwood boards fixed with cut nails (type E) and iron spikes (head type B), also painted dark grey. Three worn mortices (ctx. 296-298) cut into this area could have formed a bench or counter.

Contexts 254-255, 279-283. A later part of this phase is represented by ctx.255 (post-dating its supporting stub wall), the building of the ramp (ctx 254) and various areas of patching, using c300x50mm softwood boards predominantly fixed with cut nails (type E), all painted dark grey. By implication these areas may be contemporary with the concrete floor.

Central aisle.

Context. 60. Construction of a raised and level floor using 220-350 mm x c.75mm virgin boards fixed to adzed furring pieces with iron spikes of head type B, C & D, beautifully plugged as per ships' decking. The upstand formed at the northern end was limewashed then painted dark red later. The northern part of this edge was marked later with a white line. The construction of this floor would appear to be contemporary with that of the office, the floor of which, extending into the western aisle is similarly constructed and uses spikes of head types C & D. That part of the floor adjacent to the threshold of the office had worn by up to 1". Uniquely, this floor had eleven circular rebates, dia.72mm x 7mm deep (6 of) and dia.c135mm x c.12 mm deep (5 of) which post-date the laying of the floor. One of the former still contained a screwed circular iron plate and screw holes in the others indicate that they also once contained similar plates. These were certainly contemporary with or post-date the floor, but could not be interpreted. It would appear that this floor was at one time painted dark grey but this has become very worn over time and later daubed with case-maker's paint as per ctx. 57 (see phase 7). The debris under this floor consisted of small quantities of case-maker's debris overlying thick black/grey dust and dirt with copper washers and deformed copper rivets (hosemaking?), leather scraps including a piece dated 1918, numerous broken dockyard issue cobbler's type knife blades, 'Thor' hammer end, numerous lead bungs of assorted sizes used in the shackles for linking of cables (lengths of anchor chain) and a mysterious turned wooden half torus, perhaps a casting pattern.

Context 437. Very smooth concrete slab, cast in-situ. It is likely to have been laid at around this time. Probably a hearth slab. Associated with ctx. 332. (see phase 4)

Context 42. Raised level platform supported on tapering, adzed S/W furring pieces and with dark grey painted surface later clad with dark green enamelled perforated steel sheets. Constructed of reused softwood and occasional hardwood (teak?) boards of various widths and thicknesses, trenched over the furring pieces where necessary and fixed with iron nails (type D & E). The western edge of this platform has mortices c.75 x 26 x 30 mm deep at 1200-1290 mm centres which apparently once housed the legs of a long work bench. The upstand was painted dark red after the

laying of the southern half of the walkway ctx.215 (boards 215.14-215.27) and its lost southward continuation. The detritus beneath contained mildly ferric dirt and dust, 2 copper rivets, a few lead offcuts and some carpenters debris which probably only related to the construction of this context.

Context 447 & 448. Dark red edged shadow from painting the upstands of structures similar to ctx.42, since removed. These red marks post-date the earliest coat/coats of dark grey floor paint and black tramlines (ctx 360). After the removal of these two structures both underlying floor areas were apparently overpainted with at least one coat of dark grey. The areas that they define were noticeably less heavily painted dark grey despite the later infill between each other and ctx 44 (ctx. 215 & 223). Some bent over nails (type D & E), similar to those of ctx. 42, were interpreted as having once fixed furring pieces.

Context 215 (boards 215.14-215.27). These boards would appear to represent the first phase of the patching of the walkway between ctx. 42 and 448. Composed of virgin boards 2250 x 300 x 50 mm fixed with type B spikes and type E cut nails. Dark grey painted (later continued southwards by ctx.215.1-13) (see phase 9)

Context 250. A patch of worn dark grey softwood boards c.225 x 24 mm, built over a heavily subsided area. levelled with tapering adzed softwood furring pieces and fixed with C & E type spikes and type E & F cut nails.

5.5 *Phase 3 (late 19th to early 20th century)*

Context 265-270. Shadows of platforms c.270 x 2820mm of unknown height defined by less worn boards beneath with fewer coats of dark grey floor paint, and traces of dark red overpaint under last, worn coat of dark grey floor paint. Few traces of joist or furring fixings, but upstand boards appear to have been c20 mm thick. Some of these appear to have been interspersed with ramps (Ctx.260/264 & 287/288) to the central aisle. Numerous lead bungs were found in the area of the latter ramp and it is likely that the platforms were similarly associated. The ramps, and probably the platforms as well, would appear to have been demolished to build the later long platform ctx. 240 (see phase 6).

Context 441. As above but c4500 x 1340 mm. The line of the upstand was well defined by dark red overpaint and a line of G type wire nails. It is likely that the surviving cut nails (E type head) represent the lost furring pieces.

Context 332. Floor covering of red-backed tan linoleum scraps overpainted dark grey fixed with various copper tacks and ½ - 1" iron nails apparently of similar phasing to above contexts. This lino would appear to be associated with the small leather offcut, brass washer, lead bung, broken tin-snip blade, small brass offcuts and slightly ferrous black/grey dirt found between the lino pieces. There was evidence of a wall/counter structures here, but it was too vestigial for interpretation.

Linear rust stains overlying the lino and the area between it and ctx. 448 would indicate that this area was loosely boarded over at some stage (probably phase 5 or 6) prior to the building of ctx. 57.

5.6 *Phase 4 (c.1960s)*

Context 215.1-13. Platform of well worn softwood boards c.2250 x 300 x 50 mm, apparently painted dark grey and forming a continuation of ctx. 215.14-.27, again between ctx 42 and 448. Very similar to 215.14-.27 but fixed with wire nails (head type G). Overlain with later daubs of light grey paint with spots of light green and silver. The principal fill between the boards was slightly ferric grey dust. It would appear that this context originally continued further south but was later truncated, apparently after the destruction of the structure represented by ctx. 448.

Context 223. As above but narrower, forming a walkway between ctx. 447 and 448. Later truncated at south end. Some very similar pieces of timber (same length, colour and degree of wear) to those from this context were found beneath ctx.240. The fill between the boards was again formed of slightly ferric dark grey dust.

Context 61. Eight c300 x 50mm softwood boards replacing rotten ones of ctx.60 under leaking valley. Painted slate grey and fixed principally with wire nails (head type G) and four iron spikes (head type D). Largely protected, apparently by linoleum, though this had since disappeared. These boards overlay sub-floor debris of slightly ferric dust incorporating nuts, thermometer glass sections, dished copper washers and a few lead plugs and general small lead offcuts. It is probable that these objects predate these boards.

5.7 *Phase 5 (c.1960s)*

Context 240. Platform of reused boards, principally c230-300 x 40 mm probably ex-packing-case. Very little worn, a painted 'Keep Dry' sign on one, for example, being little less legible than the same sign on the underside of another. This platform was later edged with a limewash line and upstand (ctx. 307) to its west except where overlain by ctx.232. Furred-up with older type reclaimed packing-case materials. Overlain by east-west 'tramlines', resembling those of ctx. 254, leading to the central aisle, which imply continued communication between aisles. Apart from the lead bungs found in the underlying ramp area (between ctx. 287 and 288) this platform overlay only case-makers' debris - sawdust, splinters, wire nails, pieces of perforated steel angle, square galvanised nuts and slotted galvanised bolts, stencilled tickets describing case contents (in this instance "55027 O.N. BUTTON F3" and "54440 (PLAT. A)", steel drill swarf, broken hack-saw blades and ephemeral personal objects. It would appear that this platform was extended southwards, probably during phase 7. Associated with tramlines.

Context 217-218. Two areas of boards, ctx. 217 composed of c150 x 40 mm and ctx. 218 of 180 x 40mm. Fixed with wire nails (head type G) with a few type H in the furring of ctx. 218. Context 218 had white 'tramlines' leading down the steps to the concrete area at the north end of western bay and 'L'-shaped marks, probably from the feet of 'Dexion'-type shelves. What little sign there was of carpentry in the detritus beneath overlies the usual slightly ferrous dust and dirt implying that whilst case-making/repair had started at the southern end of the building at this time, it had not yet reached the north.

5.8 *Phase 6 (c.1960s)*

Context 174-6. A floor of reused boards in three apparently contemporary sections, constructed over the southernmost three and a half bays of the western aisle, principally of c.300 x 50 mm reused boat cradle timbers, some with "40' ST. PINNACE No.232", "40' ST. BARGE No.35" and "ST. PINNACE No.296". Loosely fixed to furring of miscellaneous reclaimed pieces of older types of packing-case with wire nails (head type G). Some of the boards and furring were very similar to some of those of ctx. 57, with which they appear contemporary. There were painted 'tramlines' (ctx. 221 & 222) which continued onto ctx. 173. Some areas were more worn, notably along the axis of the aisle, and had daubs of dark and light green, red, silver, cream and light grey paint. Other areas were cleaner and less worn notably by the west wall, between the 'tramlines' ctx. 180 and 181 and under the cupboard site by the west wall. This floor would appear to be associated with the remains of a ramp descending northwards (ctx. 258) and 'tramlines' ctx. 256 & 263. Large quantities of case-makers' debris was found beneath including pay-packets and a pools coupon from 1963-4 and an un-dated order for "Ply Cases-Air Freights"- "Special Size Cases"- " 9"x9"x9"-10 No.", - " 1'6"x12"x12"-10 No."

Context 57. A raised platform forming a northward extension to ctx. 60 up to the east-west centreline of the centre aisle. Built of reused boards 290-350 mm x 45-55 mm, some previously trenched on their undersides and some with mortices c.33 x 90 mm at c1230mm centres, either on top or underneath. Those with the mortices on the underside had dark grey paint there also. Fixed as per ctx. 174-6 to packing of older type of case material using wire nails (G type head), overlying huge quantities of casemakers' debris. Also found were a conveyor roller and a wooden foundry pattern for an axle. These latter two objects cannot have dropped between the boards and must have been thrown under this platform prior to the construction of ctx. 56 and 93/94 respectively. The morticed boards appeared identical to those of ctx. 42 and almost certainly came from ctx. 447 and/or 448. It is therefore likely that this floor is contemporary with the destruction of these two platforms. These pieces of timber present good evidence that those two contexts indeed represented platforms very similar to ctx. 42. Some damaged parts of ctx. 57 were later protected with thin ply and perforated steel sheets, the latter being painted light grey over dark green and apparently once formed the sides or ends of standardised stores containers. The floor surface was heavily daubed (as per ctx 60) with light and dark grey paint generally overlying splashes of blue, red, light green and cream. Also recorded were spots of casein glue, pitch and putty.

Context 224. An area of loosely fixed boards, some trenched and with mortices as per ctx. 42 and 57. Fixed with wire nails (head type G) and overlain with daubs of light grey and light and dark green paint. Older type packing case elements were found in the furring beneath together with casemakers' debris.

5.9 *Phase 7 (c.1960s)*

Context 237. A mysterious platform adjacent to, but below, ctx. 175, overlain by ctx. 173 yet almost exclusively fixed with wire nails (head type H). Composed of clean and unworn but apparently reused boards 300 x 38mm, probably ex packing-case. Furring similarly composed. There was little conclusive evidence as to use, but it would appear to have been very short-lived and almost certainly related to case-

making. Appears to pre-date or be contemporary with white edging on ctx. 240 (see phase 6 above).

5.10 Phase 8 (c.1960s)

Context 170. A ramp composed of reused softwood boards c.300 x 50 mm fixed with wire nails (types G & H). This ramp, overlying the previous, lower ramp (ctx. 254), connected the northern, concreted half of the western aisle to ctx. 173 (below), the northward extension of ctx. 174-6 (phase 7). Marked with daubs of light and dark grey paint. It was originally edged with silver 'tramlines', later overpainted in white. These continued onto ctx. 173 & 175. This ramp was later widened by one board width (ctx. 171) and re-edged in white.

Context 173. The continuation of ctx. 174-6, formed by a floor of reused boards c300 x 38 mm with 50 mm square rebated through mortices at 2190 mm centres (as per ctx. 51, 53 and 102) which relate to a previous use of the timber. Overlain by white and silver tramlines. It would appear likely that there was some kind of structure, perhaps a storage rack, between 'tramlines' ctx. 180 and 181 and probably a bench or racking against the western wall where the boards are unmarked. The boards are generally little worn elsewhere apart from along the centre line between the ramp and the southern doors. There were splashes of light grey, silver, light green and white paint. Holes accidentally drilled in the floor boards to the east, as found in the same area of the T & G boards of ctx. 123 overlying, show a continuity of activity in that area. This area of flooring was supported notably on unused offcuts of 150 x 75 mm PAR, 150 x 100 mm PAR, 150 x 25 mm tongue and groove and various offcuts of 5mm mahogany 3 ply. Material found beneath all related to case-making including very large quantities of waste from repetitive hole drilling in new wood as well as stencils and detritus from the dismantling/repair of old cases. Dating evidence included pay-packets dated 26/5/1961-3/5/63 and pools coupons and results from 1963. Also found was an "Enclosure B to NSO - Memo No. 21/60 to Inspector of Storehousemen from St Martin's Barracks C/M of Joiners, Storewrights Shop - Re. Packing-cases".

Context 172. A raised platform forming an extension to ctx. 173 over the south-eastern corner of the northern, concreted, half of the western aisle. Composed of reused boards, c.300 x 50 mm, similar to those of ctx. 175 yet fixed with wire nails of types G and H. Splashes of light grey paint only. Little in the way of debris beneath except a 56lb cardboard nail box marked "GKN S. Wales" and "plain round-headed nails - 2". It was full of 4" wire nails of head types G and H, as used to construct this context.

Context 93 & 94. Two steps each built of c220 x 35 mm reused boards, fixed to new offcuts of 150 x 100mm PAR with wire nails (head types G & H). Limewashed risers with treads daubed with light grey, dark grey and cream paint and hard black pitch. These steps overlay casemakers debris.

Context 216/219. Two small areas of reused boards (including 150 x 25 mm tongue-and-groove) with light grey, mid green, mid blue, dark cream red and yellow on their undersides. Fixed with wire nails (head type H) and with splashes of silver paint on top surface. They overlay dust and dirt with few signs of carpentry. It may be that case-making had not reached this corner at this stage.

5.11 *Phase 9 (c.1960s)*

Context 121-136. A veneer of tongue-and-groove offcuts c150 x 25 mm, both new and reused, laid directly over ctx. 173-176. Probably laid in sections, but all containing both wire nail types G and H. Overlain by dark and light grey paint but also by earlier dark and light green, red, vermilion, cream, white and blue. The undersides of some boards were painted and stencilled and obviously had been parts of packing-cases. Small quantities of casemakers' debris found in cracks and around edges, with an increase in the proportion of clouts. This layer may be contemporary with the widening of the north ramp ctx. 170 by ctx. 171. There were signs of workbenches along the west wall (shadows of steel fixing plates, ctx. 129-33). The separate area of T & G boarding (ctx. 128) and the gap to the south suggest previous benches and a cupboard also along west wall.

5.12 *Phase 10 (c.1960s)*

This phase is represented by a series of small areas of flooring laid from the centre to the southern end of the first bay of the central aisle. They suggest the complete takeover of the northern end by case-making and all were daubed with light and dark grey paint. These contexts were formed of boards of three basic types, all reused. Contexts 36, 37, 39, 40, 41, 42 (south end), 44 and 50 were each laid using reused boards c300 x 50 mm fixed with wire nails (H type head). Contexts 45, 46, 47, 48, 49 and 52 were of reused boards 205-225 x 75 mm, each with at least one end crudely shouldered and their similarity to the decking of Thunderbolt pier has been pointed out. These were scarcely fixed at all, but a few wire nails (H type head) had been used. Context 51, 53 and 102 consist of two types of reused softwood board, c.300 x 50 mm, as above, and c.300 x 38 mm with 50 mm square rebated through mortices, as per ctx. 173. These were also fixed with wire nails (H type head). All areas were furred with reused pieces of packing-case, plywood offcuts and lengths of unused 150 x 25 mm tongue-and-groove. All these areas overlay case-makers' debris, principally small amounts of sawdust and mechanical planer shavings. 'Dexion' type angle, galvanised wire mesh offcuts, galvanised nuts and bolts (some painted and cut through, some new and unused), hack-saw blades and tickets for case contents (e.g. "0273/910", "Targets", and "Flags, Signal"). These different but clearly contemporary floor areas probably represent a reluctance to cut reused timber with a view to future reuse or may represent a policy of advancing the refloored area as materials came to hand.

5.13 *Phase 11 (c.1960s)*

Context 56. This forms an extension to ctx. 57 overlying part of the previous phase, composed principally of virgin softwood boards c.300 x 50 mm securely fixed with wire nails (H type head). Somewhat worn towards the centre and well covered with daubs of light and dark grey paint. Furred with c.300 x 50mm reused boards, plywood and several pieces of 150 x 75 PAR (as ctx. 42 (north end, 93, 94, 172 and 173). This context again overlay casemakers' debris, notably galvanised nuts and bolts and galvanised wire mesh offcuts.

Context 95 & 96. Two ramps formed of similar 300 x 50 mm boards fixed together with wire nails (head type H) and were overlain with daubs of light and dark grey paint. Though overlying light grey paint on the context beneath it is possible that

these ramps did not long post-date it and it is possible that they slightly pre-date ctx. 56.

5.14 *Phase 12*

Context 34 & 35. The final phase is represented by this area of virgin softwood boards 140-160 x 50 mm, fixed with galvanised screws and wire nails (type H). These boards cover an engineering brick and concrete lined trench containing steam pipes which cuts all previous layers. With unique stained 150 x 50mm softwood joists and various saw-mill offcuts and hardboard as furring, the total lack of finds, except those relating to the recent refurbishment of the building, imply that this is modern work.

6 Conclusions

6.1 *Significance of Findings*

The project has proved to be worthwhile because the history of the building is now better understood by investigation prior to removal of early floor surfaces, and also because of the quite unexpected discovery of the ships timbers. Without doubt, the most significant find has been the discovery of a unique remnant of an 18th-century warship. Whilst detailed analysis of the 169 timbers will be undertaken in the future, it is already apparent that they are of national importance. HMS Victory does of course remain for examination, but it has been so rebuilt and restored in the last 250 years that the age and provenance of much of it remains uncertain. Innumerable contemporary ships timbers also survive around this and other dockyards incorporated into buildings, but these are usually very much altered and overpainted. What makes the Chatham timbers so unique is that they are often complete and just as they were when the ship was scrapped, right down to the carpenter's marks, paint and hammock rails. It is expected that they will add much to our knowledge of 18th-century ship construction.

The investigation of the floors and the chronology of changing uses has advanced the history of this building. Very little was known about the uses of this building prior to the commencement of the floor lifting and it had been hoped that archaeology could help fill some of the gaps. Recovery of some oral-history might have established some details had this been carried out in advance, while the small amount of documentary research so far undertaken has been of some use as a means of answering these questions. It is certain that use as a plank store could not have been deduced any other way, and had the archives not yielded information about loan tool and firehearth storage, the caulking tools, thread-cutting taps, drifts and stove parts found beneath the earliest floor would, on their own, only have confused the issue. On the other hand, archaeology has prompted other questions as yet unanswered, particularly regarding the presence of small brass eyelets and lead anchor chain shackle fixing pellets. Only further documentary research will enable the building record to be properly understood. At present, only two uses outside of those found in the archives can be stated with any certainty. Firstly it would appear that Coad was correct in his hypothesis that this building was constructed as a mast house.⁽¹⁾ If this is so then the lowest floor is the earliest mast house floor recorded in a British dockyard and its massive construction of ships timbers and caulked and trenailed oak planks is illuminating. The other use not anticipated from records is that of packing-case making in the 1960's. This had left an enormous amount of evidence, both in floors and debris, which was troublesome and time-consuming to investigate. On the other hand, the signs on the outside of the building also revealed the functions of trenail and pump making for which as yet no evidence has been found though it may lie in the unexcavated layer between the ships timbers. From the dearth of evidence concerning these occupations in the archives and their

limited impact on the earliest floor it is probable that they were short-lived here, in all likelihood displaced by the No. 2 smithery and metal mills of the approaching steam age.

In more general terms the work has been illustrative of the archaeological observations made on many other industrial sites. That industrial sites, no matter how well capitalised or well endowed with high-profile monuments to specific processes, would often contain many lighter, more temporary structures, often as in this case, versatile large sheds which usually well outlived their original function, housing numerous ephemeral uses yet surviving without noticeably changing in appearance. It is also apparent that even in this the most highly capital-intensive industrial industry of its day, that the reuse of materials, as well as buildings, was the norm rather than the exception in day-to-day management, right down and into the 1960's.

6.2 *Further Work.*

The brief has been fulfilled insofar as the original floor has been recorded and lifted, as have all the layers of flooring, packing and detritus overlying it. The sub-floor has also been recorded and analysed as an architectural element. Whatever becomes of the floor, it is apparent that many of the timbers may completely or partially collapse upon removal, and further detailed recording programme *in situ* will be necessary, to recover as much information as possible about these items. At some point every timber will also require examination on each face, and these may need to be individually recorded. Due to the fragility and historic importance of the smaller items (e.g. the hammock rails attached to deck beams) it has not yet been possible to analyse the final layer of detritus between these timbers, which will need to be investigated in parallel with the timber recording. Given the complex development of flooring it is also likely that the remaining detritus will contain the evidence from the entire period of the building's use. A more delicate methodology may be required for this often deep and artefactually rich deposit than that employed higher up. There is also some possibility of recovering important information about the attachment of the timbers to each other, and of artefacts associated with their original use. What is certain is that at the end of the investigation our understanding of the building and fitting out of the 18th-century warship will have been considerably advanced.

Oxford Archaeological Unit
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APPENDIX A: INVENTORY OF SHIPS TIMBERS

Inventory of 18th-century ships timbers and later furring pieces beneath the earliest floor, as shown on the figure. (NB these numbers are in sequence with the context numbers for the building, but are shown on the figure as 1, 2, 3, etc. for 1001, 1002, 1003.

CHATHAM WHEELWRIGHTS SHOP (CHWWS 95): INVENTORY OF SHIPS TIMBERS						
Number	Item	Timber	Paint	Features	Width/ Depth (mm)	Rot
1001	Deck Beam	Oak	?	?	?	100% Rot
1002	Packing	S/W	-	-	150x50	-
1003	Packing	S/W	-	-	150x50	-
1004	" (3 pcs.)	S/W	-	-	-	-
1005 +5a	Orlop Deck Beam	Oak	Red	Scarph, Orlop rebates, Carline mortices	420x300 340x300	85% rot
1006	Futtock	"	?	Scarph ?	? x 430	95% rot
1007	Deck Beam	Oak	Red	"	450x300 360x300	15% rot
1008	Futtock (cant)	Oak	?	Packing pieces	250x350	5% rot
1009	Deck Beam	Oak	?	Scarph, Carline mortices, 120x30mm chase in sides	400x300 500x300	40% rot
1010	?	Oak	x		520 x ?	80% rot
1011	Futtock (half cant)	Oak	?		330 x 300-530	5% rot
1012	Deck Beam	Oak	?	Scarph, Carline mortices	400x350 500x350	50% rot
1013	Futtock	Oak	?	-	400 x 320-370, 200x290	50% rot
1014	Futtock	Oak	?	Multiple Scarph, 100mm dowel	400 x 320-370	10% rot
1015	Deck Beam	Oak	?	Rebates for knees, Timber marks	410x330	20% rot
1016	Deck Beam	Oak	?	Scarph, Carline mortices	350 x ? 450 x ?	65% rot
1017	Carline?	Oak	?	-	190 x ?	50% rot

CHATHAM WHEELWRIGHTS SHOP (CHWWS 95): INVENTORY OF SHIPS TIMBERS						
Number	Item	Timber	Paint	Features	Width/ Depth (mm)	Rot
1018	Deck Beam	Oak	Red?	Double scarph, Carline mortices	380x350 500x350	50% rot
1019	Plank	Oak	-	Trenails	220x100	20% rot
1020	Futtock	Oak	?	Scarphs	? x 320	60% rot
1021	Deck Beam	Oak	?	-	400x310	50% rot
1022	Deck Beam	Oak	?	End, Scarph, Carline mortices	c400 x ? c500 x ?	85% rot
1023	Plank	Oak	-	-	100X240 + 1" S/W	10% rot
1024	Deck Beam	Oak	?	End, Scarph, Carline mortices	c400 x ? 520 x ?	85% rot
1025	Futtock	Oak	?	Scarph	?x300- 330	10% rot
1026	Carline?	Oak	?	Moulded arrises + 1" S/W	250x160	10% rot
1027	Deck Beam	Oak	Lime- wash	Scarph, Carline mortices, Timber marks	510 x ? 440 x ?	50% rot
1028	Deck Beam?	Oak	?	?	?	95% rot
1029	Futtock	Oak	?	Scarph	? x 330	80% rot
1030	Deck Beam	Oak	Red + Lime- wash	End, Scarph, Carline mortices	410xc300 440xc300	70% rot
1031	Futtock	Oak	-	Scarph, 100 mm dowel	340x310	5% rot
1032	Plank	Oak	?	Trenails + 100x38 mm S/W	100x200	5% rot
1033	Deck Beam	Oak	Lime- wash	Poss. end, Scarph, Carline mortices	510x360 410x360	30% rot
1034	Deck Beam (End)	Oak	-	End detail, Bolt holes for knee	390-480 x340	10% rot
1035	Plank	Oak	-	Trenails + 1" S/W	190x100	10% rot

CHATHAM WHEELWRIGHTS SHOP (CHWWS 95): INVENTORY OF SHIPS TIMBERS						
Number	Item	Timber	Paint	Features	Width/ Depth (mm)	Rot
1036	Futtock (cant)	Oak	-	100mm sockets, Scarph	330? x 340-470	5% rot
1037	Carline	Oak	?	No moulding	190x210	2% rot
1038	Deck Beam	Oak	Lime- wash	Poss. double scarph, End, Carline mortices	500x320 400x320	15% rot
1039	Futtock? (cant)	Oak	Lime- wash	-	340x290	5% rot
1040	Futtock (half cant)	Oak	-	-	400 x 200-460	5% rot
1041	Carline?	Oak	-	-	210x180	5% rot
1042	Deck Beam	Oak	-	Knee rebate? Carline mortices	410x340	10% rot
1043	Deck Beam	Oak	Red	Scarph, End, Knee rebate, Carline mortices	430x300 340x300	50% rot
1044	Futtock	Oak	-	2 scarphs	420x300	1% rot
1045	Carline?	Oak	-	-	230x170	30% rot
1046	Modern plank	S/W	Slate Grey	-	220x30	-
1047	Deck Beam	Oak	Lime- wash	End, Carline mortices, Hammock rail	510x370 410x370	10% rot
1048	Futtock	Oak	-	100 mm sockets	320x280	0% rot
1049	Futtock	Oak	-	-	310 x 300-330	0% rot
1050	Carline?	Oak	-	-	160x260	20% rot
1051	Deck Beam	Oak	Lime- wash	End, Scarph, Hammock rail, Carline mortices	500x380 400x380	10% rot
1052	Deck Beam	Oak	Lime- wash + Red	End, Carline mortices	300x300	5% rot

CHATHAM WHEELWRIGHTS SHOP (CHWWS 95): INVENTORY OF SHIPS TIMBERS						
Number	Item	Timber	Paint	Features	Width/ Depth (mm)	Rot
1053	Planks	Oak (+S/W)	-	trenails	240x100 (oak, 2 of) 150x50 (s/w, 1 of)	0% rot
1054	Futtock (cant)	Oak	-	scarph	340 x 320-350	3% rot
1055	Futtock	Oak	-	Lapped Joint, 100 mm socket	330x280	0% rot
1056	Carline?	Oak	-	-	320x160	30% rot
1057	Orlop Deck Beam	Oak	?	Scarph, End, Orlop rebates, Carline mortices	400x400 500x400	5% rot
1058	Futtock	Oak	-	Scarph	260x300 (+50x50 & 180x50S/ W)	3% rot
1059	Futtock	Oak	-	2 scarphs	360 x 320-440	5% Rot
1060	Deck Beam	Oak	-	-	170x340 (+50mm S/W)	20% rot
1061	Deck Beam	Oak	-	Scarph, Carline mortices, Hammock rail	500x360	5% rot
1062	Deck Beam	Oak	-	Carline mortices	410x360	5% rot
1063	Carline?	Oak	-	-	170x300	10% rot
1064	Futtock (cant)	Oak	-	Scarph	340x280	5% rot
1065	Futtock	Oak	-	Complex coaked lap joint, Scarph	320x320	3% rot
1066	Deck Beam	Oak	Lime- wash	Scarph, Carline mortices	520x390 400x390	2% rot
1067	Futtock (cant)	Oak	-	-	350 x 300-320	1% rot

CHATHAM WHEELWRIGHTS SHOP (CHWWS 95): INVENTORY OF SHIPS TIMBERS						
Number	Item	Timber	Paint	Features	Width/ Depth (mm)	Rot
1068	Futtock (cant)	Oak	-	Scarph	370 x 290-310	1% rot
1069	Carline?	Oak	-	-	160x300	5% rot
1070	Orlop Deck Beam	Oak	Red?	End, Scarph, Orlop rebates, Carline mortices	390x360 500x360	5% rot
1071	Deck Beam (Piece)	Oak		Scarph, Carline mortices, 120x30 rebate in faces	200-320 x340	3% rot
1072	Futtock (cant)	Oak	-	Scarphs	270-350 x 290- 520	0% rot
1073	Deck Beam (piece)	Oak	Red	Carline mortice	310x260	40% rot
1074	Orlop Deck Beam	Oak	-	End, Double Scarph, Orlop rebates, Carline mortices	380x340 500x340	2% rot
1075	Carline/ Small Deck Beam	Oak	-	Ledge/Carline mortices	270xc300	15% rot
1076	Futtock	Oak	-	Scarph	340x330	0% rot
1077	Futtock (cant)	Oak	-	Timber marks	340 x 280-310	0% rot
1078	Deck Beam piece?	Oak	-	-	270x290	15% rot
1079	Deck Beam	Oak	-	End, Scarph, Carline mortices	410x370 510x370	15% rot
1080	Futtock	Oak	-	Scarphs	350 x 290-450	0% rot
1081	Deck Beam (small)	Oak	Red?	Complex scarph	350x290	15% rot
1082	Futtock (cant)	Oak	-	Scarphs	330 x 300-660	0% rot
1083	?	Oak	-	Through mortice 320x80mm	c300x300 ?	80% rot
1084	?	Oak	-	Probably later	300x100	5% rot

CHATHAM WHEELWRIGHTS SHOP (CHWWS 95): INVENTORY OF SHIPS TIMBERS						
Number	Item	Timber	Paint	Features	Width/ Depth (mm)	Rot
1085	Deck Beam	Oak	-	End, Scarph, Carline mortices, Hammock rail	500x380 400x380	5% rot
1086	Deck Beam piece?	Oak	-	-	370x330?	10% rot
1087	Deck Beam piece?	Oak	-	-	290 x ?	40% rot
1088	Deck Beam piece?	Oak	-	Rebate, Rounded arris	315x300	0% rot
1089	Rider?	Oak	-	Bolt holes, Chamfered arrises	330x340	0% rot
1090	Deck Beam	Oak	-	End, Scarph, Carline mortices	500x370 400x370	10% rot
1091	?	Oak	White	Lap joint, 100mm dowel 'LX' in end	320x300	0% rot
1092	Futtock (cant)	Oak	-	Scarph	320 x 320-500	0% rot
1093	Deck Beam piece?	Oak	-	-	310 x ?	50% rot
1094	Deck Beam?	Oak	-	Scarph?	160-520 x 350	50% rot
1095	Futtock	Oak	-	100m dowels	310 x 130-210	0% rot
1096	Futtock (cant)	Oak	-	Scarph	350 x 290-330	10% rot
1097	Futtock (cant)	Oak	-	Scarph, Timber marks	330 x 290-310	5% rot
1098	Baulk	S/W	-	-	300x300 300x80	0% rot
1099	Futtock?	Oak	-	Carved 'NOT' 100 mm socket in end	250x320	0% rot
1100	Futtock?	Oak	Lime- wash	Scarph, Trenails	310x310	60% rot
1101	Futtock (cant)	Oak	-	-	350x300	60% rot

CHATHAM WHEELWRIGHTS SHOP (CHWWS 95): INVENTORY OF SHIPS TIMBERS						
Number	Item	Timber	Paint	Features	Width/ Depth (mm)	Rot
1102	Deck Beam?	Oak	Lime-wash	80 mm socket Iron bolt, Scarph	400x280	10% rot
1103	Futtock?	Oak	-	-	?	90% rot
1104	Futtock (cant)	Oak	-	-	? x 360- 550	70% rot
1105	Modern timber	S/W	-	replaces 160x130mm	115x75	0% rot
1106	Deck Beam	Oak	-	Scarph	480x360 390x360	0% rot
1107	Deck Beam	Oak	Lime-wash + Red	End, Carline mortices	330x290	0% rot
1108	-	S/W	-	-	150x290	0% rot
1109	Deck Beam	Oak	Lime-wash + Red	End, Scarphs, Carline mortices	440x290 320x290	0% rot
1110	Deck Beam	Oak	Lime-wash + Red	End, Scarph, Carline mortices	430x200 380x290	0% rot
1111	Deck Beam/ Carline	Oak	Lime-wash + Red	Moulded arrises, Mortices	260x190	0% rot
1112	Carline	Oak	Lime-wash + Red	Ledge mortices	230x250	2% rot
1113	Deck Beam piece	Oak	Lime-wash + Red	Scarph	460x290 400x290	2% rot
1114	Deck Beam	Oak	Lime-wash + Red	Carline mortices, Scarph	410x300 340x300	5% rot
1115	?	Oak	Lime-wash	Overlies oak trenailed board	290x100	0% rot
1116	Rider	Oak	-	Iron bolt holes	370 x 350-530	1% rot
1117	Carline?	Oak	Lime-wash + Red	60 mm socket, Moulded arrises	230x190	0% rot

CHATHAM WHEELWRIGHTS SHOP (CHWWS 95): INVENTORY OF SHIPS TIMBERS						
Number	Item	Timber	Paint	Features	Width/ Depth (mm)	Rot
1118	Deck Beam	Oak	Lime-wash + Red	Scarphs, Carline mortices	360x300 420x300	5% rot
1119	Curved Half Beam	Oak	-	Scarph, Carline mortices	210-440 x 350	0% rot
1120	Orlop Deck Beam	Oak	-	Scarph, Orlop rebates, Carline mortices	380x350 490x350	5% rot
1121	Deck Beam Piece	Oak	-	-	380x270	10% rot
1122	?	Oak	-	-	290x350	40% rot
1123	Futtock	Oak	-	Scarph	320 x 190-280	5% rot
1124	Rider? (cant)	Oak	-	Moulded arrises	330 x 310-320	5% rot
1125	Carline?	Oak	-	Moulded arrises	220x200	0% rot
1126	Deck Beam	Oak	Lime-wash + Red	End, Scarph, Carline mortices	400x300 500x300	5% rot
1127	Futtock	Oak	-	Scarphs	310 x 220-280	0% rot
1128	Futtock	Oak	-	Scarphs	310 x 220-280	0% rot
1129	?	Oak	-	Scarph	240x200	0% rot
1130	Orlop Deck Beam	Oak	-	End, Scarph, Orlop rebates, Carline mortices	490x340 350x340	5% rot
1131	Modern	S/W	-	-	80x230	-
1132	Rider	Oak	-	Bolt holes	320 x 320-380	0% rot
1133	Futtock	Oak		Scarph, Timber marks	300 x 210-270	0% rot
1134	Deck Beam End	Oak	Red	Carline mortices	350x300	5% rot
1135	Deck Beam	Oak	Lime-wash + Red	End, Scarph, Carline mortices	420x300 330x300	0% rot

CHATHAM WHEELWRIGHTS SHOP (CHWWS 95): INVENTORY OF SHIPS TIMBERS						
Number	Item	Timber	Paint	Features	Width/ Depth (mm)	Rot
1136	Deck Beam piece?	Oak	Red?	-	?	80% rot
1137	Modern	S/W	-	-	80x230	-
1138	Futtock	Oak	-	Scarph, Timber marks	300 x 200-300	0% rot
1139	Futtock (cant)	Oak	-	Scarph, Carved '19' or '61'	330x300	0% rot
1140	Deck Beam	Oak	Red	Scarph, Carline mortices	350x300 430x300	5% rot
1141	?	Oak	-	-	280 x ?	40% rot
1142	?	Oak	-	-	270 x ?	50% rot
1143	Modern	S/W	-	-	80x230	-
1144	Deck Beam	Oak	Red?	End, Scarph, Carline mortices	390 x ? 480 x ?	25% rot
1145	Deck Beam	Oak	Lime- wash + Red	Carline mortices	350x300	20% rot
1146	Deck Beam?	Oak	-	-	300x290	15% rot
1147	Futtock	Oak	-	-	300 x 270-300	5% rot
1148	Modern	S/W	-	-	80x230	-
1149	Futtock	Oak	-	-	270 x 180-230	5% rot
1150	Deck Beam	Oak	Lime- wash + Red	Scarph, Carline mortices	370 x ? 420 x ?	25% rot
1151	?	Oak	?	?	270 x ?	25% rot
1152	Modern	S/W	-	-	50 x ?	-
1153	Deck Beam	Oak	Lime- wash + Red	Scarph, End, Carline mortices	350 x ? 420 x ?	35% rot
1154	?	?	?	?	?	90% rot
1155	Modern	S/W	-	-	80x230	-

CHATHAM WHEELWRIGHTS SHOP (CHWWS 95): INVENTORY OF SHIPS TIMBERS						
Number	Item	Timber	Paint	Features	Width/ Depth (mm)	Rot
1156	Beam	Oak	Lime-wash + Red	Moulded arrises	240x200	20% rot
1157	Deck Beam?	Oak	Red	Carline mortices	250x250	40% rot
1158	Orlop Deck Beam	Oak	-	End, Scarph, Orlop rebates Carline mortices	410 x ? 510 x ?	75% rot
1159	Modern	S/W	-	-	80x230	-
1160	Modern	S/W	-	-	170x50	-
1161	Deck Beam	Oak	-	Carline mortices	? x 310	60% rot
1162	Futtock	Oak	-	Scarph	?x300- 320	50% rot
1163	Modern	S/W	-	-	80x230	-
1164	Orlop Deck Beam	Oak	-	Scarph, Orlop rebates	500 x ? 400 x ?	80% rot
1165	Modern	S/W	-	-	80x230	-
1166	Futtock (cant)	Oak	-	Packing fixed to side	?xc400	60% rot
1167	Modern	S/W	-	-	80x230	-
1168	Trenailed Board	Oak	-	Trenails	? x 100	10% rot
1169	?	Oak?	-	-	-	100% rot

Appendix B: Archive of OAU Records, 1995

A. LIST OF DRAWINGS

1. Indian ink on film (Scale 1:20)

- 1.2 Central aisle, south end. Steel, plywood & lino patches. (Ctx 3-33)
- 2.2 Central aisle, south end. Uppermost floor. (Ctx 56-100)
- 3.2 Central aisle, south end. Furring beneath uppermost floor. (Ctx 91 & 101)
- 4.2 Central aisle, north end. Uppermost floor. (Ctx 34-55, 102-118)
- 5.2 Central aisle, north end. Furring beneath uppermost floor. (Ctx 183-198)
- 6.2 Central aisle, north end. Platforms & walkways beneath 4.2 (Ctx 42, 213-224)
- 7.2 Central aisle, nth-centre. Lino & patches beneath 6.2 (Ctx 250-252,313-344)
- 8.2 Central aisle, nth - sth. Earliest floor. (Ctx 313-440)
- 9.2 Central aisle, nth - sth. Ships timbers & furring beneath 8.2. (1001-1104)

- 10.2 Western aisle, south end. Uppermost floor. (T&G) (Ctx 123-136, 159-167)
- 11.2 Western aisle, south end. Floor beneath T&G. (Ctx 170-184, 200-212)
- 12.2 Western aisle, south end. 1st platform beneath 11.2. (Ctx 237)
- 13.2 Western aisle, south end. Platform beneath 12.2. (Ctx 240)
- 14.2 Western aisle, south end. Earliest floor. (Ctx 250-311, 441, 444, 449, 452)
- 15.2 Western aisle, south end. Ships timbers & furring beneath 14.2 (1105-1169)

2. Field drawings - Pencil on film (Scale 1:20)

- 1.1 Central aisle, south end. Steel, plywood & lino patches. (Ctx 3-33)
- 2.1 Central aisle, south end. Uppermost floor. (Ctx 56-100, 351-352)
- 3.1 Central aisle, south end. Furring beneath uppermost floor. (Ctx 91 & 101)
- 4.1 Central aisle, north end. Uppermost floor. (Ctx 34-55, 102-118)
- 5.1 Central aisle, north end. Furring beneath uppermost floor. (Ctx 183-198)
- 6.1 Central aisle, north end. Platforms & walkways beneath 4.1 (Ctx 42, 213-224)
- 7.1 Central aisle, nth-centre. Lino & patches beneath 6.1 (Ctx 250-252,313-344)
- 8.1 Central aisle, nth - sth. Earliest floor. (Ctx 313-440)
- 9.1 Central aisle, nth - sth. Ships timbers & furring beneath 8.1. (1001-1104)

- 10.1 Western aisle, south end. Uppermost floor. (T&G) (Ctx 123-136, 159-167)
- 11.1 Western aisle, south end. Floor beneath T&G. (Ctx 170-184, 200-212)
- 12.1 Western aisle, south end. 1st platform beneath 11.1. (Ctx 237)
- 13.1 Western aisle, south end. Platform beneath 12.1. (Ctx 240)
- 14.1 Western aisle, south end. Earliest floor. (Ctx 250-311, 441, 444, 449, 452)
- 15.1 Western aisle, south end. Ships timbers & furring beneath 14.1 (1105-1169)
- 16.1- 18.1 Ten transverse sections. (To be completed)
- 19.1 Two longitudinal sections. (To be completed)

3. Dyeline copies showing context numbers (Scale 1:20)

- 1.01 Central aisle, south end. Steel, plywood & lino patches. (Ctx 3-33)
- 2.01 Central aisle, south end. Uppermost floor. (Ctx 56-100)
- 3.01 Not used
- 4.01 Central aisle, north end. Uppermost floor. (Ctx 34-55, 102-118)
- 5.01 Not used
- 6.01 Central aisle, north end. Platforms & walkways beneath 4.01 (Ctx 42, 213-236)
- 7.01 Central aisle, nth-centre. Lino & patches beneath 6.01 (Ctx 250-252,313-344)
- 8.01 Central aisle, nth - sth. Earliest floor. (Ctx 313-440) (combined with board nos.)

- 9.01 Central aisle, nth - sth. Ships timbers & furring beneath 8.01. (1001-1104) (to be completed)
- 10.01 Western aisle, south end. Uppermost floor. (T&G) (Ctx 123-136, 159-167)
- 11.01 Western aisle, south end. Floor beneath T&G. (Ctx 170-184, 200-212)
- 12.01 Western aisle, south end. 1st platform beneath 11.01. (Ctx 237)
- 13.01 Western aisle, south end. Platform beneath 12.01. (Ctx 240)
- 14.01 Western aisle, south end. Earliest floor. (Ctx 250-311, 441, 444, 449, 452)
- 15.01 Western aisle, south end. Ships timbers & furring beneath 14.01 (1105-1169) (to be completed)

4. Dyeline copies showing spot heights below TBM at 5.682m.

Measured from C.D.2 (Scale 1:20):-

- 1.02 Central aisle, south end. Steel, plywood & lino patches. (Ctx 3-33)
- 2.02 Central aisle, south end. Uppermost floor. (Ctx 56-100)
- 3.02 Not used
- 4.02 Central aisle, north end. Uppermost floor. (Ctx 34-55, 102-118)
- 5.02 Not used
- 6.02 Central aisle, north end. Platforms & walkways beneath 4.02 (Ctx 42, 213-236)
- 7.02 Central aisle, nth-centre. Lino & patches beneath 6.02 (Ctx 250-252,313-344)
- 8.02 Central aisle, nth - sth. Earliest floor. (Ctx 313-440)
- 9.02 Central aisle, nth - sth. Ships timbers & furring beneath 8.02. (1001-1104)
- 10.02 Western aisle, south end. Uppermost floor. (T&G) (Ctx 123-136, 159-167)
- 11.02 Western aisle, south end. Floor beneath T&G. (Ctx 170-184, 200-212)
- 12.02 Western aisle, south end. 1st platform beneath 11.02. (Ctx 237)
- 13.02 Western aisle, south end. Platform beneath 12.02. (Ctx 240)
- 14.02 Western aisle, south end. Earliest floor. (Ctx 250-311, 441, 444, 449, 452)
- 15.02 Western aisle, south end. Ships timbers & furring beneath 14.02 (1105-1169)

5. Dyeline copies showing board numbers (Scale 1:20):-

- 1.03 Central aisle, south end. Steel, plywood & lino patches. (Ctx 3-33)
- 2.03 Central aisle, south end. Uppermost floor. (Ctx 56-100)
- 3.03 Central aisle, south end. Furring beneath uppermost floor. (Ctx 91 & 101)
- 4.03 Central aisle, north end. Uppermost floor. (Ctx 34-55, 102-118)
- 5.03 Not used
- 6.03 Central aisle, north end. Platforms & walkways beneath 4.03 (Ctx 42, 213-236)
- 7.03 Central aisle, nth-centre. Lino & patches beneath 6.03 (Ctx 250-252,313-344)
- 8.01 Central aisle, nth - sth. Earliest floor. (Ctx 313-440) (combined with ctx. nos.)
- 9.01 Central aisle, nth - sth. Ships timbers & furring beneath 8.03. (1001-1104)
- 10.03 Western aisle, south end. Uppermost floor. (T&G) (Ctx 123-136, 159-167)
- 11.03 Western aisle, south end. Floor beneath T&G. (Ctx 170-184, 200-212)
- 12.03 Western aisle, south end. 1st platform beneath 11.03. (Ctx 237)
- 13.03 Western aisle, south end. Platform beneath 12.03. (Ctx 240)
- 14.03 Western aisle, south end. Earliest floor. (Ctx 250-311, 441, 444, 449, 452)
- 15.01 Western aisle, south end. Ships timbers & furring beneath 14.03 (1105-1169)

6. Dyeline copy showing paint splashes:-

- 8.04 Central aisle, nth-sth. Earliest floor. (313-440)

B. PHOTOGRAPHS

OAU record photography: colour slides (in bold) and B/W negatives. The OAU site code and photographic prefix is CHWWS95, e.g. CHWWS95-21 or CHWWS95-10). Films 21 onwards to be added in due course.

Central aisle, south end. Steel, plywood & lino patches. (Ctx 3-33)	1,2,3
Central aisle, south end. Uppermost floor. (Ctx 56-100)	1,2,3, 13 ,14
Central aisle, south end. Furring beneath uppermost floor.(Ctx 91&101,351-2)	2,3,4,9,10,11,15,16
Central aisle, north end. Uppermost floor. (Ctx 34-55, 102-118, 244-246)	1,2,5
Central aisle, north end. Furring beneath uppermost floor. (Ctx 183-198)	5,6, 9 ,10
Central aisle, north end. Platforms & walkways beneath. (Ctx 213-236)	1,5, 9,10,11,13,20
Central aisle, nth-centre. Lino & patches beneath. (Ctx 250-252,313-344)	12, 13 ,16,19,20
Central aisle, nth - sth. Earliest floor. (Ctx 313-440)	20
Central aisle, nth - sth. Ships timbers & furring beneath. (1001-1104)	
Western aisle, south end. Uppermost floor.(T&G)(Ctx 92-100, 123-136)	1,2,3,4,5
Western aisle, south end. Floor beneath T&G. (Ctx 170-184)	8, 9,10,13
Western aisle, south end. Furring & detritus beneath. (Ctx 200-212)	10,12, 11,13
Western aisle, south end. 1st platform beneath. (Ctx 237-239)	10,14
Western aisle, south end. Platform beneath that. (Ctx 240-2)	14, 15,16
Western aisle, south end. Earliest floor. (Ctx 250-311, 441, 444, 449, 452)	1 4 16, 17,18,19
Western aisle, south end. Ships timbers & furring beneath. (1105-1169)	

Appendix C: References and Bibliography.

A. REFERENCES

§2 *Historical Background*

- 1 HM Dockyard Chatham 1719. (Based on C. Lemprière). (CHDT). Also Coad 1982 Pl.1, p.134. cit. PRO MPH 247.
- 2 1774 model in National Maritime Museum, Greenwich. Also 'Plan of the same Yard with the improvements in 1774', (CHDT)
- 3 Coad 1982, p.26 & Coad 1989, p.152 & p.157.

§3 *The Documentary Evidence*

- 1 'Plan of the same yard with the improvements in 1698' (CHDT)
- 2 'A Plan of His Majesty's Dockyard and Ordnance Wharfe at Chatham. 1719' C. Lemprière. (Coad 1982. Pl.1, p.134. citing PRO, MPH 247)
- 3 'A Plan of the River Medway from Rochester Bridge to Sharpness Point. 1724' I.P. Desmartez. (CHDT)
- 4 'A Geometrical Plan and North West Elevation of His Majesty's Dockyard at Chatham with the Village of Brompton Adjacent' (NMM & Lavery 1991 p.41)
- 5 'Plan of the Intrenchment inclosing his Majesty's Dockyard and Ordnance Wharf at Chatham. 1756' (Coad 1982. Pl.2, p.136. citing British Museum, MS Kings Top, 16-40)
- 6 'Plans of HM Dockyard, Chatham in the years 1688, 1698, 1771, 1821, 1864, 1883, 1907 & 1943' (CDHS)
- 7 Chatham Dockyard Model, 1774. (NMM & Coad 1989. Pl.3, p.8)
- 8 'Plan of part of His Majesty's Yard at Chatham, Showing in Red lines, on the side of the south Mast Pond a house for heating Mast Hoops, Proposed'. (Coad 1989. Pl.121, p.144)
- 9 'Plan of Part of Chatham Dockyard - Showing the relative positions of the Saw Mill with the entrance Canal and Tunnel.' Marc Brunel. (Coad 1982. Pl.41, p.176. citing PRO ADM/140/99 pt 25)
- 10 'Plan of His Majesty's Dockyard at Chatham'. 1:80 Sir Robert Barlow. 4th July 1817 (CHDT)
- 11 'HM Dockyard, Marine Barracks & Naval Hospital.' 30 ins to 1 mile. Jan 1st 1859. (CHDT)
- 12 'Plan of Dockyard, March 1879'. Mott, Hay & Anderson Group. Drg.2835/ESP/5. (CHDT)
- 13 'Plan C.10.' OS 1:2500, 1911, corrected and annotated. '1918-19 Scheme' added in pencil. (CDHS)
- 14 'OMDO 1943 map.' OS 1:2500, 1911, corrected and annotated 1943. Civil Engineers Dept. (CDHS)
Also 'SCE Drg. No. 659/42'.
- 15 OS 1:2500, Admiralty Restricted Edn, 1956. (CDHS)
- 16 OS 1:2500, 1911, corrected and annotated 1961. (CDHS)
Also HM Dockyard Chatham Works and Building Returns 1961, III22, III25-25d. (CHDT 1987-0002 Doc10)
- 17 'Naval Base Map' contained in Building Schedule, 1976. (CDHS)
- 18 Campbell, Reith & Partners, 1987. (CHDT 1995-0005-7 Doc 185)

§4 *Building Description*

- 1 Coad 1989, pl.121, p.144
- 2 Coad 1973, p.131 & Coad 1989, pp.23-36

§5 *Description of flooring sequence in Centre & Western Aisles*

- 1 Lavery 1991, p.70.
- 2 Coad 1989, pp.158-9
- 3 Coad 1973, p.129
- 4 Coad 1989, p.158. citing NMM. CHA/E/1755 Estimates (or Coad 1973, p.132. citing NMM. CHA/E/11. 1755 Estimates)
- 5 Coad 1989, pl.9, p.18

B. BIBLIOGRAPHY

Campbell, Reith & Partners, 1973

Report on a visual inspection and structural assesment-The wheelwrights shop, Naval base, Chatham, Kent. For PSA. (CHDT 1995-0005-7)

Caroe & Martin, 1987

Chatham Historic Dockyard, Wheelwrights shop, Proposals for alterations. For CHDT. (CHDT 1995-0005-17)

Coad J.G., 1973

'The Chatham Mast Houses and Mould Loft', *Mariner's Mirror*, 59 no.2, 127-34.

Coad J.G., 1982

'Historic Architecture of Chatham Dockyard 1700-1850', *Mariner's Mirror*, 68 no.2, 133-188.

Coad J.G., 1989

The Royal Dockyards 1690-1850. Architecture and Engineering Works of the Sailing Navy, Scholar, Aldershot.

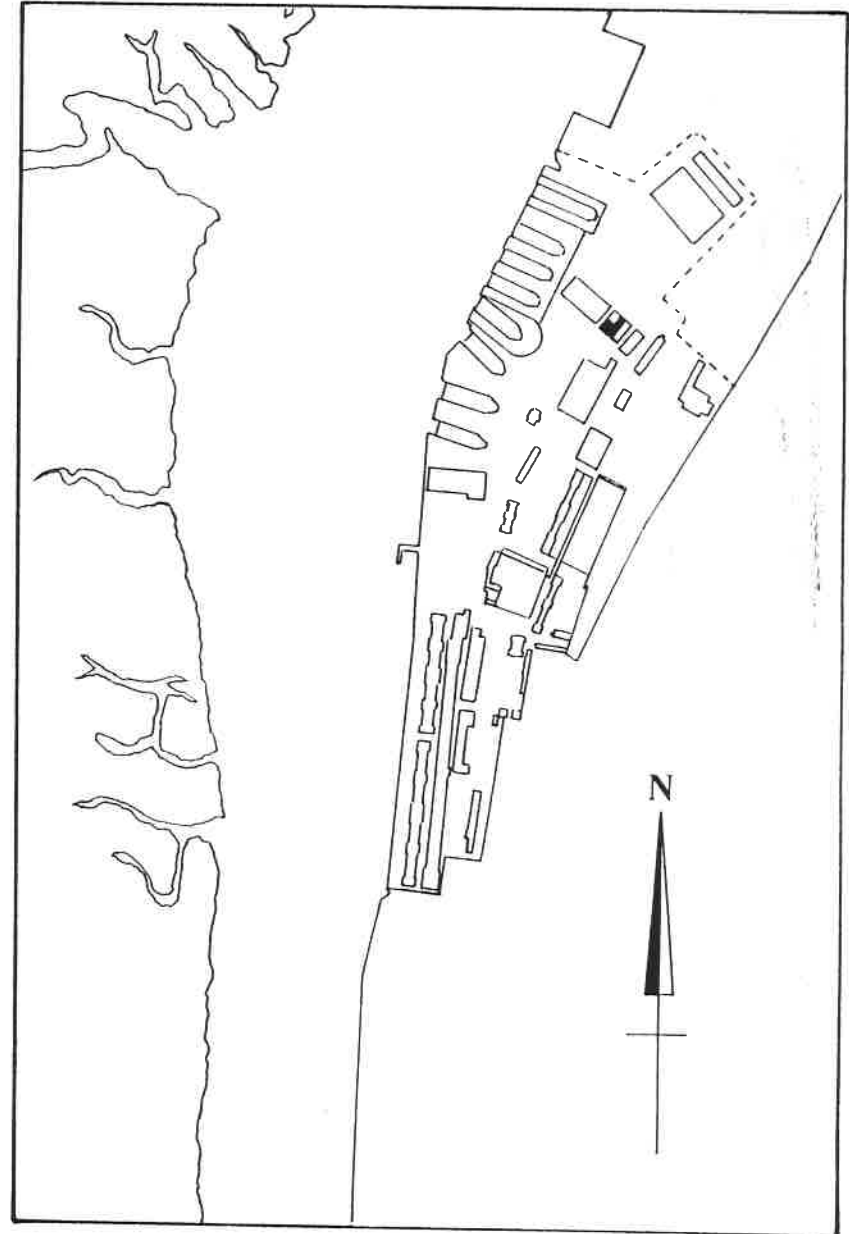
Lavery B., 1991

Building the Wooden Walls, the Design and Construction of the 74-Gun Ship Valiant, Conway, London.

Figure 1: Location Plan



Based on Ordnance Survey 1:25,000 Pathfinder Map (Sheet 1193) of 1989. Used by permission of The Controller of Her Majesty's Stationary Office. Crown Copyright reserved



Based on Coad JG, 1989 Fig. 4 p.177

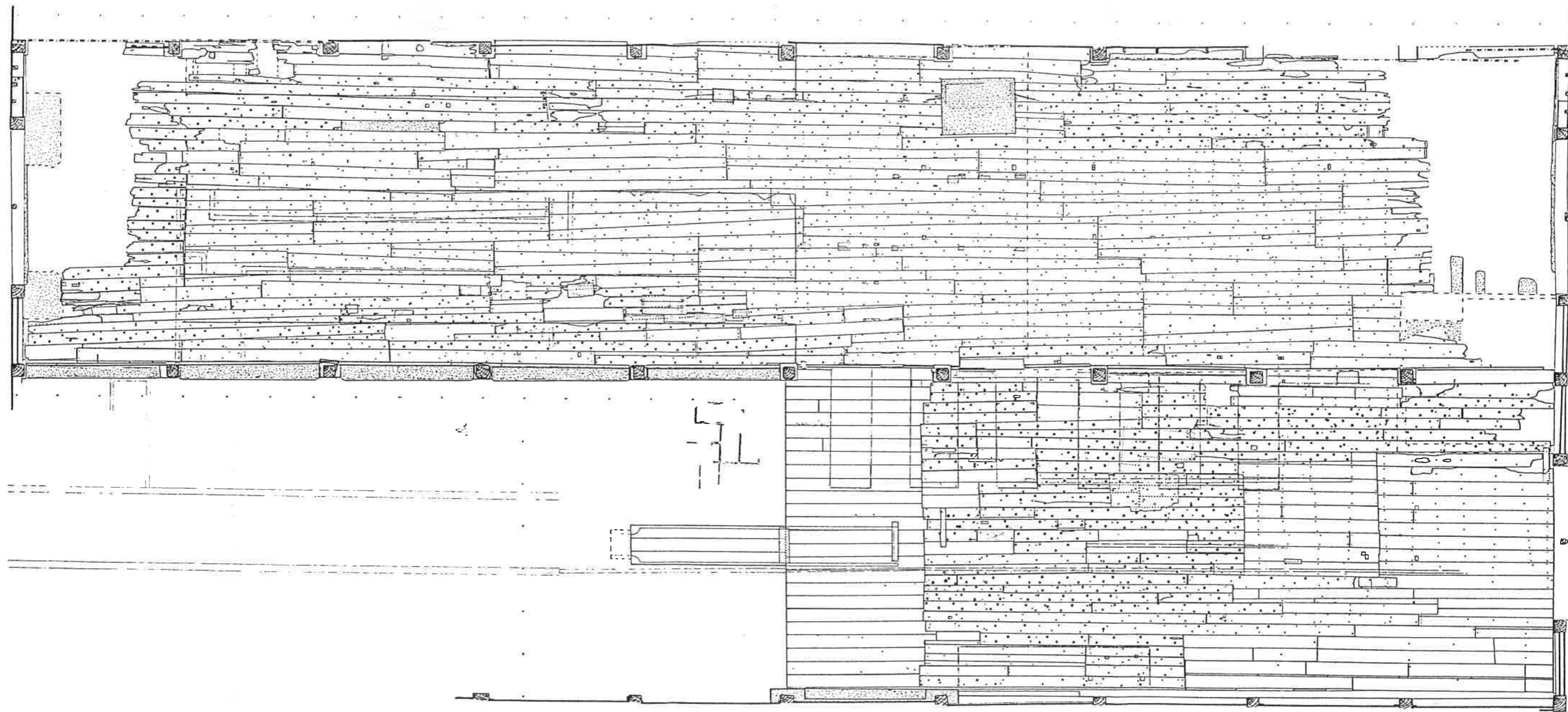
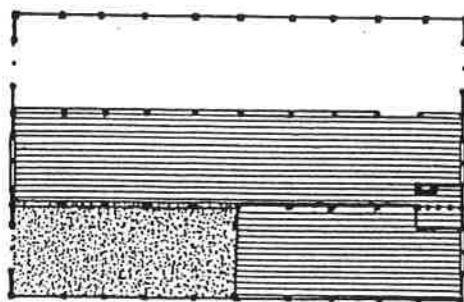



Figure 2



Oxford Archaeological Unit Architectural Survey	
Subject:	Chatham Dockyard Wheelwrights Shop Earliest Floors (Phases 1-3)
Scale as drawn:	1:100 (at A3)

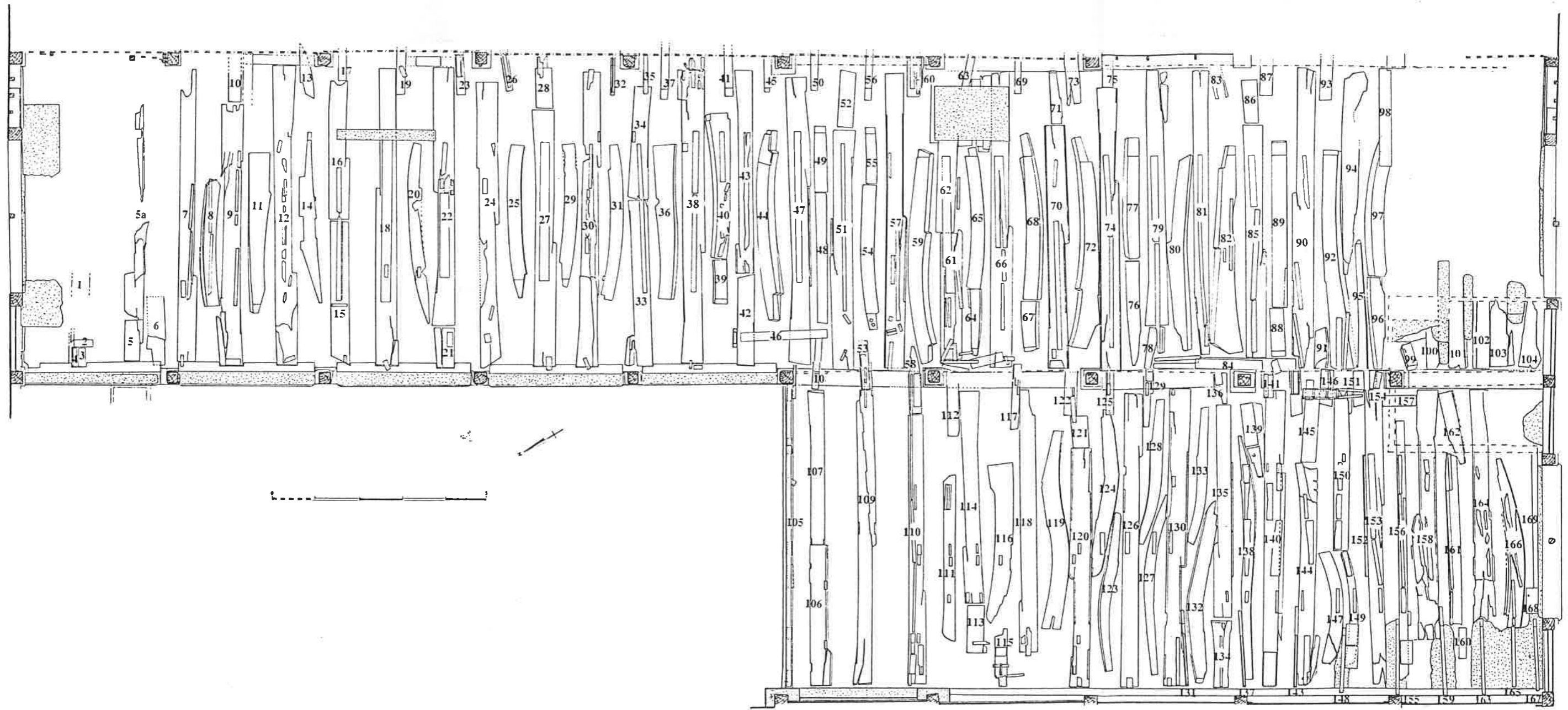
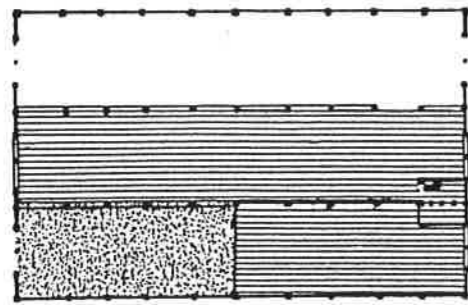



Figure 3



Oxford Archaeological Unit Architectural Survey		
Subject:	Chatham Dockyard Wheelwrights Shop Ships Timbers Below Floors	
Scale as drawn: 1:100 (at A3)		

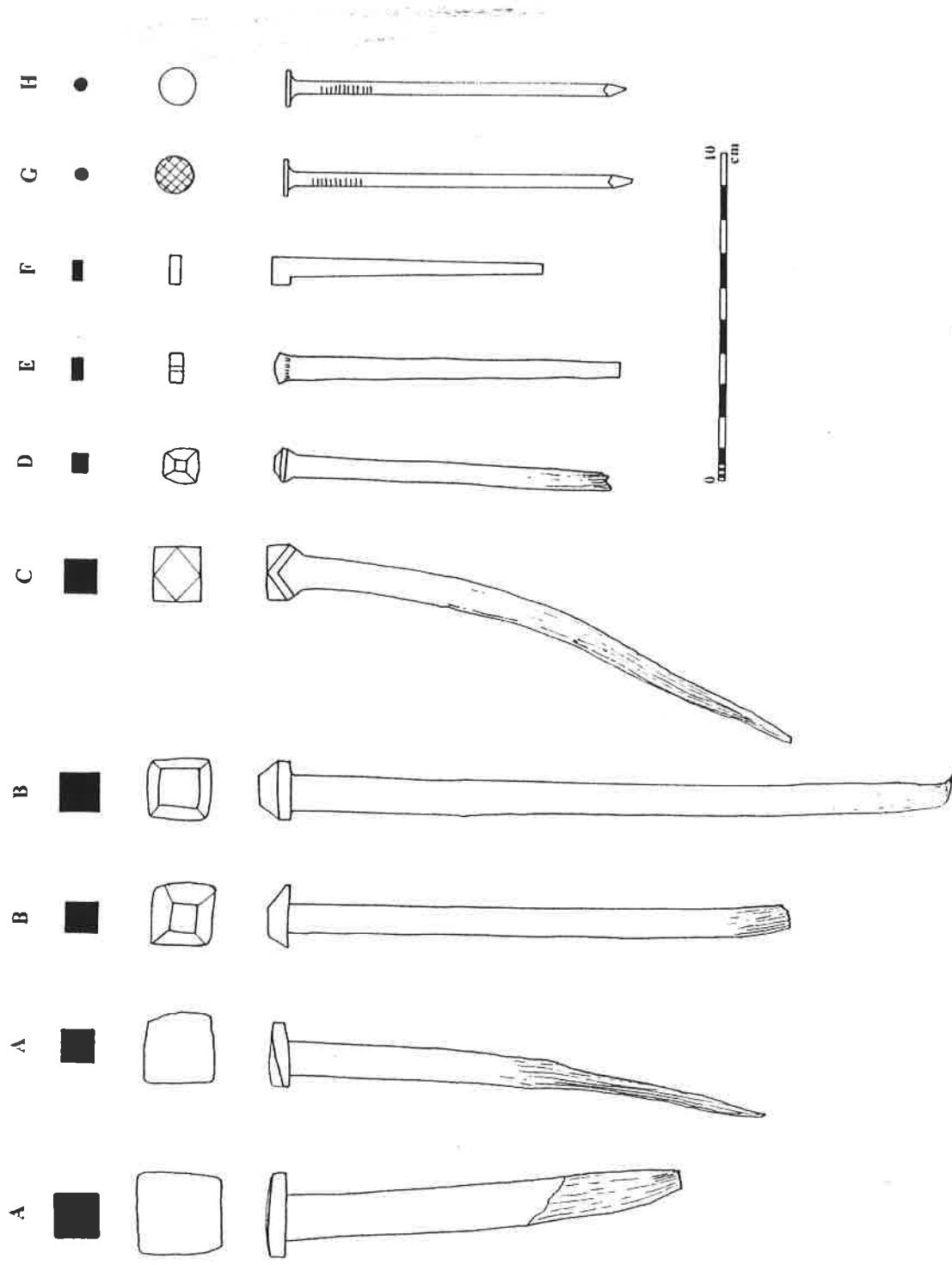


Figure 4: Comparative Nail Types

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