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*Blandford* was the first in a long line of 20-gun Sixth Rate ships built to the dimensions laid down by the 1719 Establishment. These small cruising ships, which were also equipped for rowing, formed an important link between the galley-frigates of the late seventeenth century and the true frigates of the 1750s and later. Their significant, but little known, role in the development of the frigate is outlined for the first time in this book.

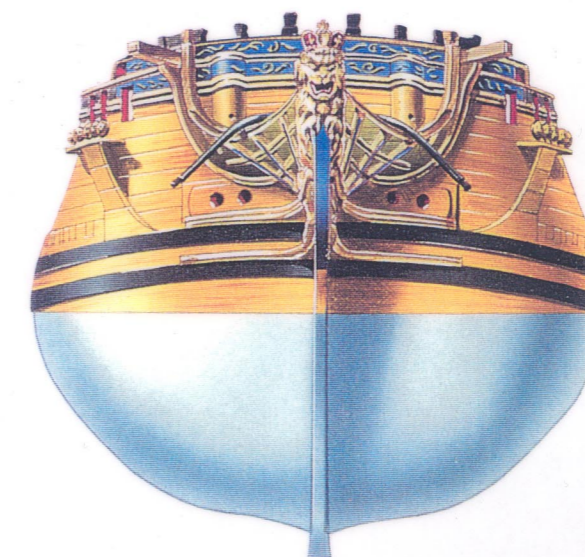
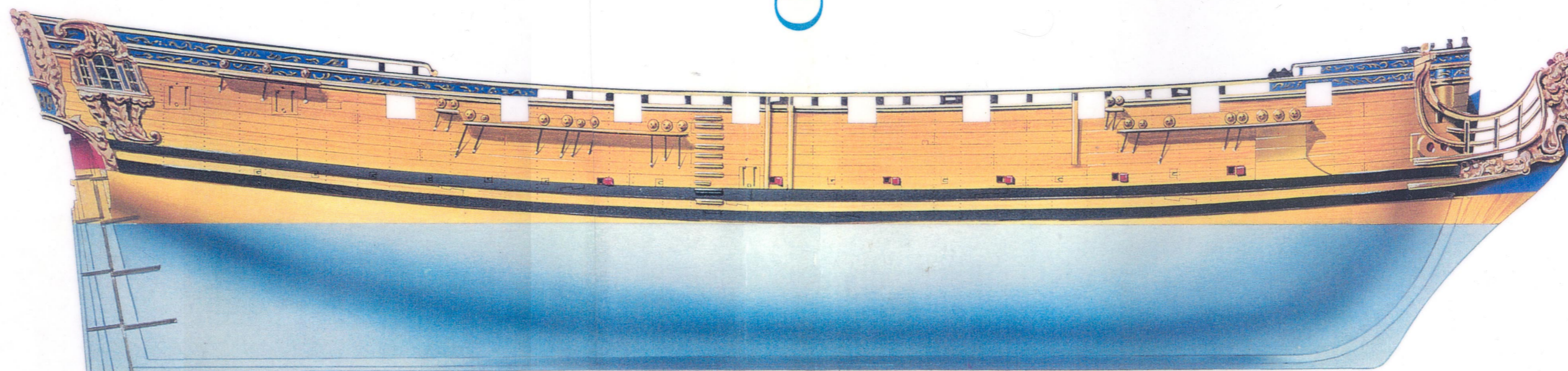
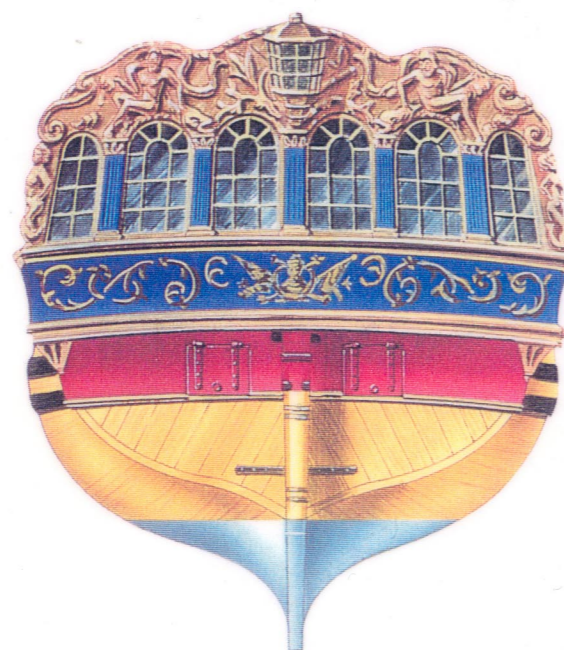
**This volume features**

- Full description of the ship and its place in the development of the 20-gun Sixth Rate
- Full list of scantlings from the 1719 Establishment, to which the ship was built
- Pictorial section covering the most reliable models of the type
- Around 300 perspective and 3-view drawings, with in-depth descriptive keys, of every detail of the ship – general arrangements, hull construction, fittings, masts and yards, rigging and sails, and armament

A complete anatomy of the ship in words, photographs and drawings.

BLANDFORD

The 20-gun ship  
**BLANDFORD**



ISBN 0-87021-058-0



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Peter Goodwin

This highly acclaimed series aims to provide the finest documentation of individual ships and ship types ever published. It is a radical departure from the usual monograph approach, which concentrates on either the ship's service history, its technical details or external appearance. All of these aspects are included in the 'Anatomy of the Ship', but what makes the series unique is a complete set of superbly executed line drawings, both the conventional type of plan as well as explanatory perspective keys. Although elaborate drawings are extremely popular in aviation publications, this is the first attempt to document a ship in similar depth – literally down to the nuts and bolts.

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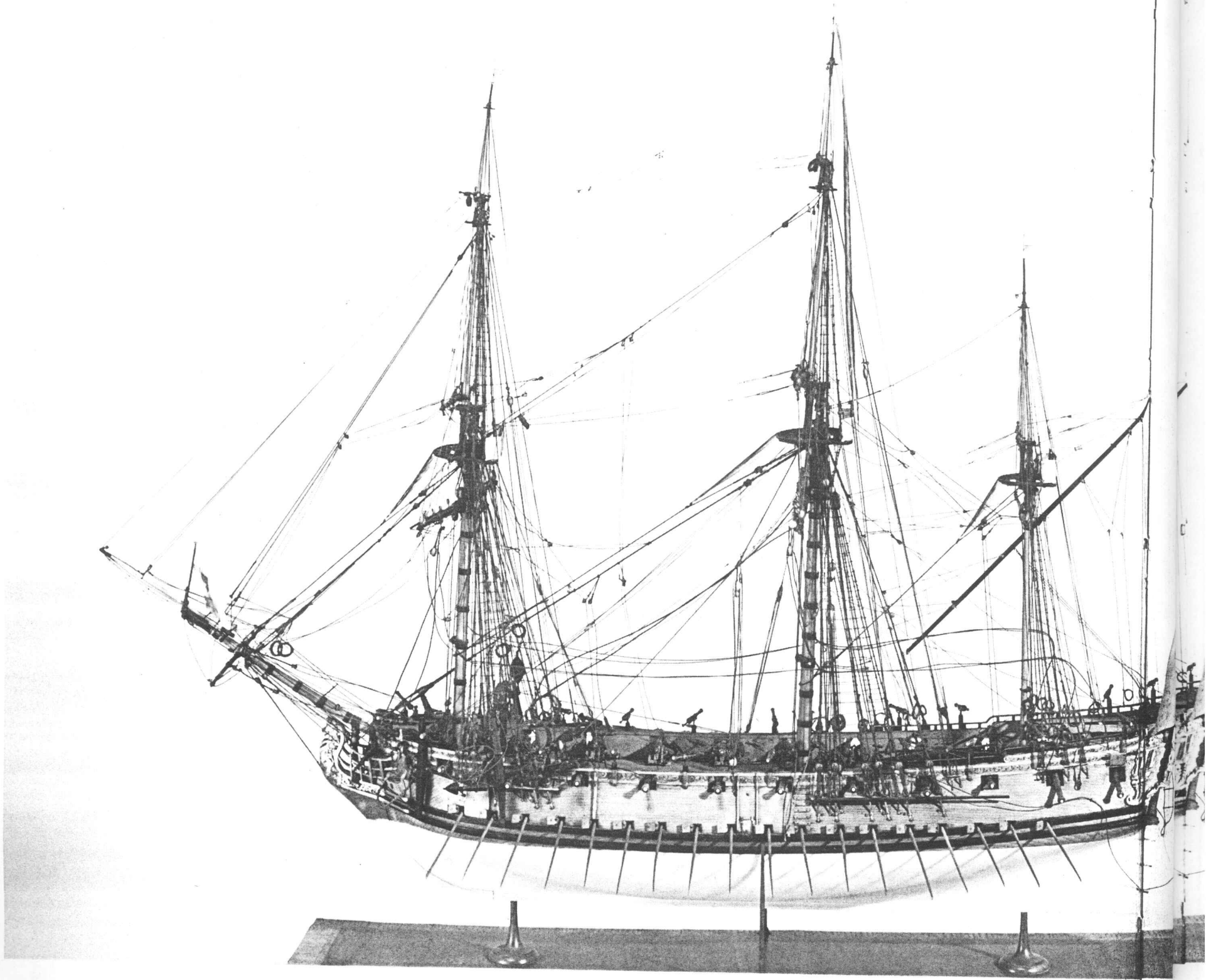
**The Author**

A Polaris submariner, Peter Goodwin counteracts the boredom of long underwater patrols with research into the technology of an earlier sea-based deterrent. He has been interested in wooden shipbuilding since his days as an engineering apprentice, and his depth of knowledge is now widely appreciated by the ship preservation movements like that involved with the *Victory*. His first book, *The Construction and Fitting of the Sailing Man of War 1650-1850* was the fruit of over ten years' research into the building process of wooden warships. He is currently working on another 'Anatomy' volume on the subject of bomb vessels.

*Cover illustration*  
This representation by Ross Watton of a typical 20-gun ship of the *Blandford* class is based on contemporary models.

Anatomy  
of the  
Ship

The 20-gun ship  
**BLANDFORD**



Anatomy  
of the  
Ship

The 20-gun ship

# BLANDFORD

Peter Goodwin



Naval  
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### **Frontispiece**

**1.** Model of a 20-gun Sixth Rate c1719, built to the 1719 Establishment. It could be either the *Blandford* or *Lyme*, as both were built to the same draught. The model conforms very closely to the original plans with a few small differences, for instance the ballast port and the aftermost sweep port are both positioned a little further forward than shown on the draught. It clearly shows the sweeps and is fitted out with eleven swivel guns each side, which suggests that it was built to show all the possible features of a 20-gun ship of this period.

*National Maritime Museum*

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## **FOREWORD AND ACKNOWLEDGEMENTS**

At the end of the eighteenth century the naval frigate proved to be a great asset to the fleet for conveying dispatches and messages and for monitoring the movements of enemy fleets. They originated from much simpler craft which had been developed from what were known as galley-frigates and the 20-gun ships of the 1719 Establishment. A model of this type of 20-gun ship at the Science Museum in South Kensington has intrigued me ever since I first saw it at an early age so it seems only fitting to have researched and compiled a work covering such ships, which to some extent have been neglected in favour of the larger vessels of the British fleet such as 100- and 74-gun ships.

I would not have been able to complete this work without those who assisted me in the search for suitable plans, models and various other sources. I must firstly thank David White and the staff of the Draught Room at the National Maritime Museum for the plans, and discussions concerning the more unusual aspects of construction of this period. Secondly I would like to thank two other staff at the National Maritime Museum: David Lyon who pursued sources covering the armament, and David Tull for a visit to the models kept at Kidbrooke. A special thanks must be given to David Sambrooke for kindly lending me photographs to work from, which provided the detail necessary for such a book as this. Also my thanks go to James Lees who sorted out problems concerning a detailed aspect of the rigging and sails. A final acknowledgement is extended to the staff of the Public Records Office at Kew and to all the others at the National Maritime Museum who helped.

Peter Goodwin 1987

# Introduction

## THE DEVELOPMENT OF THE 20-GUN SHIP

The role of the 20-gun Sixth Rate in the Royal Navy during the early part of the eighteenth century is somewhat overshadowed by the great fleet actions of the period. However, although the names of these small vessels do not often come to the notice of history, their presence was essential to the integrity of the fleet and the wellbeing of merchant shipping. These ships carried out the rather mundane tasks of convoy escort to merchant ships, of dispatch vessels, fleet scouts and fire-support for amphibious assaults.

The general layout of the *Blandford* type, with a row of oarports below the gundeck, can be traced back to the early seventeenth century. The National Maritime Museum at Greenwich holds a drawing of a vessel of 96 feet on the keel, 32 feet breadth and 12 feet draught (368 tons) that has been dated to about 1625. Evidence suggests that no ship was built to this plan, but the galley-frigate arrangement with a separate rowing deck is evident.

Sweeps (or long oars) were widely used by small warships and merchantmen in the seventeenth century – probably only for slow speed manoeuvring – but it was to be half a century before the Royal Navy introduced a genuine galley-frigate. This was inspired by the activities of the Barbary pirates, who employed the classic Mediterranean-type galley in attacks on merchant shipping. They galleys were armed with heavy forward-firing guns and consequently attacked head-on, offering only a narrow, and low, target. Depending largely on their oars, they could outmanoeuvre square-rigged sailing ships in most weather conditions, allowing the galleys to attack the vulnerable bow or stern, where few guns could be brought to bear.

Clearly a new type of warship was called for to counter this menace, and the result was the *Charles Galley* and the *James Galley* of 1676, supposedly inspired by the French 24-gun *La Bien-Aimée*, built at Toulon in 1672. The *Charles* was designed by Anthony Deane Jnr, and built by Phineas Pett III at Woolwich. She had a lower deck length of 134 feet, moulded breadth of 28 feet 6 inches and a depth in the hold of 8 feet 7 inches, measuring 492 tons. Armed with 6 sakers (later 6-pounders) on the lower deck, 22 sakers on the gundeck and four 3-pounders, the *Charles Galley* was designated a Fourth Rate. The *James Galley*, built at Blackwall by Anthony Deane Jnr, was slightly smaller, but used the same general proportions and mounted 30 guns.

Both vessels were regarded as a success under both sail and oars, but were less satisfactory as warships, since they were very large for their armament. A further very similar vessel, the *Mary Galley* was built in 1687, but the type received major official recognition after the 1688 Revolution, when the new Admiralty regime ordered a series of smaller but similar vessels, beginning with the *Experiment* of 1689. Originally intended to have a lower deck fitted for oars only, they eventually acquired a few gunports on that level, becoming what the French termed *demi-batterie* ships. They varied in detail from ship to ship but were about 106 feet on the gundeck, 27½ feet in breadth and about 380 tons, and were armed with 32 to 36 guns.

Their loss rate in the ensuing French wars was very high (about 30 per cent of the whole class was lost to the enemy, and a number more to stress of weather) which suggested that they were at the same time not powerful enough for the job but too small for their armament. A few more were built after 1706 to slightly enlarged dimensions but thereafter the type was superseded by larger two-decker 40-gun ships and smaller single-decker Sixth Rates of 20 or 24 guns.

At this time the term 'galley' was applied to any vessel which could employ oars, even in an auxiliary role, which is attested to by the large number of vessels with the suffix *Galley* in their names. This applied to many of the swifter merchant ships of the period, which may have employed their oars on the 'tween deck, like a naval galley-frigate. This was certainly true of Captain William Kidd's notorious *Adventure Galley* built in 1695. Even single-decked vessels, like the 20-gun *Peregrine Galley* of 1700, acquired this sobriquet if they operated oars from ports between the guns on the upper deck. The *Peregrine*, which proved a remarkably good sailer, was a 'freelance' design by the Marquis of Carmarthen, whose enthusiasm for oars eventually over-reached itself – he persuaded the Admiralty to build a 40-gun ship, the *Anne Galley*, with two rows of oar ports: it was an expensive failure.

After 1706 Sixth Rates were single-decked, but in 1718 a return was made to the original concept of the galley-frigates of 1689 for a vessel called the *Dursley Galley*. This ship had no gunports (only oarports) on the lower deck, reducing the armament to twenty 6-pounders, but keeping the 1689 dimensions, which produced a better balanced design.

In 1719 an enquiry was convened to try to produce improvements in ship design and construction. The committee, led by the Surveyor of the Navy, Sir Jacob Acworth, consisted of the master shipwrights of the royal dockyards and reported to the Admiralty in November. Possibly in response to the additional firepower called for in the 1716 Gun Establishment, the recommendations generally involved an increase in dimensions, and were formalised as the 1719 Establishment. The new dimensions were intended to ensure that all ships 'may now properly be built so as to prove good sailers as well as ships of force . . . making the said ships stronger and lighter but also cause them to be built cheaper and better sea boats.' In specific terms for the Sixth Rates this meant taking the best available model: 'The 20-gun ships are conformed to the *Dursley Galley*, which works and sails well.' Thus, there was a return in effect to a thirty-year-old design but with the armament reduced to a more reasonable scale.

Although later enlarged the essential layout of the 20-gun ships remained unaltered until after 1745 when they were superseded by true 'frigate-built' vessels (*ie* with a complete unarmed lower deck set at or below the waterline, producing a lower, more stable, and more seaworthy ship). As originally built, the 1719 20s of the *Blandford* type were probably quite effective, but the history of the 1689 ships repeated itself, with the 20s gradually acquiring lower

**TABLE 1: 20-GUN SIXTH RATES BUILT OR CONVERTED ACCORDING TO THE 1719 ESTABLISHMENT**

| Name        | Launched   | Dockyard   | Shipwright | Origin                           | Fate                             |
|-------------|------------|------------|------------|----------------------------------|----------------------------------|
| Blandford   | 13.2.1720  | Deptford   | Stacey     | New building                     | Sold for £228, 1739              |
| Greyhound   | 13.2.1720  | Deptford   | Stacey     | New building                     | Paid off 1732; broken up 1741    |
| Shoreham    | 25.8.1720  | Woolwich   | Hayward    | Rebuild of 32-gun ship of 1694   | Bomb vessel 1727; sold 1744      |
| Lyme        | 8.11.1720  | Deptford   | Stacey     | Rebuild of 32-gun ship of 1694   | Broken up 1738                   |
| Scarborough | 19.7.1722  | Deptford   | Stacey     | Rebuild of 32-gun ship of 1711   | Sold for £225, 1739              |
| Lowestoffe  | 18.12.1723 | Portsmouth | Naish      | Rebuild of 32-gun ship of 1697   | Paid off 1733; sold 1744         |
| Garland     | 1.5.1734   | Sheerness  | Ward       | New building                     | Sold for £1003, 1744             |
| Rose        | 8.9.1724   | Woolwich   | Hayward    | Rebuild of 20-gun ship of 1712   | Hulked 1739; sold 1744           |
| Seafood     | 22.10.1724 | Deptford   | Stacey     | Rebuild of 24-gun ship of 1697   | Bomb vessel 1727; broken up 1740 |
| Deal Castle | 6.4.1727   | Sheerness  | Ward       | Rebuild of 24-gun ship of 1706   | Sold for £191, 1746              |
| Gibraltar   | 8.8.1727   | Deptford   | Stacey     | Rebuild of 20-gun ship of 1711   | Sold for £340, 1748              |
| Bideford    | 2.10.1727  | Chatham    | Rosewell   | Rebuild of 24-gun ship of 1711   | Lost off Flamborough Head, 1737  |
| Seahorse    | 7.10.1727  | Deptford   | Stacey     | Rebuild of 20-gun ship of 1712   | Sold for £245, 1748              |
| Squirrel    | 19.10.1727 | Woolwich   | Hayward    | Rebuild of 24-gun ship of 1707   | Sold for £260, 1749              |
| Rye         | 21.10.1727 | Chatham    | Rosewell   | New building                     | Broken up 1735                   |
| Aldborough  | 21.10.1727 | Portsmouth | Allin      | Rebuild of 20-gun ship of 1705   | Broken up, 1742                  |
| Flamborough | 21.10.1727 | Portsmouth | Allin      | Rebuild of 24-gun ship of 1707   | Sold for £331, 1749              |
| Experiment  | 1.11.1727  | Plymouth   | Lock       | Rebuild of a 32-gun ship of 1689 | Broken up 1738                   |
| Fox         | 18.11.1727 | Deptford   | Stacey     | Rebuild of 24-gun ship of 1702   | Broken up 1736                   |
| Phoenix     | 16.1.1728  | Woolwich   | Hayward    | Rebuild of 24-gun ship of 1709   | Sold for £201, 1744              |
| Sheerness   | 4.1.1732   | Deptford   | Stacey     | New building                     | Sold for £240, 1744              |
| Dolphin     | 6.1.1732   | Deptford   | Stacey     | New building                     | Fireship 1747; captured 1760     |

deck gunports, and more substantial upperworks in the form of longer forecastles and quarterdecks, higher rails, and so forth.

Part of the reason for this may lie with the early eighteenth century policy of 'rebuilding', a term which had a myriad of meanings. On the one hand it might simply mean a major reconstruction, but on the other hand there were cases of ships taken to pieces and rebuilt to very different designs, occasionally retaining little more than the name of the original vessel. A number of *Blandford's* nominal sister ships were actually rebuilt from the earlier 32-gun *demi-batterie* Fifth Rates, which had some gunports on the lower deck. This may have influenced the rebuilding, and there is certainly evidence that the 20-gun ships departed more from the Establishment details than ships of higher rates. The Establishment itself was modified in 1733, 1741 and 1745 and thereafter 20-gun ships officially carried two gunports a side aft of a midships ballast port on the lower deck, and were re-rated as 24s. Being relatively cheap the Sixth Rates may have been the subject of much *ad hoc* experimentation, and the large number of 'non-standard' models which do not agree with draughts provides strong evidence of this.

Detailed developments included a retrograde move from the round bow to the beakhead bulkhead (when the forecastle became more substantial) and an elaboration of the after cabin to include full quarter galleries in lieu of the quarter badges carried by the earlier ships. Combined with the higher and more substantial upperwork, these changes gradually reduced the stability and seaworthiness of the Sixth Rates to a point in the late 1740s where they were finally condemned as totally unsuitable cruising ships. The Anson administration ordered the first true frigates in 1747 as 24s (the *Unicorn* and *Lyme*, which were soon re-rated as 28s) as direct successors to these inadequate vessels, and thereafter the frigate principle was applied to larger (32- and 36-gun ships) and smaller (20-gun) cruising ships.

### THE BLANDFORD'S HISTORY

The *Blandford* was built to replace a previous ship bearing the same name which, while under the command of Captain Erasmus Phillips, was 'lost in the Bay' (of Biscay) on 28 March 1718/19. The new ship was constructed under the supervision of Richard Stacey, Master Shipwright of Deptford. The official launching took place on Saturday 13 February 1719/20, but due to a number of problems she did not actually 'come off the dock' until 23 February. The initial cost of the hull was £3041 11s 3d amounting to a final sum of £3521 11s 3 $\frac{1}{2}$ d after her overall fitting out.

The following calendar of events shows the considerable work carried out between her launching and the time she sailed for the Nore to join the Fleet on 12 March 1720

**Wednesday 24 February:** Gangs of shipwrights and joiners went aboard to complete the minor work, internal fittings and cabin bulkheads etc.

**25 February – 27 February:** Spent shipping and setting up the masts, yards and rigging. (This appears to have been a formidable achievement especially when one considers that the hours of daylight at this period of the year were very short.)

**28 February:** Loaded with ballast, generally in the form of shingle. This was used to lower the centre of gravity to counter-balance the topweight of the masts and yards etc above.

**Monday 29 February** (leap year): Anchor cables loaded.

**1 March 1720:** Sails bent onto the yards.

**2 March:** Anchors and additional ballast embarked.

**3 March:** Moved from the sheer hulk (used for shipping the masts) to the gallows (crane) where she spent the following seven days embarking her twenty 6-pounder carriage guns, boatswain's and carpenter's stores, and carried out her victualling.

**11 March:** Loaded with powder and shot

A week later she left British waters on an assignment to Copenhagen,

**TABLE 2: ESTIMATED COSTS**

**COSTS FOR A 24-GUN and 20-GUN SHIP**

|  | 24 guns | 20 guns |
|--|---------|---------|
| Hull   | £2703   | £2503   |
| Masts and Yards                                  | £97     | £97     |
| Rigging, fitted                                  | £180    | £180    |
| Eight months' boatswains' and carpenters' stores | £930    | £930    |
|  | £3910   | £3710   |

**COSTS FOR A 20-GUN SHIP**

|                        |     |     |    |
|------------------------|-----|-----|----|
| Figurehead 'Lyon'      | £6  | 10s | 0d |
| Trailboard, both sides | £1  | 3s  | 6d |
| Tafferal               | £9  | 0s  | 0d |
| Quarter pieces, both   | £6  | 0s  | 0d |
|                        | £22 | 13s | 6d |

**COSTS OF FIGUREHEAD AND ORNAMENTATION, c1745**

|                |     |     |    |
|----------------|-----|-----|----|
| Lion           | £7  | 4s  | 0d |
| Trailboards    | £1  | 4s  | 0d |
| Tafferal       | £9  | 8s  | 0d |
| Quarter pieces | £10 | 0s  | 0d |
|                | £27 | 16s | 0d |

arriving on Wednesday 6 May 1720, where she remained until her final return to the Nore on 2 December.

The following year her duties took her further afield, sailing for South Carolina on 9 February 1720/21 from Deptford. Ten days later on 19 February her fore mast sprung during heavy weather. Two days later when the weather had improved, the mast was 'fished' with two halves of an anchor stock, a temporary arrangement that had to suffice until she reached her destination.

The *Blandford* arrived off Charleston, South Carolina on 9 June 1721. Two days later an entry was made in the Master's log referring to the condition of the provisions: 'Survey of our Bread and Cast 1156 Pounds Rotten, not fit for a man to eat and saw it over Board by Order'. (This is a powerful reminder that foodstuffs deteriorated rapidly within the dank confines of the ship's hold.)

Whilst on station at Charleston, *Blandford* was employed in the escort duties that many of the small vessels like her were designed for, and on Friday 14 June sailed with the 20-gun *Flamborough* with a small convoy of merchantmen. Between 22 September and 7 November the ship was laid up in Quelcher Creek and underwent minor repairs. It was during this period that her damaged fore mast was replaced with a new mast and the opportunity was taken to careen and pay the underwater hull. The remaining two years on foreign station saw the ship running between Charleston and the West Indies carrying out escort and dispatch duties. *Blandford* finally sailed for England on 6 August 1724 and on arrival she underwent a refit at Portsmouth.

For the next six years *Blandford* remained in home waters plying between Plymouth and the Nore with the exception of a brief period where she was sent to Gibraltar. She sailed on 16 July 1727 and as before when leaving British waters ran into bad luck, for on her first day out from Spithead she lost both her main and mizzen topmasts. She finally reached the 'Rock' on 28 July to join the squadron under Sir Charles Wager. The squadron consisted of the *Torbay* 80, *Stirling Castle* 70, nine other warships, the *Success* (store ship), the bomb *Thunder* and the sloop *Hawk*. During the whole of this period the ship

underwent a number of refits and annual dockings for re-paying the underwater hull, both at Portsmouth and Sheerness.

In 1730 the *Blandford* was once again sent back to the American Colonies working between Charleston and Boston carrying out escort duties. She remained on this station until her recall to England in 1732.

One aspect that does come to light during the period prior to 1732 is that which concerns modifications made to her structure. An entry made in the Master's log for 25 May 1731 states: 'Hauled ashore to the Wharf in order to drive and clenche the Bolts of the Ryders on the Larboard side'. This statement poses the question of whether the riders (internal frames) were built into the ship when she was originally constructed or fitted later during a refit. Riders were fitted in the midship section of the hold to give additional strength to the hull, but the 1719 Establishment makes no reference to riders being fitted to 20-gun ships so it could be assumed that there was no need for them on this size of vessel. However, two alternative answers can be given: one being that they were fitted on initial building at the discretion and experience of the builder; or that they were later fitted to strengthen the ship, thereby increasing her lifespan or to overcome any shortcomings in the construction and design. It was considered normal practice during the eighteenth century to install floor and futtock riders and toptimber riders to prolong a ship's life, and as this was the case it can be assumed that the riders were fitted during her refit at Sheerness in March 1727/28.

After her deployment in the American Colonies she returned to England and paid off at Sheerness on 25 July 1732. At this dockyard she underwent an extensive refit where a number of modifications were made to the quarter galleries, quarterdeck and forecastle. She was also fitted out with an iron firehearth with two copper kettles, an improvement that was to become common throughout the fleet. The overall expenditure for the work carried out was £1872 9s 9d, which was more than half her original building cost.

On completion of the refit she resumed her duties in home waters until 1738. Throughout this period she was docked once at Woolwich and five times at Portsmouth. Her docking at Woolwich in 1734 must have included considerable work and repairs, for the total cost came to £1799 6s 8d. It will appear from this that the overall condition of the ship was deteriorating quite rapidly for she had undergone a major refit only eighteen months earlier. However, this was quite common throughout the eighteenth century when the life of a wooden hull could only be extended at considerable cost.

Her final years were spent with the squadron under the command of Vernon, based at Port Royal, Jamaica. Here she carried out routine patrol work seeking out privateers and acting as escort to merchant convoys. This was a period of unrest, for Spain insisted that she had a trade monopoly in this area which caused much friction between the Spanish and the English, and was shortly to flare into the War of Jenkins' Ear.

In late January 1739/40 Vernon's squadron was heavily buffeted by gales when cruising off Cartagena, the squadron dispersed and ran for shelter at Port Royal. During this storm the *Blandford* yet again lost her fore mast and damaged her bowsprit and was kept in harbour for a while due to the lack of spare masts. This seems to have been quite a frequent problem for the vessels on this station, but so too was the lack of stores. Finally she sailed on 1 September escorting a convoy back to England, to return home for the last time.

By now the ship was, by eighteenth century standards, old and unfit for service and the following year she was surveyed and ordered to be sold. The Navy Board then ordered a new ship to be 'built in her room'. The last entry

made in the Captain's log reads as follows:

Saturday, 13 December 1741

These twenty four hours moderate and cloudy with small rain. This day the Admiralty ordered the Ships Company to three weeks liberty. Ditto said [three illegible words] Boatwain, the Lieutenant and the Master with some of the People impressing men in London. His Majesty's ship *Blandford* condemned as unserviceable, Admiralty Order 15th January 1740/41. Was Discharged from and turned over into the Dover with the Whole Ships Company.

George Burrish

The ship was sold at Deptford on the 28 October 1742 for the sum of £222. Her successor, the new *Blandford*, was lost to the French in January 1745 while under the command of Captain Edward Dodd.

### CONSTRUCTION

The *Blandford* was built to the specifications authorised by the 1719 Establishment. The Establishment List gave a complete inventory of the dimensions for all of the components required for the ship's construction. Also included were the more minor details such as bolt sizes, scarph lengths and general instructions governing standards and practices. These instructions, however, were only a guide (albeit a firm one) to the constructor, who in reality would use his discretion to interpret the requirement of the Navy Board. This does not imply that he would have deviated greatly from the rules, but would apply a more practical approach in order, for example, to reduce timber wastage. If a timber such as a carling were made half an inch less in scantling in order to use an existing stock the resulting deviation would have had little impact on the overall construction.

First the keel was laid. This was made from elm, chosen because it was durable when immersed in water for long periods and could receive a considerable number of bolts and nails without splitting. The keel was actually made in four lengths, each section being scarphed and bolted together. The sides of the keel were rabbeted throughout its length to receive the lower edge of the garboard strake, the lowest line of planking.

Rising vertically at the after end of the keel was the stern (or main) post. This was generally made from a single baulk of oak forming the after boundary of the vessel. In some cases, if a suitable piece of timber could not be obtained, a false post was fayed and bolted to the after side of the stern post to increase the overall scantling. It was either fitted fore or aft (according to the 1719 Establishment, aft). Supporting the structure forward of the stern post was the inner post and the deadwood, the latter consisting of a series of timbers that were scarphed together to form a large knee.

At the fore end of the keel was the stem post, a curved timber made up of pieces of 'compass oak' scarphed and bolted together. The stem post was further stiffened by the apron or false stem which was fayed to the after side. The stem post was joined to the keel by an intricate scarph called the 'boxing'. The lower part of the apron was continued aft into the fore deadwood, on to which the ship's frames were set and bolted through to the keel. This course of timber was in reality a continuation of the deadwood fitted fore and aft, the height diminishing towards the midship section of the ship, to comply with the height of the framing.

There does appear to be a number of peculiarities in the design of the *Blandford* and her sisters which show some departures from the accepted practice of warship construction at that time. Firstly there is the manner of the

### TABLE 3: BLANDFORD'S REFIT HISTORY

Sixth Rate of 20 guns

Built at Deptford

Surveyor: Richard Stacey

Launched 13 February 1719/20

|                     |       |     |      |
|---------------------|-------|-----|------|
| Initial hull costs  | £3041 | 11s | 3d   |
| Cost of fitting out | £480  | 0s  | 8½d  |
| Final costs         | £3521 | 11s | 11½d |

|                                      |       |            |
|--------------------------------------|-------|------------|
| Dimensions: Length on the lower deck | 106ft | 0ins       |
| Length of the keel for tonnage       | 87ft  | 3ins       |
| Extreme breadth                      | 26ft  | 5½ins      |
| Depth in the hold                    | 9ft   | 2ins       |
| Burden                               | 375,  | 18/94 tons |

| Start date   | Comp. date  | Dockyard   | Cost  | Work done   |
|--------------|---|------------|---|---|
| 5.12.1724    | 6.1.1724/25   | Portsmouth | £501 1s 0d                                  | General refit/careening                             |
| 23.6.1727    | 28.6.1727   | Portsmouth |   | General refit                                       |
| 6.10.1727    | 13.10.1727  | Portsmouth | £671 13s 2d                                 | General/sheathing                                   |
| 6.3.1727/28  | 26.3.1727/28  | Sheerness  |   | Major refit   |
| 20.8.1728    | 27.8.1728   | Sheerness  | £439 1s 8d                                  | Careening/caulking                                  |
| 4.4.1729     | 5.4.1729  | Sheerness  | £148 16s 9d                                 | Minor repair work                                   |
| 27.10.1729   | 26.11.1729  | Portsmouth | £408 2s 10d                                 | General refit/sheathing                             |
| 25.7.1732    | Arr. off Sheerness and payed off  |            |   |   |
| 13.12.1732   | 3.2.1732/33   | Sheerness  | £1872 9s 9d                                 | Extensive refit/repair                              |
|              |   |            | (Estimated cost of firehearth, £135 12s 0d) | Fitting of an iron firehearth with 2 copper kettles |
| 7.11.1733    | 5.12.1733   | Portsmouth | £701 13s 6d                                 | General/careening                                   |
| 14.11.1734   | 26.3.1734/35  | Woolwich   | £1799 6s 8d                                 | Major refit   |
| 5.9.1735     | 2.10.1735   | Portsmouth | £740 10s 8d                                 | General refit                                       |
| 17.6.1736    | 5.7.1736  | Portsmouth | £591 9s 6d                                  | General refit                                       |
| 13.6.1737    | 30.7.1737   | Portsmouth | £879 18s 7d                                 | General refit/careening                             |
| 20.2.1737/38 | 30.3.1737/38  | Portsmouth | £480 8s 0d                                  | General refit/sheathing for foreign service         |
| 1741         | Surveyed to be sold, orders arranged to have a new ship built                           |            |   |   |
| 15.1.1740/41 | Admiralty Order stating that she was to be sold   |            |   |   |
| 13.12.1741   | Captain and ships' company discharged from the ship and transferred to the <i>Dover</i> |            |   |   |
| 28.10.1742   | Sold at Deptford for £222 0s 0d   |            |   |   |

actual construction of the frames. Secondly there is the disposition of the framing in comparison with the 'room and space' regulation stipulated for the 20-gun ship.

Regarding the frame construction it can be seen that the *Blandford* was built with a square tuck stern (despite the fact that the square tuck had been abolished on most English men-of-war since about 1645), and also had a distinguishable long run forward for the dead flat. From these two features it can be assumed that the ship was built with square framing throughout the hull. Since about 1715 it had been accepted practice to fit cant frames in the extreme fore and after bodies of a ship. This form of construction was introduced to reduce the amount of timber wastage where the curvature of the hull towards the centre line became more pronounced, but it suited neither the requirements of the square tuck nor the very bluff bow formed by the length of the dead flat forward. However, quite a number of 20-gun ships were 'rebuilt' from 32-gun ships built during the first decade of the eighteenth century, all of which would have been built with square frames.

This period of naval construction can be classified as one of transition, when

old practices were applied alongside the new. It was to be another thirty years before frames were included on a set of draughts and even then it was rare. Thus it can be assumed that in most cases the individual builder would interpret the ships' drawings and specifications according to his own practices and experience.

The disposition of the framing also points to this period being one of transition. Unlike the later practice where every other frame position was marked on the draught, only every third frame is marked on those of the *Blandford* and other vessels in the same era. The overall distance between these frames was 7 feet 3 inches, which when divided by three gives a 'room and space' of 2 feet 5 inches which corresponds to the 20-gun ship dimension set down in the 1719 Establishment.

The fore and aft siding of each floor was 9 inches and each first futtock, 8½ inches, giving a total 'room' of 17½ inches. The remaining 'space' of 11½ inches between each main or full frame permitted only one filling frame to be fitted. It was common practice to have two filling frames between each main frame, so it appears that this was a transitional system of framing. It can be assumed that the structure of each filling frame was made in the reverse fashion to its counterpart, in other words one was made up of a floor and second futtock, the next of a first and third futtock, and so on.

The main frames were made up in two 'slices' one half being made up of a floor, second futtock and toptimber, the other half, a first futtock, third futtock and toptimber, lengthening pieces being added to either as necessary. Sixth Rate ships of this period were not fitted with fourth futtocks but it can be assumed that some builders may have included them in order to reduce timber wastage or when suitable 'compass' oak could not be procured. When each component had been assembled to form each half of the full frame, the two halves were fayed and bolted together at the 'joint line'. This always corresponded to the divisions of the 'room and space' shown on the draught, in other words every 2 feet 5 inches.

The aftermost square frame formed the boundary of the square tuck transom, the frame terminating at its head below the wing transom. The space at the fore end of the ship forward of the foremost square frame (R) was filled in with the hawse pieces, so called because the hawse holes were cut through them.

Once all the frames or timbers had been set up in position the whole structure was made rigid by a series of longitudinal members. The first and most important of these was the keelson which ran fore and aft along the centre line directly above the keel. Towards the fore end the keelson continued up the after face of the apron, at which point it was generally referred to as the stemson. At the after end the keelson was married into a large knee called the sternson which gave additional support to the stern post.

Next to be wrought was what was generally known as the 'thick stuff'. This comprised a series of bands of heavy planking laid over the inner faces of the frames or timbers. The position at which each strake was laid corresponded to the joint lines of the floors and various futtocks. In a similar fashion the deck clamps were wrought at their respective deck levels, their function being to support the ends of the beams. The beams were fitted prior to the completion of both the internal and external planking.

The deck beams greatly enhanced the strength of the ship in its transverse plane. Most of the beams fitted in the midship section were fashioned from two lengths of pitch pine scarphed and bolted together, those fitted afore and abaft being short enough to be made out of a single timber. The beams were supported at their outboard ends by wooden brackets called knees, these being

categorised as either hanging knees or lodging knees. The timber from which they were made was carefully selected or even grown to shape to ensure that the grain curvature gave the maximum strength required. The hanging knees were set vertically with the athwart arm bolted to the side of the beam and the perpendicular arm to the ship's side. The lodging knees were set in the horizontal plane with one arm bolted to the beam and the other to the side of the ship, its heel butting against the adjacent hanging knee on the next beam. Towards the fore and after end of the ship the hanging knees of the lower deck were inverted due to the diminishing shape of the hull; these were often referred to as standards. The beams of the fore and after platforms were not supported by hanging or lodging knees. The ends of these beams were simply shaped to fit and bolted down.

Worked intercostally between the beams were a series of lighter timbers called carlings and ledges. The carlings were laid longitudinally in two tiers, the innermost forming the boundaries of the hatchways and so on. The ledges were worked transversely between the tiers of carlings, usually three between each deck beam. Both carlings and ledges were only fitted on the upper and lower decks, with the exception of the companionway on the quarterdeck and where necessary on the platforms to support the galley firehearth.

The bottom planking was between 2 and 3 inches thick, the thicker boards forming the diminishing strakes below the main wale. Due to the complex hull shape at the fore and after ends, stealer and drop strakes were worked to prevent the boards 'snying'. The ends of the planks which were set into the rabbets of the stem and stern posts were called hood ends.

At this time the main wale was wrought in two strakes, 4 inches thick and 10 inches deep, with a filling strake wrought between them. The planking of the main wale was joined together by a 'hook and butt' scarph, the 'top and butt' and 'anchor stock' type being introduced later. The function of this heavily built wale was to bind the hull longitudinally to resist the 'hogging' and 'sagging' strains which afflicted wooden ships of this era. The rest of the ship's side was planked up with 2-inch boards.

Internally, waterways were worked along the side of the ship over the outboard ends of the beams. These strakes were fashioned to form a watertight seal between the deck and the ship's side. Above each waterway was a thick band of planking which was worked up to the level of either the sweep port or gunport sills on the lower and upper deck respectively. This band of planking was called the spirketting and it served the same purpose as that of the main wale. The spirketting was usually wrought in the 'top and butt' fashion. The space between the spirketting and the deck clamps was worked up with relatively thin planking known as the lining or 'quickwork'.

Adjacent to the keelson was a longitudinal known as the limberstrake which acted as a clamp to hold the floor timbers. The remaining lining which covered the floors of the hold was known as the footwaling.

The framing of the stern comprised a series of counter timbers which were set up and bolted at their heels to the wing transom which supported the whole of the stern structure above the stern post. The counter timbers were braced laterally with deck transoms and transom beams, and planked up with 2-inch boards. At the fore part of the hull the structure was stiffened with deck hooks and breast hooks which were wrought across the inboard side of the hawse pieces.

## DECORATION

This description of the *Blandford's* decoration is speculative, for no sources relating specifically to her decoration design appear to exist. The following

information has been compiled by careful examination of a number of existing contemporary models and by assessment of their general recurring features. The degree of decoration and carved work on *Blandford* was, by comparison to that of seventeenth century vessels, somewhat modest. Much of the carved work which was to be found on these earlier ships had been reduced due to the restrictions imposed by the Navy Board Order of 1703. This was promulgated both to reduce the unnecessary expenses incurred in the decoration of ships and to minimise the amount of good timber being wasted on superfluous adornment.

The majority of decoration was restricted to the head and stern of the ship. The main feature at the head of the ship was the figurehead which in *Blandford's* case probably consisted of the heraldic rampant 'Lyon' wearing the royal crown. (It is worth noting that the two models representing 20-gun ships of this period which are in the Henry Huddleston Rogers Collection at the Naval Academy in Annapolis have individual figureheads in place of the more common lion form.) This form of figurehead was common to all vessels with the exception of First and Second Rates which bore individual figures. It was to be another eight years before this privilege was extended to the lesser rates (by the Navy Board Order of 1727), and even then it was quite a number of years before the practice became general in the smallest rates of men-of-war.

The figurehead was supported by a number of head rails leading aft in a serpentine curve to the ship's side adjacent to the catheads. Each of these rails was fashioned with an individual moulding. The head rails were supported by vertical brackets which were themselves fashioned in the form of either panelled or fluted columns. At the foot of the figurehead was the 'trayle board' (trailboard) which was decorated with seahorses and dolphins carved in bas relief.

The sides of the ship were relatively plain with a simple painted frieze running the full length of the ship above the sheer rail. Similarly a frieze was painted above the drift rails fore and aft. On this frieze there were voluted foliage designs picked out with what looked like gold paint, but which was in reality more likely to have been yellow ochre. The background of the frieze was either black or aqua blue and may, in some cases, have possibly been red. The colour schemes on contemporary models are not always a reliable way of determining the actual pigments used at the period and therefore the colour scheme I have suggested is purely speculative. For practical reasons black would have been the most likely colour for the background of the frieze.

The decoration at the stern was far more elaborate. The tafferal or uppermost portion generally carried a coat-of-arms centrally supported by reclining cherubs. Sometimes there were two coats-of-arms, in which case the figures were usually reclining Gods or Greek heroes. Flagstuffs and weaponry decorated the base of the tafferal. At each side adjacent to the stern lights were quarter figures of warriors bearing arms, which surmounted mythological fish or dolphins which formed part of the lower finishing.

Between the stern lights (windows) were a series of either panelled or fluted pillars supporting a lintel of heavy moulding. A similar moulding was employed for the sill of the lights, which also served as the top edge of the upper counter. The upper counter was painted with a background the same colour as the friezework displayed along the ship's side. This counter was divided into two friezes, the uppermost like that above the drift rails. The lower frieze consisted of voluted acanthus leaves with a central band of laurels supported by nude maidens.

The pillars and moulding of the quarter lights were consistent with those at the stern lights. The upper and lower finishing were decorated with carvings of

acanthus leaves. Three plumes of acanthus supported the sill of the quarter light, their lower ends terminating in a scroll. The upper finishing was fashioned in the same manner but the other way up.

Some contemporary models carry three stern lanterns and others only one. This makes it difficult to determine what was normal practice. From inspection of various models it can be asserted that in all probability those vessels built earlier bore three lanterns, those later, one. However, some vessels carried two lanterns.

## LAYOUT

The *Blandford* was officially referred to as a 'single-decker', for her armament was carried on one deck only. This was called the upper (or main) deck. Her armament consisted of twenty 6-pounder carriage guns, but there is reason to believe that at one point in her career she may have carried a number of swivel guns in addition to her main armament. Unlike most other vessels of the period all her cannon were exposed to the weather.

Along the centre line of the upper deck were quite a number of gratings which gave access to the deck below or served to ventilate the ship. The section of this deck between the main and the fore mast was commonly known as the 'waist' and was used for stowing the ship's boats, spare spars and the sweeps (if carried). Aft of the main mast was the upper portion of the main capstan which was employed for raising the anchor, warping the ship and lifting weights as required. The steering wheel was placed abaft the mizzen mast under the overhang of the quarterdeck. At the extreme fore end of the upper deck was a short closed-in area under the forecastle. Here the ship's heads (latrines) were situated, built into the two roundhouses, which were integral with the ship's side. The area aft under the quarterdeck contained the captain's quarters, the compartments being divided off by a transverse bulkhead. There were a number of fittings fastened along the bulwarks of this deck, which were used for the securing of various important ropes such as sheets and braces. Other fittings included the galley flue and the main and fore topsail and jeer bitts.

Below the main deck was the lower deck which was often referred to as the berthing deck as it was used for the accommodation of the ship's company and the remaining officers. At the extreme fore end were the hawse holes through which the anchor cables passed. To prevent any inadvertant ingress of sea water from the hawse holes spreading throughout the entire deck, a small 'dwarf' bulkhead was erected across the deck. It closed off a small area known as the 'manger' as livestock were often kept in it. Incorporated with the after side of the manger was the step for the bowsprit which consisted of two baulks of timber with a mortice cut between them to receive the tenon of the mast.

Aft of the step were two sets of riding bitts, to which the anchor cables were secured when the ship was riding at anchor. The foremost pair were a little unorthodox in design as they were not fitted with a cross piece. The cross piece type was fitted on vessels where space was not at a premium but on the *Blandford* the foremost pair could only be fitted either side of the fore mast. In the vicinity of the main mast were the ship's pumps. There were two elm tree pumps for domestic use and fire-fighting and two chain pumps for pumping out the bilges. Aft was the main capstan which was integral with that on the deck above, the part on the lower deck being employed for weighing the anchor.

The remaining part of the lower deck consisted of the gunroom which served as both cabin space and a wardroom for the officers. The gunroom was divided off from the rest of the deck by a transverse bulkhead.

Below this deck were fore and aft hold and platform decks. At the extreme

fore end was the fore peak which served as a sail room and boatswain's store. On the fore platform at the centre line was the galley space with its brick firehearth and galley stove. Either side were store rooms for the carpenter and the boatswain. The fore part of the hold was used as the cable tier for the anchor hawsers, the remaining part of the hold was used for general provisions and cordage.

The after platform was divided off into a series of store rooms – the slop room, fish room, spirit room and captain's store room. The after section of the platform was occupied by the magazine. This compartment was divided into a powder room and filling room, the latter being a store for ready-use cartridges. The entire magazine was illuminated from a separate lightroom where an external lantern was placed at a window. Both the bulkheads and the deck of the magazine were built with a double layer of planking to prevent the ingress of damp and water. The remaining after section of the hold consisted of the bread room, access being attained from the after platform by a passageway on the port side of the magazine.

### ACCOMMODATION

The accommodation aboard a 20-gun ship was relatively cramped as was the case on all small ships. However, the 20-gun ship had one advantage: all the armament was situated on the open upper deck, therefore the living space on the lower deck was far better than that of the crew of a ship of the line.

At the after end of the upper deck, beneath the quarterdeck was the captain's cabin. This was relatively spacious compared to the rest of the ship. It was divided into two compartments, a day cabin where he would eat and conduct his everyday business and a small sleeping cabin. Access was through a door on the port side of the main bulkhead. This appears to have been common on all 20-gun ships. The day cabin was illuminated by daylight from both the stern lights and the two quarter badges. Further ventilation and light could also be admitted through the two aftermost gun ports, and the starboard one for his sleeping berth. No guns were fitted at these two ports but provision was made should it be necessary to do so. All of the bulkheads in this vicinity could be easily removed which not only provided more space to operate the ship during action, but reduced the danger of splinters which accounted for most injuries when the ship came under fire.

Below, on the lower deck or berthing deck as it was often referred to, the accommodation was divided in two. Aft in the gunroom were the officers, while forward the remainder of the crew ate and slept. The gunroom served as the wardroom around which usually four, or sometimes six cabins were fitted. These were used by the ship's lieutenant, the lieutenant of marines, the master and the surgeon. It is not known whether additional cabins for the purser etc were fitted in this area or just forward of the wardroom. On some vessels these cabins were made from light deal panels, on others, canvas stretched over a frame. On the *Blandford* however, there appears to be no reason why these cabins would need to be dismantled, as this deck would not have been cleared for action, thus cabins built with wooden panels would probably have been more common. Both the captain and the officers slept in cots suspended from the deck head, their personal belongings being kept in a chest which served both as a table and a seat. In the middle of the wardroom was a large table which probably served as a chart table for the Master when not being used for meals.

The remainder of the crew lived and ate forward of the wardroom bulkhead. They slept in hammocks suspended from hooks driven into the beams. As a rule each man was allotted 14 inches of space, but in fact there was a little more

comfort, for half the crew would be on watch at once. The warrant officers such as the gunner, boatswain and quartermaster, etc divided themselves off from the rest by hanging canvas screens to form their own mess. Other members of the crew who did not actually work the ship, such as the captain's clerk and servants and the carpenter probably found their own 'niches' in their store rooms which were situated on either the fore or the after platforms in the hold.

The crew ate at long tables which hung from the beams, and sat on wooden forms. Food was cooked on a brick firehearth built in the centre of the fore platform. The stove consisted of two copper kettles where the cook boiled up salt pork or beef. The smoke from the fire passed up through a flue to the upper deck. In later years the galley was placed under the forecabin and instead of having a brick firehearth it was made of iron. The latrines or 'heads' were situated in the two roundhouses built into the ship's side under the forecabin. One would have been used by the officers and would have been furnished with a screen. A piss-dale was also fitted on each bulwark just aft of the second gunport. In later years when these vessels were modified and quarter galleries replaced the badges, the officer's heads were moved to one of the galleries, so no doubt the warrant officers and petty officers commandeered one of the roundhouses forward.

It was usual practice to place the hammocks in nettings around the upper deck bulwarks, when they were not in use below, to give protection in action. However, there appears to be no evidence to suggest that hammock cranes and netting were on *Blandford*. Therefore it can be assumed that the hammocks were generally stowed below. These vessels never or rarely got into heavy action where this form of protection was necessary.

### STEERING

The steering system was a relatively simple affair comprising a rudder, tiller, tiller quadrant and steering wheel. It was operated by the tiller rope and the tiller which acted as a lever.

The rudder or 'rother' as it was often called acted as a surface plane over which the water passed. Any alteration made in the angle of the rudder affected the water flow, thereby turning the ship. The rudder was hinged by gudgeons and pintles to the after side of the stern post, around which it rotated on its axis. The head of the rudder stock was fashioned with a mortice to receive the after end of the tiller. Iron hoops and strappings were fitted to strengthen this part of the stock.

The tiller was made from ash, chosen for its properties of withstanding strain and shock when the rudder was hit by heavy seas. The fore end of the tiller was supported by the tiller quadrant which was a curved beam fitted under the upper deck beams. The arc of the quadrant corresponded with that produced by the sweep of the tiller, thus the tiller was supported throughout its entire traverse travel.

The steering wheel was a relatively recent innovation and had only been in general use for less than two decades. On 20-gun ships it was situated abaft the mizzen mast on the upper deck. When these ships were modified by the quarterdeck being extended forward, the helm position was raised to the quarterdeck. The helm consisted of a single spoked wheel connected to a horizontal barrel, the whole assembly being supported by two short stanchions, one forward, one aft.

The tiller rope was turned around the barrel about seven times. Each end then passed down to the deck below via sheaves set vertically in the deck. The ropes then passed to their respective tiller blocks fitted at the ship's side and

thence to the fore end of the tiller where they were secured. Alternatively, they passed through eyebolts on the tiller and to the tensioning tackle blocks. Though tensioning tackle may have been used it was not common during this period. Secondary steering was obtained by use of the rudder pendants attached to a ringbolt fitted on the hance of the rudder.

## GROUND TACKLE

Ground tackle is the collective name given to the anchors and their associated equipment; capstans are also covered in this section. The 20-gun ships of this era generally carried two bower anchors, two sheet anchors and a kedje anchor. A stream anchor was sometimes carried if required. It was used in combination with the kedje for warping the ship in narrow channels or when becalmed. They could be suspended under the ship's boats and easily transported.

The bower anchors were at all times secured to their respective cables for instant use and were stowed hanging from the catheads and lashed to the fore channel. The sheet anchors were also secured to the fore channel, the kedje being lashed to the port sheet anchor. During this period all anchors were furnished with wooden stocks, made in two halves joined together by bolts and iron hoops. The function of the stock was to 'trip' the anchor thereby allowing one of the palms to embed itself into the seabed.

Most ships had between five and six anchor cables but it can be assumed that only three or four cables were actually carried aboard 20-gun ships due to the relatively limited storage space. Each cable for this class of ship was 13½ inches in circumference and 120 fathoms in length. A lighter cable which was far easier to transport was carried for the kedje anchor when it was used to warp the ship.

The anchor cables entered the ship via the hawse holes at the fore end of the lower deck and were transferred to the cable tier in the hold by means of a second cable of lesser diameter. The ship's boys joined the two cables with temporary lashings called 'nippings'. A second cable had to be used because in most cases the anchor cable was of too great a diameter to pass round the capstan. During the first half of the eighteenth century there were two methods of moving the anchor cable both involving another cable, one of which was called the vyol, the other a messenger. In both cases the ends of the cables were spliced together to form a continuous loop of rope. It appears that it was more practical to use a vyol when the capstan was sited before the main mast. The vyol was passed through a snatch block rigged to the main mast and then to the capstan forward. The messenger passed directly aft to the capstan situated abaft the main mast and then returned forward to the hawse holes. The capstan on 20-gun ships was usually placed aft of the main mast, therefore it can be assumed that in the case of the *Blandford*, a messenger was used. However, it could be argued that because the anchor cable itself had a relatively small diameter it was lead directly to the capstan. Not only would this have been less time consuming but it would have reduced the number of cables carried.

*Blandford's* capstan was double-tiered with a common spindle. The uppermost capstan was fitted with whelps and a drum head. The whelps were fitted to increase the diameter of the drum and to allow the rope to tighten, giving greater friction and reducing any slip. The drum head was slotted to receive the ten capstan bars. The lower capstan at this period did not have a drum head and consisted only of a number of whelps and the pawls. The pawls acted as a form of ratchet which worked against the feet of the whelps to prevent the capstan reversing direction. The position of each pawl could be altered,

TABLE 4: SHEET ANCHOR DIMENSIONS FOR A SHIP OF 364 TONS BURDEN

|   | Ft   | In                               |
|---|--|----------------------------------|
| Shank length                                | 12   | 2                                |
| Maximum shank thickness                     |  | 7½                               |
| Minimum shank thickness                     |  | 5½                               |
| Length of the square                        | 1  | 11                               |
| Position of the nut                         | 1  | 3                                |
| Square of the nut                           |  | 1 <sup>51</sup> / <sub>100</sub> |
| Inner diameter of the ring                  | 1  | 3                                |
| Thickness of the ring                       |  | 3                                |
| Hole diameter for the ring in the shank     |  | 3 <sup>1</sup> / <sub>10</sub>   |
| Length of the crown                         |  | 8 <sup>7</sup> / <sub>20</sub>   |
| Length of the arm                           | 4  | 0 <sup>6</sup> / <sub>10</sub>   |
| Length of the fluke                         | 2  | 5½                               |
| Breadth of the fluke                        | 1  | 9                                |
| Thickness of the fluke                      |  | 1 <sup>7</sup> / <sub>10</sub>   |
| Length of the bill                          |  | 6 <sup>7</sup> / <sub>10</sub>   |
| Square of the arm at the fluke              |  | 4 <sup>6</sup> / <sub>10</sub>   |
| Rounding of the fluke                       |  | 7 <sup>9</sup> / <sub>100</sub>  |
| Clutching of the arm                        | 2  | 4 <sup>1</sup> / <sub>10</sub>   |
| Arms  | ¾ × the length of the shank and formed to an arc of a circle which is 2/5 of the arm broad |                                  |
| Circumference of the throat                 | 1/5 × length of the shank  |                                  |
| Length of the stock                         | length of the shank plus half the diameter of the ring                                     |                                  |
| Length of the parallel section of the stock | 1/6 of its overall length  |                                  |
| Stocks                                      | set at a position 1/24 of the length of the shank from one end                             |                                  |

allowing the capstan to haul or veer as necessary.

Each capstan bar was 7 feet long and 3 inches square in section. In most cases they were made from ash. There were ten bars in total so with three men at each bar a total of thirty seamen could weigh the anchor. Additional men could assist by pulling on the swifter, a rope passing around the ends of the bars. The capstan was also used for hoisting in stores, raising yards and so on, and hoisting the ship's boats.

Once the anchor had broken surface the catblock was hooked to the anchor ring and the anchor was hoisted to the cathead, or 'catted' as it was known. Once this was done the anchor was 'fished' by means of the fish davit and secured to the fore channel.

## PUMPS

Two types of pumps were fitted aboard the 20-gun ship, the chain pump and the elm tree pump, each serving a separate function. The chain pump was used primarily for removing water from the bilges which accumulated at the lowest point of the limber passages at the well of the ship. Although referred to as one pump, it in fact consisted of two individual pumps which shared a cistern sited on the lower deck a little abaft the main mast. Each pump consisted of two tubes, a back case and a return case; the latter was often referred to as the working chamber. Fitted at the top and bottom of these casings was a sprocket wheel around which passed a continuous loop of chain to which circular pieces of leather backed with an iron plate or 'saucer' were attached. The uppermost sprocket wheel was turned (towards the centre line of the ship) by a series of crank handles which engaged with the spindle of the sprocket wheel. Additional crank handles could be fitted to increase the number of operators. As each leather washer entered the limber passage it scooped up water and lifted it to the cistern via the working chamber. The water level in the cistern would rise and eventually water would flow out through the pump dale to the scupper and was thus discharged overboard.

During this period both the chain and the sprocket wheel were simple in design and it was not uncommon for the chain to break or the crutches forming the sprockets to foul up with the chain. The wooden block forming the sprocket wheel hubs was generally made from elm. The lower wheel was not always made in the form of a sprocket but sometimes left simply as a roller. The pump was relatively efficient but it was to be another forty years before William Cole modified the moving components and increased the pump's output.

The elm tree pump was employed for domestic uses, washing down the decks and fire-fighting. It took water directly from the sea and was operated with a handle or 'brake' which produced the reciprocating action necessary for its operation. The casing of the pump was made from a single bored out elm tree. The lower end passed through the bottom of the ship, the upper end terminated at the upper deck, where the water was discharged. Alternatively water could be discharged on the lower deck by simply removing the cover from an outlet port.

Two valve 'boxes' were fitted within the pump's bore, the lower valve box being fixed, at a position approximately one-third of the way from the bottom. The other valve box was connected to the brake by an iron rod, often called the 'spear'. Both valve boxes were fitted with a 'clapper' non-return valve. The lower 'box' could be removed for repair by hooking up a staple fitted to its top. Iron hoops were fitted around the casing to prevent splitting.

#### ARMAMENT

The *Blandford* was armed with twenty 6-pounder carriage guns, the size and weight of which were authorised by the Gun Establishment of 1716. This stated that all 20-gun sixth Rates were to carry 6-pounders with a length of 7 feet 6 inches and weighing eighteen hundredweight. The cannon was made from cast iron and bored out smooth to a diameter of  $3\frac{1}{2}$  inches. The diameter of the shot was generally one-fifth less than the bore of the gun and therefore in this case was approximately  $2\frac{7}{8}$  inches diameter. The charge required to fire a 6-pounder was between one third and one half of the weight of the shot. Therefore a single broadside would have expended between 40 and 60 pounds of gunpowder. Firing a cannon was somewhat precarious and was done by using a slow match held on a linstock which was placed at the touch hole.

The gun was mounted on a wooden carriage made from elm. This type of timber was used for two reasons: firstly it did not splinter into small shards, thereby reducing the degree of injury caused by splinter wounds; secondly, it had the property of withstanding shock – ideal in view of the force of the gun's recoil. The carriage consisted of two side cheeks, a front transom and a bed which carried the quoin. The quoin was a wedge-shaped block of timber placed under the breech and was used to either elevate or depress the gun as required. The overall length of the carriage was generally three-fifths of the length of the gun itself, and in thickness it was equal to the bore diameter of the gun. At the fore and after end of the carriage were two axletrees on which wooden wheels called trucks, made from oak, were fitted. These could be removed if necessary; the removal of the back trucks gave greater elevation to the gun. The gun barrel was held to the carriage by iron hinges known as cap squares which fitted over the trunnions and were locked down by a pin inserted in the keep plate.

Each gun was furnished with gun tackle, traversing tackle and a breeching rope. The breeching was a good-quality stout hemp rope which secured the gun to the bulwark and took the strain of the recoil. Its inboard end was passed around the cascable behind the breech of the gun. Fitted either side of the

TABLE 5: GUN TACKLE SIZES FOR A 6-POUNDER

|                   | Rope circumference (Ins) | Length of rope (Ft) |
|-------------------|--------------------------|---------------------|
| Breeching         | 4½                       | 24                  |
| Gun tackle        | 2                        | 30                  |
| Traversing tackle | 2                        | 26–30               |

carriage was the gun tackle which was used to run the gun out ready to fire. At the rear of the carriage was the traversing tackle. This served two functions; one was simply to haul the gun back for reloading, the other, by transferring the tackle to an adjacent ringbolt in the deck, to make oblique fire possible.

Swivel guns were fitted on some of the Sixth Rates during this period. One model in the National Maritime Museum at Greenwich, of either the *Blandford* or the *Lyme*, is fitted out with twenty-two swivels. The standard half-pounder swivel gun at this period was 2 feet  $6\frac{1}{4}$  inches long, weighed 46 pounds, and had a bore of 15 inches diameter. Each gun was mounted on an iron yoke which was set into a timber pedestal. The pedestals were usually bolted to the outboard side of the bulwark, but in some cases the gun was supported by an iron stanchion set into the deck. The main function of the weapon was anti-personnel, and cannister shot was often used as an alternative to solid shot.

Three 20-gun ships, the *Seaford* and *Shoreham* of the *Blandford* type, and the earlier *Solebay*, were converted to bomb vessels. Although this form of mortar had been in naval service since the latter part of the seventeenth century an improved design was introduced after successful testing had been carried out at Woolwich in June 1726. The advantage of the mortar was that it fired an explosive shell in a high trajectory, which was very useful for bombardment of ships in harbour, shore-side installations and fortresses. Due to the sparsity of sources on this subject, it is not known how many were carried on the converted 20s.

The mortar consisted of a short heavy barrel mounted on a large solid bed. The barrel at this time was made of either brass or cast iron and was approximately 5 feet in length and had a bore of 13 inches. The bed was made from heavy baulks of elm. The type employed at this time was designed by William Ogbourne, the master carpenter at Woolwich. It was made to rotate and therefore could be classified as the forerunner of the modern turret gun. Considerable structural alterations were necessary in order to convert vessels not built to withstand the weight and recoil action of the mortar. This involved strengthening the hull by fitting riders in the hold and deck beams of greater scantling. All of this work would have been expensive, as the following list illustrates. *Solebay* converted 16–28 June 1726 at a cost of £1070 12s 0d; *Shoreham* converted March–15 April 1727 cost not known but probably similar, and *Seaford* converted 2–15 March 1726/27 at a cost of £1010 3s 7d.

#### SHOT

The British Navy's preference was for solid round shot, but alternative types for destroying masting and rigging were occasionally used. These took the form of bar shot, chain shot and expanding shot. For anti-personnel use, either cannister or grape shot was employed. Both types had a 'spray' effect, cutting down the enemy. The shot used in the mortar was generally in the form of a hollow iron ball filled with explosive. A fuse was inserted and lit prior to loading it. The timing of the firing could be determined by the length of fuse

woven in the timing cone inserted in the shell or 'bomb'. By trial and error and adjustments in trajectory an explosion on impact could be achieved.

### MASTS AND SPARS

All 20-gun Sixth Rates were ship-rigged, which meant that they had three masts and a bowsprit. The fore and main masts were complete (in other words they had a lower mast, topmast and topgallant mast), whereas the mizzen mast had no topgallant. The bowsprit was extended by a jibboom in order to carry the jib sail.

During the early eighteenth century most masts were made from a single tree, with additions such as the cheeks and the bibs fitted separately. Generally Riga or New England pine was preferred for mast manufacture due to its girth and length. The heel of each mast was stepped into a large baulk of timber fashioned with a suitable mortice which was bolted firmly astride the keelson. The bowsprit, due to its angle or 'steeve' was stepped into a vertical block situated on the lower deck a little afore the fore mast.

At the head of each lower mast was a flat platform called a top, which was supported by two crosstrees set transversely and two trestletrees set fore and aft. The heel of the topmast was set between the trestletrees and located by an iron pin called a fid. The topmast was further supported by a block, known as a mast cap, fitted to the lower mast head. The topgallant masts were supported in the same manner. The jibboom was retained by a cap at the extremity of the bowsprit and its heel was set into a block forming a saddle over the top surface of the bowsprit. The yards, with the exception of the topgallants and spritsail, were round except for their centre section which was octagonal. Two sling cleats were fitted at the centre to retain the slings and yard parrel ropes. Cleats were also fitted at the yardarms for securing various blocks and the sail. The lower (or course) yards of the main and fore masts were made from two pieces, scarphed together with battens nailed on the flats of the octagonal section to give additional strength.

The tops fitted to the lower masts served a twofold function: they spread the shrouds of the respective topmast and provided a suitable platform from which sharpshooters could fire their muskets during action. From this position they could easily pick out a target. The top was constructed from light boards set up on the crosstrees. A rail was fitted at the after side to provide some degree of safety. The crosstrees fitted at the topmast head remained unplanked but were still used as a lookout post despite being exposed and precarious.

### STANDING RIGGING

The standing rigging included all of the cordage that braced and supported the masts from aft, forward, and laterally. These ropes were called backstays, forestays and shrouds respectively. Much preparation and care was taken in setting up this rigging. All of the cordage was well tarred to protect it from the elements and some ropes were further protected from wear by serving, worming or parcelling as necessary.

The fore and main mast lower stays were set up with a suitably formed eye which was passed over the mast head. The stay then passed forward and downward at an oblique angle to either a collar or deck fastening. A heart was seized into the lower end of the stay. A similar heart was seized to the collar and the two hearts were then lashed together by a lanyard. The lower end of the mizzen stay was secured to the lower part of the main mast by deadeyes and lanyards.

The topmast and topgallant mast stays were secured in the same manner as those of the mizzen stay, except that a block was used, the fall of the stay

TABLE 6: MAST AND YARD DIMENSIONS FOR THE 20-GUN SHIPS OF 1719

| Mast            | Length |    | Diameter |     |
|-----------------|--------|----|----------|-----|
|                 | Ft     | In | Ft       | In  |
| Main mast       | 68     | 6  | 1        | 8½  |
| Fore mast       | 61     | 8  | 1        | 6½  |
| Mizzen mast     | 54     | 10 |          | 11½ |
| Bowsprit        | 40     | 8  | 1        | 4½  |
| Main topmast    | 39     | 9  |          | 11½ |
| Fore topmast    | 37     | 3  |          | 11½ |
| Mizzen topmast  | 27     | 10 |          | 7¾  |
| Main topgallant | 19     | 6  |          | 6¼  |
| Fore topgallant | 18     | 4  |          | 6¼  |
| Jibboom         | 22     | 4  |          | 6¼  |
| Ensign staff    | 23     | 6  |          | 4¾  |
| Jack staff      | 11     | 9  |          | 3   |

| Yards                | Length |    | Diameter |    |
|----------------------|--------|----|----------|----|
|                      | Ft     | In | Ft       | In |
| Main yard            | 60     | 6  | 1        | 2  |
| Fore yard            | 52     | 11 | 1        | 0½ |
| Mizzen yard          | 50     | 5  |          | 9  |
| Crossjack            | 38     | 6  |          | 7¾ |
| Main topsail yard    | 44     | 0  |          | 9¼ |
| Fore topsail yard    | 38     | 6  |          | 8  |
| Mizzen topsail yard  | 28     | 10 |          | 5¼ |
| Main topgallant yard | 25     | 8  |          | 5¼ |
| Fore topgallant yard | 22     | 6  |          | 4½ |
| Spritsail yard       | 38     | 6  |          | 8  |

### DIMENSIONS OF THE CROSSTREES

| Mast         | Length |    | Breadth | Depth |
|--------------|--------|----|---------|-------|
|              | Ft     | In | In      | In    |
| Main mast    | 12     | 6  | 6¾      | 4½    |
| Fore mast    | 11     | 7  | 6¼      | 4½    |
| Mizzen mast  | 6      | 10 | 4       | 2½    |
| Main topmast | 5      | 2½ | 2¾      | 2½    |
| Fore topmast | 4      | 11 | 2½      | 2½    |

### DIMENSION OF THE TRESTLETREES

| Mast         | Length |    | Breadth | Depth |
|--------------|--------|----|---------|-------|
|              | Ft     | In | In      | In    |
| Main mast    | 9      | 7  | 6¾      | 9¼    |
| Fore mast    | 8      | 11 | 6¼      | 8½    |
| Mizzen mast  | 5      | 10 | 4       | 4¾    |
| Main topmast | 3      | 11 | 2¾      | 3¾    |
| Fore topmast | 3      | 8  | 2½      | 3½    |

### DIMENSIONS OF THE MAST CAPS

| Mast         | Length |     | Breadth | Depth |
|--------------|--------|-----|---------|-------|
|              | Ft     | In  | Ft      | In    |
| Main mast    | 3      | 11½ | 1       | 11¾   |
| Fore mast    | 3      | 11½ | 1       | 11¾   |
| Mizzen mast  | 2      | 7   | 1       | 3½    |
| Main topmast | 2      | 2   | 1       | 1     |
| Fore topmast | 2      | 0½  | 1       | 0¾    |
| Bowsprit     | 2      | 11  | 1       | 2     |

passing down to the deck. Each block was fastened to its respective mast head by a pendant.

**TABLE 7: RIGGING SIZES**

Note. All dimensions are of the rope's circumference.

**FORE STAYS**

| Item                        | Stay (Ins) | Stay collar (Ins) | Lanyard (Ins) | Worming (Ins) |
|-----------------------------|------------|-------------------|---------------|---------------|
| Fore stay                   | 9½         | 8½                | 3             | 1             |
| Fore preventer stay         | 6½         | 5½                | 2             | ½             |
| Fore topmast stay           | 4½         | 3½                | 1½            | —             |
| Fore topmast preventer stay | 3½         | 2½                | 1             | —             |
| Fore topgallant stay        | 2½         | —                 | ¾             | —             |
| Main stay                   | 10½        | 7½                | 3½            | 1             |
| Main preventer stay         | 7½         | 5½                | 2½            | ½             |
| Main topmast stay           | 5½         | 4                 | 1½            | —             |
| Main topmast preventer stay | 4          | 3                 | 1½            | —             |
| Main topgallant stay        | 2½         | —                 | 1             | —             |
| Mizzen stay                 | 5½         | 4½                | 2             | ½             |
| Mizzen preventer stay       | 5½         | 4½                | 2             | ½             |
| Mizzen topmast stay         | 2½         | 2                 | 1             | —             |
| Bobstay                     | 4½         | 4½                | 2½            | —             |

**SHROUDS**

| Item                        | Size (Ins) | Deadeye Lanyard |                   |
|-----------------------------|------------|-----------------|-------------------|
|                             |            | Size (Ins)      | No of Pairs (Ins) |
| Fore lower shrouds          | 5½         | 3               | 5                 |
| Fore topmast shrouds        | 3½         | 2               | 3                 |
| Fore futtock shrouds        | 3½         | —               | 3                 |
| Fore topgallantmast shrouds | 2½         | 1½              | 2                 |
| Main lower shrouds          | 6½         | 3½              | 6                 |
| Main topmast shrouds        | 4          | 2               | 3                 |
| Main futtock shrouds        | 4          | 2               | 3                 |
| Main topgallantmast shrouds | 2½         | 1½              | 2                 |
| Mizzen lower shrouds        | 4½         | 2½              | 3                 |
| Mizzen topmast shrouds      | 2½         | 1½              | 2                 |
| Mizzen futtock shrouds      | 2½         | 1½              | 2                 |
| Bowsprit shrouds            | 4          | 2               | 1                 |
| Bowsprit gammon lashing     | 4          | —               | 1                 |

**BACKSTAYS**

| Item                     | Size (Ins) | Lanyard size (Ins) |
|--------------------------|------------|--------------------|
| Fore backstay            | 5½         | 3                  |
| Main backstay            | 6½         | 3½                 |
| Mizzen backstay          | 4½         | 2½                 |
| Fore topmast backstay    | 3½         | 2                  |
| Main topmast backstay    | 4          | 2                  |
| Mizzen topmast backstay  | 2½         | 1½                 |
| Fore topgallant backstay | 2½         | 1                  |
| Main topgallant backstay | 2½         | 1½                 |

**THE RIGGING TO THE LOWER YARDS**

| Rigging                  | Fore Yard (Ins) | Main Yard (Ins) |
|--------------------------|-----------------|-----------------|
| Tie                      | 4½              | 5½              |
| Jeer                     | 4½              | 7               |
| Jeer falls               | 2½              | 2½              |
| Slings                   | 4               | 4               |
| Parrel rope              | 3               | 4               |
| Brace pendants           | 3½              | 3½              |
| Brace                    | 2½              | 2½              |
| Lifts                    | 3               | 2½              |
| Lift span                | 3               | 3½              |
| Yard tackle pendant      | 3½              | 4               |
| Yard tackle              | 2½              | 2½              |
| Yard tackle tricing line | 1               | 1½              |
| Footrope                 | 2½              | 2½              |
| Footrope lanyards        | 1               | 1               |
| Leechline legs and falls | 2               | 2               |
| Leechline strop          | 2               | 2               |

**LOWER YARDS (cont)**

|                                     | Fore Yard (Ins) | Main Yard (Ins) |
|-------------------------------------|-----------------|-----------------|
| Buntline legs and falls             | 1½              | 2               |
| Bowlines and bridles                | 2½              | 2½              |
| Reef pendants                       | 2½              | 2½              |
| Reef tackles                        | 1               | 1½              |
| Reefing lines                       | 1               | 1               |
| Clew garnets                        | 2               | 2               |
| Sheets                              | 3½              | 4               |
| Tack, at widest point               | 4½              | 5½              |
| Outer stunsail halyard              | 2½              | 2½              |
| Inner stunsail halyards             | 2               | 2               |
| Stunsail boom topping lift and guys | 2               | 2               |

**THE RIGGING TO THE CROSSJACK YARD**

| Item                | Ins |
|---------------------|-----|
| Slings              | 3½  |
| Truss pendant       | 3½  |
| Truss pendant falls | 2½  |
| Lifts               | 3½  |
| Lift span           | 1   |
| Footrope            | 2½  |
| Footrope lanyard    | 1½  |
| Brace pendants      | 2½  |
| Brace               | 2½  |
| Jeer                | 2   |

**RIGGING TO THE TOPSAIL YARDS**

| Item                                | Fore (Ins) | Main (Ins) | Mizzen (Ins) |
|-------------------------------------|------------|------------|--------------|
| Ties                                | 3          | 4½         | 2½           |
| Runner of the tie                   | 2½         | 3½         | 2½           |
| Halyard                             | 2          | 2½         | 2            |
| Parrel rope                         | 2          | 2½         | 1½           |
| Lifts                               | 2½         | 2½         | 2            |
| Footropes                           | 2½         | 2½         | 1½           |
| Footrope lanyards                   | 1          | 1½         | ¾            |
| Brace pendants                      | 3          | 3          | 2            |
| Brace                               | 2          | 2          | 1½           |
| Leechlines                          | 1½         | 1½         | 1            |
| Buntlines                           | 1½         | 2½         | 1            |
| Bowlines and bridles                | 2          | 2½         | 1            |
| Reef tackle pendants                | 2½         | 2½         | 1½           |
| Reef tackle falls                   | 1½         | 1½         | 1            |
| Clewlines                           | 2          | 2½         | 2            |
| Sheets                              | 4½         | 4½         | 2½           |
| Stunsail halyards, sheets and tacks | 2½         | 2½         | —            |
| Stunsail downhauler and boom tackle | 1½         | 1½         | —            |

**THE RIGGING TO THE TOPGALLANT YARDS**

| Item                 | Fore (Ins) | Main (Ins) |
|----------------------|------------|------------|
| Ties                 | 2½         | 2½         |
| Halyard              | 1          | 1½         |
| Parrel rope          | 1½         | 1½         |
| Lifts                | 1½         | 1½         |
| Footrope             | 1½         | 1½         |
| Footrope lanyard     | ¾          | ¾          |
| Brace pendants       | 1½         | 1½         |
| Brace                | 1½         | 1½         |
| Buntlines            | ¾          | 1          |
| Bowlines and bridles | 1          | 1½         |
| Clewlines            | 1          | 1½         |
| Sheets               | 2½         | 2½         |

**TABLE 7: RIGGING SIZES**

| RIGGING TO THE SPRITSAIL YARD         |            | RIGGING OF THE JIB SAIL                     |            | RIGGING TO THE MAIN TOPGALLANT STAYSAIL       |            | SIZES OF MISCELLANEOUS ROPES AND CABLES |     |
|---------------------------------------|------------|---|------------|---|------------|---|-----|
| Item                                  | Ins        | Item  | Ins        | Item  | Ins        | Item                                    | Ins |
| Parrel rope                           | 3          | Jib sail stay                               | 2½         | Staysail stay                                 | 2          | Cat fall                                | 3½  |
| Slings                                | 3½         | Stay fall                                   | 1½         | Halyard                                       | 1½         | Back rope                               | 2   |
| Halyard                               | 3½         | Stay tackle                                 | 1½         | Sheet pendants                                | 1½         | Cathead stopper                         | 3½  |
| Lanyard                               | 1          | Halyard                                     | 2½         | Sheets  | 1½         | Shank painter tail                      | 4½  |
| Garnet                                | 2          | Sheet pendants                              | 2½         | Sheet pendant whips                           | 1½         | Fish pendant                            | 5½  |
| Standing lifts                        | 2          | Sheets                                      | 2          | Tacks and downhaulers                         | 1          | Fish pendant tackle                     | 2½  |
| Standing lift lanyards                | 1          | Tacks and whips                             | 1½         |   |            | Anchor cable – sheet and bower          | 13½ |
| Brace pendant                         | 3          | Downhauler                                  | 2          |   |            | Spare cables                            | 12  |
| Brace                                 | 2½         |   |            | <b>RIGGING OF THE MIZZEN STAYSAIL</b>         |            | Kedge anchor cable                      | 8   |
| Running lift                          | 2          |   |            | <b>Item</b>                                   | <b>Ins</b> | Messenger or vyol                       | 8   |
| Sheet pendants                        | 3          | <b>RIGGING TO THE FORE TOPMAST SAIL</b>     |            | Halyard                                       | 2½         | Nippers, hook ropes and ring stoppers   | 1½  |
| Sheet strop                           | 2½         | <b>Item</b>                                 | <b>Ins</b> | Sheet pendants                                | 2½         | Swifters                                | 1½  |
| Clewlines                             | 2          | Staysail stay                               | 2½         | Sheets and tack                               | 2½         | Bittstoppers                            | 5½  |
| Footrope                              | 2½         | Lanyard                                     | 2          | Downhauler                                    | 1½         | Anchor buoy rope                        | 4½  |
| Reef points                           | 1          | Tackle                                      | 1½         |   |            | Anchor buoy slings                      | 2   |
| Buntlines                             | 2          | Halyard                                     | 1½         | <b>RIGGING OF THE MIZZEN TOPMAST STAYSAIL</b> |            | Rudder pendants                         | 4½  |
|                                       |            | Sheet pendants                              | 2½         | <b>Item</b>                                   | <b>Ins</b> | Rudder pendant falls                    | 2   |
|                                       |            | Sheet pendant whips                         | 1½         | Staysail halyard                              | 1½         | Tiller rope                             | 2½  |
|                                       |            | Tacks and sheets                            | 2          | Staysail sheets                               | 1½         | Gunport tackles                         | 2   |
|                                       |            | Downhauler                                  | 2          | Tacks   | 1          |   |     |
|                                       |            |   |            | Downhauler                                    | 1          |   |     |
| <b>THE RIGGING TO THE MIZZEN YARD</b> |            | <b>RIGGING OF THE MAIN TOPMAST STAYSAIL</b> |            |   |            |   |     |
| <b>Item</b>                           | <b>Ins</b> | <b>Item</b>                                 | <b>Ins</b> |   |            |   |     |
| Parrel rope                           | 3          | Staysail stay                               | 2½         |   |            |   |     |
| Slings                                | 5          | Staysail sheet pendants                     | 2½         |   |            |   |     |
| Ties                                  | 3½         | Staysail sheets                             | 2½         |   |            |   |     |
| Tie falls                             | 3          | Staysail sheet whips                        | 2          |   |            |   |     |
| Jeers                                 | 5          | Staysail halyards                           | 2½         |   |            |   |     |
| Lifts                                 | 2          | Staysail tacks                              | 2½         |   |            |   |     |
| Lift span and falls                   | 2          | Downhauler                                  | 1½         |   |            |   |     |
| Bowlines                              | 3          |   |            |   |            |   |     |
| Sheets                                | 4          |   |            |   |            |   |     |
| Foot brails                           | 2½         |   |            |   |            |   |     |
| Peak and throat brails                | 1½         |   |            |   |            |   |     |
| Lacing to the yard                    | 1          |   |            |   |            |   |     |
| Tack                                  | 3          |   |            |   |            |   |     |

The bowsprit was rigged with a bobstay which passed from the forestay collar to the knee of the head. The lower end was in the shape of an eye and the upper end was secured to deadeyes. The backstays were rigged from the mast heads down to the channel or backstay stool on the ship's side. The upper end was in the shape of an eye which fitted over the mast head, the lower end was seized to a deadeye. A similar deadeye was fastened to the channel board or stool, the two being lashed together by a lanyard.

The lower shrouds passed from their respective channels to the mast head. They were joined into a pair by an eye which fitted over the mast head and was spliced in the bights. The tail end of the shroud was seized to a deadeye which was fastened to its counterpart on the channel by a lanyard. The lower deadeye was secured to the ship's side by a chain plate. The topmast and topgallant mast shrouds were set up in the same manner with their respective deadeyes fitted at the sides of the tops or the crosstrees. Futtock shrouds were rigged from the lower shrouds to the deadeye plates of the topmast shrouds. In the same manner futtock shrouds were also rigged from the topmast shrouds to the crosstrees. Once all of the shrouds were set up they were 'rattled down' with ratlines which formed footholds for the seamen to scale the masts.

The bowsprit was also fitted with two shrouds, one either side, passing from the forestay collar to the ship's side. The upper end was secured to the collar by deadeyes and a lanyard. A hook was seized to the lower end of each shroud, the hook being fastened and moused to an eyebolt fitted a little above the main wale, aft of the hawse holes.

## RUNNING RIGGING

This comprised all the ropework which was employed for manipulating the yards and sails. In general this cordage was untarred to prevent it jamming in the blocks.

The rigging to the lower yards consisted of parrels, slings, jeers and lifts. Their function was to raise, lower and support the yard. Braces were rigged to the yardarms to rotate the yard around its axis on the mast. The topsail, topgallant and spritsail yards were rigged in the same manner as the lower yards, the only difference being that ties were used instead of the jeer tackle.

The amount of rigging to the sails themselves was considerable, thus for simplicity I have divided it into two categories: that which furled the sails up and that which held the sails taut and in position when in use. Additionally, most sails were rigged with reef tackle which was used to raise the sail a short distance when taking in reefs to shorten sail. For furling the sails, clewlines, buntlines and leechlines were used, each line pulling the sail upward and inward. The mizzen sail was rigged with peak, throat and foot brails for furling it instead of buntlines. Tacks, sheets, bowlines and bridles were employed to hold the sail in position when in use. Most of the sails had reef points that were used to shorten them as required.

The fore and aft staysails and jib sail were, with the exception of those on the mizzen mast, set up on staysail stays, the upper ends of which were seized to their respective stays. Each sail was raised on its stay by a halyard and lowered by a downhauler. Tacks and sheets were rigged to each sail so that it could be positioned as required for tacking or wearing ship.

Each of the studdingsail booms and yards were rigged with halyards, topping lifts and guy ropes. The sails each had their respective halyards, sheets and tacks, the topmast stunsail having a downhauler.

### THE SAILS

Two types of sails were employed on 20-gun ships: square sails which were set transversely, bent to the yards, and a number of triangular sails, generally called staysails, set up fore and aft on the stays. Both types of sail were made up of strips (or cloths) of canvas sewn together, each strip being a standard two feet wide. Each edge of the sail was stiffened with a rope stitched to the seams; this was called the bolt rope.

The sides of a square sail were called the head, foot, and leech, the latter being the two perpendicular sides. The same terminology was applied to the bolt ropes, ie the head bolt rope, and so on, and to the three-sided sails though there was only one leech.

Additional cloths, or linings as they were called, were sewn at varying positions on each sail to give extra strength, or where excessive wear would occur. The linings were generally placed where there were buntlines, or reef points, along the leeches and where the foot of the sail came into contact with the fore rim of the tops. Along the leeches and the foot of the sail small rope eyes called cringles were worked into the bolt ropes. To these various parts of the rigging were secured, such as the buntlines, leech lines, reef tackle and the bridles and bowlines. Eyes were fitted at each corner of the sail. Those at the top two corners were called earings. From these a lashing was passed to the yardarm cleat. The tack and sheet blocks were fastened at the lower two corners, or clews as they were called.

The seam across the head of the sail had small holes, usually two per sail cloth, through which robbands passed. These were short lengths of rope which passed between the holes and around the yard securing the whole breadth of the sail. The ends of the rope were fastened with a reef knot. Reef points were placed as appropriate along the fore and after sides of the sail, and like the holes for the robbands there were two to every cloth. Short ropes were passed through these points so when shortening sail the two ends of the reefs were tied together over the top of the yard.

The fashion in which the fore and aft staysails were rigged varied according to their position. Some were bent onto the actual stay and others were set up on their own staysail stay. These sails had the necessary earings and clews but with the exception of the mizzen sail did not have cringles.

In addition to the standard set of sails, studdingsails (sometimes abbreviated to stunsails) were carried for use in light winds. It appears that a lower and a topmast stunsail were carried only on the fore and main masts. Sources contain little precise information on these sails.

Although there are no original sail plans of any consequence for the 20-gun ship of the early eighteenth century, I estimate the total sail area including the stunsails was 15,084 square feet. The individual estimated sail areas are shown in Table 8.

### BOATS

In all probability, the *Blandford* only carried one 27-foot pinnace as authorised in the 1719 Establishment. However, according to the recommendations forwarded by the Navy Board in March 1714/15, vessels of 20 or 24 guns were to carry a 27-foot pinnace and a 17-foot yawl. The pinnace had been in service use for quite some time and had proved very suitable for various duties such as watering ship, conveying stores, personnel or raiding parties.

TABLE 8: ESTIMATED SAIL AREAS OF A 20-GUN SHIP

| Item                     | Ft <sup>2</sup>                          |
|--------------------------|--|
| Fore course              | 1338                                     |
| Fore topsail             | 1435                                     |
| Fore topgallant sail     | 525                                      |
| Main course              | 1648                                     |
| Main topsail             | 1716                                     |
| Main topgallant sail     | 616                                      |
| Mizzen (lateen)          | 646                                      |
| Mizzen topsail           | 729                                      |
| Spritsail                | 448                                      |
| Jib sail                 | 350                                      |
| Fore topmast staysail    | 322                                      |
| Main topmast staysail    | 304                                      |
| Main topgallant staysail | 225                                      |
| Mizzen staysail          | 157.5                                    |
| Mizzen topmast staysail  | 136.5                                    |
| Main lower stunsail      | 630 (total of both 1260ft <sup>2</sup> ) |
| Main topmast stunsail    | 560 (total of both 1120ft <sup>2</sup> ) |
| Fore lower stunsail      | 558 (total of both 1116ft <sup>2</sup> ) |
| Fore topmast stunsail    | 496 (total of both 992ft <sup>2</sup> )  |

TABLE 9: SAIL SIZES

#### Note

Rope sizes refer to their circumference. All the sail cloths are 2 feet in width. Any fraction contained in the dimension of a sail is divided equally between each side of it.

| Sail                     | Cloths at |      | Boltropes at |      |      |      |
|--------------------------|-----------|------|--------------|------|------|------|
|                          | Head      | Foot | Leech        | Foot | Head | Luff |
| Fore course              | 22        | 22   | 3in          | 3in  | 1½in | —    |
| Fore topsail             | 22½       | 14   | 3in          | 3in  | 1½in | —    |
| Fore topgallant          | 16        | 9    | 1½in         | 1½in | 1in  | —    |
| Main course              | 26        | 26   | 3½in         | 3½in | 1½in | —    |
| Main topsail             | 27        | 16   | 3in          | 3in  | 1½in | —    |
| Main topgallant sail     | 17½       | 10   | 1½in         | 1½in | 1in  | —    |
| Mizzen sail              | 17        | 17   | 2½in         | 2½in | 1½in | —    |
| Mizzen topsail           | 16        | 10   | 1½in         | 1½in | 1in  | —    |
| Spritsail                | 16        | 16   | 1½in         | 1½in | ¾in  | —    |
| Fore lower stunsail      | 9         | 9    | 1½in         | 1½in | 1in  | —    |
| Main lower stunsail      | 9         | 9    | 1½in         | 1½in | 1in  | —    |
| Fore topmast stunsail    | 9½        | 5    | 1½in         | 1½in | ¾in  | —    |
| Main topmast stunsail    | 10½       | 5½   | 1½in         | 1½in | ¾in  | —    |
| Jib sail                 | 10        | 5½   | 1in          | 1in  | —    | 1in  |
| Fore topmast staysail    | 9½        | 5½   | 1½in         | 1½in | —    | 1½in |
| Main topmast staysail    | 9         | 5½   | 1½in         | 1½in | —    | 1½in |
| Main topgallant staysail | 7½        | 5½   | 1in          | 1in  | —    | 1in  |
| Mizzen staysail          | 8½        | 5½   | 1½in         | 1½in | —    | 1½in |
| Mizzen topmast staysail  | 6½        | 5½   | 1in          | 1in  | —    | 1in  |

The pinnace generally had a breadth of between 5 feet 8 inches and 6 feet and a depth of 2 feet 6 inches. Like most naval boats she was of carvel construction and double-banked with eight oars each side. The rowlocks were cut into the gunwale thereby giving the craft greater freeboard without hindering the operation of the oars. Usually this boat was stowed in the waist of the ship, supported between the spare booms set fore and aft between the after end of the forecastle and the gallows afore the main mast. Alternatively it may have been stowed on chocks fitted on the deck in convenient positions between the hatchways. Difficulties in hoisting the boat inboard did arise. This is a

problem which appears to have been more commonplace on the smaller men-of-war. Records show that complaints concerning this were common, and some commanders preferred to have their boats towed astern.

If a yawl was carried, it can only be assumed that it was stowed inside the pinnace, for if it had been set adjacent it would have greatly restricted the deck area at the waist. Alternatively it could have been towed astern. It must have been very inconvenient if it was stowed alongside the pinnace and this may have encouraged the Navy Board to reduce the complement of boats from two to one in 1719.

In the 1660s, when introduced into naval service, the yawl was clinker-built. Though Norwegian in origin they were named after their place of manufacture, and known as Deal yawls. After about 1702 they were, like the pinnace, carvel-built, after their manufacture was transferred from the Deal boatyards to the dockyards. Most yawls were eight-oared but it seems more likely that those carried on the Sixth Rates would have been six-oared.

Whether any other type of boat was used as an alternative on 20-gun ships is a matter of speculation. If any were, it would have been purely left to the commander's discretion. The only feasible alternative would have been a longboat, which was generally replaced by pinnaces and barges over the next forty years. In most cases it would not have been practical to carry one on a Sixth Rate ship.

#### THE CREW

The complement of a 20-gun ship such as *Blandford* consisted of approximately 120–130 officers and men. Of this number about 25 were either of commissioned or warrant officer status, about 20 were able seamen, and approximately 70 were ordinary seamen, the remaining members of the ship's company being carpenters' mates, cooks, officers' servants and so on. The only officers who held the King's Commission were the commander and his lieutenant. The remaining officers such as the master and boatswain were of warrant officer status and held the King's Warrant. The gunner, carpenter, boatswains' mates, quartermaster and coxswain were classified as non-commissioned officers. The captain was allowed to have four servants per hundred men of the ship's company, thus on *Blandford* there were four servants and one steward.

During any action the majority of the able and ordinary seamen manned the guns, the remaining men assisting with sailing the vessel. One question that does arise concerns the number of personnel manning the sweeps. If each sweep was rowed by three men a total of 108 would have been needed. Therefore to manoeuvre the ship with sweeps while her guns were manned for action was impossible so the advantage of the hybrid vessel was lost due to the actual manpower available. The addition of a further 100 seamen to carry out such duties would have been ideal, but the costs of running and victualling a ship with approximately 230 crew would have been impractical.

#### SOURCES

##### At the Public Records Office, Kew:

##### Captains' Logs – Blandford

|            |                     |                    |
|------------|---------------------|--------------------|
| ADM 51/113 | 11 February 1719/20 | – 12 March 1720/21 |
| ADM 51/113 | 30 April 1721       | – 30 April 1723    |
| ADM 51/113 | 1 June 1723         | – 31 December 1723 |
| ADM 51/113 | 31 May 1727         | – 31 October 1729  |
| ADM 51/113 | 13 June 1730        | – 31 December 1731 |
| ADM 51/113 | 11 May 1733         | – 31 December 1740 |
| ADM 51/114 | 10 October 1741     | – 1742             |

##### Masters Logs – Blandford

|            |                     |                      |
|------------|---------------------|----------------------|
| ADM 52/130 | 10 April 1720       | – 11 January 1720/21 |
| ADM 52/348 | 9 February 1720/21  | – 24 November 1724   |
| ADM 52/348 | 13 May 1727         | – 20 January 1729/30 |
| ADM 52/349 | 21 January 1729/30  | – 2 August 1732      |
| ADM 52/349 | 11 May 1733         | – 9 January 1737/38  |
| ADM 52/546 | 12 February 1741/42 | – 29 September 1742  |

##### Ship Muster Books for the Blandford

|            |         |
|------------|---------|
| ADM 36/217 | 1727    |
| ADM 36/219 | 1727–28 |
| ADM 36/218 | 1728    |
| ADM 36/221 | 1728–29 |
| ADM 36/222 | 1729–30 |
| ADM 36/223 | 1730–31 |
| ADM 36/224 | 1731–32 |
| ADM 36/225 | 1735–36 |
| ADM 36/226 | 1736–37 |
| ADM 36/227 | 1737–39 |
| ADM 36/220 | 1739–40 |
| ADM 36/228 | 1739–51 |
| ADM 36/230 | 1741–42 |
| ADM 36/252 | 1741–46 |
| ADM 36/231 | 1742–43 |

##### Sources for the tables

**Table 1:** *Naval Administration 1715–1750*, Navy Records Society, Vol 120; Progress Books Vols I and II, NMM, and Dimension Book B, NMM, except for column 5, the information in which was extracted from a letter from the Navy Board to the Admiralty Secretary dated 18 February 1716/17.

**Table 2:** Costs for a 24- and 20-gun ship, PRO Adm 1/5114/17; costs for a 20-gun ship, NMM SPB 37a ms61/030 and *Shipwright's Notebook 1720–1760*, by William Wilkins; costs of figurehead and ornamentation, NMM SPB 20 ms9355 and extracts from *Shipwright's Notebook*.

**Table 3:** Progress Books Vols I and II, NMM.

**Table 4:** *Shipbuilding Unveiled*, 1717, by William Sutherland.

**Table 6:** 1719 Establishment Book, PRO Adm 170/429.

## BIBLIOGRAPHY

- Anderson, R C *Oared Fighting Ships*, Marshall, 1962  
 Baugh, D A *Naval Administration 1715-1750*, Vol 120, Navy Records Society  
 Blackmore, H L *The Armouries of the Tower of London*, HMSO, 1976  
 Goodwin, P *The Construction and Fitting of the Sailing Man of War 1650-1850*,  
 Conway Maritime Press, 1987  
 Howard, Dr F *Sailing Ships of War 1400-1860*, Conway Maritime Press, 1979  
 Lavery, B *Deane's Doctrine of Naval Architecture 1670*, Conway Maritime Press, 1981  
 Lavery, B *Ship of the Line*, 2 vols, Conway Maritime Press, 1983-84  
 Lees, J *The Mastng and Rigging of English Ships of War 1625-1860*, Conway  
 Maritime Press, 1979  
 May, Cdr W E *Boats of Men of War*, NMM Publication  
 Ranft, B Mcl *The Vernon Papers* Vol XCIX, Navy Records Society  
 Sutherland, W *Englands Glory or Shipbuilding Unveiled*, 1717  
 1719 Establishment Book  
 Progress Book Vols 1 and 2  
 Dimension Book B

## APPENDIX: THE DIMENSIONS AUTHORISED FOR THE 20-GUN SHIPS OF THE 1719 ESTABLISHMENT

|   | Ft                    | In    |
|---|-----------------------|-------|
| Length of the Keel for Tonnage  | 87                    | 9     |
| Length of the Gundeck from the Rabbet of the Stem to the Rabbet of the Post                           | 106                   | 0     |
| Breadth, Extreme  | 28                    | 4     |
| Breadth at the after part of the Main Transom from out to outside of the Plank                        | 16                    | 2     |
|   | Afore                 | -     |
| Breadth at the Toptimber Line out to out  | Midships              | 22 10 |
|   | Abaft                 | 13 0  |
| Breadth of the Stern at the Fiferaille abaft  | 11                    | 9     |
| Height of the Cutting Down in the Dead Flat above the Keel  | 1                     | 4     |
| Height of the Toptimber line or Upper edge of the Waist Raile above the Bottom of the False Keel      | Afore                 | 23 4  |
|   | Midships              | 21 4  |
|   | Abaft                 | 26 5  |
| Rising of the Midships Flat   | -                     | 10    |
| Depth in the Hold taken from the Strake next the Limberboards   | 9                     | 2     |
| Strake next the Limberboard   | Thick                 | 5     |
|   | Broad (if can be had) | 1 0   |
| Burthen in Tunns  | 374                   | 87/94 |
| Draught of Water  | Afore                 | 11 4  |
|   | Abaft                 | 12 4  |
| Platform  |                       |       |
| Abaft, height between Plank to Plank (at the Middle of the Beams)                                     | 5                     | 7     |
| Afore, height between Plank to Plank (at the Middle of the beam)                                      | 5                     | 7     |
| <b>Lower Deck</b>   |                       |       |
| Beams to Round  |                       | 3     |
| Plank, Thick  |                       | 2     |
| Height to the Upper Edge of the Quarter Deck Beams at the middle of the Beam (Afore, Midships, Abaft) | 5                     | 9     |
| Height, to the Sweep Port Cills from the Waterline Midships   | 2                     | 7     |
| Height, to the Ballast Port Cill from the Waterline Midships  | 2                     | 7     |
| <b>Upper or Main Deck</b>   |                       |       |
| Beams to Round  |                       | 6     |
| Plank, Thick  |                       | 2     |
| Height to the Upper Edge of the Quarter Deck Beams at the middle of the Beams                         | Afore                 | 6 5   |
|   | Abaft                 | 6 6   |
| Height to the Upper Edge of the Forecastle Beams at the middle of the Beams, Afore and Abaft          | 4                     | 8     |
| Gunports  | Deep                  |       |
|   | Broad                 |       |
| <b>Forecastle</b>   |                       |       |
| Beams to Round  |                       | 5     |
| Plank, Thick  |                       | 2     |
| Length from the fore side of the Planking   | 7                     | 3     |

|  |     |       |
|--|-----|-------|
| <b>Quarterdeck</b>   |     |       |
| Beams to Round   |     | 6     |
| Plank, Thick   |     | 2     |
| Length, taken midships from the after part of the Counter Timbers  | 16  | 9     |
| Length, from the fore side of the Tafferaile at the Height of the Fiferaille to the fore side of the Figure of the Head at a line parallel to the Keel | 121 | 11    |
| Rounding of the Stern, at the Wing Transom (not applicable to those vessels built with the Square Tuck)  |     | 6     |
| Rounding of the Stern, at the Lower Counter  |     | 8     |
| Gundeck (Upper or Main deck) perpendicular height above the Upper Edge of the Keel, to the upper edge of the Plank at the middle line of the Deck      |     | Afore |
|  |     | Abaft |
| The Back of the False Post to Rake Two and a Half inches in a Foot and the upright of the Stern, three inches  |     |       |
| The Stem to Rake Forward above the Lower Deck to the top of it One Inch in a Foot  |     |       |
| The Height of the Upper edge of the Wing Transom above the Upper edge of the Keel at the Post  | 15  | 6½    |
| Lower Height of the Breadth above the Upper edge of the Keel in the Dead Flat  | 10  | 5     |
| Upper Height of the Breadth above the Upper edge of the Keel in the Dead Flat  | 11  | 5     |
| From the Upper edge of the Keel to the Lower edge of the Counter Raile at the middle line  | 18  | 0     |
| From the After side of the Wing Transom to the After part of the Counter at the middle line  | 3   | 4     |
| From the Upper edge of the Keel to the Lower edge to the Lower edge of the Raile under the Great Cabbin Lights   |     |       |

## Parts of the Frame

|   |   |     |
|---|---|-----|
| Keel, Main of Elm or Beach, No of Pieces not to be exceeded, 4  |   |     |
| Square in the Midships  | 1 | 0   |
| Scarphs, (laid with Tarr and Hair), Thrice their Breadth or; Number and Size of Bolts; 6 of ½ in dia  | 3 | 4   |
| Keel, Sided afore   |   | 10½ |
| Sided at the Rabbet of the Post   |   | 7½  |
| False Keel, Thick   |   | 3   |
| Number of Pieces; The Same or One more than the Main Keel   |   |     |
| Stem, Main, Breadth at the Head athwartships  | 1 | 2   |
| Below the Hance; The Bigness of the Keel amidships  |   |     |
| Fore and Aft at the Head  | 1 | 0   |
| At the Fore foot; The same as the Keel  |   |     |
| Scarphs, not less than  | 3 | 0   |
| No and Size of Bolts in each and to go through the False Stem; 6 of ½ in dia  |   |     |
| False Stem (or Apron) Thick, (to overlaunch the Scarphs of the Stem, above and below)   |   | 6   |
| Broad, (if can be had)  | 1 | 6   |
| Scarphs, long   | 1 | 0   |
| Post, Main, Square at the Upper End, the Top to be wrought upwards if can be had  | 1 | 0   |
| Fore and Aft on the Keel, the False Post included   | 2 | 0   |
| Abaft the Rabbet at the Wing Transom  |   | 5½  |
| False, the back of it Abaft the Rabbet of the Keel  | 1 | 5   |
| The Inner, Fore and Aft, (the Top end upward)   |   | 8   |
| Fore and Aft on the Keel, (if to be had)  |   | 9   |
| Transoms, Wing sided  |   | 10½ |
| Moulded at the ends   | 1 | 0   |
| Deck, to lye close to the Lower Deck for the Plank of the said Deck to Bolt into the same   |   |     |
| Sided   |   | 8½  |
| Moulded, as Broad as conveniently may be for the Better fastening the Plank of the Deck   |   |     |
| Between the Wing Transom and Deck, so thick as to leave 2 inches between the Wing Transom and the Lower Deck Planking for the circulation of Air  |   |     |
| [The earlier built 20-gun ships were constructed with a square tuck, so no other transoms were fitted below the deck transom of the lower deck. However, later vessels had a round tuck stern. In this case a further three transoms were fitted below the lower deck transom. The moulding of each of these transoms is given as 7½ inches with spaces of no less than 3 inches for air circulation between them.] |   |     |
| Rising Wood, A sufficient number of pieces, Afore and Abaft   |   |     |
| Abaft, (if a short piece of Keel) to overlaunch the Scarph at least 6 feet, if a Long piece of Keel to drop short of the Scarph 8 feet  |   |     |
| Depth in the Midships on the Keel   |   | 7   |
| Broad, in the Midships 3 inches on each side of the Keel, (if can be had)   |   |     |
| Knee, against the Post, upon the Lower piece of Deadwood, Length of the Up and Down Arm   | 4 | 0   |
| Fore and Aft Arm, (if can be had)   | 5 | 0   |
| Distance and Size of Bolts; Spaced every 22 inches, diameter being 1 in. Bolted through the Keel and Post, and upon the said Knee to bring on the rest of the Rising Wood fastened in the same manner   |   |     |

|   |   |     |   |              |    |    |
|---|---|-----|---|--------------|----|----|
| Hawsepieces, No on each side, Two, and a piece between, or Four as conveniently be had  |   |     | Both the Main and the Fore Mast Steps were fastened with Six Bolts of 1 inch Diameter   |              |    |    |
| If in Two, each piece to be Broad   | 2 | 0   | Mizen, sided - To the Diameter of the Mizzenmast in the Partners                        |              |    |    |
| Hawse Holes, Diameter   |   | 9½  | On the Keelson, - A sufficient Depth  |              |    |    |
| <b>Timbers</b>  |   |     | Fastened with Six Bolts of ¼ inch in diameter   |              |    |    |
| Room and Space  | 2 | 5   | Main Capstan (if fitted in this form) Step,   | Broad        | 1  | 3  |
| Floor and Foothook and the Bearing of the Ship to fill up the Rooms and Space           |   |     |   | Deep         | 1  | 0  |
| Next the Flats, Sided   |   | 9   | Breast Hooks, One fitted below the Lower Deck Hook, sided; Two fitted of the same       |              |    |    |
| Afore and Aft, In wake of the Half Timbers, One inch less                               |   |     | Siding forming the Step for the Foremast  |              |    | 9  |
| At the Wrongheads, Dead Flat, wrought in and out  |   | 7   | Pillars, Upright under the (Lower Deck) Beams, Square                                   |              |    | 5  |
| Afore and Aft, in and out   |   | 6   | To be placed under the Middle of each Beam and in the Quarters on the Scarphs of the    |              |    |    |
| Every other bolted through the Keel by bolts of 1 in dia                                |   |     | Riders [not generally fitted on initial Building unless a Rebuild or later              |              |    |    |
| Heads to lye above the Bearing of the Floor   | 1 | 4   | modification to 'stiffen' the Hull]   |              |    |    |
| Foothooks, Lower sided in the Dead Flat next the Flats a small distance afore and abaft |   |     | Well, Fore and Aft  |              | 6  | 0  |
| the Bearing of the Ship   |   | 9   | Thwartships   |              | 5  | 8  |
| Afore and abaft, that stated above  |   | 8   | Planking, Thick   |              |    | 2  |
| Heel to Scarph below the Floorheads, at least   | 5 | 6   | Shot Lockers, One only, fitted abaft the Well   |              |    |    |
| In and out at the Heads in the Dead Flat  |   | 5½  | Fore and aft in the Clear   |              | 1  | 10 |
| Scarphs, upwards long   | 5 | 4   | Plank, Thick, (integral with that of the Well)  |              |    | 2  |
| afore and abaft, not less than  | 5 | 0   | Bulkheads, Length from the Inside of the Rabbet of the Stern Post on the Lower Deck to  |              |    |    |
| Foothooks, Second, sided in the Midships  |   | 8½  | the After side of the Magazine [this dimension may have varied between the first        |              | 18 | 6  |
| Afore and abaft, sided  |   | 7½  | Building Programme and the Third.]  |              |    |    |
| Scarphs long in the Dead Flat   | 5 | 4   | <b>Lower Deck</b>   |              |    |    |
| Afore and abaft, not less than  | 5 | 0   | Clamps, In two Strakes. Upper   | Thick        |    | 4  |
| Foothooks, Upper, sided in the Dead Flat  |   | 8   |   | Broad        | 1  | 2  |
| sided afore and abaft   |   | 7½  | Lower   | Thick        | 1  | 1  |
| [Both stated above were to be 1 inch less at their Heads]                               |   |     |   | Broad        | 3  | 0  |
| In and out at the Lower Deck in the Dead Flat   |   | 5   | Lengths of the Scarphs  |              | 3  | 0  |
| Scarphs, Long, in the Midships  | 5 | 4   | Openings under them   |              |    | 8  |
| Upper and Lower, afore and abaft  | 5 | 0   | Breast (deck) Hook and Hook under the Hawses  | sided        |    | 9  |
| Top, sided at the Heels and at the Upper Foothook Heads                                 |   | 8   |   | Length       | 12 | 0  |
| Sided at the Heads  |   | 6   | Number of ¼ inch diameter Bolts, 9  |              |    |    |
| In and Out at the Gunnell or Top of the Sides   |   | 2½  | Breast Hook, under the Lower Deck (Deck Hook) to have a Large Chock and to be left as   |              |    |    |
| To be placed in wake of the Channells, some on each side if can be had                  |   |     | much as possible fore and aft for the Better Coaking, Bolting and Fastening the         |              |    |    |
|   |   |     | Planks of the Lower Deck to the Same  |              |    |    |
| <b>In (the) Hold</b>  |   |     | Beams, sided in the Midships (One inch less afore and abaft each way)                   |              |    | 8  |
| Keelson, Square   |   | 11½ | Moulded in the Midships (One inch less afore and abaft each way)                        |              |    | 7  |
| Number of pieces if can be had; 4   |   |     | One to be placed under and one between each Port where conveniently be had except       |              |    |    |
| Length of the Scarphs to reach Three Floor Timbers and to be bolted with Bolts of the   |   |     | in the Wake of the Hatchways and Masts and there to have Doubled Armed                  |              |    |    |
| same size of the Floor Timbers, and Two Bolts in the Ends of the Scarphs                |   |     | Beams, that one part may be proper Standards where necessary and double Kneed           |              |    |    |
| Standard, upon or under the Keelson abaft, the Up and Down Arme to Butt under the       |   |     | at each end with One Hanging Knee and One Lodging Knee. [Standards were                 |              |    |    |
| Lower Transom if can be had   |   |     | employed towards the fore and After ends due to the acute shape of the Hull below       |              |    |    |
| The other Arme Long   | 7 | 0   | the waterline at these points]  |              |    |    |
| Sided, at least   |   | 10  | Knees, Sided,   | Lodging      |    | 5½ |
| Limberboards  |   | 2   |   | Hanging      |    | 6  |
|   |   |     | Thick   |              |    |    |
|   |   |     | Broad   |              |    |    |
| Thickstuff at the Floorheads, Middle Strake,  |   | 1   | Those (of the above stated) in Wake of the Main and Fore Masts and Main Hatch, to be    |              |    |    |
|   |   |     | ½ an inch bigger  |              |    |    |
| Thickness of the Strakes above and below the Middle Strake                              |   | 1½  | Hanging Arm Long (if can be had)  |              | 4  | 6  |
| Number of Strakes above and below the Middle Strake; 1                                  |   | 3   | Lodging Arme to the Beam, Long  |              | 3  | 0  |
| No more than One Strake of 2½ inches in thickness afore or abaft, fitted in 20 Gun      |   |     | Hanging Knees to be Bolted with 6 Bolts of ¾ inches diameter                            |              |    |    |
| ships   |   |     | To have 4 Bolts in the lower arms of the Hanging Knees, especially in Wake of the       |              |    |    |
| Thickstuff at the Lower Foothook Heads, Middle Strake                                   |   | 3½  | Masts and Hatchways and where the Knees can be got of sufficient length                 |              |    |    |
|   |   | 0   | Carlings, Number of Tires (tiers) on each side; 2                                       | Broad        |    | 5½ |
| Strake both above and below the Middle Strake, Thick                                    |   | 2   |   | Deep         |    | 4½ |
| Footwaling (in this case also applies to the Strake next the Limber Boards)             |   |     | Ledges, to lye asunder not less than 9 inches, not more than 12                         | Broad        |    | 3  |
| Thick, in the Midships  |   | 2   |   | Deep         |    | 2½ |
| Afore and abaft   |   | 1½  | Bits (Riding), Number of Pairs; 1½ [However, this was not always the case for often the |              |    |    |
| Platform Clamps, Not fitted [the Beams for the Platforms were probably Bolted down      |   |     | fore set consisted of two separate halves, the cross piece tying both being omitted     |              |    |    |
| upon the Thickstuff over the Lower Foothook Heads]                                      |   |     | because of the position of the fore mast]   |              |    |    |
| Platform Planking, [The deck planking was mainly made up of Boards 2 inches thick and   |   |     | The Foremost fitted - as conveniently as possible                                       |              |    |    |
| where no loading was required (ie the wings outboard of the magazine) possibly          |   |     | The Aftermost to be abaft the Rabbet of the Stem  |              | 26 | 0  |
| made of 1½-1¾ Boards]   |   |     | Distance between them, Thwartships  | Foremost     |    |    |
| Crotches, Number fitted; one  |   |     |   | Aftermost    |    |    |
| Length of each Arme (if can be had)   | 5 | 0   | Aftermost   | Square       | 1  | 1  |
| Sided   |   | 8   | Foremost  | Square       |    | 11 |
| Number of bolts of ¾ inches Diameter, fitted; 6   |   |     | Crosspieces, Foremost (if fitted)   | Deep         |    | 11 |
| Steps Main, sided - The Diameter of the Mainmast in the Partners                        |   |     |   | Fore and Aft | 1  | 2  |
| Deep on the Keelson   | 1 | 0   | Length, as conveniently be got  |              |    |    |
| Fore, sided - To the Diameter of the Foremast in the Partners                           |   |     | Lower Edge above the Deck   |              | 1  | 4  |
| On the Keelson, - A sufficient depth  |   |     | Scored in Deep  |              |    | 2  |
| Length (if can be had)  | 7 | 0   | Elme Back of; Thick   |              |    | 4  |
|   |   |     | Aftermost, Deep   |              |    | 11 |
|   |   |     | Fore and Aft  |              | 1  | 2  |

|   |                |                 |   |
|---|----------------|-----------------|---|
| Length, as conveniently be got  |                |                 |   |
| Lower Edge above the Deck   | 1              | 3               |   |
| Scored in Deep  |                | 2               |   |
| Elme Back of, Thick   |                | 4               |   |
| Standard Knees (for the After Bitts), sided   |                | 9               |   |
| To be Sufficiently Deep to make the Carling if can be had   |                |                 |   |
| The Arme upon the deck to be as long as the Bitt pins are asunder and the Forepart to be Flush with the Deck  |                |                 |   |
| To be Bolted with 4 Bolts of 1 inch diameter  |                |                 |   |
| Waterway, Thick, in the Chine; One inch thicker than the Plank of the Deck  |                |                 |   |
| Plank, on the Flat to be English, in the Wake of the Standards. Thick;  |                | 1               |   |
| Two Strakes next the Coamings to be one Inch thicker than the rest of the Deck and to be let down an Inch on the Beams, to be bolted with 2 Small Bolts in each Beam and One Treeneil in each Ledge, the size of the Bolts to be $\frac{1}{2}$ an Inch and to be 1 inch longer than Twice the Thickness of the Plank. All the rest of the Plank to be Bolted with one Bolt in each Beam and one Treenaile on each Ledge |                |                 |   |
| Partners, for the Masts, Main to be Carlings  |                | 11              |   |
|   | Broad          |                 |   |
|   | Deep           | 1               | 0 |
| Fore, Thick   |                | 4               |   |
| Mizen, No thicker than the Deck   |                | 5               |   |
| Bowsprit, Thick   |                | 5               |   |
| Main Capstan, Thick   |                | 5               |   |
| Step for the Main Capstan, Thick  | 1              | 0               |   |
| To be no higher above the Deck than 4 inches if it can be done  |                |                 |   |
| Transom Knees, The Wing sided   |                | 7               |   |
| The fore and aft Arme to be scored into the Timbers $1\frac{1}{2}$ inches and to Scarph with Hook and Butt at the Fore end on the Spirketting a sufficient Length   |                |                 |   |
| Fore and Aft Arme, Long (if can be had)   | 10             | 0               |   |
| Shortest Arme, Long (if can be had)   | 6              | 0               |   |
| Bolted with bolts of $\frac{1}{4}$ inches diameter set every 24 inches apart  |                |                 |   |
| Deck, sided, the same as that of the Hanging Knees  |                |                 |   |
| Length of the Longest Arme  | 6              | 0               |   |
| Distance and size of the Bolts the same as the Wing Transom Knees   |                |                 |   |
| Below the Lower Deck, sided 2 inches less than the Wing Transom Knees   |                |                 |   |
| Length of the Longest Arme  | 6              | 0               |   |
| Distance and size of the Bolts, the same as the Wing Transom  |                |                 |   |
| Hatches, Main   |                | 5               | 0 |
|   | Fore and Aft   |                 |   |
|   | Thwartships    | 4               | 0 |
| Fore  |                |                 |   |
|   | Fore and Aft   |                 |   |
|   | Thwartships    |                 |   |
| Next abaft the Mainmast   |                |                 |   |
|   | Fore and Aft   |                 |   |
|   | Thwartships    |                 |   |
| Over the Fishroom   |                |                 |   |
|   | Fore and Aft   |                 |   |
|   | Thwartships    |                 |   |
| Plank for Ditto, Thick; One and a Half inches for each  |                |                 |   |
| Height above the Deck   |                | 2               |   |
| Scuppers, Lead, number on each side being Three with a diameter of 4 inches [Additional Scuppers were sited forward of the Manger]  |                | 2               |   |
| Manger, Plank Thick   |                |                 |   |
| Scuppers, number on each side being Two of 4 inches in diameter   |                |                 |   |
| Pump Dale Scupper, Diameter in the Clear  |                | 6               |   |
| Spirketting, Two Strakes on each side to be bolted in the next Timber to each Butt with One Bolt  |                |                 |   |
| Thickness in the Midships   |                |                 |   |
|   | The Lower Edge | 3               |   |
|   | The Upper Edge | 2 $\frac{1}{2}$ |   |
| Plank, between the Spirketting and the Upper Deck Clamps, Thick   |                | 2               |   |
| Ports, In the Counter, Number; 2  |                |                 |   |
| Oar Ports, Number; 36   |                |                 |   |
|   | Depth          | 8               |   |
|   | Fore and Aft   | 7 $\frac{1}{2}$ |   |
| Ballast [Port], Number; 1   |                |                 |   |
|   | Depth          |                 |   |
|   | Fore and Aft   |                 |   |
| Pillars, Turned Square  |                | 4 $\frac{1}{2}$ |   |
| Tiller, Square in the Biggest end   |                | 8               |   |
| Sweep, to be flush with the Beam  |                | 2               |   |
|   | Thickness      |                 |   |
|   | Broad          | 6 $\frac{1}{2}$ |   |
| Transom, Deep   |                | 7               |   |
| Transom Knees, Deep   |                | 6               |   |
| Transom Knees, Armes, fore and aft, long if can be had  | 7              | 6               |   |
| Thwartships   | 3              | 8               |   |
| To be fastened with same size and number of bolts as used for the Upper Deck Knees  |                |                 |   |

### Upper Deck (Main Deck)

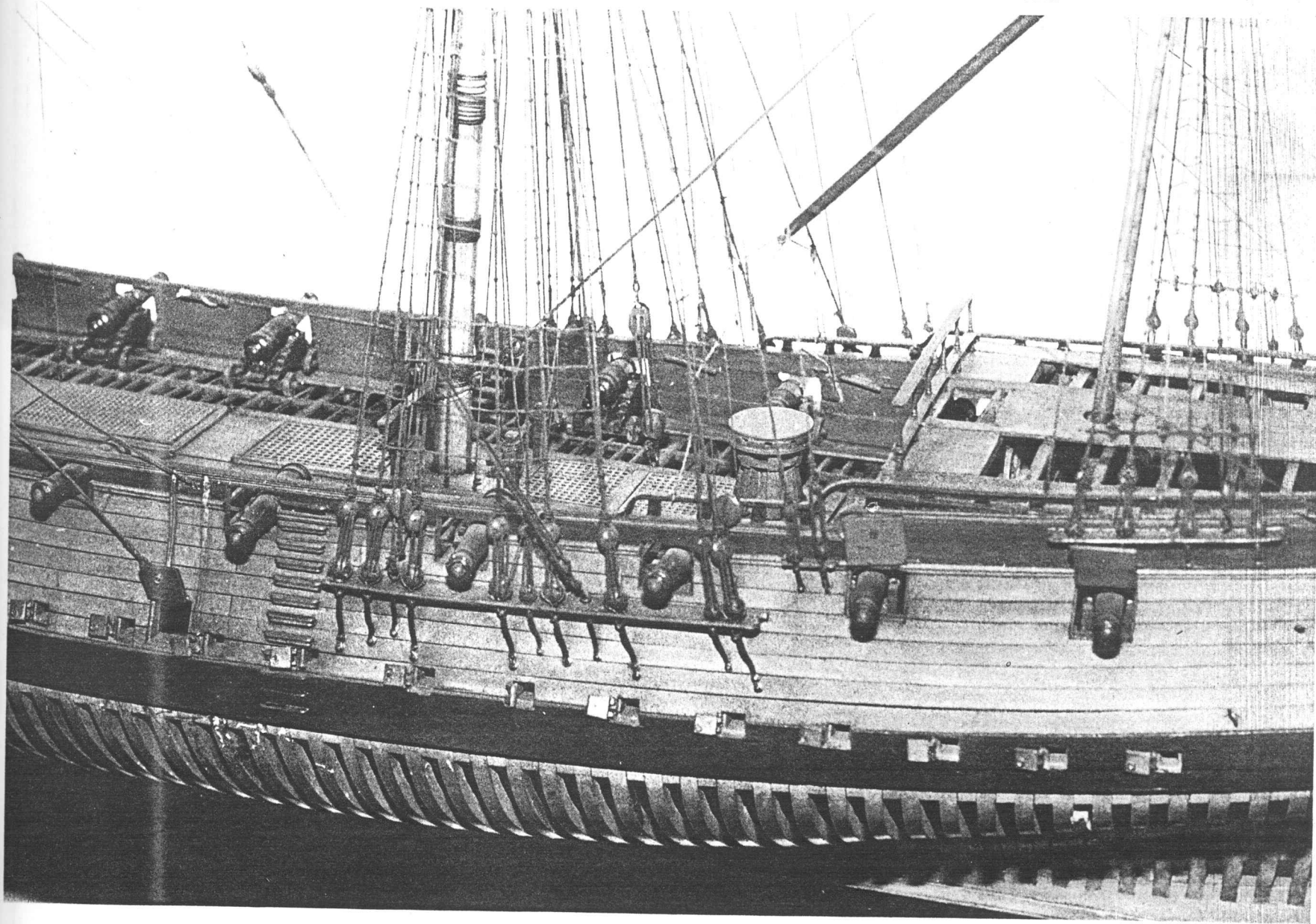
|  |              |    |                 |
|--|--------------|----|-----------------|
| Clamps, to be wrought Anchor Stock Fashion with Hook and Butt  |              |    |                 |
| Thick at the Upper edge  |              |    | 3               |
| Thick at the Lower edge  |              |    | 2 $\frac{1}{2}$ |
| Beams, Sided   |              |    | 8 $\frac{1}{2}$ |
| Moulded  |              |    | 6 $\frac{1}{2}$ |
| To lye One under and One between each Port, where they can conveniently be placed, and as near as possible over the Beams of the Lower Deck and under the Great Cabbin the Distance of the others  |              |    |                 |
| Knees, Double at each End, Hanging and Lodging, Sided  |              |    | 5               |
| The Up and Down Arme to reach the Spirketting  |              |    |                 |
| Shortest Arme, Long, if can be had   | 2            | 10 |                 |
| To be fastened with Five Bolts of $\frac{1}{2}$ inches diameter  |              |    |                 |
| Carlings   |              |    |                 |
|  | Broad        |    | 6               |
|  | Deep         |    | 4 $\frac{1}{2}$ |
| Number of Tire (Tier) on each side except in Wake of the Hatchways and Mainmast; 2   |              |    |                 |
| Short, with Long Coamings of Oake on them, pricked down One Inch into the Beams  |              |    | 3               |
| Coamings to lye above the Deck   |              |    | 8 $\frac{1}{2}$ |
| Broad, with the Rabbet   |              |    | 3 $\frac{1}{2}$ |
| Ledges   |              |    | 3               |
|  | Broad        |    |                 |
|  | Deep         |    |                 |
| To lye Asunder, From 9 to 12 inches  |              |    |                 |
| Waterway, Thick on the Chine; One inch more than the Flat of the Deck  |              |    |                 |
| Partners, for the Foremast, Thick  |              |    | 5               |
| Mainmast - see Carlings, [but was more probably, Thick   |              |    | 5 $\frac{1}{2}$ |
| Mizenmast, Thick   |              |    | 3 $\frac{1}{2}$ |
| Flats, Three Strakes next the Waterways and all the Forepart of the Deck to be of Oake,  |              |    |                 |
| Thick  |              |    | 2               |
| Two Strakes of Oake next the Coamings to give scarph to each other and to be pricked down an Inch into the Beams, Tyld (tailed) and hooked into the Transom and Deckhook and bolted to the Beams, Breasthook and Transom. The rest to be of Prutia (Prussia) Deal                        |              |    |                 |
| [Capstans - see drawings as no details are listed for the 20-gun ship]   |              |    |                 |
| Spirketting, Two Strakes on each side  |              |    |                 |
| Thickness at the Lower Edge  |              |    | 2 $\frac{1}{2}$ |
|  | Lower Strake |    | 2               |
|  | Upper Strake |    | 6               |
| Scuppers, Lead, on each Side, Number   |              |    | 4 $\frac{1}{2}$ |
| Diameter in the Clear  |              |    |                 |
| Standards of Iron, One Pair  |              |    |                 |
| The up and down arm to reach the Upper Edge and Bolt thro' the Forecastle and Quarter Deck Clamps. [This contradicts the previous statement as only One pair fitted. On inspection of existing models Iron Standards are omitted therefore leaving doubt as to their actual application] |              |    |                 |
| If Fitted - Shortest Arme, Long  |              |    | 2               |
| Fastened with Five Bolts of $\frac{1}{2}$ inches diameter  |              |    | 11              |
| Stringer in the Waist, made integral with the Planksheer   |              |    |                 |
| Bitts, Main Topsaile Sheet and Jeer, Square  |              |    | 7               |
| Jeer, high above the Deck  |              |    | 3               |
| Sheet and Jeer Crosspieces   |              |    | 2               |
|  | Fore and Aft |    | 6               |
|  | Deep         |    | 5               |
| Scored into the Bitts  |              |    | 1 $\frac{1}{2}$ |
|  | Sided        |    | 6 $\frac{1}{2}$ |
|  | Deep         |    | 11              |
|  | Long         |    | 9               |
|  |              |    | 0               |
|  |              |    | 6               |
|  |              |    | 0               |
|  |              |    | 1 $\frac{1}{2}$ |
| Bolts, Ring and Eye for the Ports, Four in number per port, $\frac{1}{4}$ inches diameter  |              |    |                 |
| Diameter of the Rings in the Clear   |              |    | 4               |
| On the Flat of the Deck for the Guns, Size   |              |    | 3               |
| Eye for lashing the Blocks on each side of the Mainmast and the Foremast, Size   |              |    | 3               |
| Ditto, for the Toptackles, diameter  |              |    | 1 $\frac{1}{2}$ |
| All Carlings and Ledges afore and abaft where they are Shorter to be made lesser than in the Midships  |              |    |                 |
| Bitts, Fore Topsaile Sheet, Squire; (to meet in the Middle)*   |              |    | 6               |
| Jeer, Square; (to meet in the Middle)*   |              |    | 6               |
| High above the Deck  |              |    | 3               |
| Crosspieces  |              |    | 2               |
|  | Fore and Aft |    | 6               |
|  | Deep         |    | 5               |
| Scored into the Bitts  |              |    | 1 $\frac{1}{2}$ |
| Bolts, Span Shackle, (the corner of the Shackle to be Round), Size   |              |    | 1 $\frac{1}{2}$ |
| Number fitted; Two   |              |    |                 |
| Eye for the Main Topmast Stay; $\frac{1}{2}$ inches diameter   |              |    |                 |
| * The Bitts were more commonly fitted separately and did not marry in the middle at the Deck   |              |    |                 |

**Quarterdeck**

|  |                      |       |  |  |        |
|--|----------------------|-------|--|--|--------|
| Clamps, Upper edge, Thick  |                      | 3     | Thick at the edges   |  | 3      |
| Lower edge, Thick  |                      | 2     | Size of bolts  |  | 1 1/4  |
| String of Oake in the Great Cabbin,  | Upper edge, Thick    | 2 1/2 | Plates, Ring and Backstay for the Main Chaines to have the same Breadth and Thickness and the same size Bolts as the Main Chains                       |  |        |
|  | Lower edge, Thick    | 2     | Bindings for the Deadeyes for the Main and Fore Channells, their size  |  | 1 1/4  |
|  | Broad, if can be had | 1 0   | Bindings for the Deadeyes for the Mizzen Channell, their size  |  | 3      |
| Beams, To have a Small Strap of Iron round the Timber to every Second and Third Beam in Wake of the Cabbin   | Sided                | 5 1/2 | Deadeyes, for the Main Channells, number fitted including One Spare; 6   |  | 11     |
|  | Moulded              | 4 1/2 | Diameter   |  |        |
| To lye asunder from 2 feet 4 inches to 2 feet each where they can be conveniently placed   |                      |       | For the Fore Channells, Number fitted including One Spare; 5   |  | 10     |
| In the Great Cabbin, to be Bolted into the Strings at their ends with Bolts of 3/4 inch diameter   |                      |       | Diameter   |  |        |
| Knees, Hanging, Sided  |                      | 4     | Main and Fore Channells to be in Thickness 3/4 of an inch or more than Half the Diameter   |  |        |
| [These were not generally fitted. If, however, they were the up and down arm would have been worked down to the spirketting, the short arm being approximately 2 feet 4 inches in length. The knees would be fastened with bolts of 3/4 inch diameter] |                      |       | For the Mizzen Channells, Number fitted; 3   |  | 7      |
| Waterways, Thick on the Chine; One Inch thicker than the Plank of the Deck   |                      |       | To be in Thickness 1/2 an Inch more than Half the Diameter   |  |        |
| Spirketting, Thick   |                      | 2     | For the Main Topmast Backstays, Two of 7 inches diameter (each side)   |  |        |
| Quickwork, berthed up with Deale, thick  |                      | 1 1/2 | For the Main Topgallant Backstays, One of 5 inches diameter (each side)  |  |        |
| Gunnell to the Taffarell, Deep   |                      | 3     | For the Foretopmast Backstays, Two of 6 inches diameter (each side)  |  |        |
|  |                      |       | For the Fore Topgallant Backstays, One of 5 inches diameter (each side)  |  |        |
|  |                      |       | For the Mizzen Topmast Backstay, One of 5 inches diameter (each side)  |  |        |
|  |                      |       | Rother, Head, Thwartships (if can conveniently be had)   | 1  | 1      |
|  |                      |       | Fore and Aft (if can conveniently be had)  | 1  | 3      |
|  |                      |       | At the Lower end, Fore and Aft, One Tenth part of the Ships Extreme Breadth  |  |        |
|  |                      |       | Braces and Pintles, Number of Pair; 5  |  |        |
|  |                      |       | Upper afore the Rabbet of the Post, Long   | 2  | 6      |
|  |                      |       | Lower afore the Back of the Post, Long   | 4  | 0      |
|  |                      |       | To be Hung Flemish Fashion, and secured with Chocks above the Water to prevent its unehanging  |  |        |
|  |                      |       | Pintles, Diameter  |  | 2      |
|  |                      |       | Length of the Upper Pintles  |  | 9      |
|  |                      |       | Length of the Lower Pintle only to be  |  | 11     |
|  |                      |       | Braces and Straps for Pintles, Broad   |  | 3      |
|  |                      |       | Thick in the Shoulder at the Return  |  | 1 1/4  |
|  |                      |       | To have an Iron Strap on the Back and on each Corner an Eye well Clenched on the side of the Strap, of Sufficient Bigness to receive an Oval Ring      |  |        |
|  |                      |       | Head, The Knee to be as Thick as the Stem  |  |        |
|  |                      |       | Size of the Two upper Bolts in the Knee  |  | 1 3/4  |
|  |                      |       | Size of the Two upper Bolts in the Stem  |  | 1 1/4  |
|  |                      |       | Cheeks, Sided if can conveniently be had   | Lower                                    | 7      |
|  |                      |       |  | Upper                                    | 6      |
|  |                      |       | Length of the Arm next the Side (if can be had) The Bolts the same size as the Lower   | 6  | 6      |
|  |                      |       | Deck knees   |  |        |
|  |                      |       | Timbers, Sided from  |  | 4 to 3 |
|  |                      |       | Length from the Fore side of the Stem to the Fore part of the Knee of the Head   | 7  | 0      |
|  |                      |       | Standard in the Head, sided; (bolted as the Lower Deck knees)  |  | 7 1/2  |
|  |                      |       | Upper Rails at the after end, Fore and Aft   |  | 7      |
|  |                      |       | Thwartships  |  | 5 1/2  |
|  |                      |       | Chesstrees, sided at the Gunwale   |  | 4 1/2  |
|  |                      |       | Fenders, sided at the Gunwale  |  | 2 1/2  |
|  |                      |       | against the Hatchways, Asunder   | 1  | 4      |
|  |                      |       | Linings of the Anchors, Thick  |  | 2      |
|  |                      |       | Rails on the Side, the Sheer   | Broad                                    | 5 1/2  |
|  |                      |       |  | Thick                                    | 2 1/2  |
|  |                      |       | Waist Rail   | Broad                                    | 5 1/2  |
|  |                      |       |  | Thick (dimension unknown, no plans here) |        |
|  |                      |       | After Drift  | Broad                                    | 4      |
|  |                      |       |  | Thick                                    | 2 1/2  |
|  |                      |       | Fife Rail  | Broad                                    | 8      |
|  |                      |       |  | Thick                                    | 2 1/2  |
|  |                      |       | Drifts, Thick  |  | 2      |
|  |                      |       | To be Struck with an Astricall within and without, and the Square to overhang the Plank or Deal Half an Inch within and without Board                  |  |        |
|  |                      |       | Shankpainter Chain, Long   | 10                                       | 6      |
|  |                      |       | Size of the Links  |  | 3      |
|  |                      |       | Port Hinges [no dimensions given]  |  |        |
|  |                      |       | Bolts, for the Butt ends under water where they are necessary to be placed in the Timber next the Butt and to be Clenched within side, Size (Diameter) |  | 3      |
|  |                      |       | Eye for the Standing part of the Main and Fore Sheats, Size  |  | 1 1/4  |
|  |                      |       | for the Mizzen Sheat, Main Brace, Main and Fore Topsaile Halyards, Bowsprit Shrouds and in Wake of the Chain Plates, Size                              |  |        |
|  |                      |       | for the Mizzen Topsaile Halyard and the Mizzen Truss, size   |  | 1      |
|  |                      |       | Swivle, for the Longboat, size   |  | 3      |
|  |                      |       | Diameter of the Ring in the clear  |  | 1      |
|  |                      |       | Lining of the Hawse, between the Holes, Thick  |  | 2 1/2  |
|  |                      |       | Bolt Holes to be bored through, size   |  | 5      |

# The Photographs

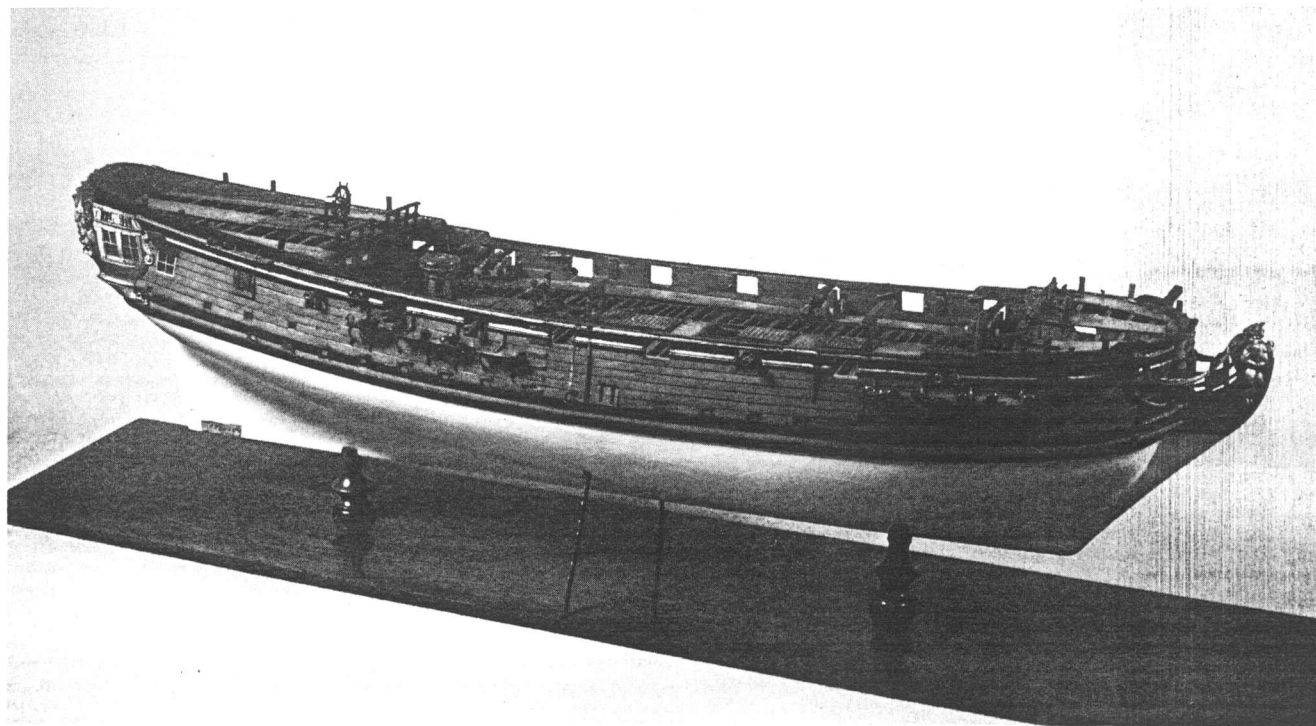
2. Port side of a 20-gun ship model at the Science Museum, showing the main and mizzen channels, sweep ports and ballast port. Note the centre line companionway to the quarterdeck.  
*Author*



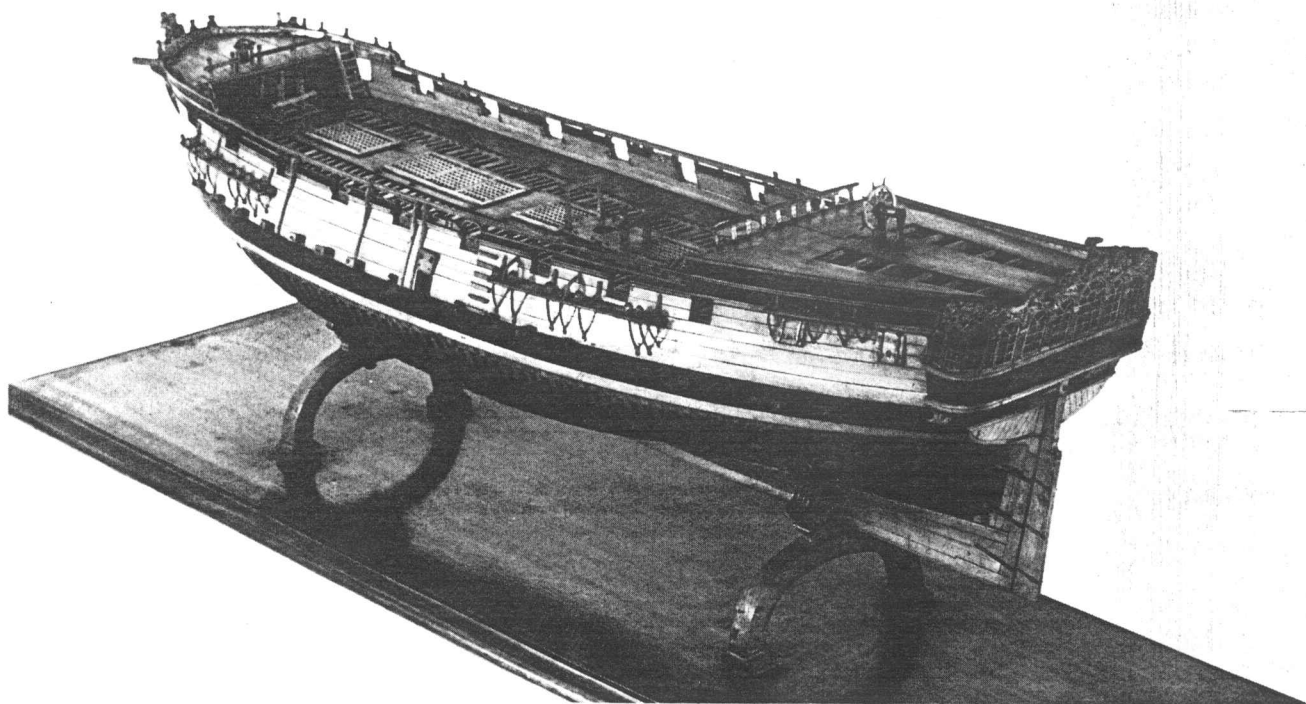


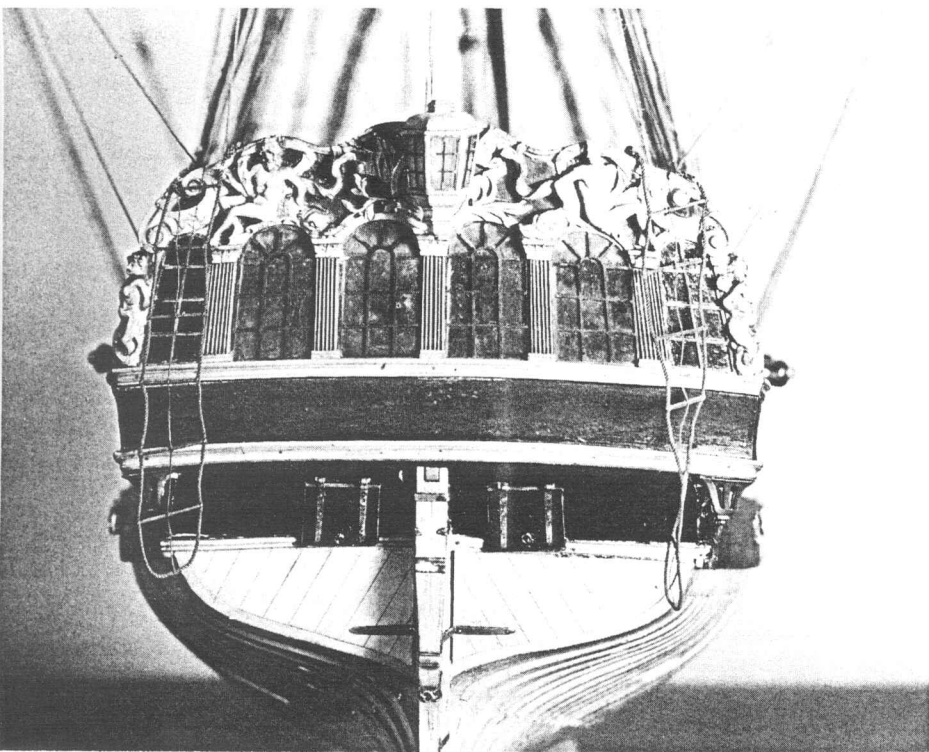
**3.** Overall view of a 20-gun ship c1719. This Science Museum model has two features that demonstrate the evolution of this type. It is fitted with quarter galleries that replaced the earlier quarter badges, and features the square beakhead bulkhead which replaced the round bow. *Science Museum*

4. Model, c1730 of a 20-gun ship which was never actually built. It illustrates clearly the modifications made to 20-gun ships of the 1719 Establishment. The quarterdeck has been extended forward and the steering wheel raised from the upper deck to the quarterdeck. The aftermost gunport is shown here as a light for the after cabin, thus only ten guns were fitted each side. A second set of galleys is fitted for boat stowage.  
*National Maritime Museum*

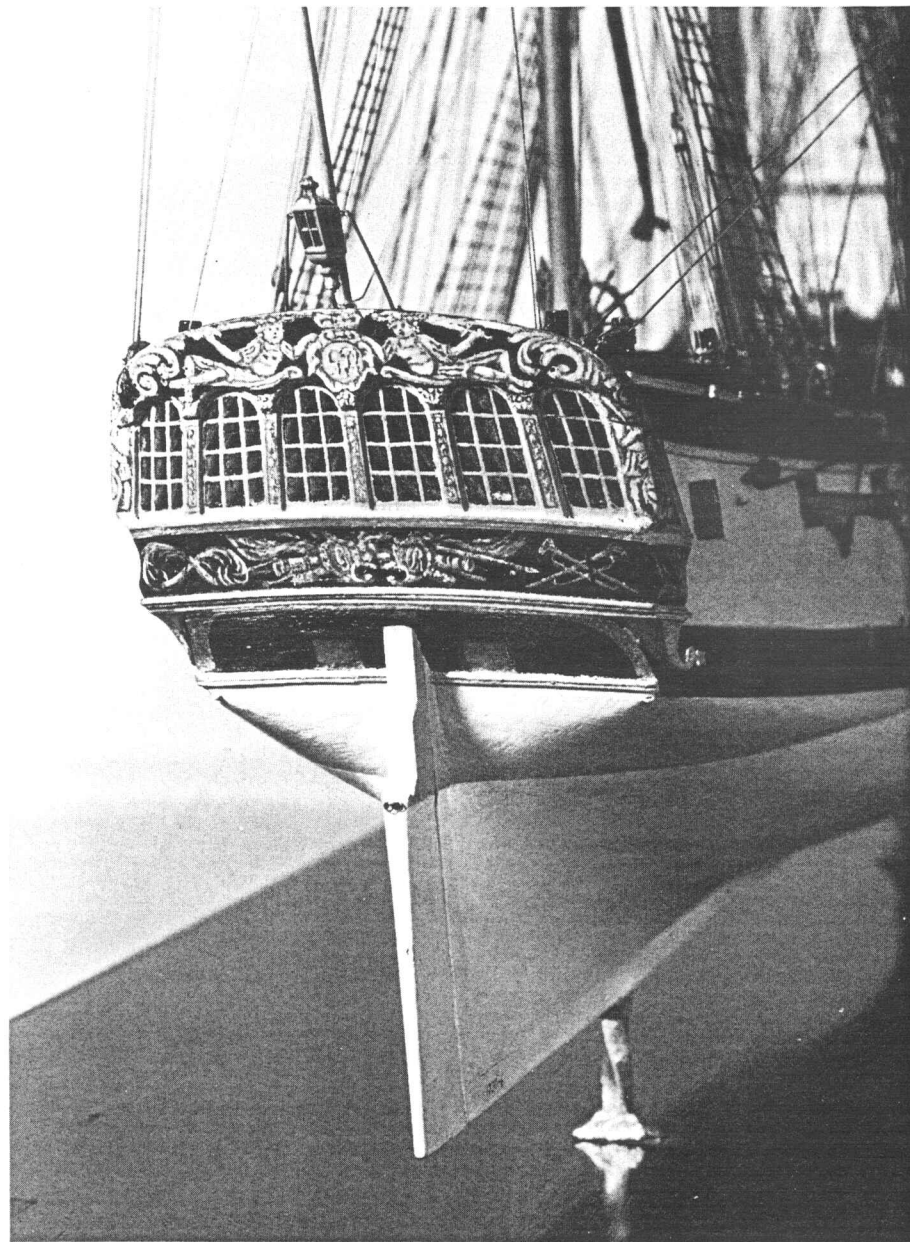


5. View of port quarter of a 20-gun ship, c1725 showing the quarter gallery which was introduced to these vessels to replace the quarter badge lights. Other features of interest are the square tuck transom and the unusual moulded arch fitted over the middle gunport. Although at this period the quarterdeck had been extended forward, the forecabin was still short, finishing afore the fore mast. Note that the steering wheel has been raised to the quarterdeck from its original position on the upper deck.  
*National Maritime Museum*



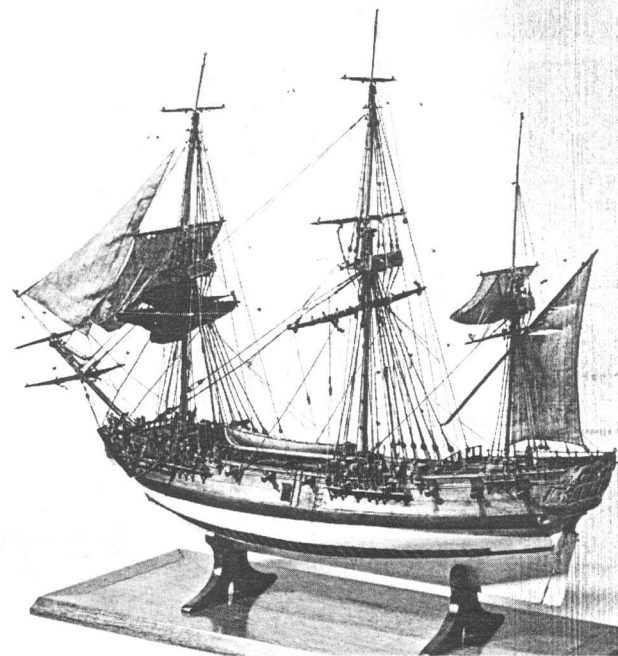


6. Stern view of a 20-gun ship with a small square tuck transom. This model also shows that despite the introduction of the quarter galleries, there were still five stern counter timbers. This suggests that little alteration was necessary in replacing the quarter badge lights with quarter galleries. The main features of the decoration can be seen.  
*Science Museum*

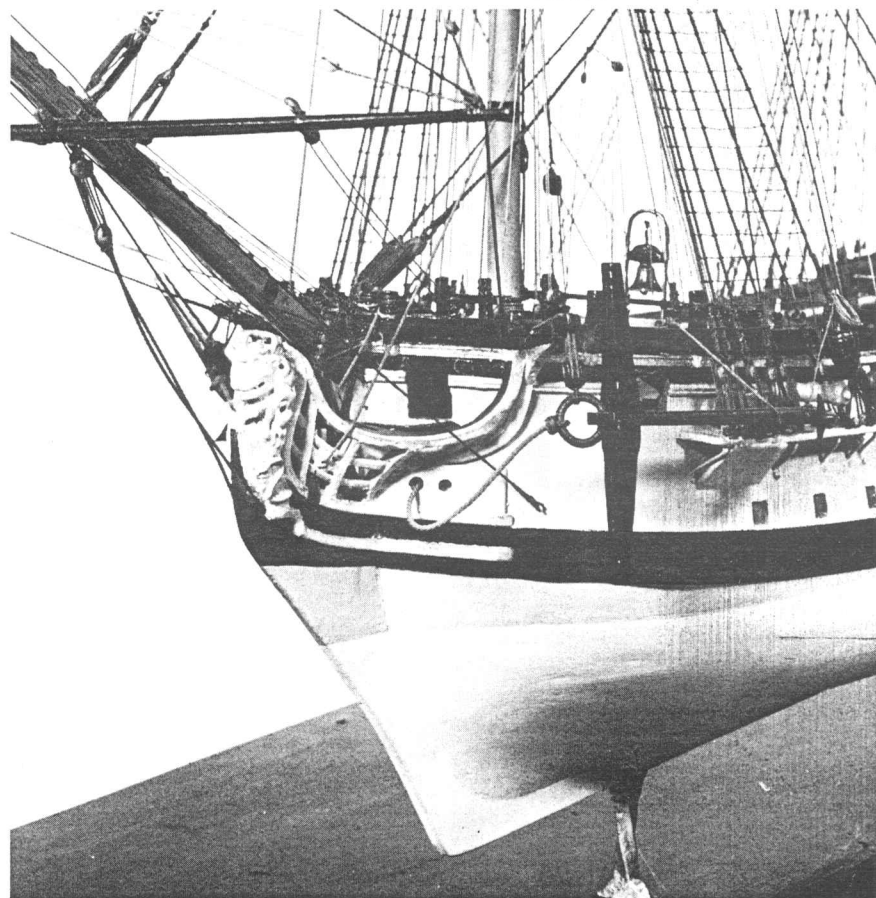


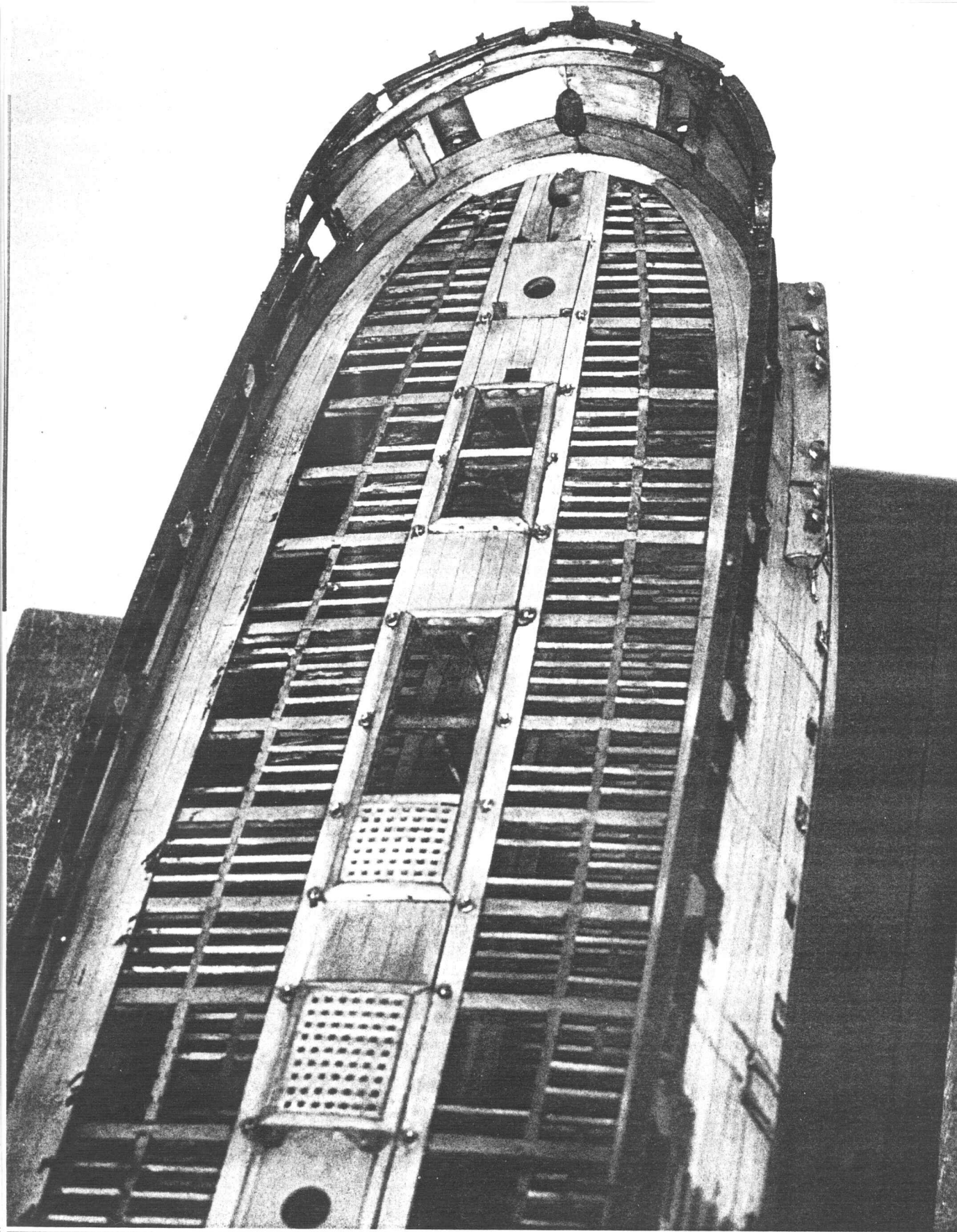
7. Stern view of a model, c1730. Although not executed with the skill of a good craftsman, it shows the general features of the decoration at this period. Note that the model has the round tuck stern standard on larger ships of the period.  
*National Maritime Museum*

8. *Tartar*, a 20-gun ship, c1734. She was 'rebuilt' from a 32-gun ship of the same name built in 1702. This is one of the earliest models rigged with sails, and clearly shows the driver (a sail that was introduced to replace the lateen) abaft the mizzen mast. Note the absence of the oar ports and the manner in which the pinnace was stowed in the waist of the ship on spare spars. *National Maritime Museum*

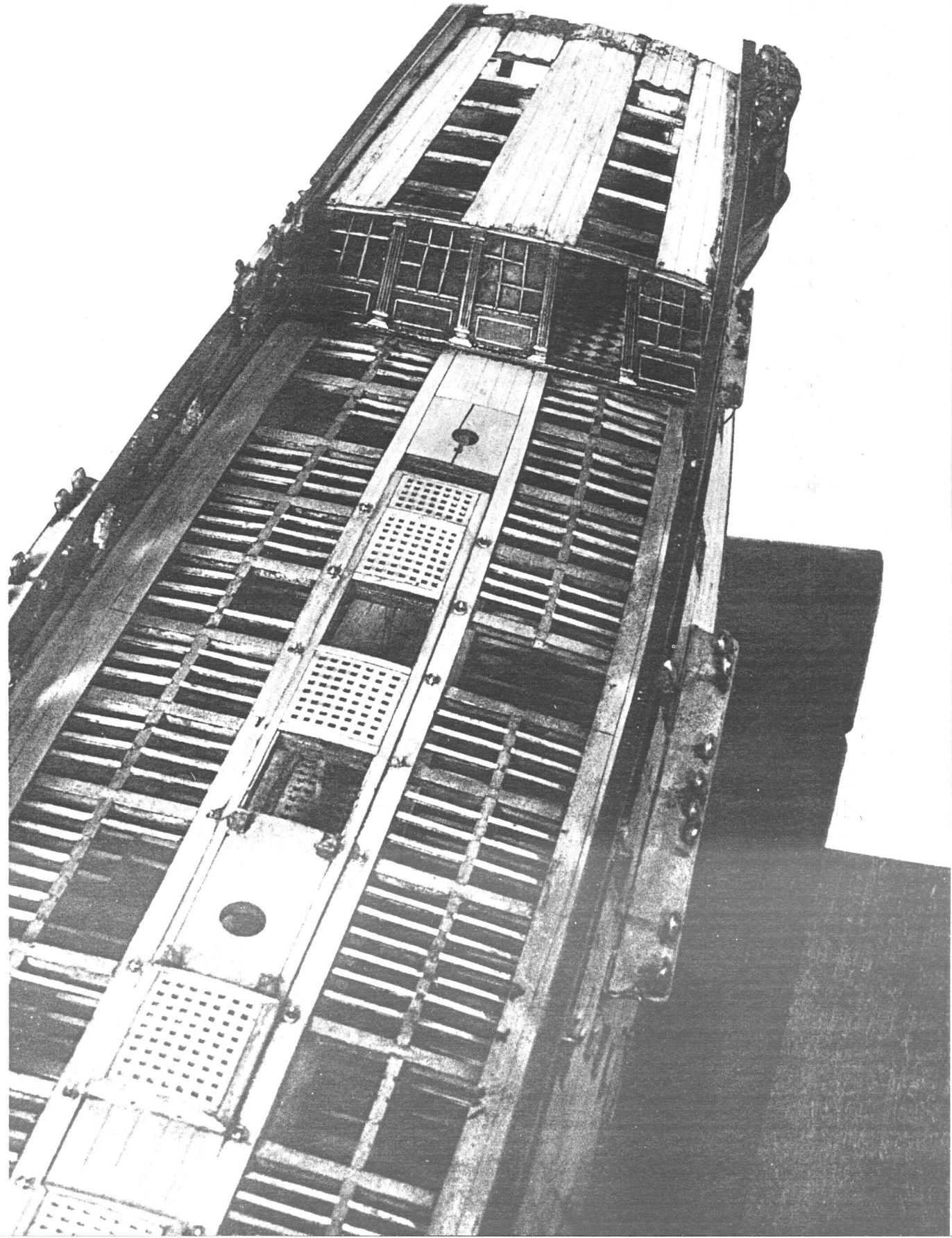


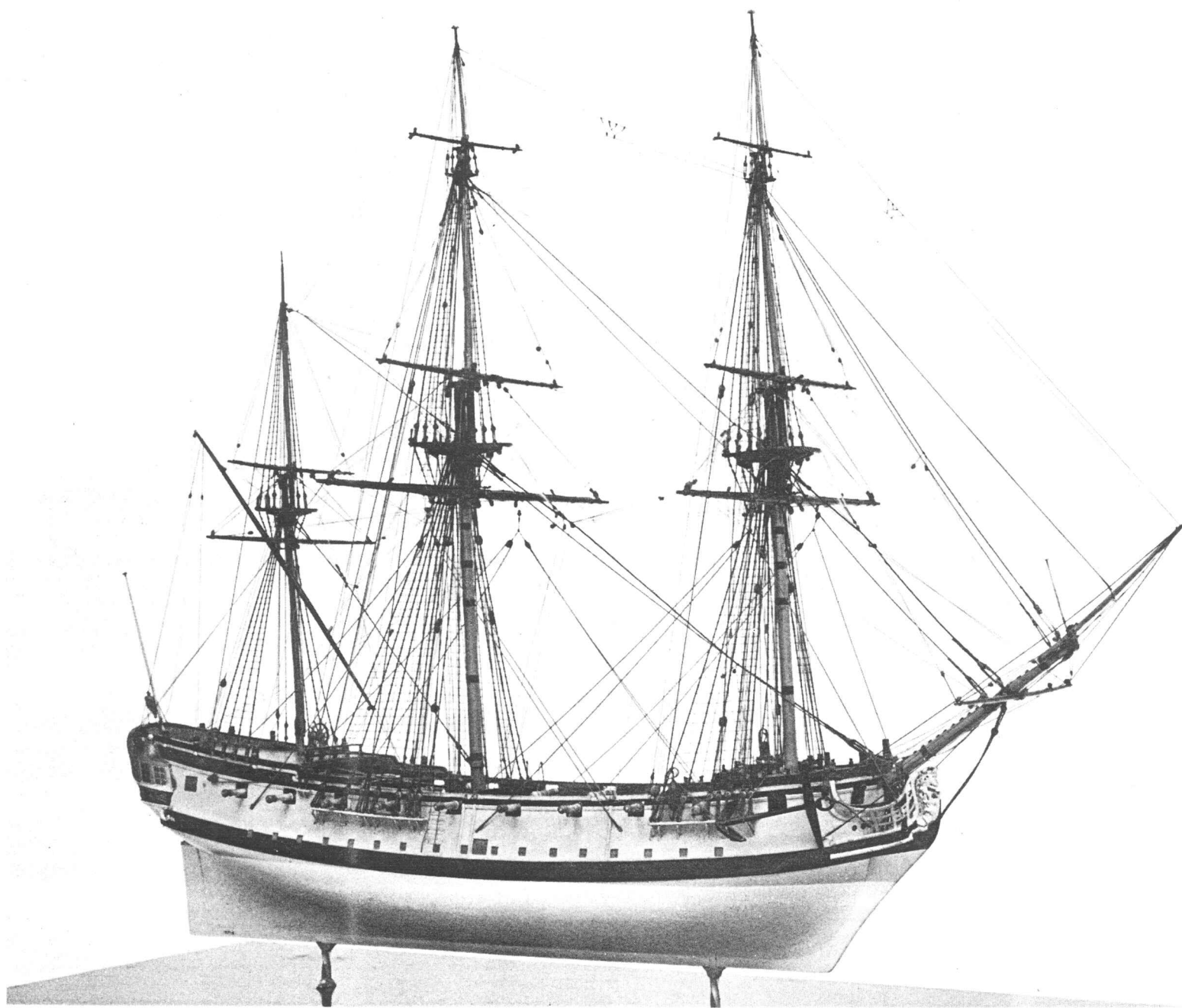
9. View of the port bow of a 20-gun ship, c1730 showing the typical round bow of the first generation of these ships. The figurehead and head rails are clearly shown but lack the finish of a skilled craftsman. *National Maritime Museum*





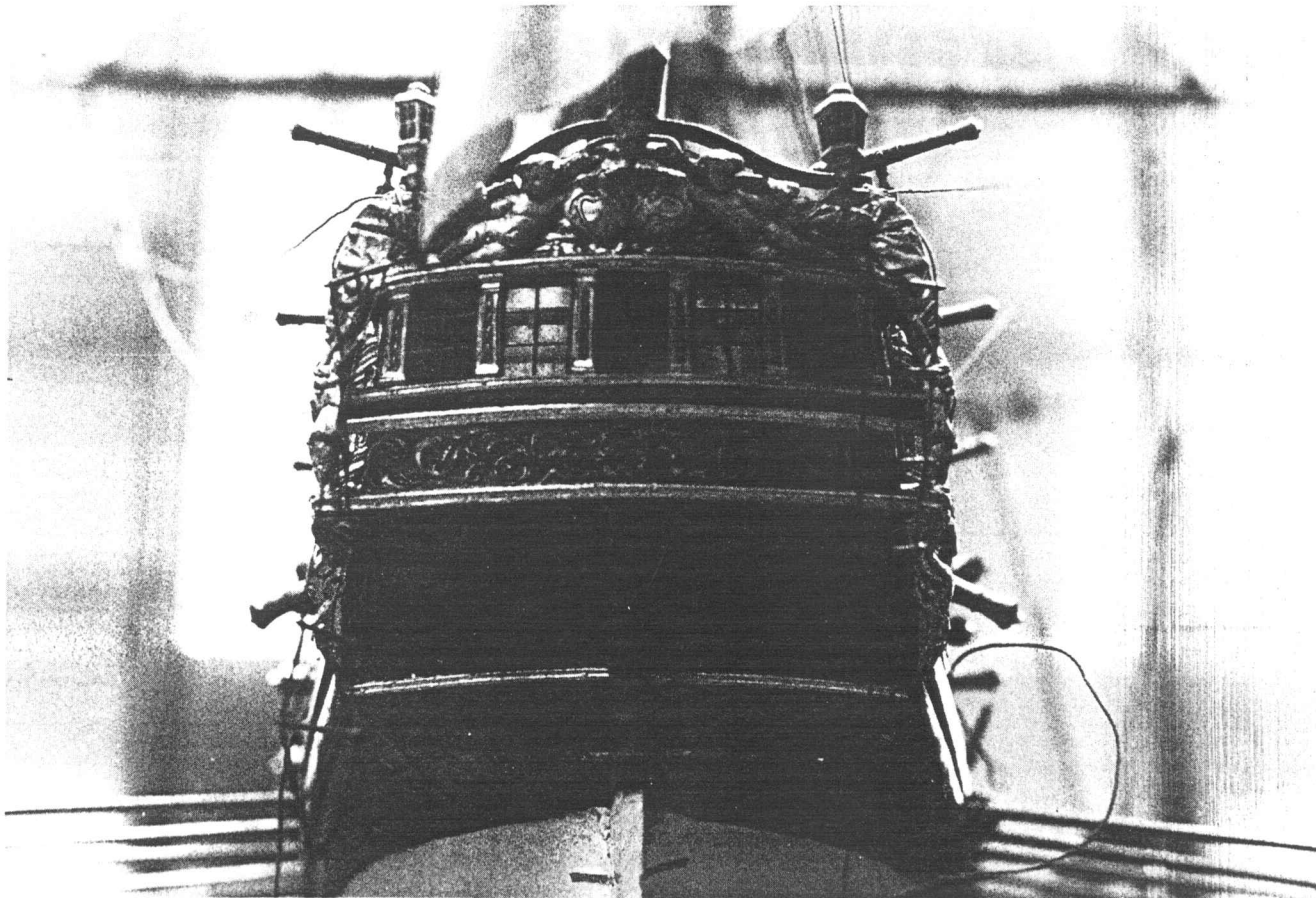
**10. and 11.** Model of the 20-gun ship *Lowestoffe*, showing the layout of the deck beams, carlings, and ledges. **10.** View looking forward. Note the roundhouses built integral with the hull planking and the seats of ease fitted within them. The square hole forward of the foremost hatch is for the galley flue (which is missing on the model because it was badly damaged). **11.** Quarterdeck and after section of the upper deck. A typical feature of these vessels was that the doorway to the captain's quarter was always situated on the port side.  
*National Maritime Museum*





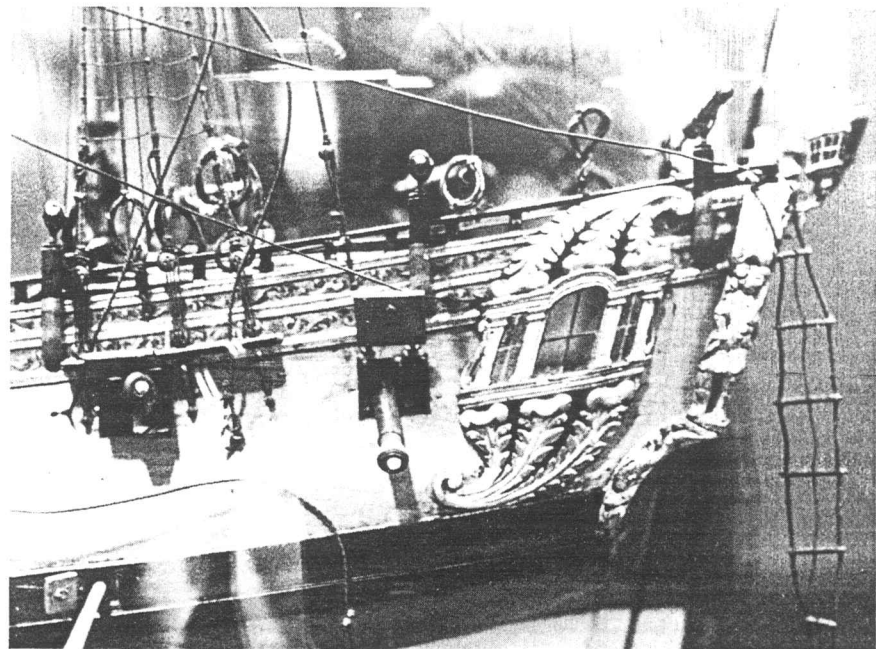
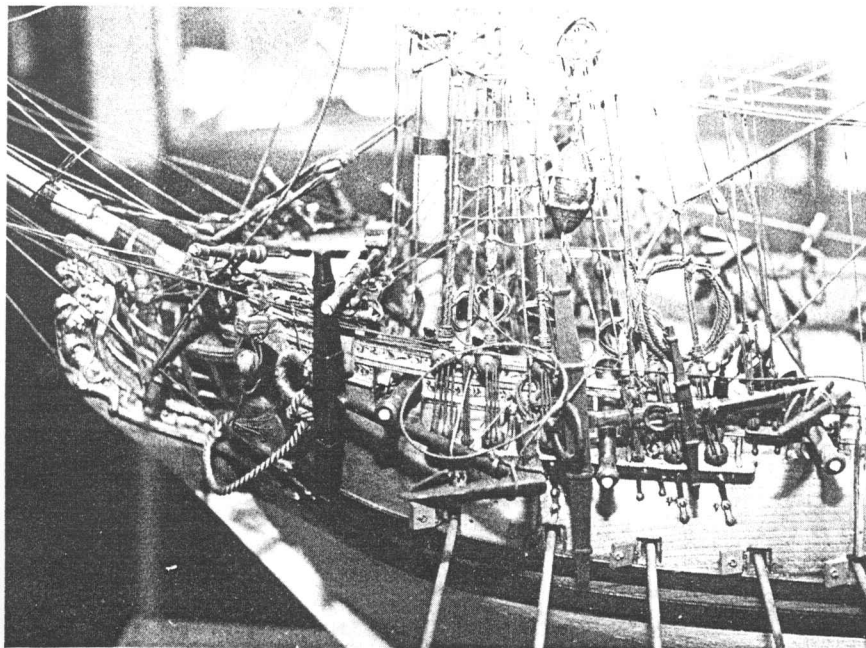
**12.** Model of a 20-gun ship, c1730. The rigging is contemporary. The model is a fair representation but does not have the finish of a skilled craftsman.  
*National Maritime Museum*

**13.** The decoration of the stern of a 20-gun ship, showing details of the counters and taffarel. National Maritime Museum model.  
*Author*



**14.** The fore channel and head of a National Maritime Museum model of a 20-gun ship, showing the manner in which the bower, sheet and kedje anchors were stowed. Note the main course tack which is coiled and secured to the shrouds.  
*Author*

**15.** The decoration of the quarter badge, quarter figure on a model of a 20-gun ship at the National Maritime Museum.  
*Author*

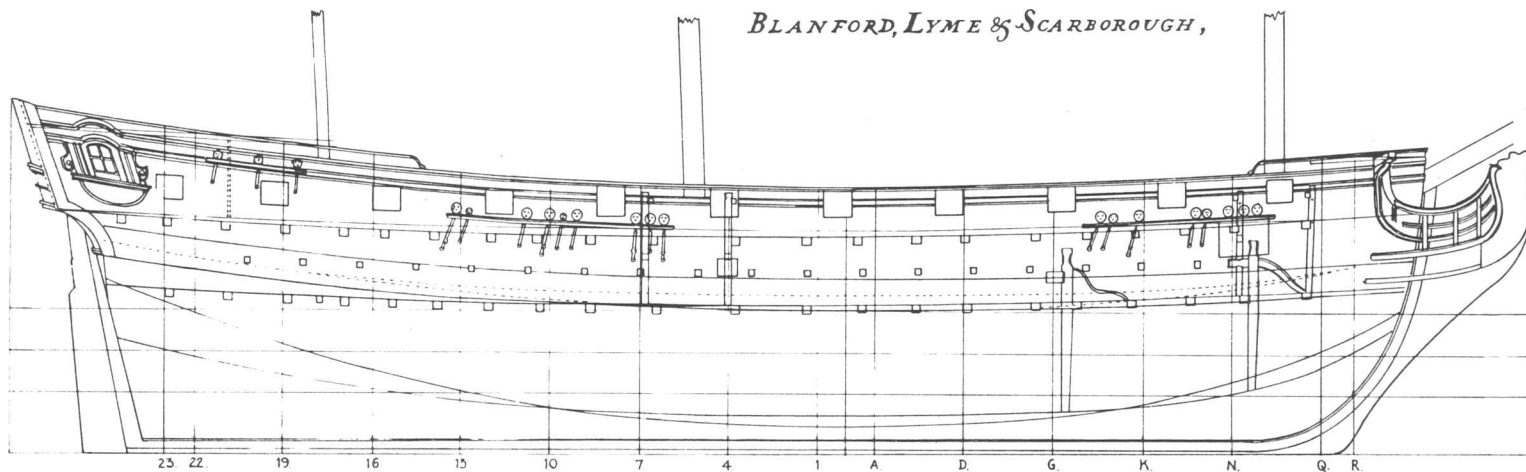


# The Drawings

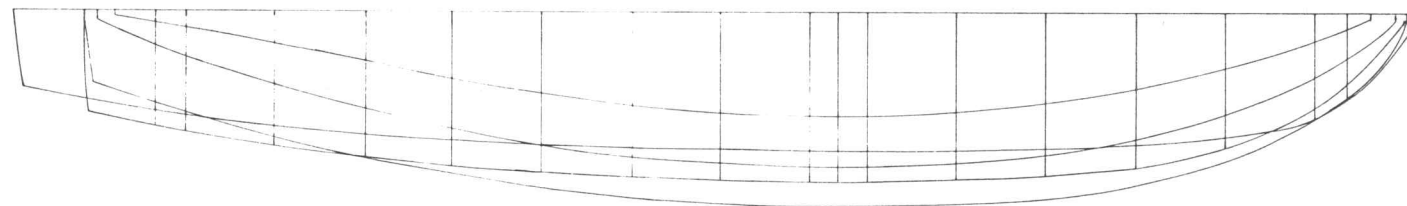
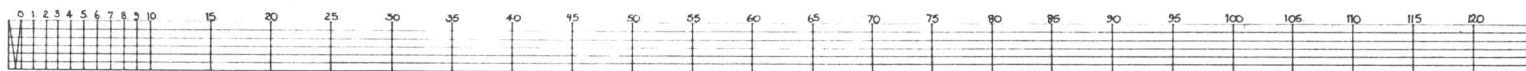
## Plans used for the drawings

|                                     |                      |     |
|-------------------------------------|----------------------|-----|
| <i>Blandford, Lyme, Scarborough</i> | 3074 & 3074A, Box 43 | NMM |
| <i>Bideford</i>                     | 2939 & 2939A, Box 45 | NMM |
| <i>Dolphin</i>                      | 2797 Box 43          | NMM |
| <i>Garland</i>                      | 2757 Box 43          | NMM |

# A General arrangements



**A1/1**



**A1/2**

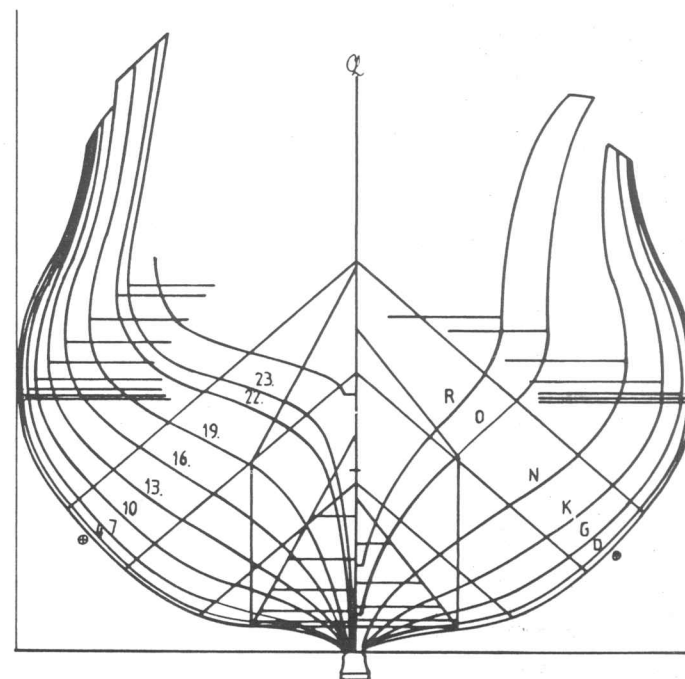
**A1** SHEER AND HALF-BREADTH  
PLAN OF *BLANDFORD, LYME*  
AND *SCARBOROUGH* (1/192  
scale)

**A1/1** Sheer elevation

**A1/2** Half-breadth plan

**A2** BODY PLAN (1/96 scale)

**A2**



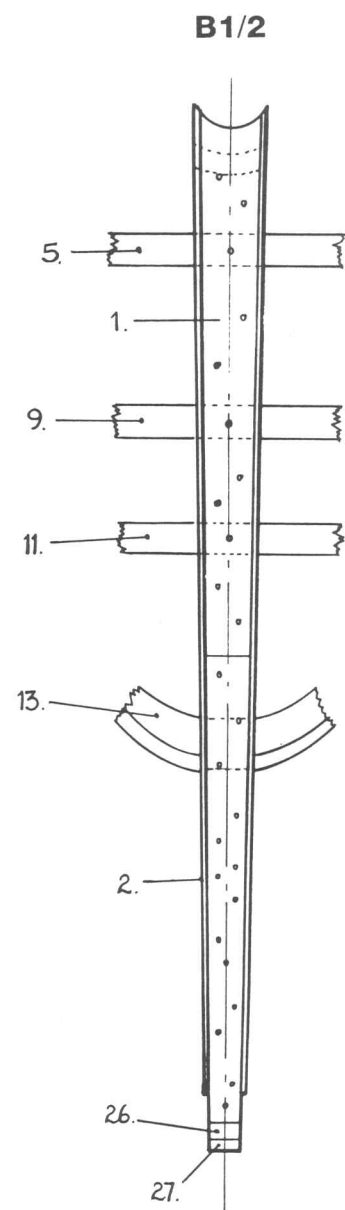
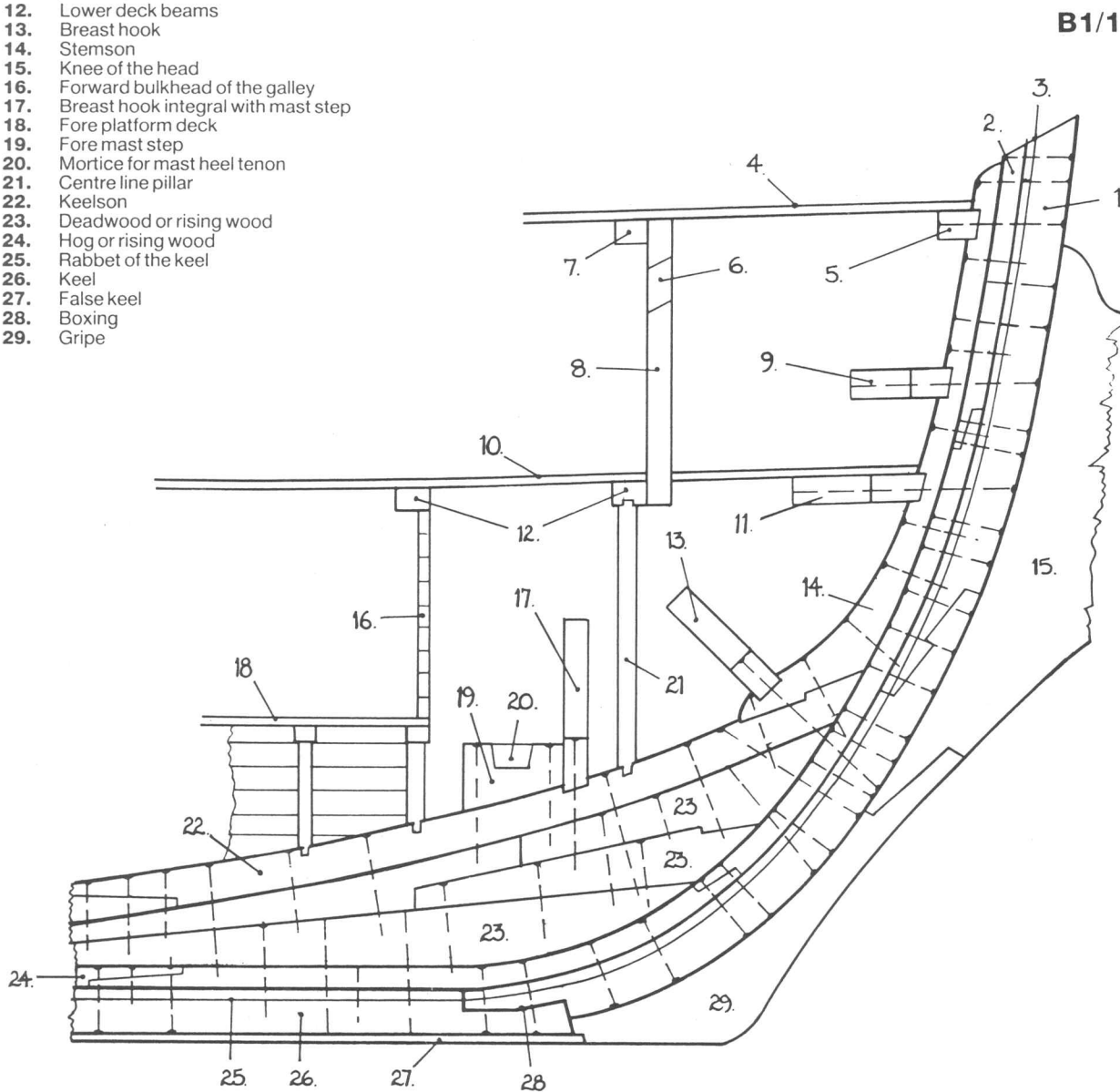
## B Hull construction

### B1 BOW

#### B1/1 Stempost and surrounding area, profile (1/48 scale)

#### B1/2 End view of stem post (1/48 scale)

1. Stem post
2. False post or apron
3. Line of the rabbet
4. Upper deck
5. Deck hook
6. Mortice for the bowsprit heel tenon
7. Upper deck beam
8. Bowsprit step
9. Breast hook
10. Lower deck
11. Deck hook
12. Lower deck beams
13. Breast hook
14. Stemson
15. Knee of the head
16. Forward bulkhead of the galley
17. Breast hook integral with mast step
18. Fore platform deck
19. Fore mast step
20. Mortice for mast heel tenon
21. Centre line pillar
22. Keelson
23. Deadwood or rising wood
24. Hog or rising wood
25. Rabbet of the keel
26. Keel
27. False keel
28. Boxing
29. Gripe

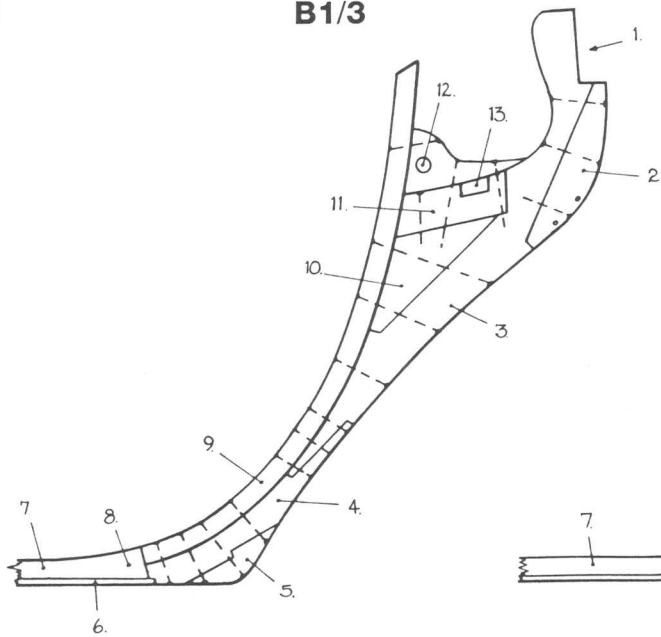


**B1/3 Knee of the head c1719, adapted from Sutherland's *Shipbuilding Unveiled* (1/96 scale)**

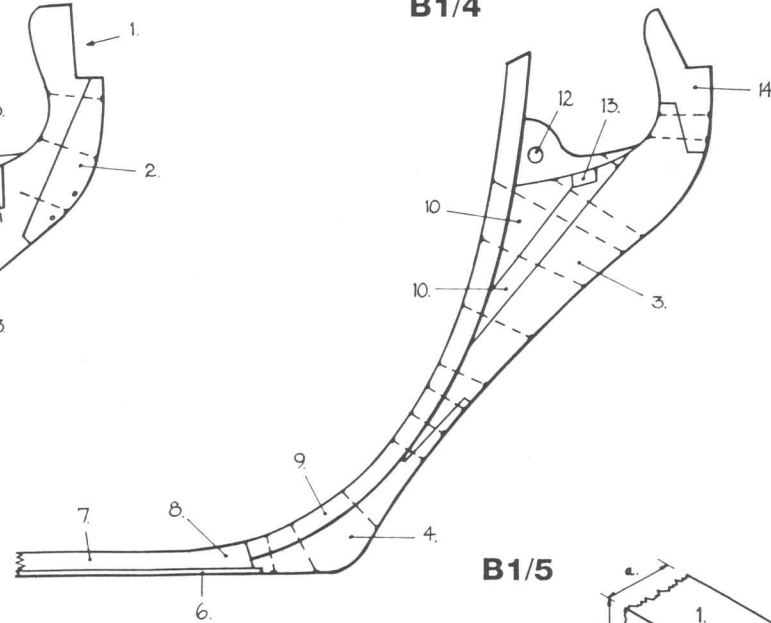
**B1/4 Knee of the head, c1730, general form (1/96 scale)**

1. Position of the figure
2. Bobstay piece
3. Main piece
4. Gripe
5. Fore foot
6. False keel
7. Keel
8. Boxing
9. Stem post
10. Chocks
11. Lacing
12. Hole for the main stay collar
13. Slot for the gammon lashing
14. Figure piece

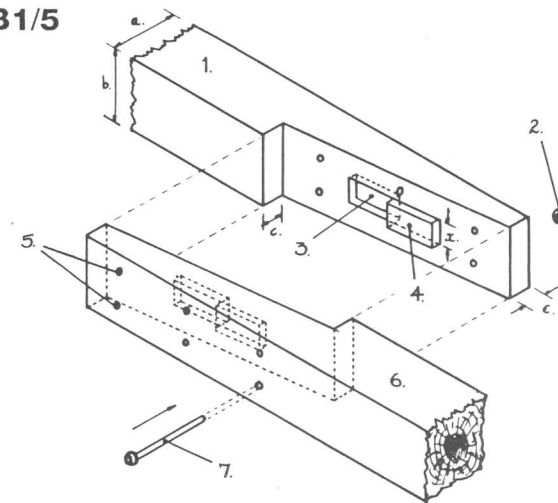
**B1/3**



**B1/4**



**B1/5**



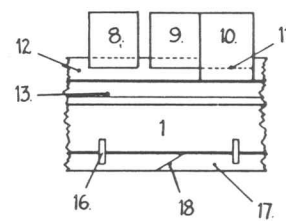
**B1/5 Detail of scarph joining keel (no scale)**

**B1/6 Side elevation (1/64 scale)**

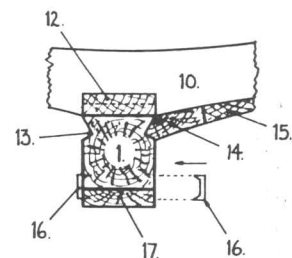
**B1/7 Section (1/64 scale)**

1. Section of the keel
  2. Rove (or washer)
  3. Recess of tabled joint
  4. Elevated portion of tabled joint
  5. Bolt holes
  6. 2nd section of the keel
  7. Bolt
  8. First futtock cross chock of filling frame
  9. First futtock cross chock of main frame
  10. Floor timber of main frame
  11. Score line on the hog
  12. Hog or rising wood
  13. Rabbet
  14. Carboard strake
  15. Bottom planking
  16. Staple to secure the false keel
  17. False keel
  18. False keel scarph
- a. width  
b. depth  
c = a/3  
x = b/3

**B1/6**



**B1/7**



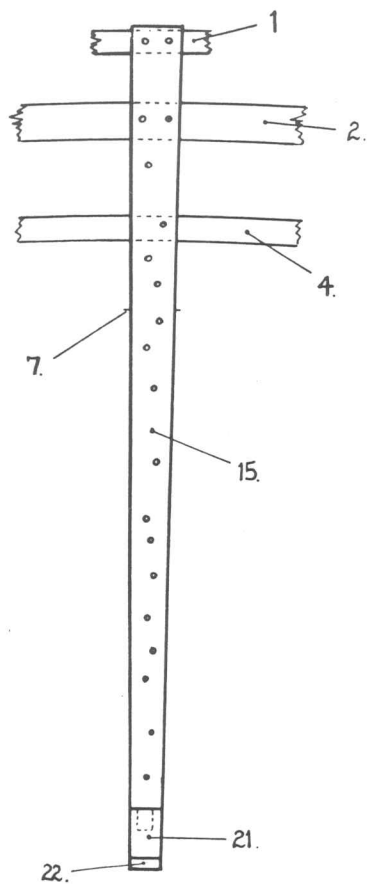
**B2 STERN**

**B2/1 Stern post, deadwood and surrounding area, profile (1/48 scale)**

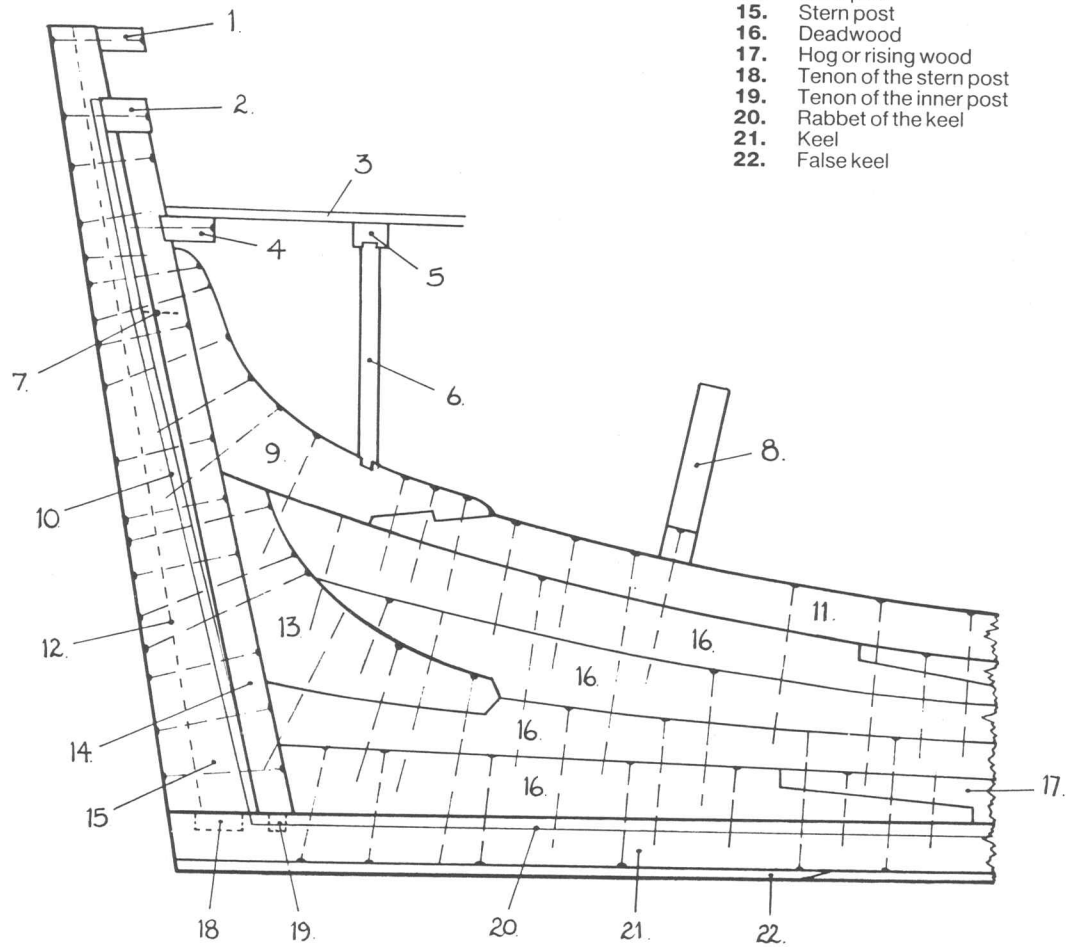
**B2/2 End view of stern post (1/48 scale)**

1. Helm port transom
2. Wing transom
3. Lower deck
4. Deck transom
5. Lower deck beam
6. Pillar
7. Position of the floor of the square tuck transom
8. Crutch
9. Sternson knee
10. Line of the rabbet
11. Keelson
12. Line of the false post if fitted
13. Knee of the post
14. Inner post
15. Stern post
16. Deadwood
17. Hog or rising wood
18. Tenon of the stern post
19. Tenon of the inner post
20. Rabbet of the keel
21. Keel
22. False keel

**B2/1**



**B2/2**

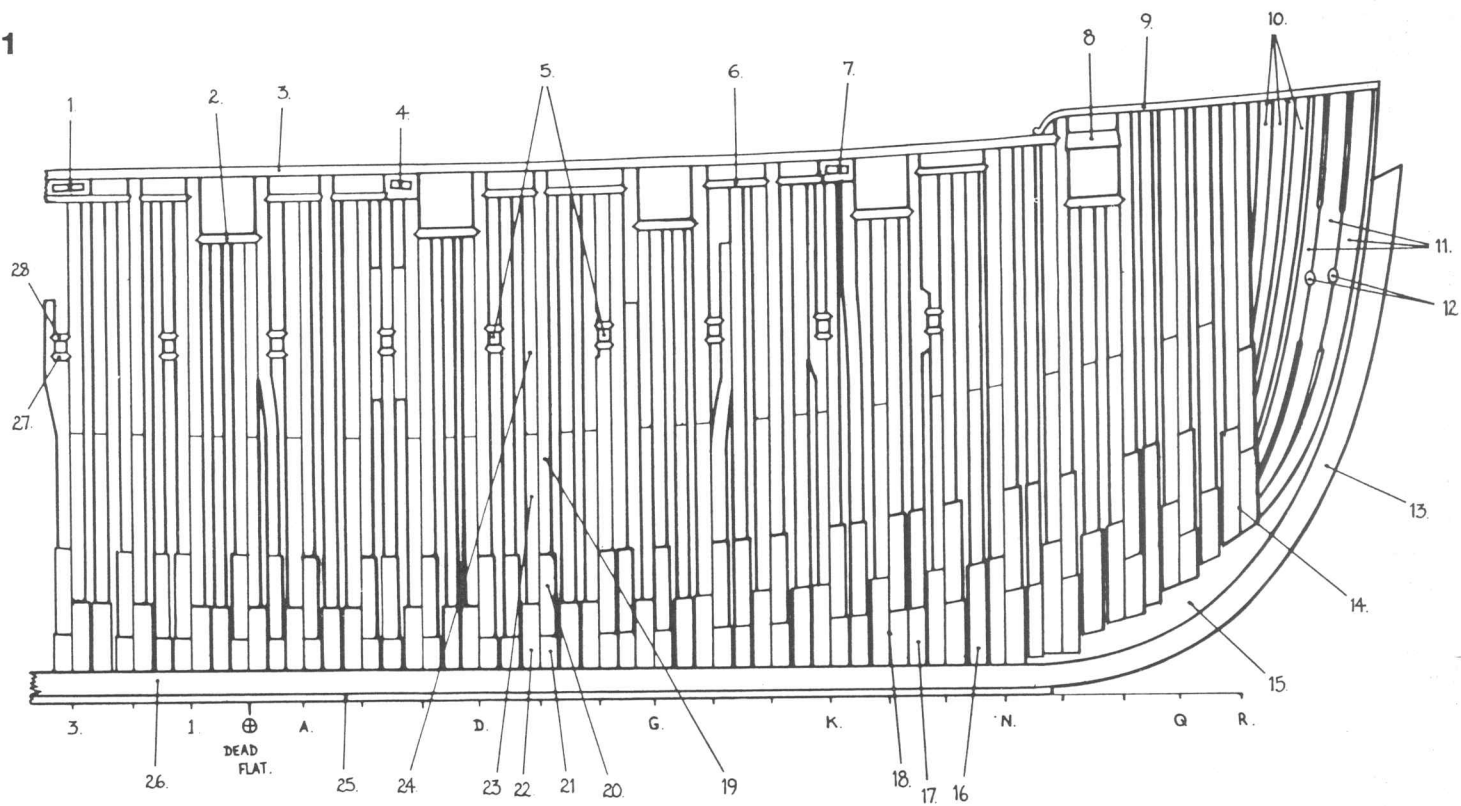


### B3 FRAMING AND PLANKING

#### B3/1 Frames and hawse pieces in the fore body (1/96 scale)

1. Sheave block
2. Gunport sill
3. Planksheer rail
4. Sheave block
5. Sweep ports
6. Capping over the timberheads
7. Sheave block
8. Gunport lintel
9. Fife rail
10. Filling frames
11. Hawse pieces
12. Hawse holes
13. Stem post
14. Foremost square frame
15. Deadwood and apron
16. First futtock of filling frame
17. Floor timber of filling frame
18. Joint line of main frame
19. Toptimber
20. Second futtock of main frame
21. Floor timber of main frame
22. First futtock of main frame
23. Third futtock of main frame
24. Lengthening piece
25. False keel
26. Keel

#### B3/1

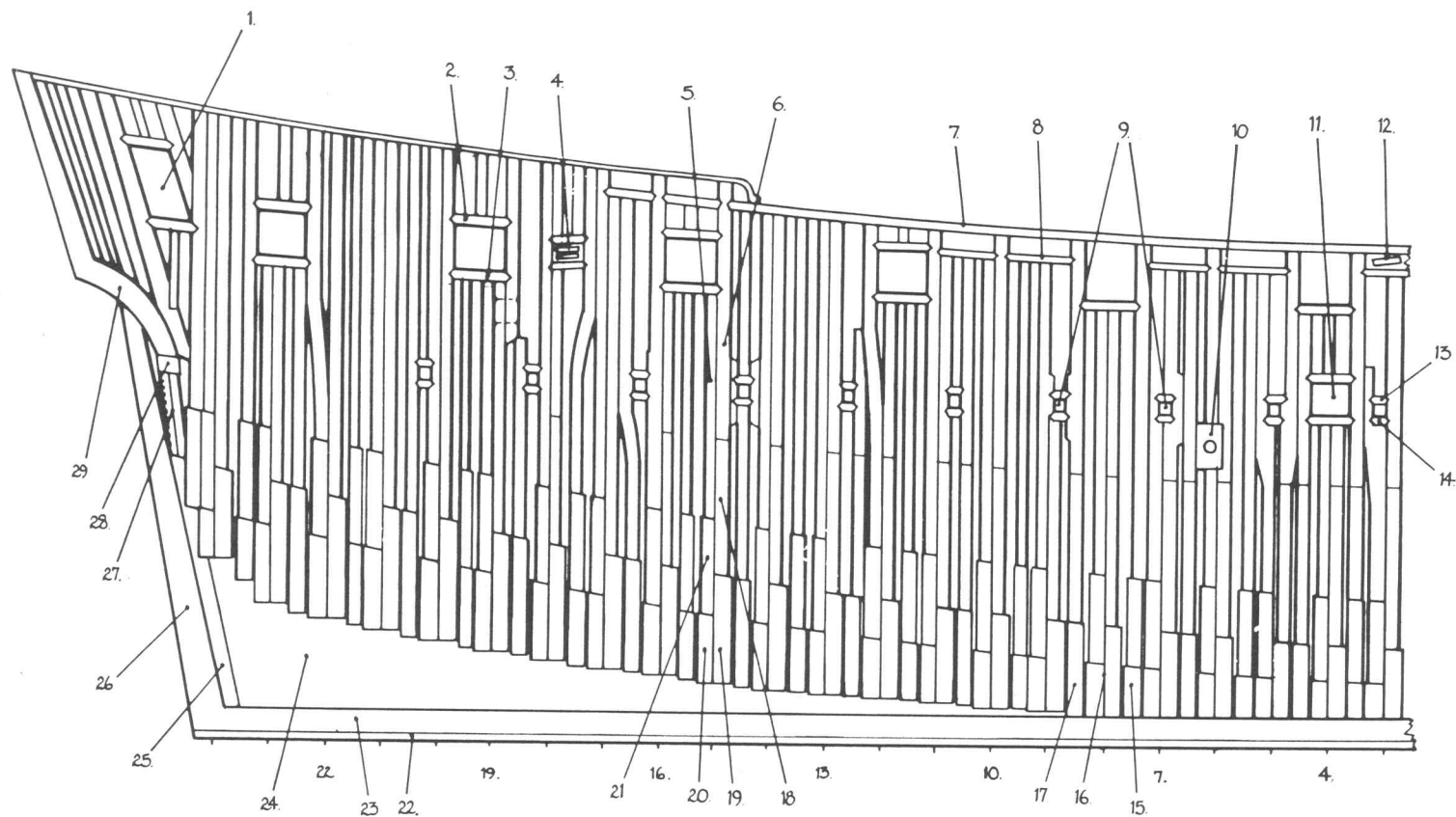


## B Hull construction

### B3/2 Main and filling frames in the after body (1/96 scale)

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Quarter badge light</li> <li>2. Gunport lintel</li> <li>3. Gunport sill</li> <li>4. Sheave block</li> <li>5. Toptimber of a main frame</li> <li>6. Lengthening piece of a main frame</li> <li>7. Planksheer rail</li> <li>8. Capping over the timberheads</li> <li>9. Sweep ports</li> <li>10. Timber block incorporating chain pump scupper</li> <li>11. Ballast port</li> <li>12. Sheave block</li> <li>13. Sweep port lintel</li> </ol> | <ol style="list-style-type: none"> <li>14. Sweep port sill</li> <li>15. Floor timber of a filling frame</li> <li>16. Joint line of main frame</li> <li>17. First futtock of filling frame</li> <li>18. Third futtock of main frame</li> <li>19. First futtock of main frame</li> <li>20. Floor timber of main frame</li> <li>21. Second futtock of main frame</li> <li>22. False keel</li> <li>23. Keel</li> <li>24. Deadwood</li> <li>25. Inner post</li> <li>26. Stern post</li> <li>27. Transom frame</li> <li>28. Wing transom</li> <li>29. Counter timber</li> </ol> |
|--|---|

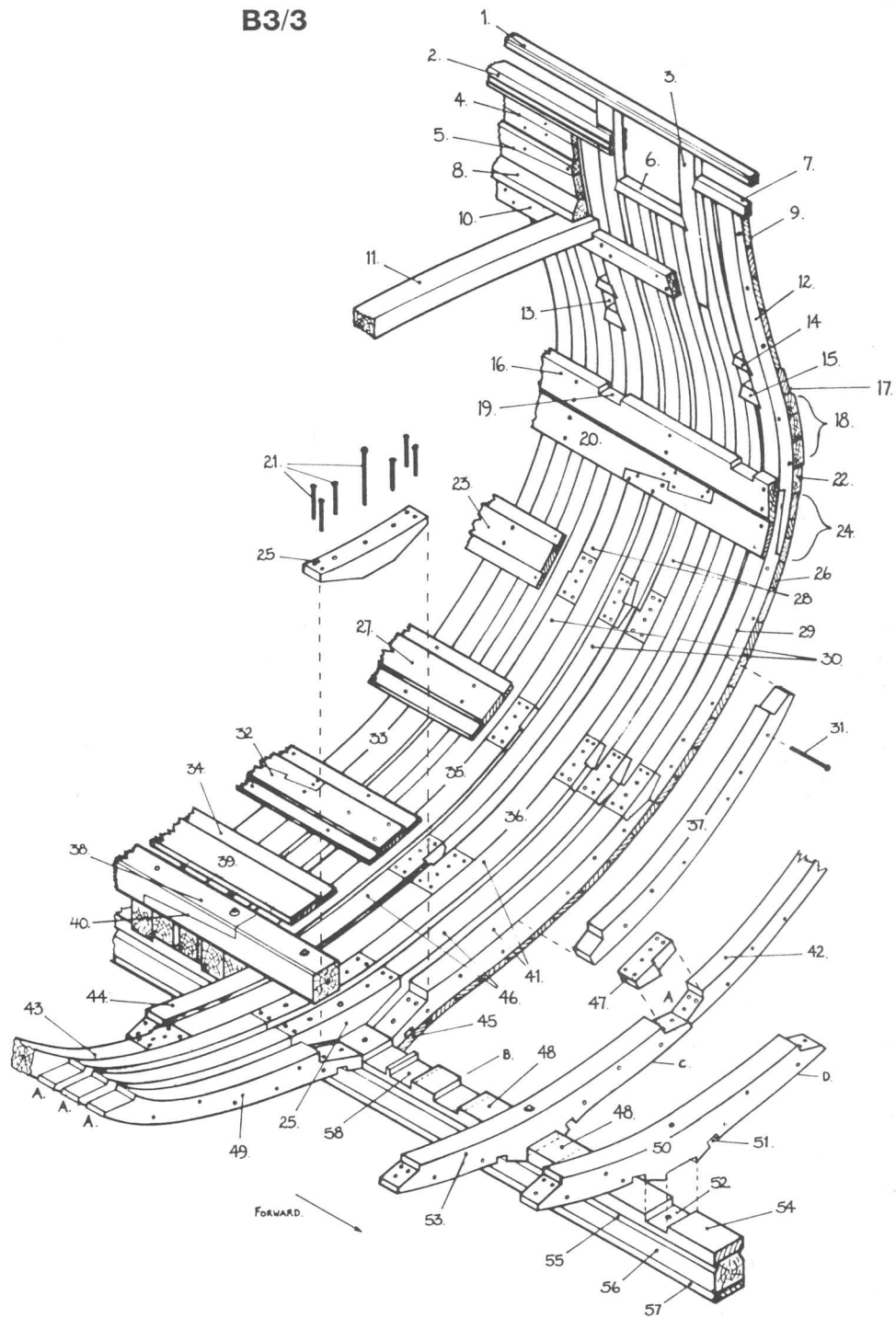
B3/2



**B3/3 Isometric of the midship timbers  
(1/64 scale)**

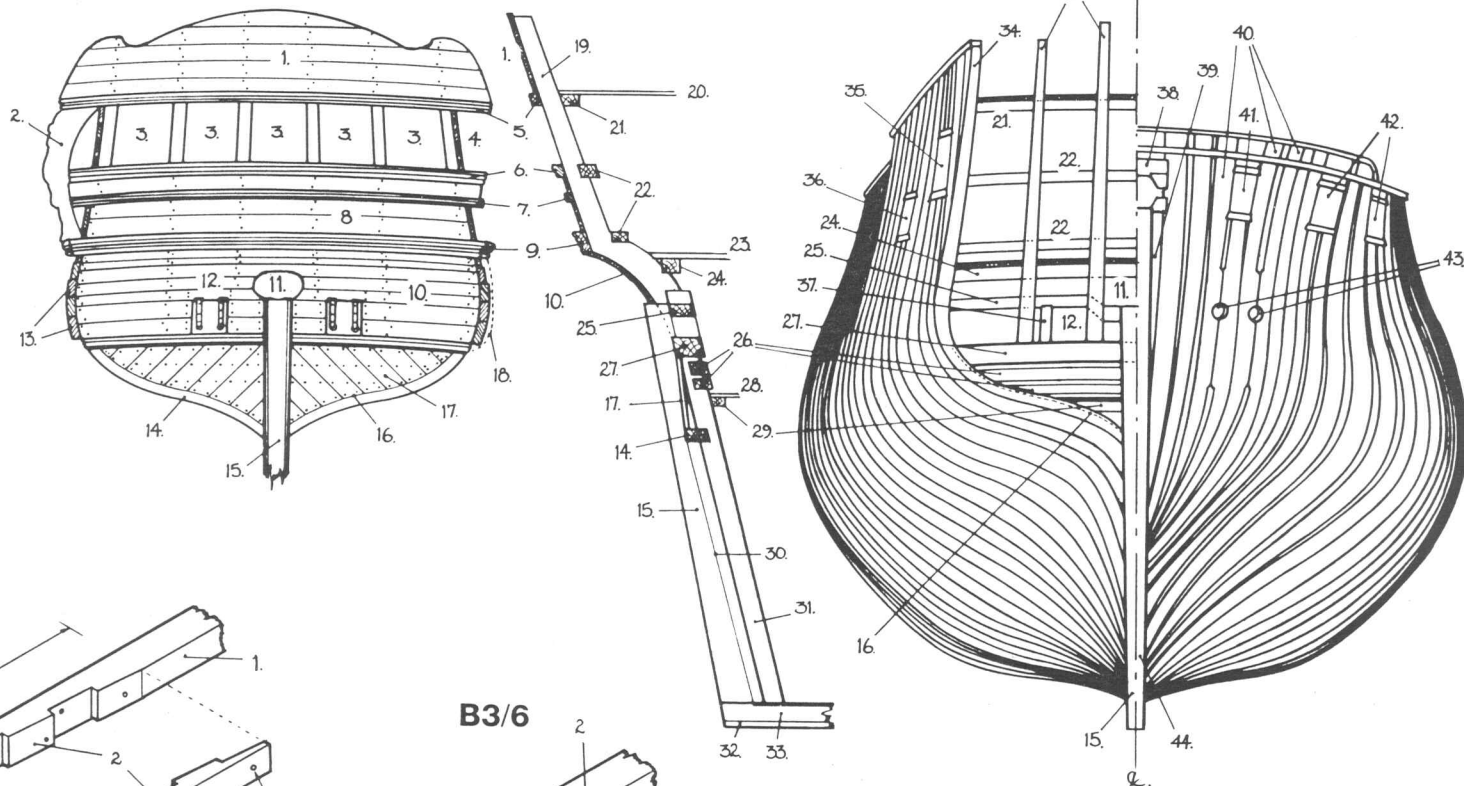
1. Planksheer rail
2. Sheer rail
3. Side cast lengthening piece
4. Upper deck lining (or quickwork)
5. Upper deck spirketting
6. Gunport sill
7. Timber capping piece
8. Waterway
9. Ship's side hull planking
10. Upper deck deck clamp
11. Upper deck beam
12. Toptimber
13. Sweep port
14. Sweep port lintel
15. Sweep port sill
16. Lower deck deck clamp
17. Strake above the wale (blackstrake)
18. Main wale and strake between
19. Recess for deck beam end
20. Strake below the deck clamp (beam shelf)
21. Cross chock bolts
22. Strake below the main wale
23. Upper strake of thickstuff over the second futtock heads
24. Diminishing strakes
25. Cross chock, over the first futtock heels
26. Upper strake of the bottom planking
27. Middle band of thickstuff over the first futtock heads
28. Toptimber
29. Joint line of main frame
30. Second futtocks
31. Horizontal bolts between the timbers
32. Lower strake of thickstuff over the floorheads
33. Full or main frame
34. Footwaling
35. Full or main frame
36. Full or main frame
37. Third futtock
38. Keelson
39. Limber strake
40. Keelson scarph
41. First futtocks of a full frame
42. Second futtock
43. First futtock
44. Floor timber
45. Garboard strake
46. Single frames
47. Chock or anchor piece
48. Bed for cross chock
49. First futtock
50. Floor timber
51. Limber hole
52. Recess for floor timber
53. Bolt holes through floor timber
54. Hog or rising wood
55. Rabbet
56. Keel
57. False keel
- A. Scarphs
- B. Frame 'B' centre line
- C. Frame 'C' centre line
- D. Frame 'D' floor

**B3/3**

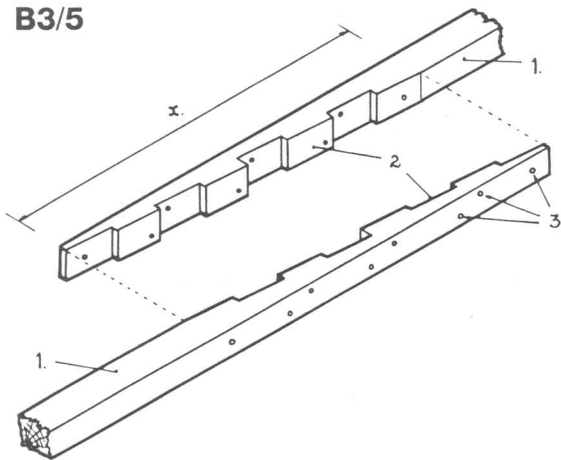


## B Hull construction

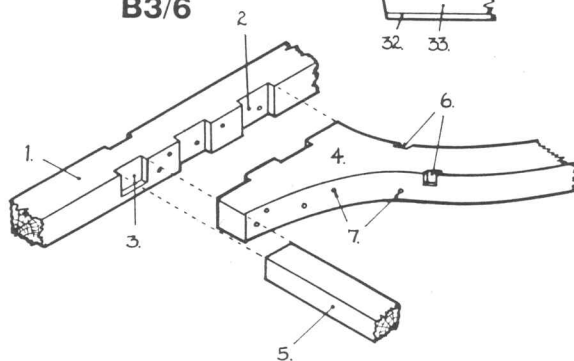
### B3/4



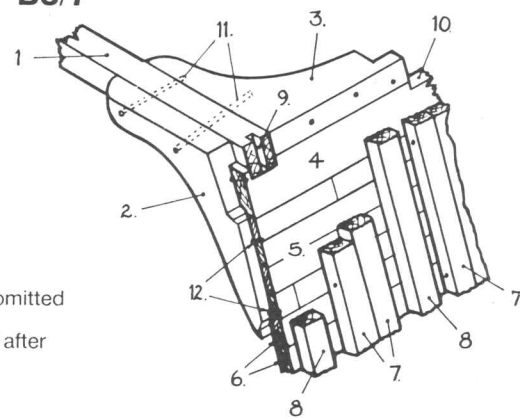
### B3/5



### B3/6



### B3/7



#### B3/4 Stern counter timbers, hawse pieces and initial stern planking (1/96 scale)

- |  |   |
|--|---|
| 1. Taffarel planking                             | 17. Square tuck transom planking                                |
| 2. Quarter piece                                 | 18. Dashed line indicates position of lower finishing           |
| 3. Stern lights (windows)                        | 19. Stern counter timber  |
| 4. Ship's side planking                          | 20. Quarterdeck   |
| 5. Moulded rail forming the cove                 | 21. Deck transom beam   |
| 6. Upper counter rail                            | 22. Transom beams (or tie beams)                                |
| 7. Intermediate counter rail (not always fitted) | 23. Upper deck  |
| 8. Upper counter planking                        | 24. Deck transom beam   |
| 9. Lower counter rail                            | 25. Helm port transom   |
| 10. Lower counter planking                       | 26. Transom pieces  |
| 11. Helm port                                    | 27. Wing transom  |
| 12. After chase port                             | 28. Lower deck  |
| 13. Strakes of the main wale                     | 29. Deck transom  |
| 14. Aftermost timber, the fashion piece          | 30. Rabbet line on stern post for the bottom planking hood ends |
| 15. Stern post                                   | 31. Inner post  |
| 16. Line of the rabbet for the transom planking  | 32. False keel  |
|  | 33. Keel  |
|  | 34. Side counter timber   |
|  | 35. Quarter badge opening                                       |

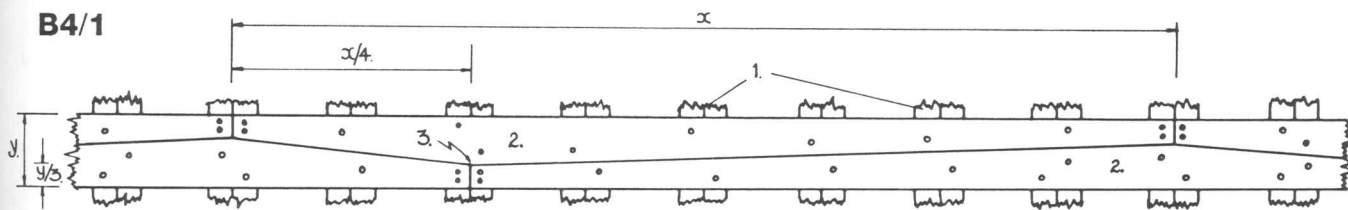
- |  |
|--|
| 36. Aftermost gunport (the rest omitted for clarity)     |
| 37. Filling timber forming side of after chase port      |
| 38. Chock fitted over bowsprit                           |
| 39. False stem or apron                                  |
| 40. Hawse pieces   |
| 41. Opening for the roundhouse                           |
| 42. Foremost two gunports (the rest omitted for clarity) |
| 43. Hawse holes  |
| 44. Stem post  |

#### B3/5 Construction of tabled deck beam (1/48 scale)

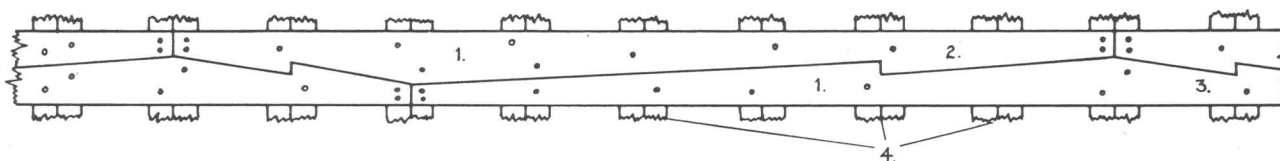
- Note** Only those amidships were made in two sections
- |                         |
|-------------------------|
| 1. Half section of beam |
| 2. Table scarph         |
| 3. Bolt holes           |
| x Beam length ÷ 3       |

#### B3/6 Construction of beam arm (1/48 scale)

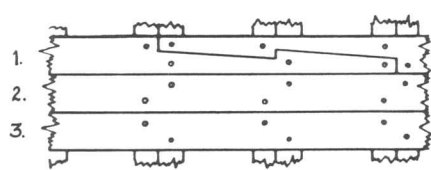
- |                          |
|--------------------------|
| 1. Deck beam             |
| 2. Bolt hole             |
| 3. Table recess          |
| 4. Beam arm, inboard end |
| 5. Carling               |
| 6. Recesses for ledges   |
| 7. Bolt holes            |



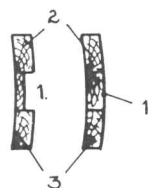
**B4/2**



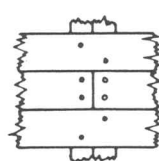
**B4/3**



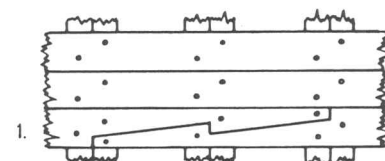
**B4/4 B4/5**



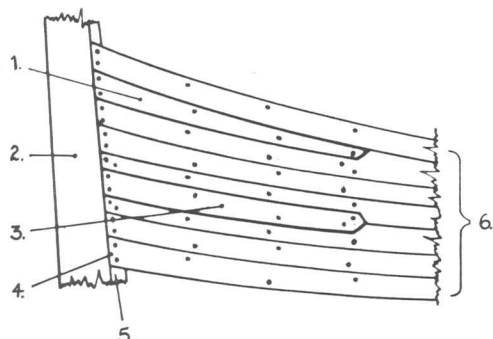
**B4/6**



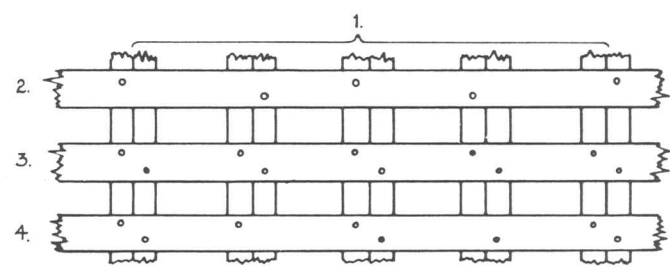
**B4/7**



**B4/9**



**B4/8**



**B3/7 Hanging and lodging knees (1/48 scale)**

1. Beam
2. Hanging knee
3. Lodging knee
4. Deck clamp
5. Lining or quickwork
6. Spirketting
7. Main timbers or frames
8. Filling timbers or frames
9. Slot in beam end for ventilation
10. Rebate in deck clamp for adjacent beam
11. Bolts, joining hanging and lodging knees
12. Bolts joining hanging knee to ship's side

**B4 INTERNAL AND EXTERNAL PLANKING TECHNIQUES (1/48 scale)**

**B4/1 Top and butt planking (employed for the spirketting and later for the solid built main wale and the various bands of thickstuff)**

1. Main timbers (or frames)
2. Single plank, fashioned top and butt
3. The 'touch' of the plank

**B4/2 Hook and butt planking (stronger version of the top and butt fashion, usually employed for the solid built main wales)**

1. Single plank, fashioned hook and butt
2. Long hook scarph
3. Short hook scarph
4. Timbers (or frames)

**B4/3 Detail of the main wale**

1. Upper strake of main wale with hook scarph
2. Filling strake (or plank between the wales)
3. Lower strake of the main wale

**B4/4 Cross-section of the main wale, c1719**

1. Filling strake, half the thickness of the strakes of the main wale
2. Upper strake of the main wale
3. Lower strake of the main wale

**B4/5 Cross-section of the main wale (solid built), c1730**

1. Filling strake (made up to thickness of the upper and lower strakes. Was often, during a transition period, built up with planking of suitable thickness over original filling strake)
2. Upper strake of the main wale
3. Lower strake of the main wale

**B4/6 Butt joint of the filling strake**

**B4/7 Detail of the lower strake of the main wale**

1. Reverse direction hook scarph

**B4/8 Methods of securing planking with trennals**

- Note** The butt ends of the planks would have been secured with two nails or dumps
1. Timbers (or frames)
  2. Single fastening method
  3. Double fastening method
  4. Combined single and double method

**B4/9 Dropstrakes and stealers (no scale; worked in at the ends of the bottom planking strakes to reduce 'sny' at the hood ends. Either or both were employed as required. They were also used for planking the stem of the ship)**

1. Dropstrake
2. Stern post
3. Stealer
4. Hood ends of the planks
5. Rabbet of the stern post
6. Bottom planking

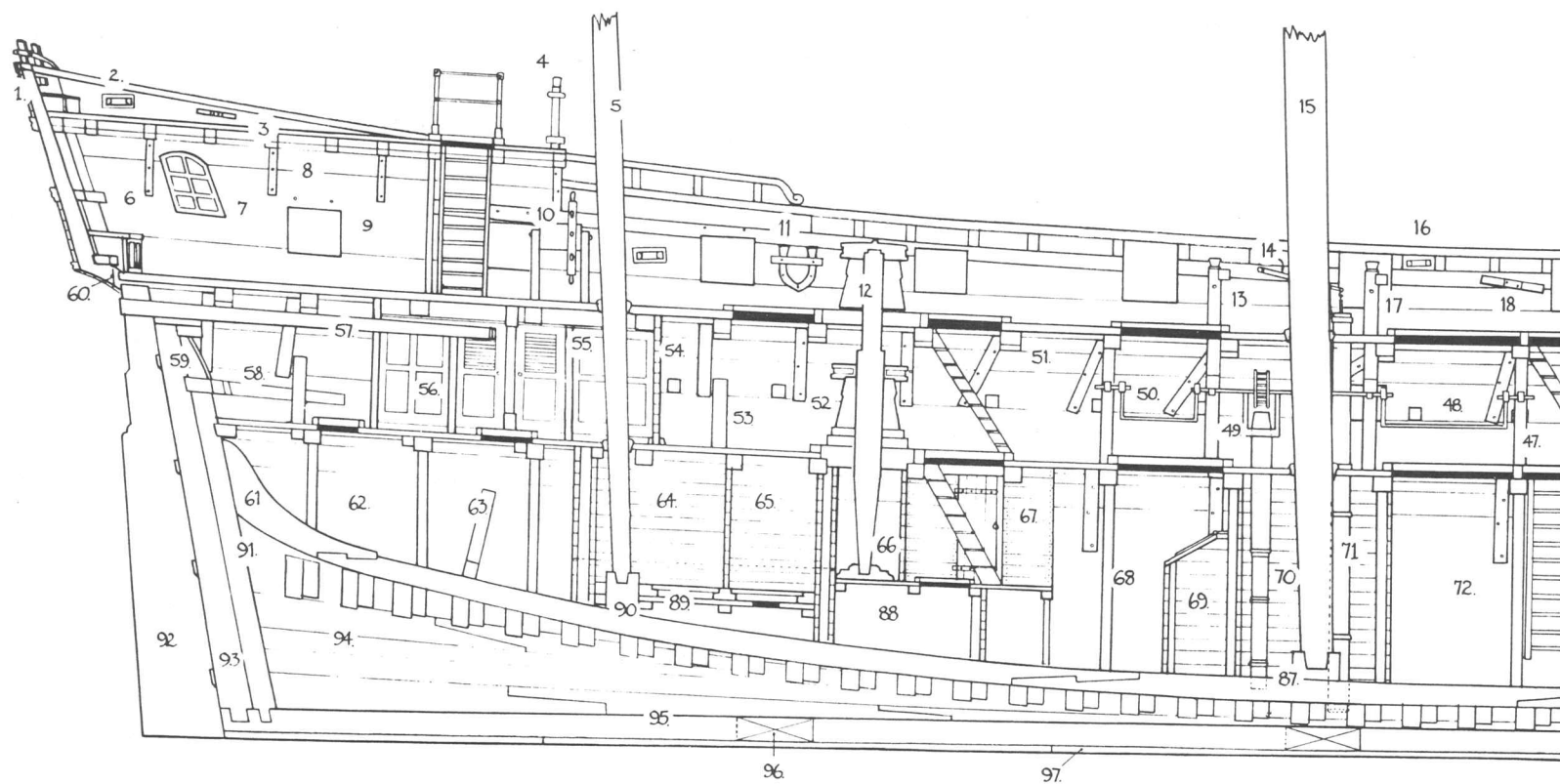
# C Internal hull

## C1 ARRANGEMENTS

### C1/1 Longitudinal section (1/96 scale)

- |                              |                            |                               |                             |
|------------------------------|----------------------------|-------------------------------|-----------------------------|
| 1. Stern counter timber      | 14. Elm tree pump brake    | 30. Sheave block              | 46. Lower deck spirketting  |
| 2. Sheave block              | 15. Main mast              | 31. Forecastle decking        | 47. Pillar                  |
| 3. Quarter deck              | 16. Sheave block           | 32. Knighthead                | 48. Chain pump crank handle |
| 4. Breast rail               | 17. Main topsail bitts     | 33. Bowsprit                  | 49. Main chain pump         |
| 5. Mizzen mast               | 18. Cleat                  | 34. Figure of the head        | 50. Lining or quickwork     |
| 6. Captain's day cabin       | 19. Cleat                  | 35. Head rails                | 51. Upper deck beam         |
| 7. Badge light (window)      | 20. Sheave block           | 36. Hole for the gammoning    | 52. Main capstan            |
| 8. Quarter deck clamp        | 21. Upper deck spirketting | 37. Stem post                 | 53. Standard                |
| 9. Captain's dining quarters | 22. Cleat                  | 38. Hawse holes               | 54. Wardroom bulkhead       |
| 10. Steering wheel           | 23. Sheave block           | 39. Manger                    | 55. Officer's cabin         |
| 11. Kevel cleat              | 24. Galley flue            | 40. Bowsprit step             | 56. Officer's cabin         |
| 12. Main jeer capstan        | 25. Pissdale               | 41. Larboard fore riding bitt | 57. Tiller                  |
| 13. Main jeer bitts          | 26. Fish davit cleat       | 42. After riding bitts        | 58. Transom knee            |
|                              | 27. Fore jeer bitts        | 43. Side cast hanging knee    | 59. Wing transom            |
|                              | 28. Fore mast              | 44. Sweep port                | 60. Helm port               |
|                              | 29. Belfry                 | 45. Upper deck clamp          | 61. Sternson knee           |

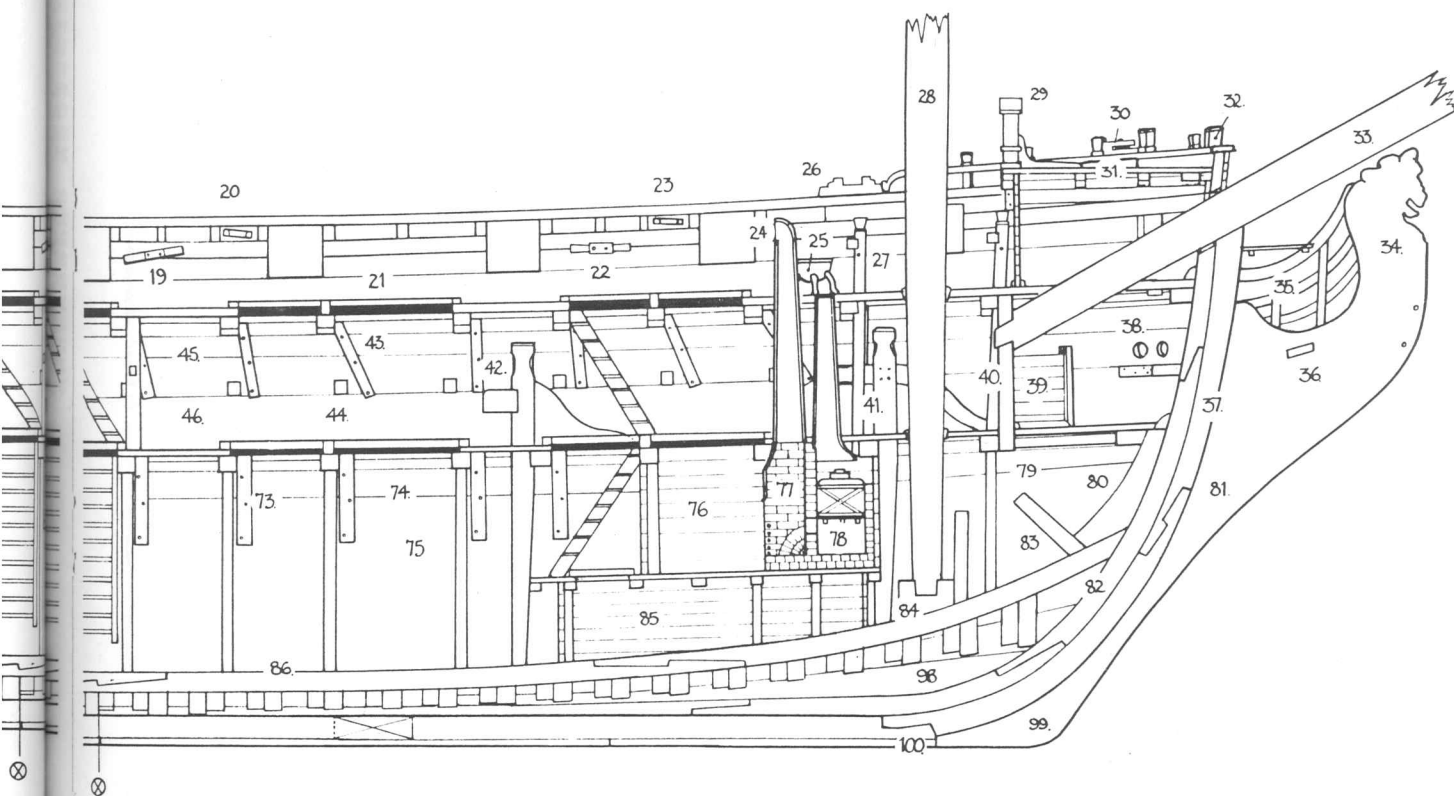
### C1/1



- 62. Bread room
- 63. Crutch
- 64. Filling room
- 65. Powder room
- 66. Lobby and capstan room
- 67. Captain's store room
- 68. After hold
- 69. Shot locker
- 70. The well
- 71. Elm tree pump casing
- 72. Main hold
- 73. Hanging knee
- 74. Lower deck clamp
- 75. Pillars
- 76. Galley
- 77. Galley firehearth

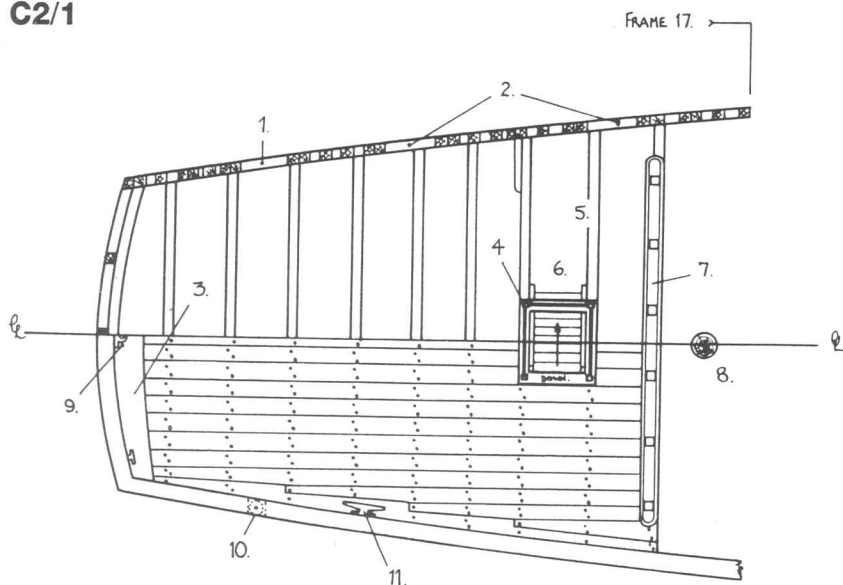
- 78. Galley stove
- 79. Fore peak and sail room
- 80. Stemson
- 81. Knee of the head
- 82. False stem or apron
- 83. Breast hook
- 84. Fore mast step
- 85. Sail room and coal store
- 86. Keelson
- 87. Main mast step
- 88. Fish room
- 89. Pallating deck of the magazine
- 90. Mizzen mast step
- 91. Inner post
- 92. Rudder
- 93. Stern post

- 94. Deadwood
- 95. Keel
- 96. Scarph of the keel
- 97. False keel
- 98. Deadwood or rising wood
- 99. Gripe and cutwater
- 100. Boxing of the stem post

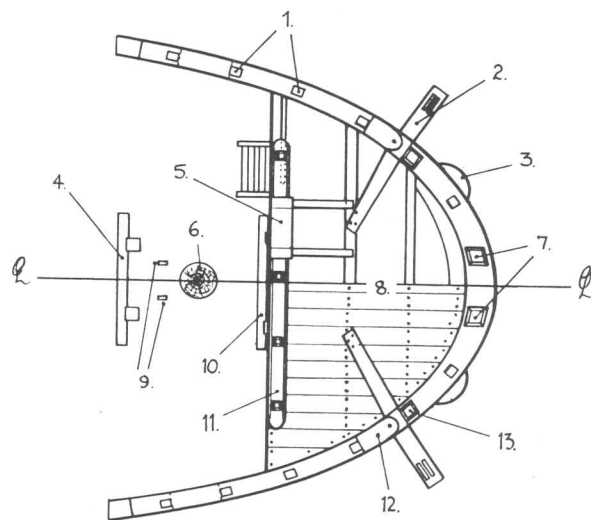


## C Internal hull

### C2/1



### C2/2



## C2 QUARTERDECK AND FORECASTLE

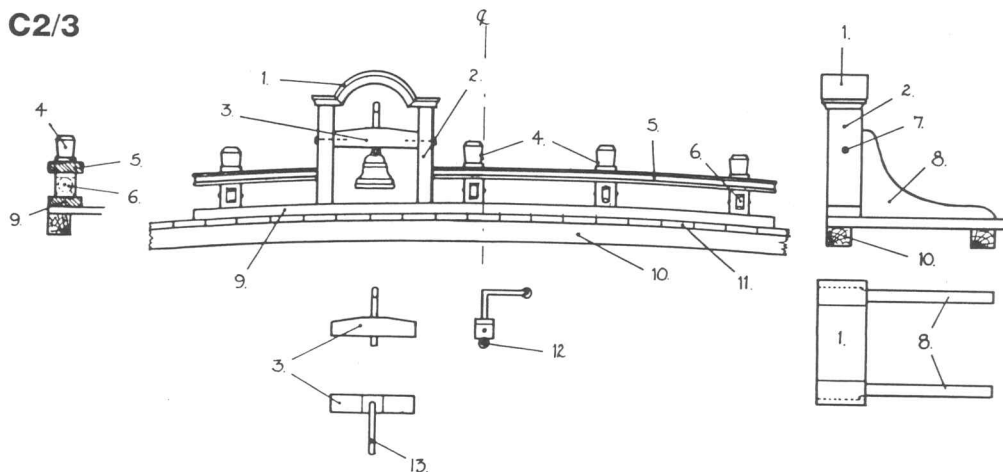
### C2/1 Plan view of quarterdeck (1/96 scale)

1. Cabin light
2. Gunports
3. Pendant lockers
4. Companion rail
5. Quarterdeck beam
6. Companionway
7. Quarterdeck breast rail
8. Mizzen mast
9. Tabernacle for ensign staff
10. Sheave
11. Cleat

### C2/2 Plan view of forecastle (1/96 scale)

1. Timberheads
2. Cathead
3. Roundhouse
4. Fore jeer bitts
5. Belfry
6. Fore mast
7. Knightheads
8. Forecastle deck
9. Ringbolts for jeers
10. Fore topsail sheet bitts
11. Forecastle breast rail
12. Sheave block for catblock tackle
13. Timberhead

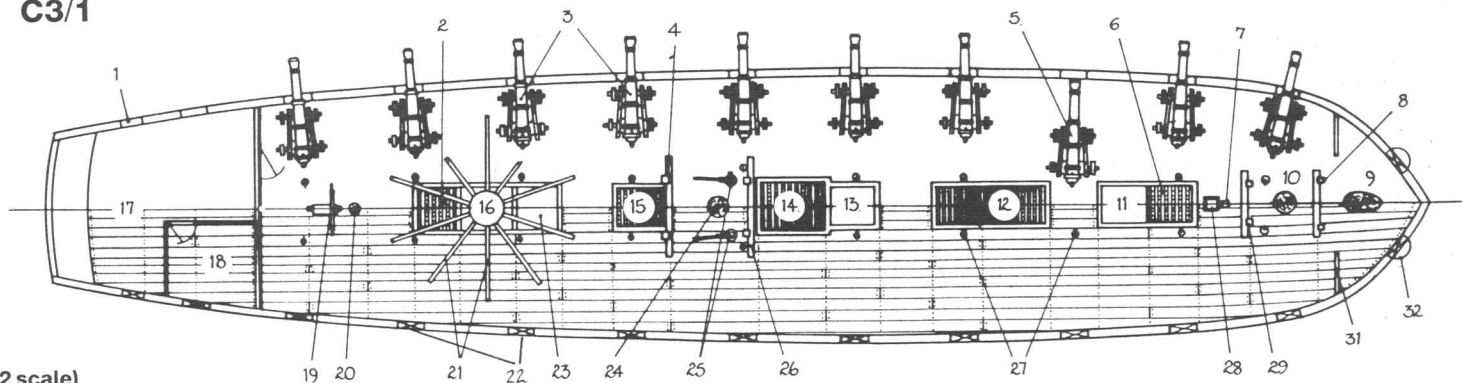
### C2/3



### C2/3 The belfry and forecastle breast rail (1/48 scale)

1. Belfry canopy
2. Canopy supports
3. Headstock
4. Breast rail timberheads
5. Rail
6. Sheaves
7. Headstock pivot bolt
8. Standard supporter
9. Rail waterway
10. Forecastle deck beam
11. Deck planking
12. Eye for bell to hang from
13. Attachment for bell cord

### C3/1

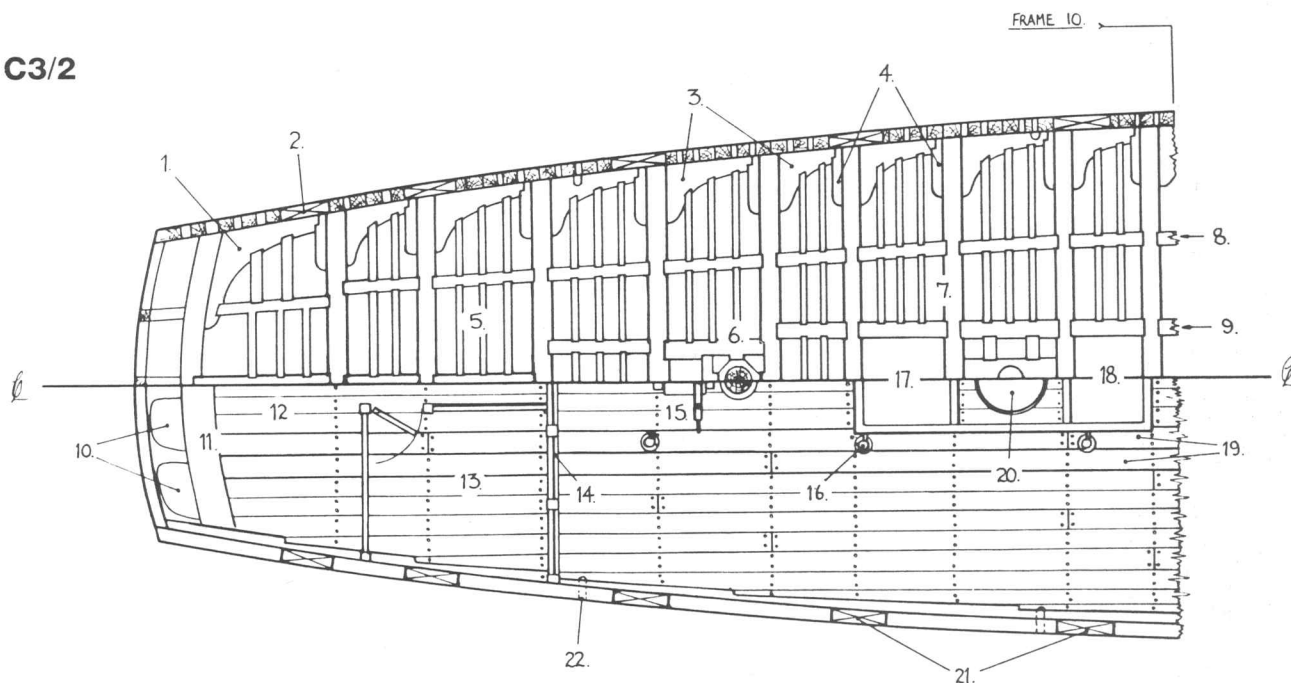


### C3 UPPER DECK

#### C3/1 General layout (1/192 scale)

1. Quarter light
2. Ventilation grating
3. 6pdr cannon
4. Main jeer bits
5. Cannon in run in position
6. Ventilation grating
7. Galley ventilation flue
8. Fore topsail sheet bits
9. Bowsprit
10. Fore mast
11. Fore access hatchway
12. Fore hatch
13. Access hatchway
14. Main hatch
15. After hatch
16. Capstan
17. Captain's day cabin
18. Captain's sleeping berth
19. Steering wheel
20. Mizzen mast
21. Capstan bars (partially omitted for clarity)
22. Gunports
23. After access hatchway
24. Main mast
25. Elm tree pumps
26. Main topsail sheet bits
27. Ringbolts for the training tackle
28. Galley firehearth flue
29. Fore jeer bits
30. Forecastle bulkhead
31. Roundhouse

### C3/2

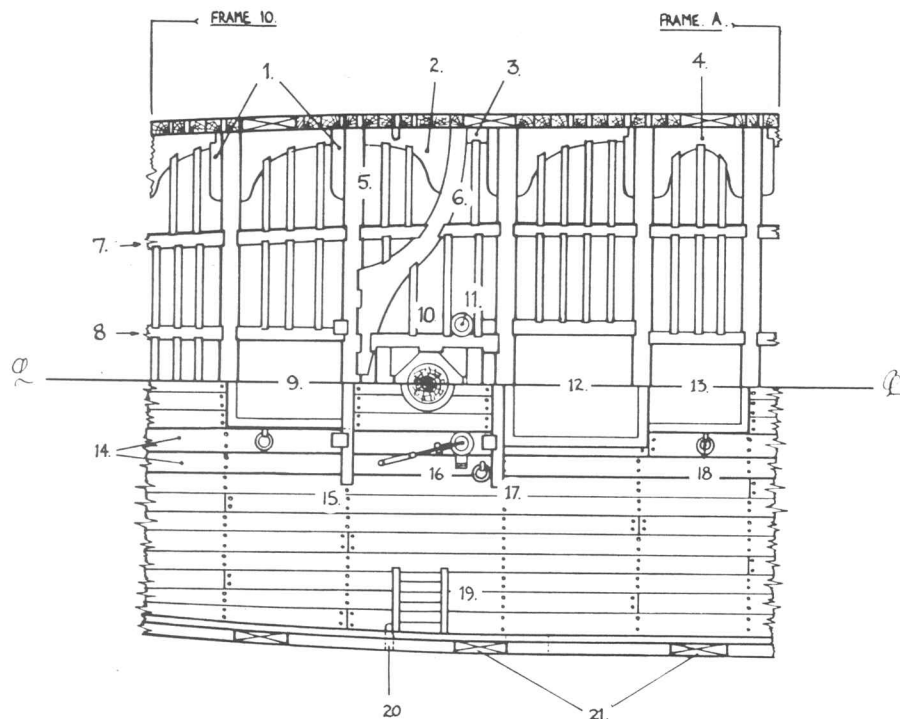


#### C3/2 Plan view of after section (1/96 scale)

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Transom knee</li> <li>2. Cabin light</li> <li>3. Lodging knees</li> <li>4. Hanging knees</li> <li>5. Ledges</li> <li>6. Mizzen mast and partners</li> <li>7. Upper deck beam</li> <li>8. Outer tier of carlings</li> <li>9. Midship tier of carlings</li> <li>10. Lights (or stern windows)</li> </ol> | <ol style="list-style-type: none"> <li>11. Transom seat</li> <li>12. Captain's day cabin</li> <li>13. Captain's sleeping quarters</li> <li>14. Transverse bulkhead</li> <li>15. Steering wheel</li> <li>16. Ringbolt for gun's training tackle</li> <li>17. Hatchway</li> <li>18. Access hatchway</li> <li>19. Binding strakes</li> <li>20. Capstan</li> <li>21. Gunports</li> <li>22. Scupper</li> </ol> |
|--|---|

## C Internal hull

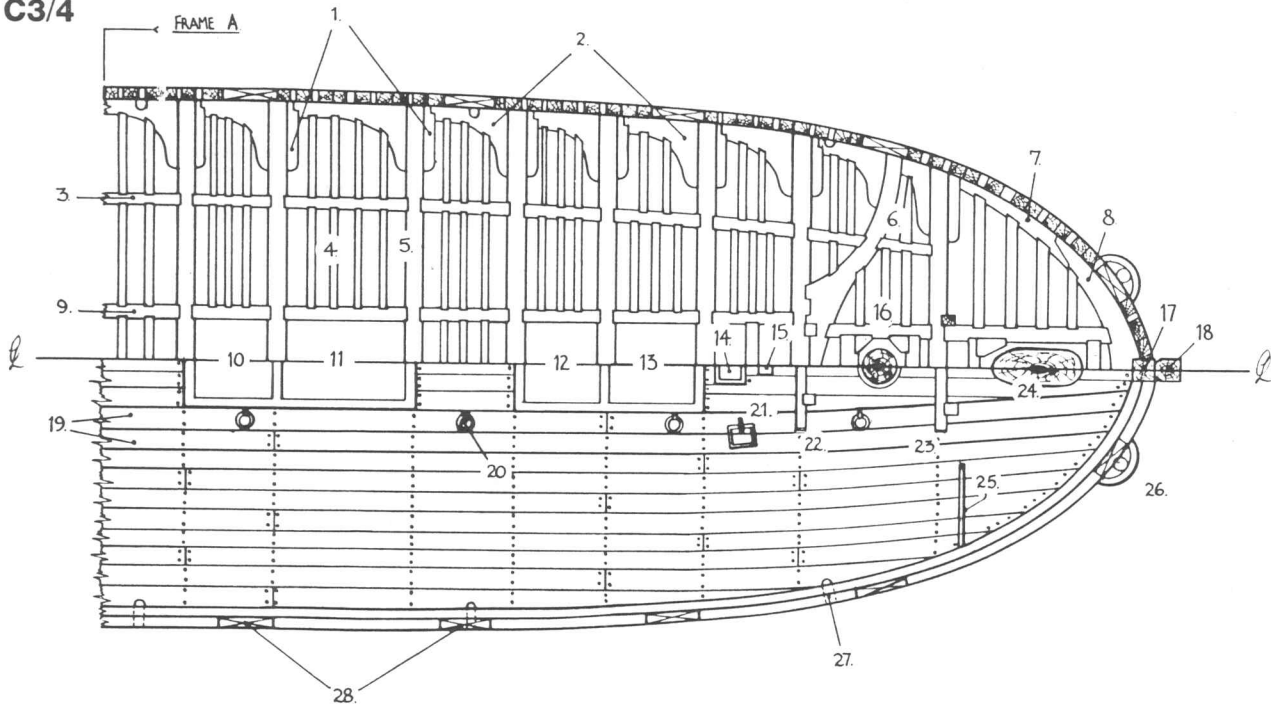
C3/3



C3/3 Plan view of midship section (1/96 scale)

1. Hanging knees
2. Lodging knee
3. Packing piece
4. Double lodging knee
5. Upper deck beam
6. Beam arm
7. Outer tier of carlings
8. Midship tier of carlings
9. After hatchway
10. Ledges
11. Elm tree pump casing
12. Main hatchway
13. Access hatchway
14. Binding strakes
15. Main jeer bits
16. Elm tree pump
17. Main topsail sheet bits
18. Ringbolt for gun's training tackle
19. Gangway to the entry steps
20. Scupper
21. Gunports

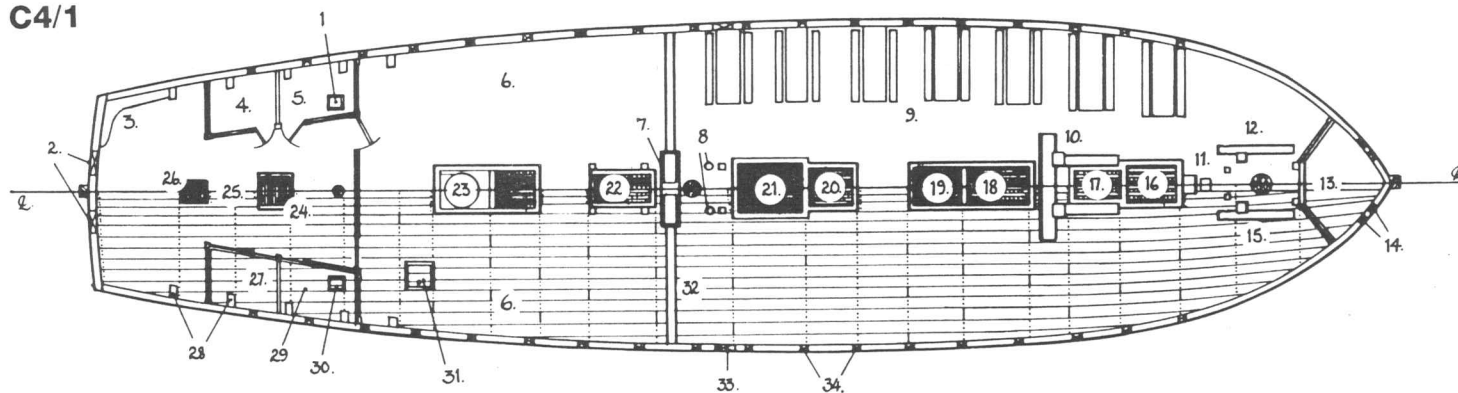
C3/4



C3/4 Plan view of fore section (1/96 scale)

1. Hanging knees
2. Lodging knees
3. Outer tier of carlings
4. Ledges
5. Upper deck beam
6. Beam arm
7. Ekeing
8. Deck hook
9. Midship tier of carlings
10. Fore hatchway
11. Fore hatchway
12. Access hatchway
13. Ventilation hatchway
14. Galley flue
15. Condensation flue from galley stove
16. Fore mast partners and mast
17. False post or apron
18. Stem post
19. Binding strakes
20. Ringbolt for gun's training tackle
21. Spanshackle
22. Fore jeer bits
23. Fore topsail sheet bits
24. Bowsprit
25. Forecastle bulkhead (if fitted)
26. Roundhouse with seat of ease
27. Scupper
28. Gunports

C4/1



**C4 LOWER DECK**

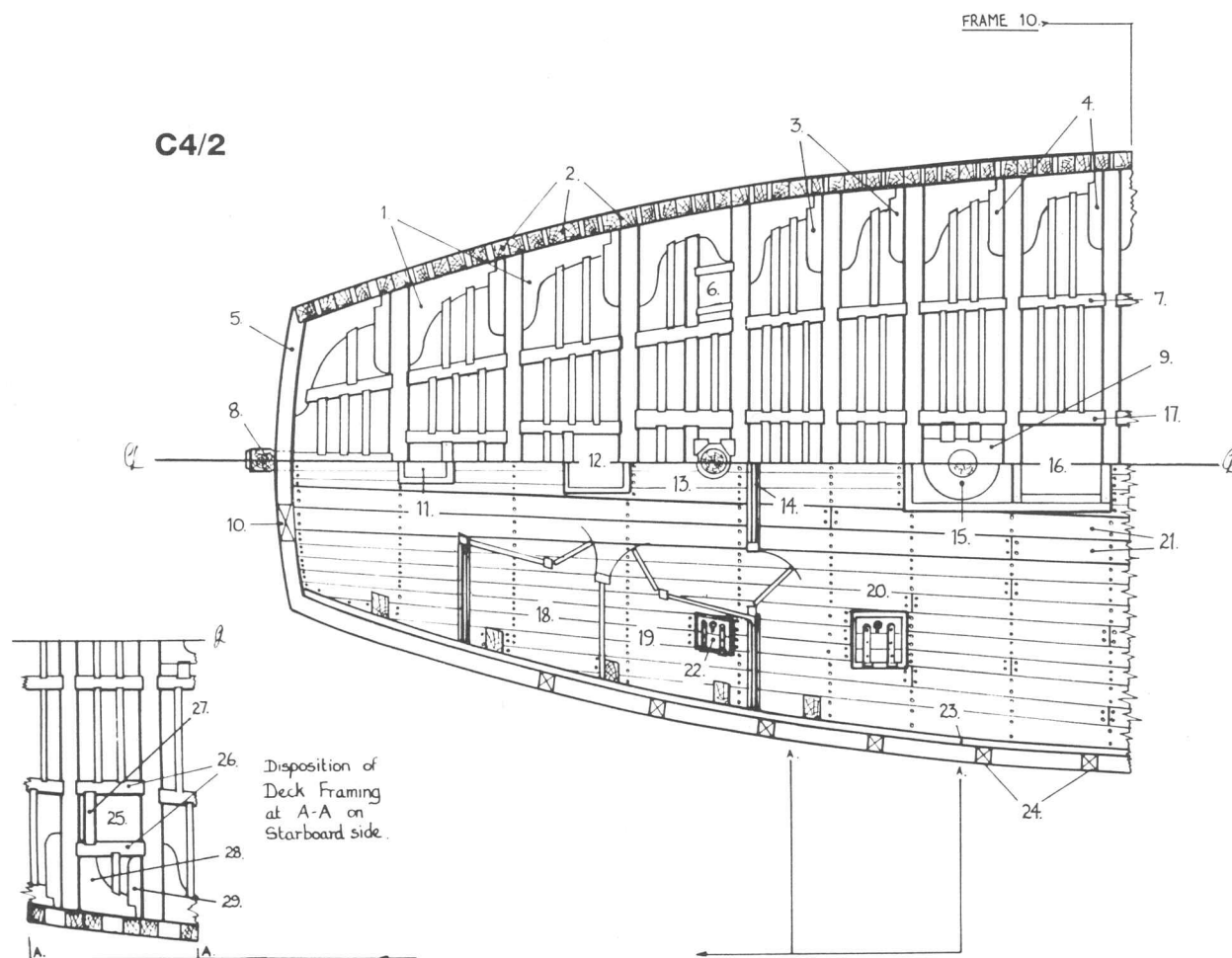
**C4/1 General layout (1/192 scale)**

1. Access scuttle to the bread room
2. After ports
3. Wing transom knee
4. Lieutenant's cabin
5. Surgeon's cabin
6. Area for canvas cabins to be rigged (used by midshipmen/warrant officers etc and probably constituted a separate 'mess')
7. Chain pump cistern
8. Elm tree pump
9. 'Mess' tables and formers
10. After riding bits
11. Galley flue and vent
12. Port fore riding bitt
13. Manger and bowsprit step
14. Hawse holes
15. Starboard fore riding bitt
16. Ventilation grating
17. Companionway to fore platform
18. Forward hatch
19. Hatchway
20. Companionway to hold
21. Main hatch
22. After hatch
23. Capstan
24. Bread room hatch
25. Wardroom
26. Access scuttle to bread room
27. Master's cabin
28. Standards
29. Cabin
30. Scuttle to magazine lightroom
31. Scuttle to magazine
32. Pump dale
33. Ballast port
34. Sweep ports

## C Internal hull

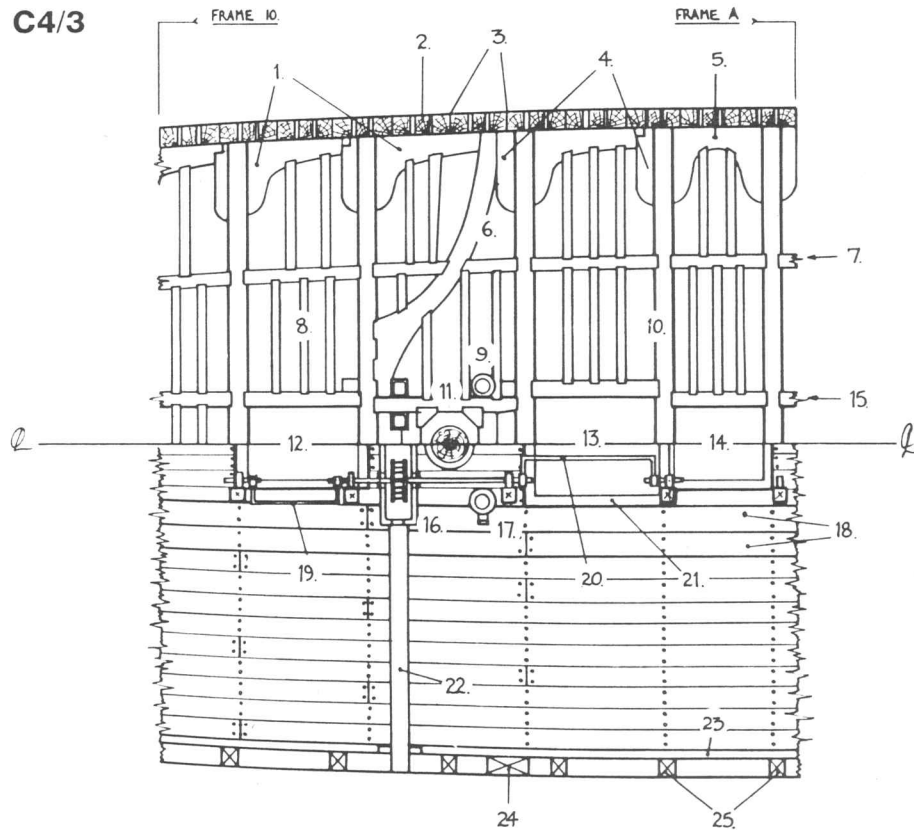
### C4/2 Plan view of after section (1/96 scale)

1. Lodging knees
2. Main frames
3. Lower end of the standards
4. Hanging knees
5. Deck transom
6. Scuttle to bread room passageway
7. Outer tier of carlings
8. Stern post
9. Capstan partners
10. After port
11. Ventilation scuttle for the bread room
12. Scuttle to bread room
13. Mizzen mast and partners
14. Wardroom bulkhead
15. Capstan
16. Access hatchway to after platform
17. Midship tier of carlings
18. Officer's cabin
19. Officer's cabin
20. Scuttle to magazine and gunner's store
21. Binding strakes
22. Scuttle to lightroom
23. Waterway
24. Sweep ports
25. Scuttle to magazine and gunner's store
26. Hatch partner (or carling)
27. Hatch ledge
28. Short lodging knee
29. Lower end of the standard



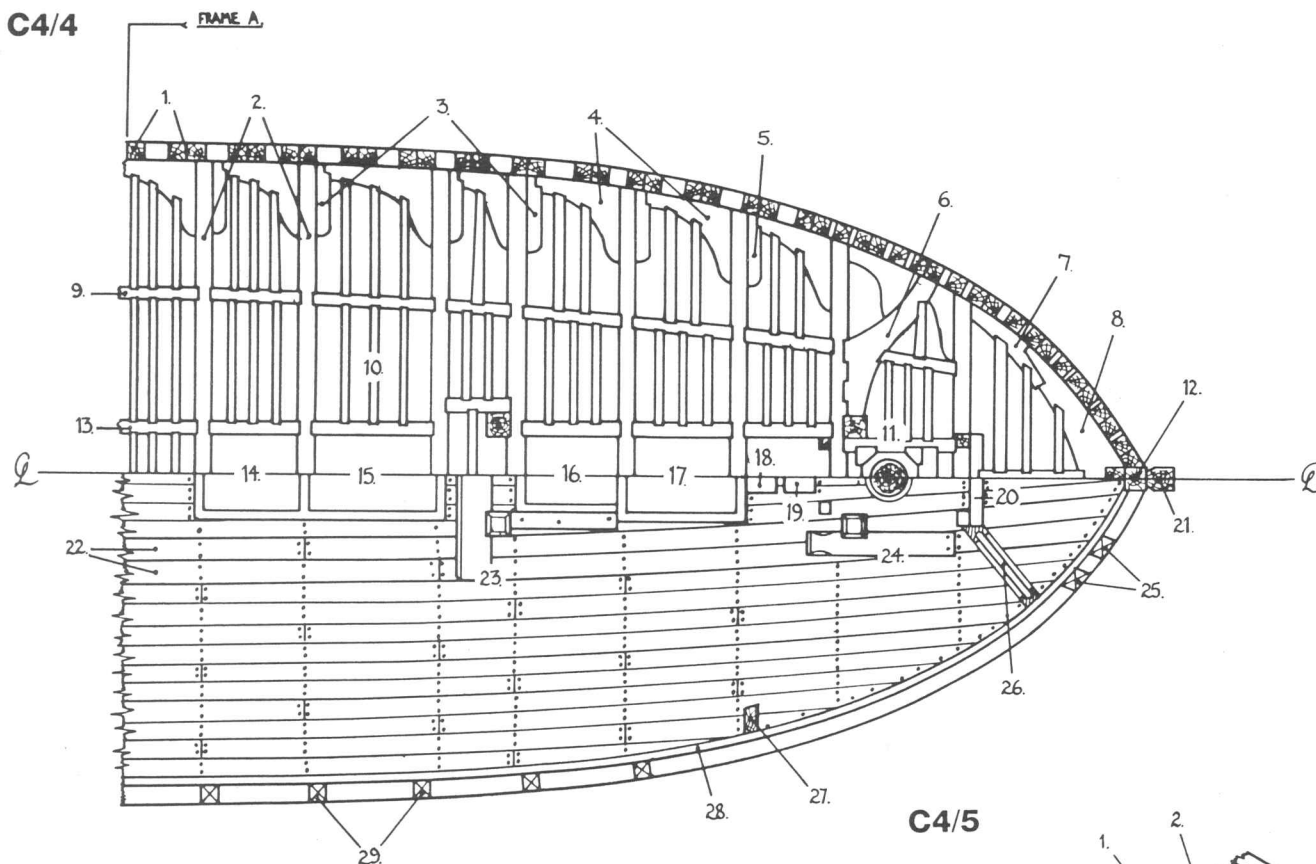
**C4/3 Plan view of midship section (1/96 scale)**

1. Lodging knees
2. Filling frame
3. Main frames
4. Hanging knees
5. Double lodging knee
6. Beam arm
7. Outer tier of carlings
8. Ledges
9. Elm tree pump case
10. Lower deck beam
11. Main mast partners
12. After hatchway
13. Main hatchway
14. Access hatchway
15. Midship tier of carlings
16. Chain pump cistern
17. Elm tree pump
18. Binding strakes
19. Chain pump crank handle
20. Chain pump crank handle extension
21. Main hatchway ledge
22. Pump dale
23. Waterway
24. Ballast port
25. Sweep ports



## C Internal hull

C4/4



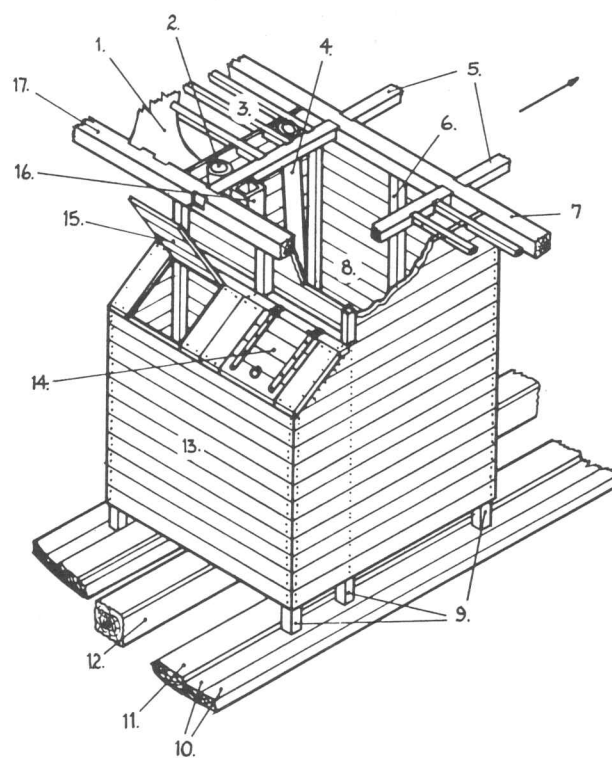
**C4/4 Plan view of fore section (1/96 scale)**

1. Main frames
2. Lower deck beams
3. Hanging knees
4. Lodging knees
5. Lower end of standard
6. Beam arm
7. Ekeing
8. Deck hook
9. Outer tier of carlings
10. Ledges
11. Fore mast partners
12. False post or apron
13. Midship tier of carlings
14. Fore hatchway
15. Fore hatchway
16. Access hatchway to the fore platform
17. Ventilation hatch for the galley
18. Galley flue
19. Condensation flue from galley stove
20. Manger
21. Stem post
22. Binding strakes
23. After riding bits
24. Starboard fore riding bitt
25. Hawse holes
26. Manger bulkhead and waterways
27. Standard
28. Waterway
29. Sweep ports

**C4/5 Isometric of the pump well (1/64 scale)**

1. Beam arm
2. Working chamber of chain pump
3. Ledges
4. Casing of elm tree pump
5. Carlings
6. Centre line stanchion
7. Lower deck beam
8. Pump well
9. Side stanchions
10. Footwaling
11. Limber strake
12. Keelson
13. Shot locker
14. Shot locker scuttle (closed)
15. Shot locker scuttle (open)
16. Lower deck beam

C4/5

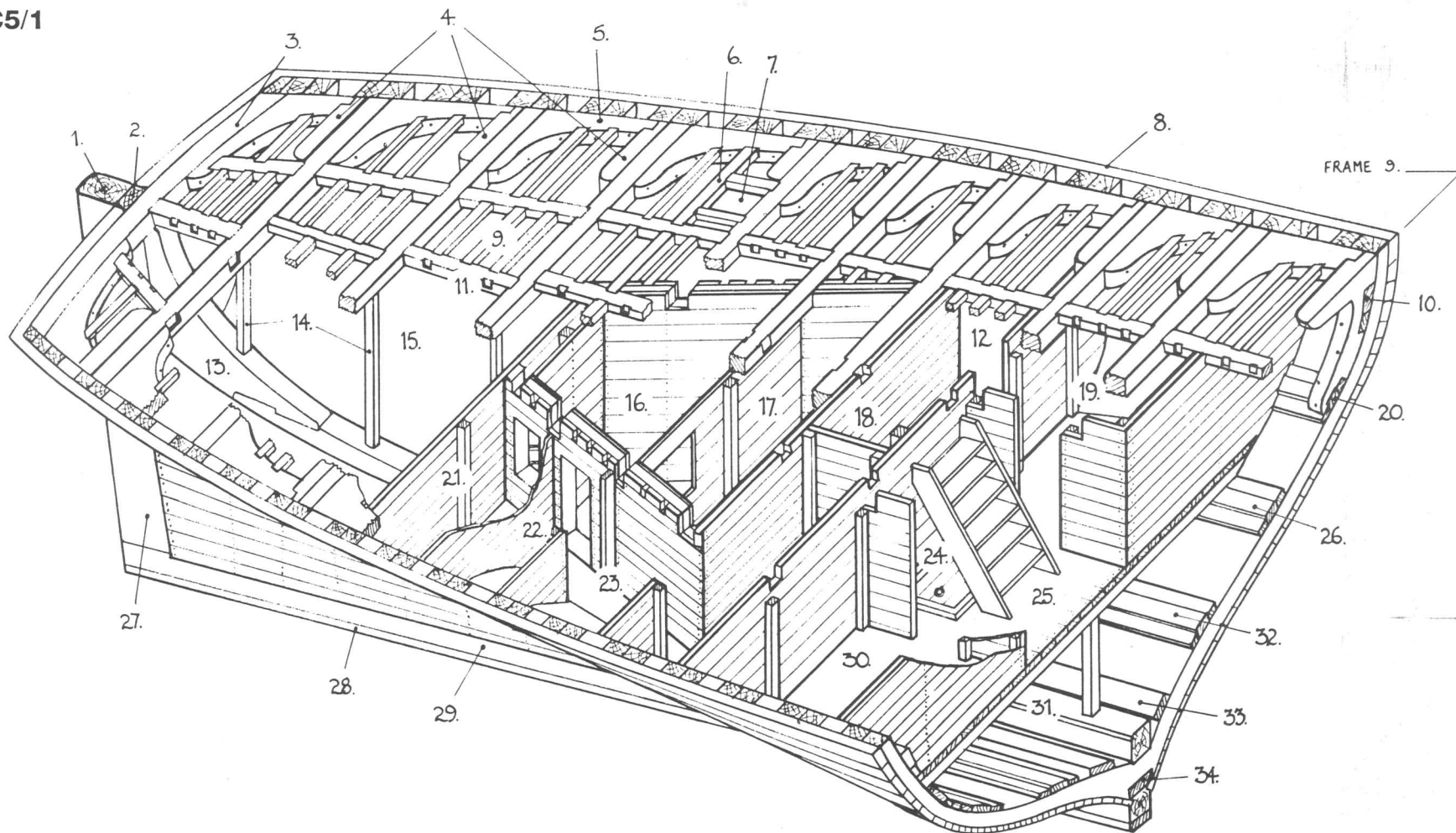


## C5 PLATFORMS AND HOLD

### C5/1 Section of the after platform and hold (no scale)

1. Stern post
2. Inner post
3. Deck transom
4. Lower end of the standards
5. Lodging knee
6. Scuttle ledge
7. Scuttle to bread room passageway
8. External planking
9. Ledges
10. Deck clamp
11. Carling
12. Lobby and capstan room
13. Sternson
14. Pillars
15. Bread room
16. Filling room
17. Powder room
18. Double-lined bulkhead of the magazine
19. Captain's store room and servants' berth
20. Thickstuff over the second futtock heads
21. Lightroom
22. Passageway to magazine
23. Passageway to gunner's store
24. Hatch to fish room
25. Lobby of after platform
26. Thickstuff over the first futtock heads
27. Stern post
28. False keel
29. Keel
30. Spirit room
31. Keelson
32. Thickstuff over the floor heads
33. Limber strake
34. Hog or rising wood

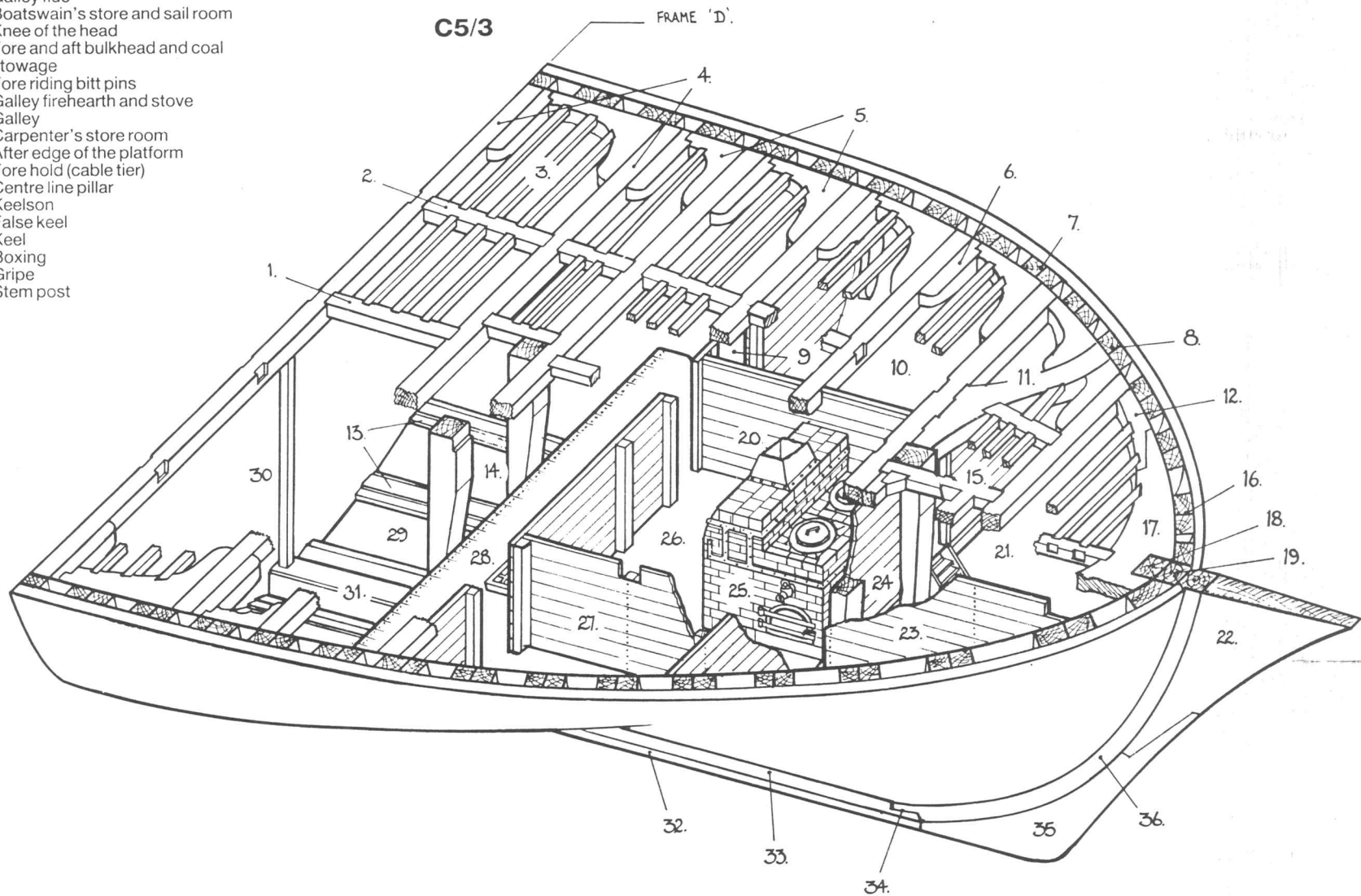
### C5/1





**C5/3 Section of the fore platform and hold (no scale)**

1. Carling (midship tier)
2. Carling (outer tier)
3. Ledges
4. Lower deck beams
5. Lodging knees
6. Lower end of a standard
7. Main frame
8. Cant frame
9. Door to boatswain's store and berth
10. Boatswain's store and berth
11. Beam arm
12. Ekeing
13. Thickstuff over the floor and futtock heads
14. After riding bitt pins
15. Fore mast partners
16. Hawse pieces
17. Deck transom
18. Stemson
19. False stem or apron
20. Galley flue
21. Boatswain's store and sail room
22. Knee of the head
23. Fore and aft bulkhead and coal stowage
24. Fore riding bitt pins
25. Galley firehearth and stove
26. Galley
27. Carpenter's store room
28. After edge of the platform
29. Fore hold (cable tier)
30. Centre line pillar
31. Keelson
32. False keel
33. Keel
34. Boxing
35. Gripe
36. Stem post

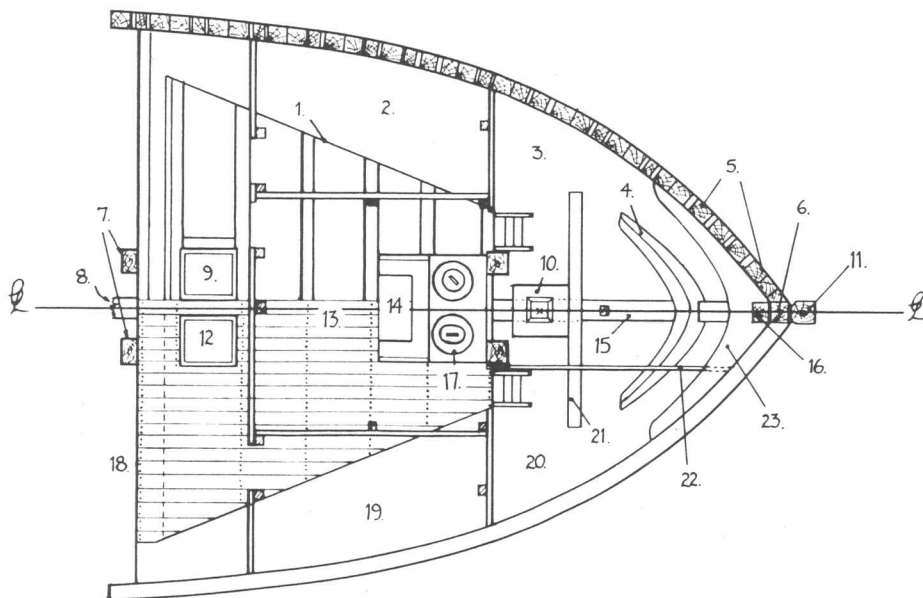


## C Internal hull

### C5/4 Plan view of fore platform and forepeak (1/96 scale)

1. Outboard extremity of the fore platform
2. Boatswain's store room and berth
3. Boatswain's store room
4. Breast hook
5. Hawse pieces
6. False stem or apron
7. Bitt pins of the after riding bits
8. Keelson
9. Hatch to sail room
10. Fore mast step
11. Stem post
12. Hatch to coal store
13. Galley area
14. Galley firehearth
15. Fore part of keelson
16. Stemson
17. Galley stove (kettle)
18. After end of the platform
19. Carpenter's store room and berth
20. Sail room
21. Crutch
22. Bulkhead
23. Deck hook

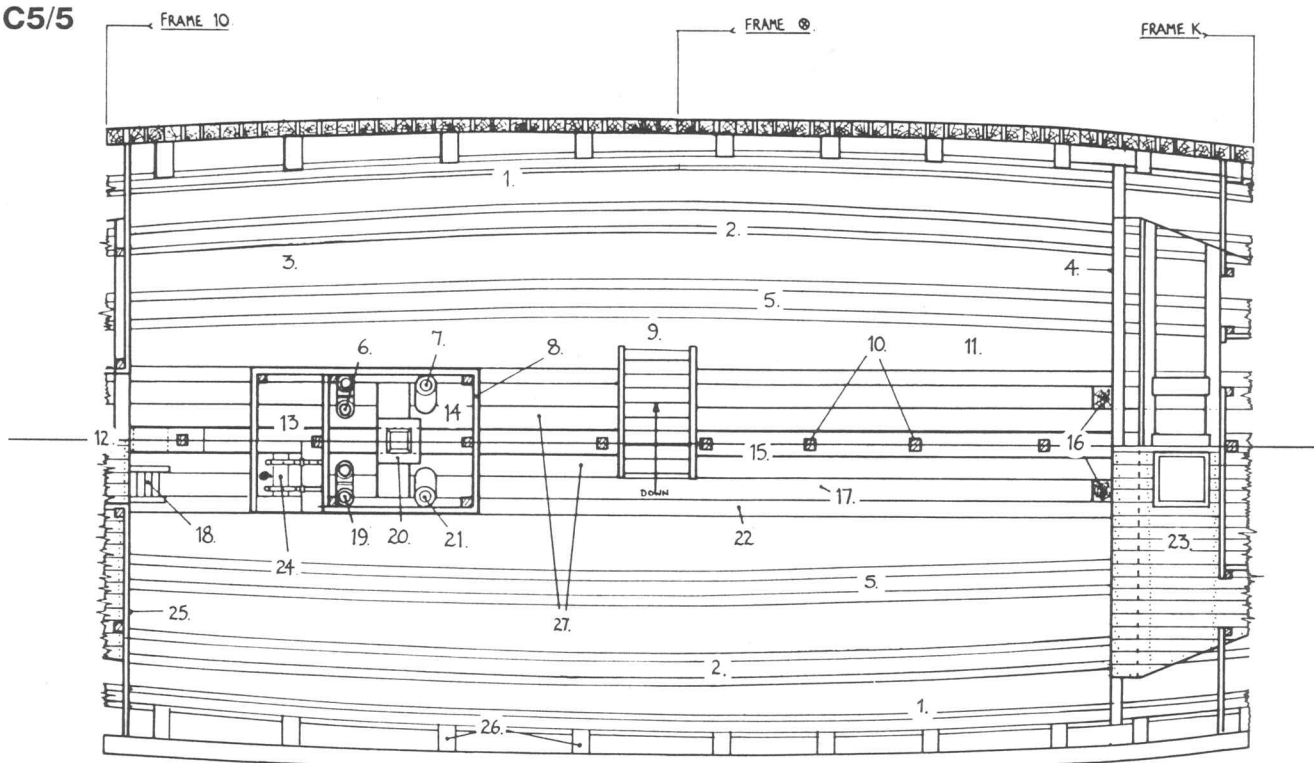
### C5/4

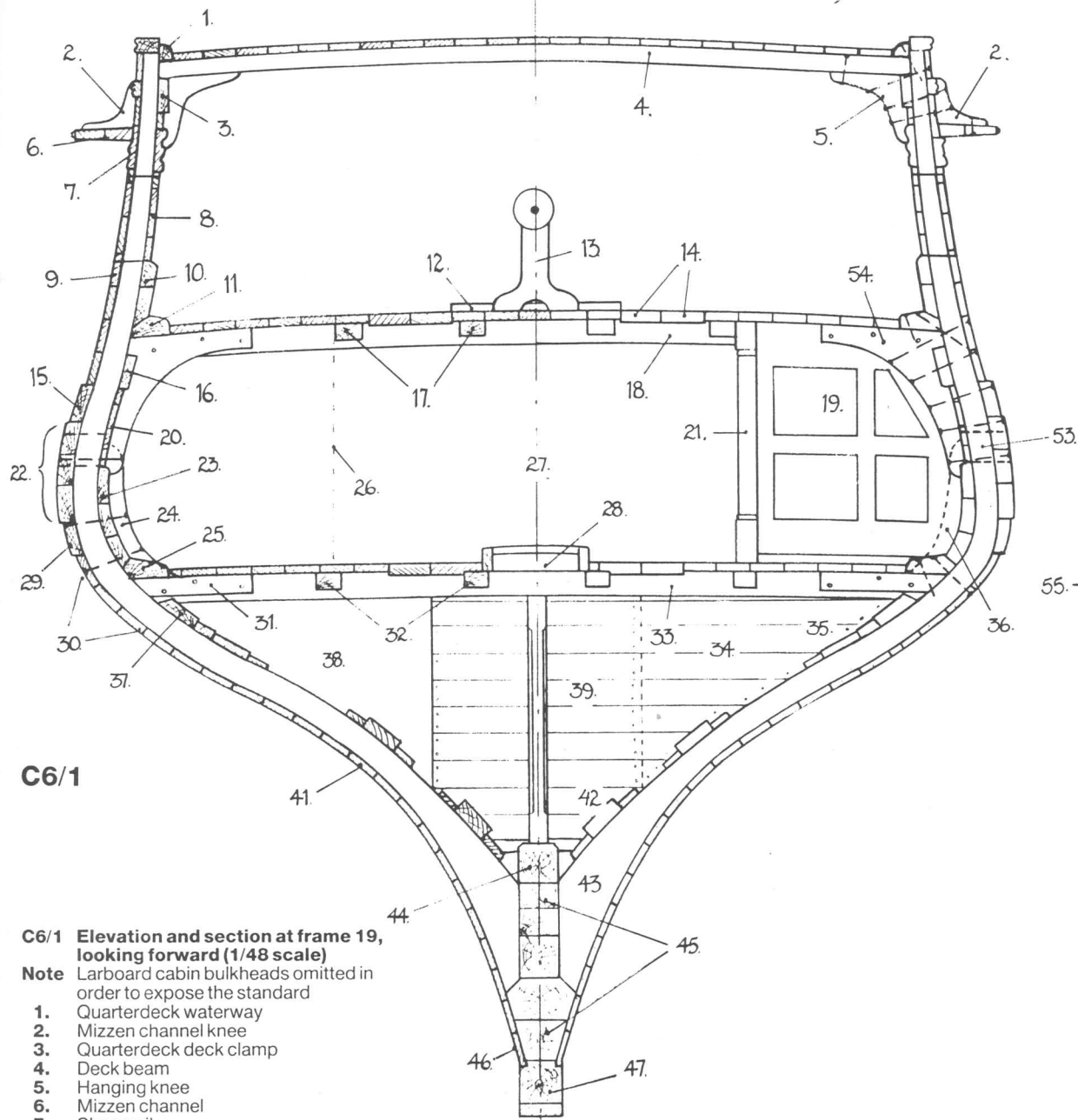


### C5/5 Plan view of amidships section of the hold (1/96 scale)

1. Upper band of thickstuff
2. Middle band of thickstuff
3. Ceiling
4. After beam of the fore platform
5. Lower band of thickstuff
6. Back case of the chain pump
7. Casing of the elm tree pump
8. Fore bulkhead of the well
9. Ladder
10. Pillars
11. Main hold
12. After platform
13. Shot locker
14. Pump well
15. Keelson
16. Bitt pins of the after riding bits
17. Limber strake
18. Ladder to after platform
19. Working chamber of the chain pump
20. Main mast step
21. Casing of the elm tree pump
22. Strake next to the limberstrake (footwaling)
23. Fore platform
24. Shot locker access hatch
25. Spirit room bulkhead
26. Hanging knees
27. Limber channels

### C5/5





**C6/1**

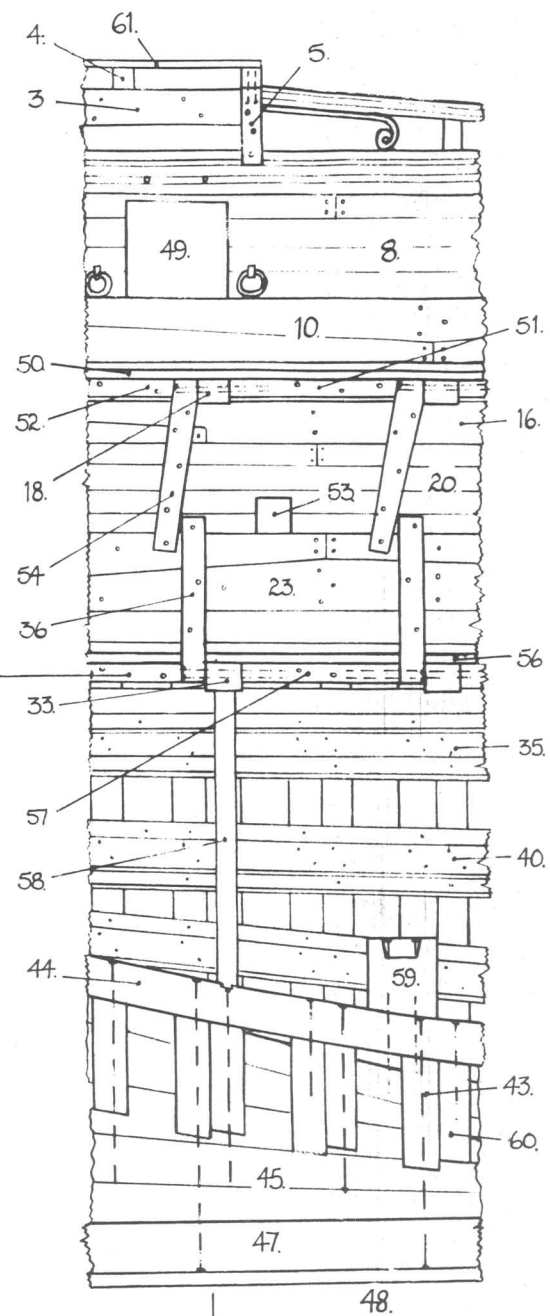
**C6/1 Elevation and section at frame 19, looking forward (1/48 scale)**

**Note** Larboard cabin bulkheads omitted in order to expose the standard

1. Quarterdeck waterway
2. Mizzen channel knee
3. Quarterdeck deck clamp
4. Deck beam
5. Hanging knee
6. Mizzen channel
7. Sheer rail
8. Lining (or quickwork)
9. Ship's side planking
10. Spirketting
11. Upper deck waterway
12. Grating
13. Steering wheel pedestal
14. Binding strakes
15. Strake above the wale (black strake)
16. Upper deck clamp
17. Upper deck carlings
18. Upper deck beam
19. Wardroom cabins (removable)
20. Lining (or quickwork)
21. Half pillar (removable)
22. Main wale and filling strake between
23. Spirketting

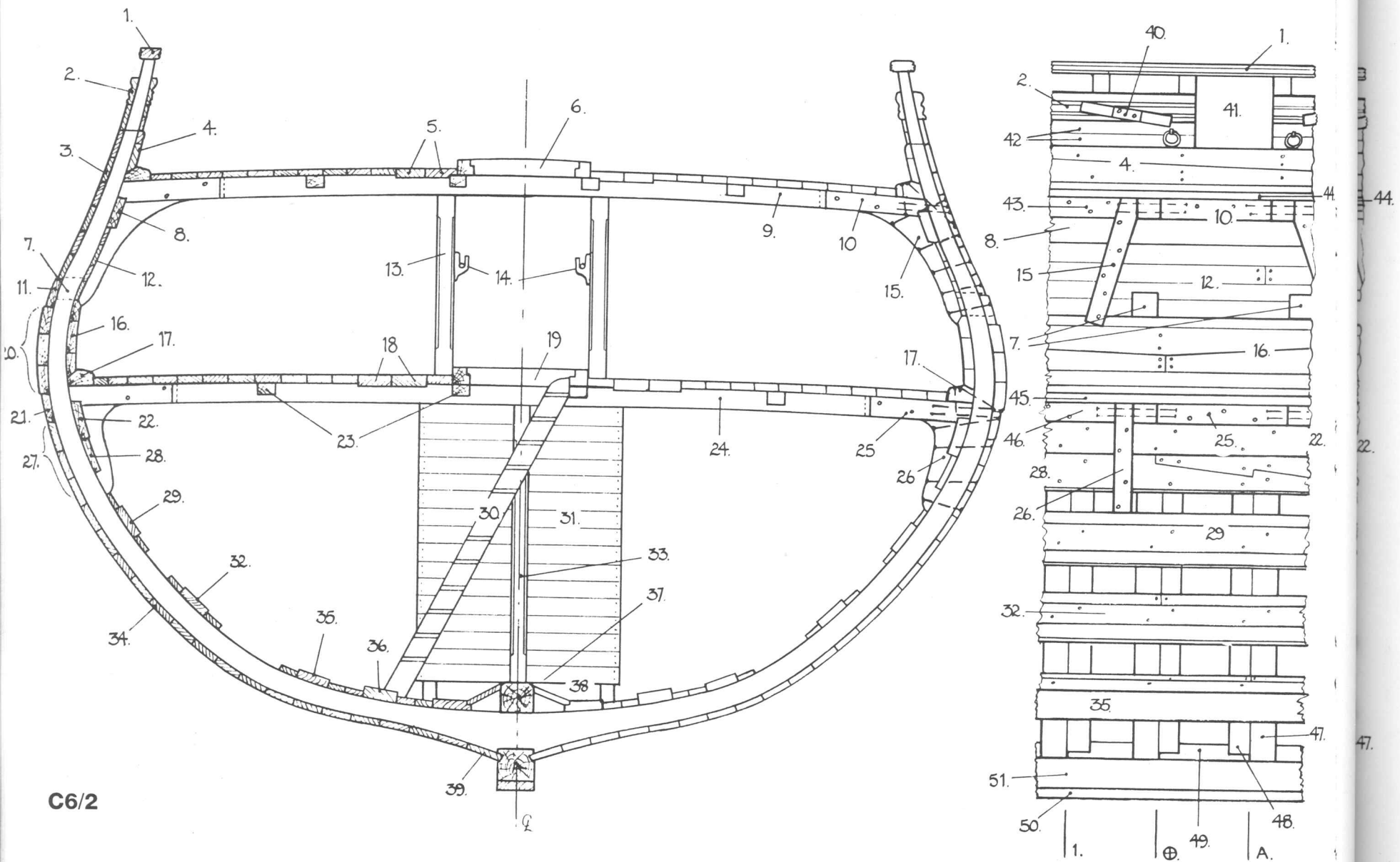
24. Standard
25. Lower deck waterway
26. Line depicts edge of port side cabins (omitted for clarity)
27. Wardroom
28. Bread room hatch
29. Strake below the wale
30. Diminishing strakes
31. Lodging knee
32. Lower deck carlings
33. Lower deck beam
34. After bulkhead of lightroom
35. Upper strake of thickstuff
36. Standard fitted adjacent to cabin bulkhead

37. Lower deck clamp
38. Storage space
39. After bulkhead of magazine
40. Middle band of thickstuff
41. Bottom planking
42. Limber strake
43. Frame
44. Keelson
45. Deadwood
46. Garboard strake
47. Keel
48. False keel
49. Gunport
50. Upper deck planking
51. Lodging knee



52. Lodging knee
53. Sweep port
54. Hanging knee, side cast in wake of standard (below)
55. Lodging knee
56. Lower deck planking
57. Double lodging knee
58. Centre line pillar
59. Mizzen mast step
60. Cross chock joining the heels of the first futtocks

# C Internal hull



C6/2

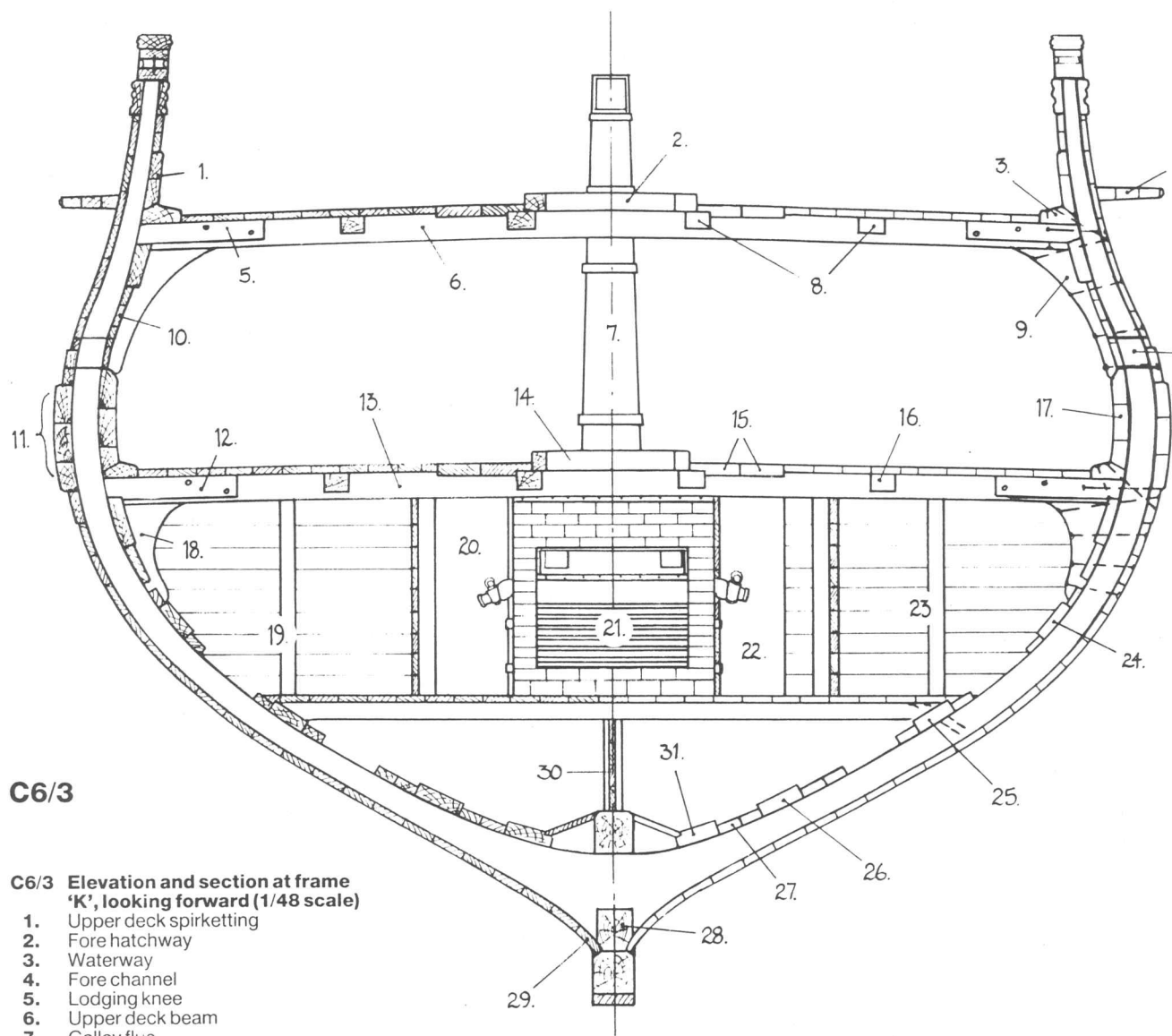
## C6/2 Elevation and section at dead flat ⊕ looking aft (1/48 scale)

- 1. Waist rail
- 2. Planksheer
- 3. External planking
- 4. Upper deck spirketting
- 5. Binding strakes
- 6. Main hatch
- 7. Sweep port
- 8. Deck clamp
- 9. Upper deck beam
- 10. Lodging knee
- 11. Black strake
- 12. Lining, or quickwork

- 13. Pillar
- 14. Brackets for the chain pump crank handles
- 15. Hanging knee
- 16. Lower deck spirketting
- 17. Waterway
- 18. Binding strakes
- 19. Access hatch to the hold
- 20. Main wales and filling strake
- 21. Thick strake below the wales
- 22. Deck clamp
- 23. Carlings
- 24. Lower deck beam
- 25. Double lodging knee

- 26. Hanging knee
- 27. Diminishing strakes
- 28. Beam shelf
- 29. Thickstuff over the second futtock heads
- 30. Ladder to the hold
- 31. Pump well
- 32. Thickstuff over the first futtock heads
- 33. Pillar
- 34. Bottom planking
- 35. Thickstuff over the floor heads
- 36. Thickstuff
- 37. Keelson
- 38. Limber strakes

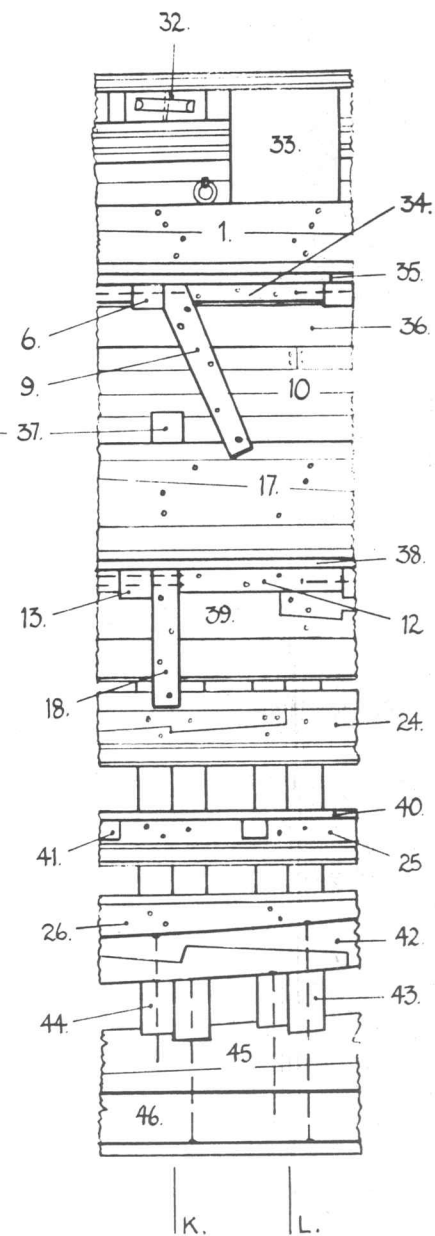
- 39. Garboard strake
- 40. Cleat for fore sheet
- 41. Gunport
- 42. Lining, or quickwork
- 43. Lodging knee
- 44. Upper deck planking at the side
- 45. Lower deck planking at the side
- 46. Lodging knee
- 47. Floor timber
- 48. First futtock
- 49. Hog or rising wood
- 50. False keel
- 51. Keel



**C6/3**

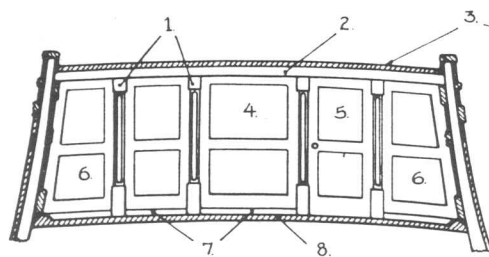
**C6/3 Elevation and section at frame 'K', looking forward (1/48 scale)**

- |  |   |                                     |
|--|---|-------------------------------------|
| 1. Upper deck spirketting                    | 26. Thickstuff over the floor heads               | 36. Deck clamp                      |
| 2. Fore hatchway                             | 27. Footwaling (strake next to the limber strake) | 37. Sweep port                      |
| 3. Waterway                                  | 28. Hog or rising wood                            | 38. Lower deck planking at the side |
| 4. Fore channel                              | 29. Garboard strake                               | 39. Deck clamp                      |
| 5. Lodging knee                              | 30. Centre line dividing bulkhead and pillars     | 40. Fore platform deck planking     |
| 6. Upper deck beam                           | 31. Limber strake                                 | 41. Fore platform beams             |
| 7. Galley flue                               | 32. Sheave block for main tack                    | 42. Keelson                         |
| 8. Carlings                                  | 33. Gunport                                       | 43. Floor timber                    |
| 9. Hanging knee                              | 34. Lodging knee                                  | 44. First futtock timber            |
| 10. Lining, or quickwork                     | 35. Upper deck planking at the side               | 45. Hog or rising wood              |
| 11. Main wales and filling strake            |   | 46. Keel                            |
| 12. Lodging knee                             |   |                                     |
| 13. Lower deck beam                          |   |                                     |
| 14. Hatchway (ventilation)                   |   |                                     |
| 15. Binding strakes                          |   |                                     |
| 16. Carling                                  |   |                                     |
| 17. Lower deck spirketting                   |   |                                     |
| 18. Hanging knee                             |   |                                     |
| 19. Boatswain's store room                   |   |                                     |
| 20. Passageway to boatswain's stores         |   |                                     |
| 21. Galley firehearth                        |   |                                     |
| 22. Passageway to sail room                  |   |                                     |
| 23. Carpenter's store room                   |   |                                     |
| 24. Thickstuff over the second futtock heads |   |                                     |
| 25. Thickstuff over the first futtock heads  |   |                                     |

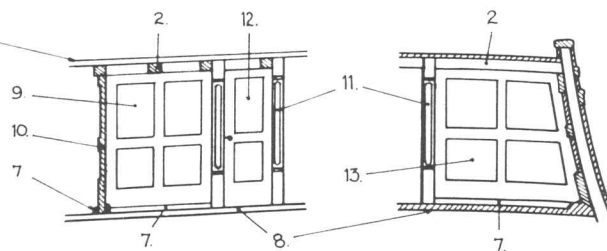


## C Internal hull

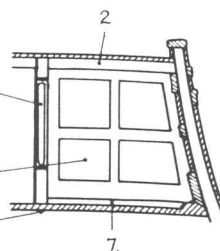
C7/1



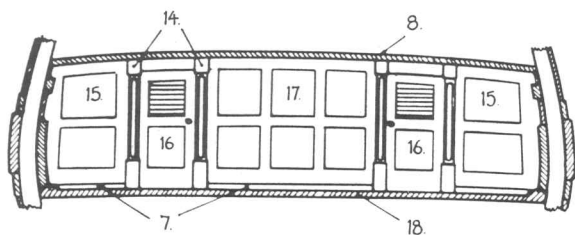
C7/2



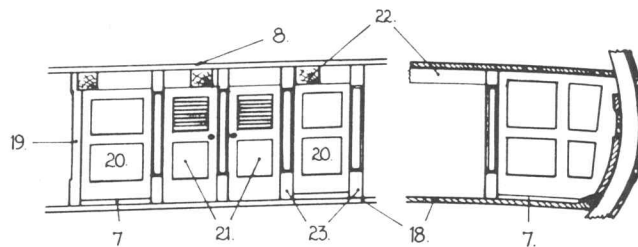
C7/3



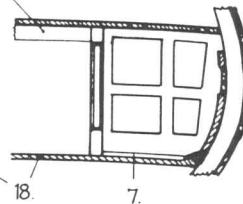
C7/4



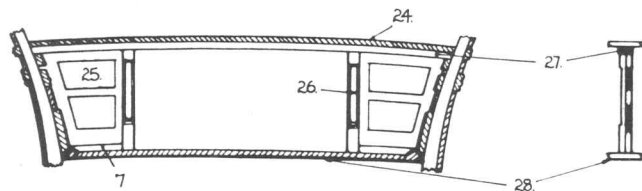
C7/5



C7/6



C7/7



### C7 BULKHEADS OF THE MAIN AND LOWER DECKS (1/96 scale)

C7/1 Bulkhead below the quarterdeck

C7/2 Captain's bedplace from larboard

C7/3 After side of bedplace

C7/4 Wardroom bulkhead on lower deck

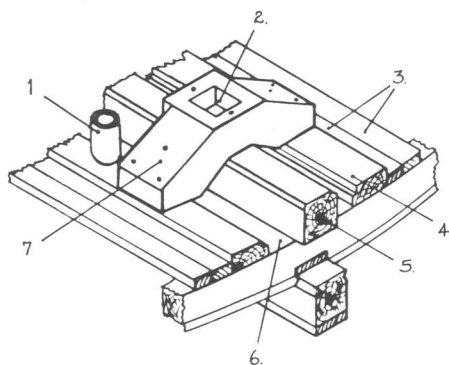
C7/5 Starboard side of wardroom cabins (canvas screens were often used as an alternative to the wardroom cabin and captain's bedplace timber bulkheads)

C7/6 After side of wardroom cabins

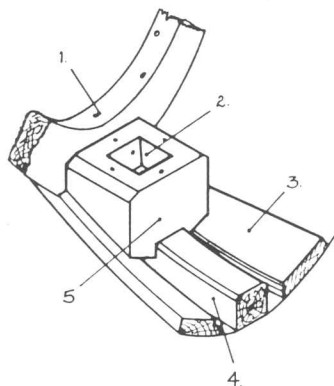
C7/7 Half bulkheads below the forecastle (not always fitted)

1. Pillars
2. Quarterdeck beam
3. Quarterdeck planking
4. Centre panel (portable)
5. Door to captain's quarters
6. Side panel (portable)
7. Combined waterway and locating beam
8. Upper deck planking
9. Panel (portable)
10. Pillar
11. Pillar
12. Door to captain's bedplace
13. Panel (portable)
14. Pillars
15. Side panel (portable)
16. Doors to the wardroom
17. Centre panel (portable)
18. Lower deck planking
19. Pillar
20. Panels (portable)
21. Cabin doors
22. Upper deck beams
23. Pillars
24. Forecastle deck planking
25. Side panels (not always fitted)
26. Pillar (not always fitted)
27. Forecastle beam
28. Upper deck planking

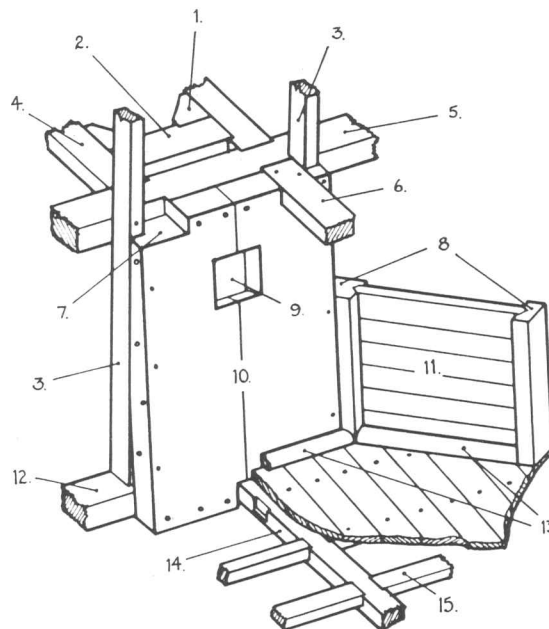
### C8/1



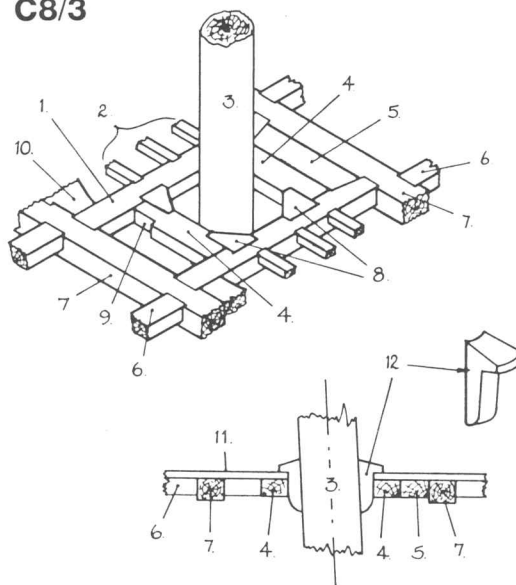
### C8/2



### C8/4



### C8/3



## C8 MAST STEPS AND PARTNERS

### C8/1 Main mast step, isometric (1/64 scale)

1. Lower end of elm tree pump
2. Mortice for mast tenon
3. Footwaling
4. Limber strake
5. Keelson
6. Limber passage
7. Step block

### C8/2 Foremast step, isometric (1/64 scale)

1. Breast hook
2. Mortice for mast tenon
3. Limber strake
4. Keelson
5. Step block

### C8/3 Mast partners, isometric (1/64 scale)

1. Carling of extra scantling
2. Ledges
3. Main mast
4. Partners
5. Filling piece
6. Carlings
7. Deck beam
8. Chocks
9. Recess for pump casing
10. Beam arm
11. Deck planking
12. Wedges

### C8/4 Details of the bowsprit step and the manger, isometric (1/48 scale)

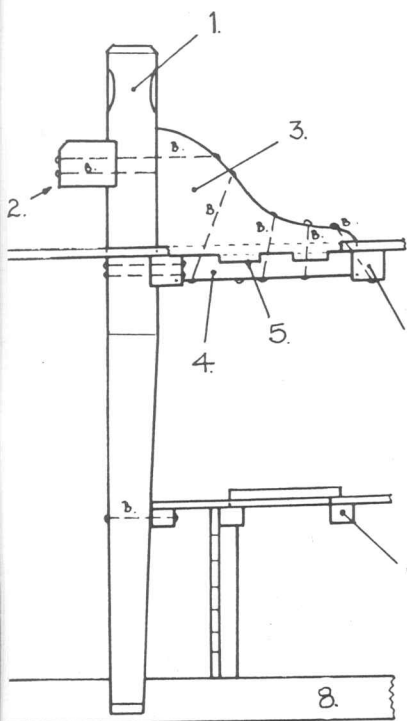
1. Partner chock
2. Cross partner
3. Lower portion of the fore topsail sheet bitt pin
4. Partners
5. Deck beam
6. Carling
7. Recess for the carling
8. Manger bulkhead supports
9. Mortice for the bowsprit tenon
10. Step in two halves
11. Manger bulkhead planks
12. Lower deck beam
13. Waterways
14. Ledges
15. Centre line carling

## C Internal hull

### C9 BITTS (1/48 scale)

#### C9/1 Starboard side elevation of aftermost riding bitt

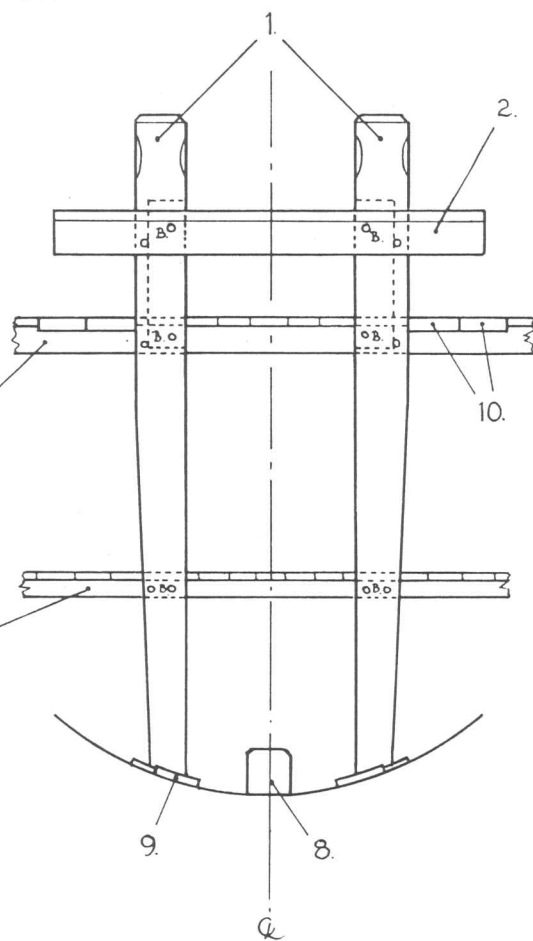
C9/1



#### C9/2 Section elevation viewed from aft of starboard aftermost riding bitt

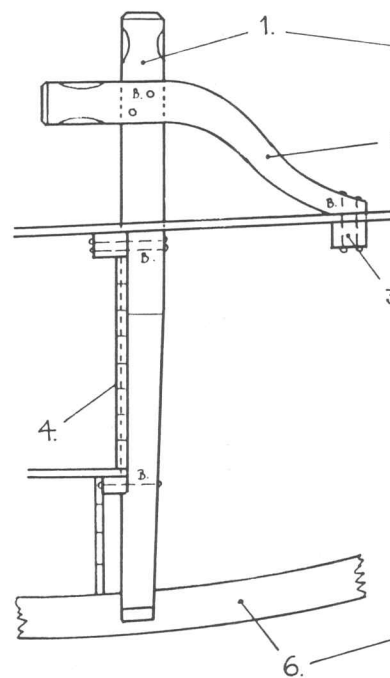
1. Bitt pins
2. Cross piece
3. Standard
4. Carling of greater scantling
5. Tabling of standard into carling
6. Lower deck beam
7. Platform beam
8. Keelson
9. Limber strake and footwaling
10. Binding strakes

C9/2



#### C9/3 Starboard side elevation of foremost riding bitt

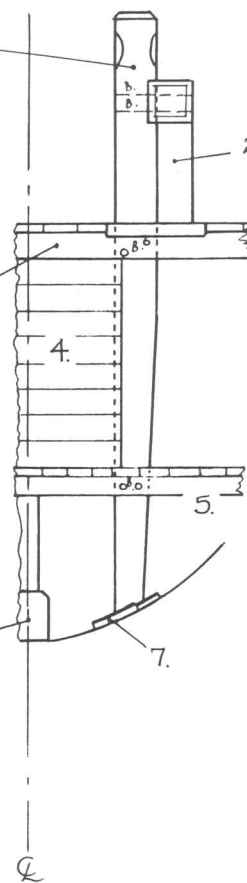
C9/3

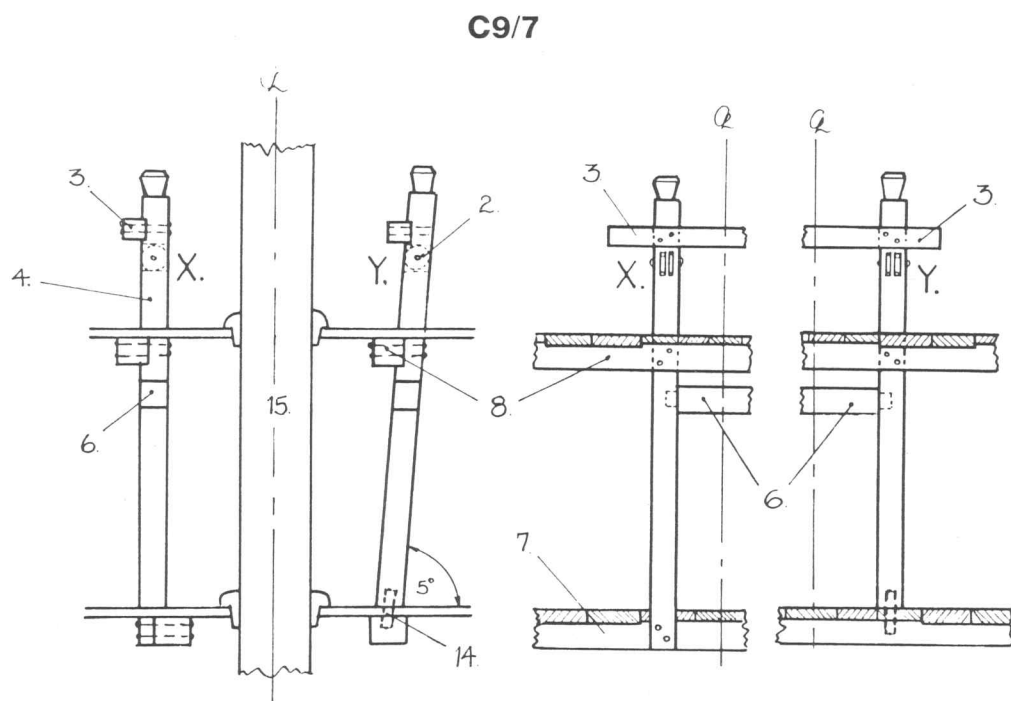
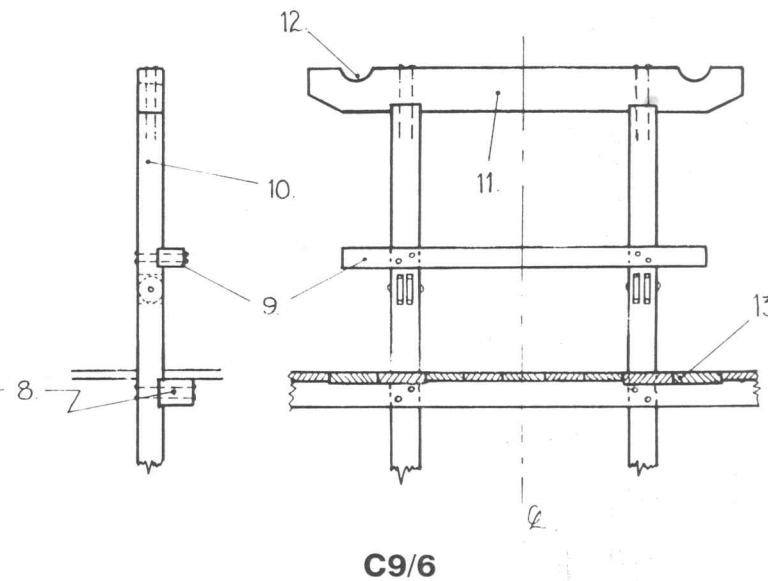
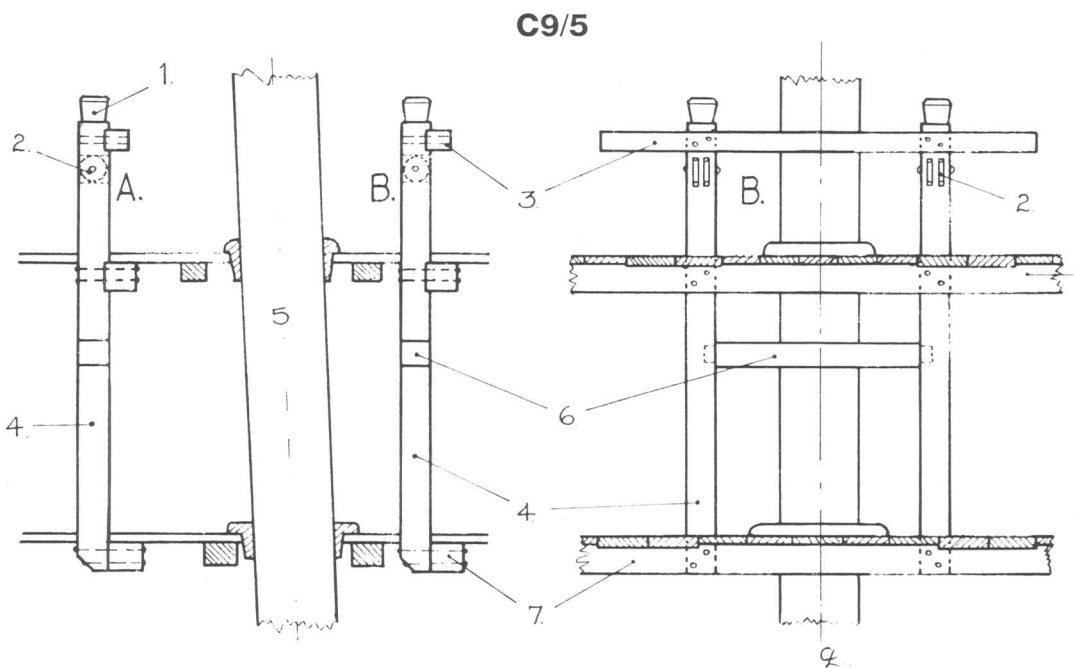


#### C9/4 Section elevation of starboard foremost riding bitt

1. Bitt pins
2. Combined support and securing  
timber
3. Lower deck beam
4. Fore bulkhead of galley
5. Platform beam
6. Rising of the keelson
7. Limber strake and footwaling

C9/4





**C9/5 Main jeer (A) and topsail sheet bitts (B)**

**C9/6 Main topsail sheet bitts fitted with a gallows**

**C9/7 Fore jeer (X) and topsail sheet bitts (Y)**

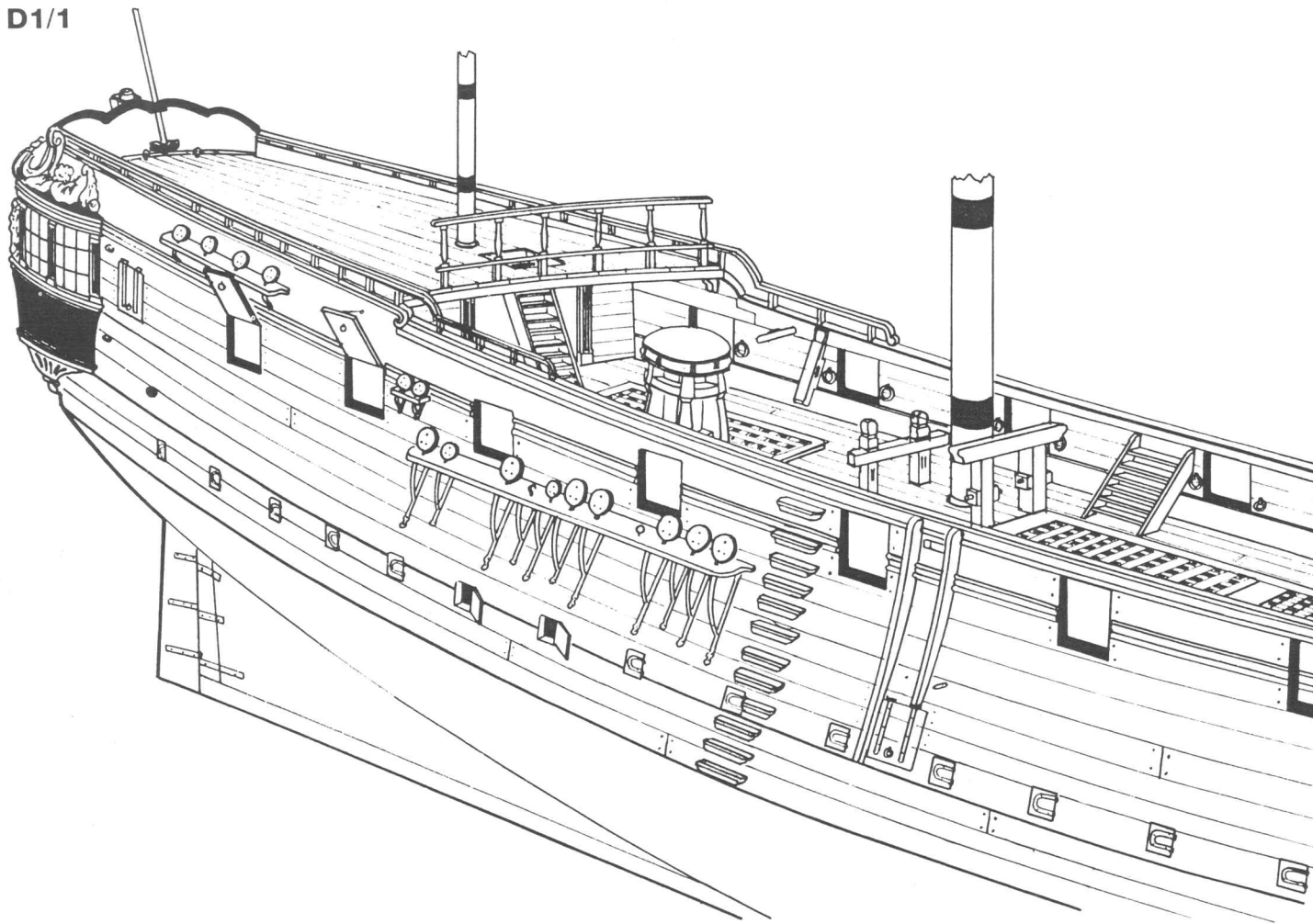
1. Timberhead of bitt pin
2. Sheave
3. Cross piece
4. Bitt pin
5. Main mast
6. Strengthening cross piece
7. Lower deck beam
8. Upper deck beam
9. Cross piece
10. Bitt pin
11. Gallows
12. Recess for spare spar stowage
13. Binding strake
14. Coak to retain heel of bitt pin
15. Fore mast

# D External hull

## D1 GENERAL

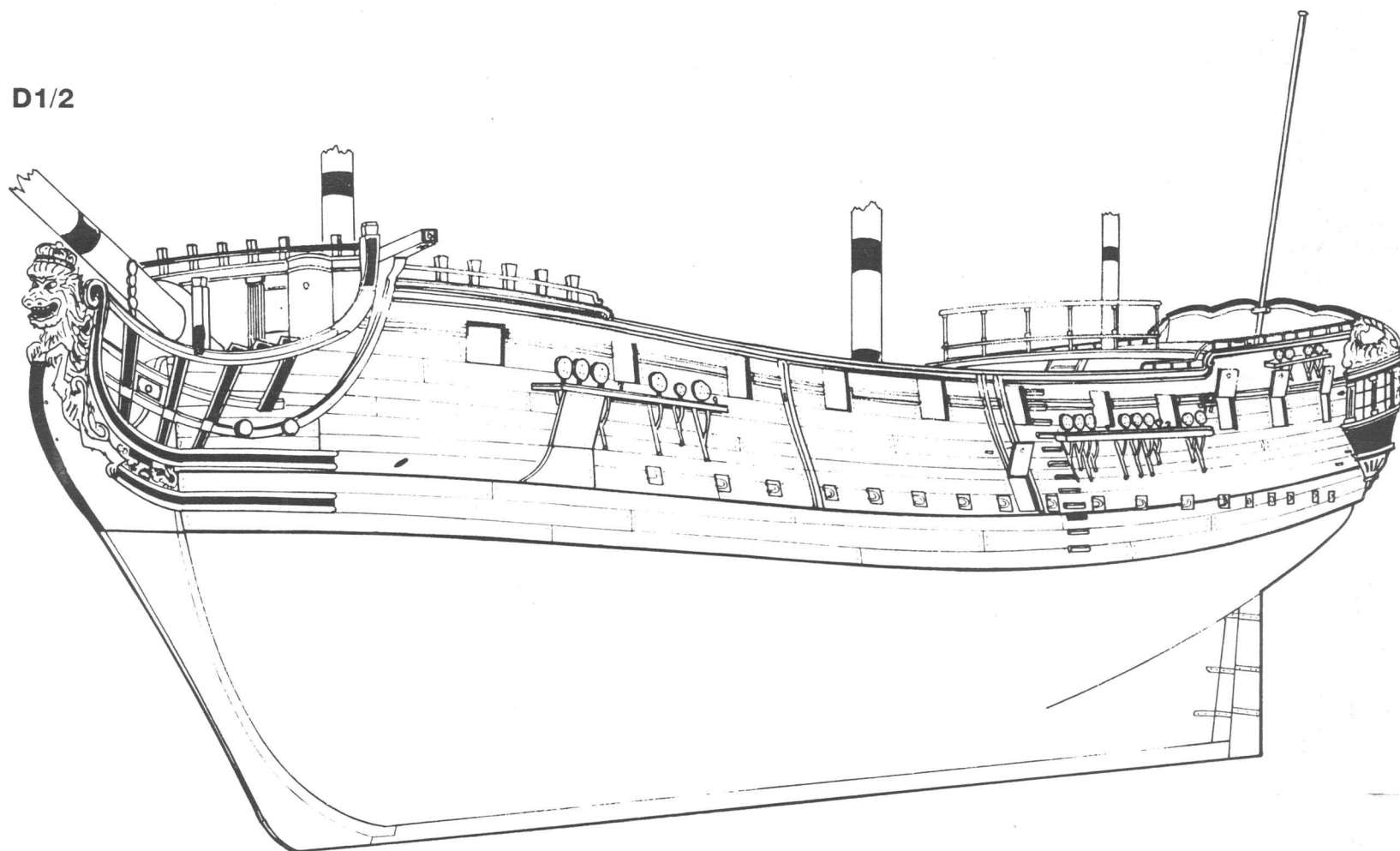
D1/1 Starboard side, based on Science  
Museum model (no scale)

D1/1



D1/2 Port side, based on Science  
Museum model (no scale)

D1/2

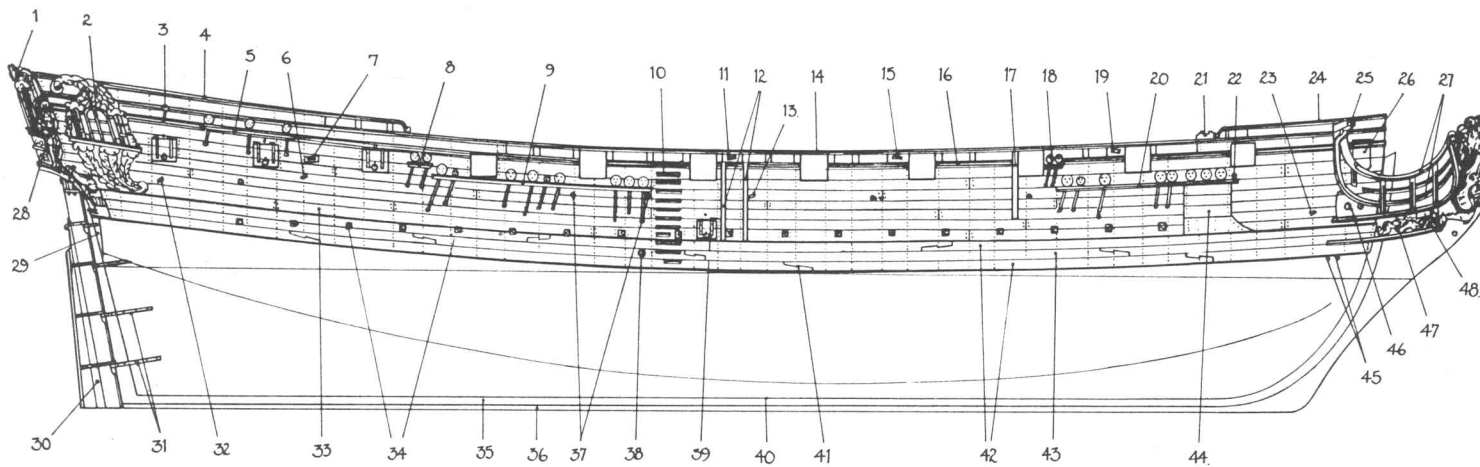


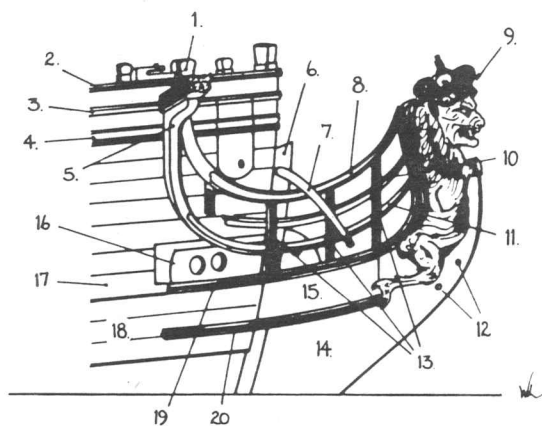
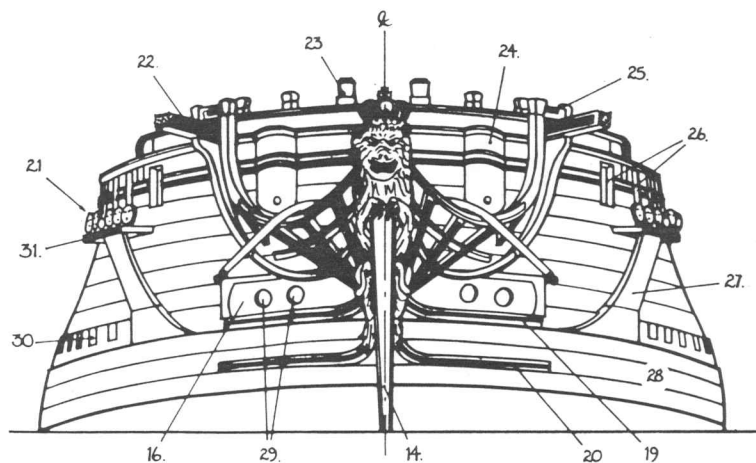
## D External hull

### D1/3 Disposition of the external features and planking strakes (1/192 scale)

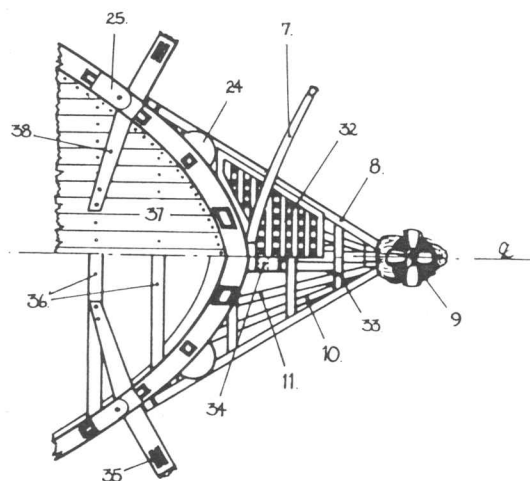
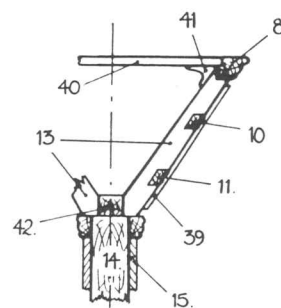
- |  |  |
|--|--|
| 1. Taffarel                              | 24. Fife rail                                |
| 2. Quarter badge                         | 25. Cathead                                  |
| 3. Mizzen topmast backstay deadeye       | 26. Roundhouse                               |
| 4. Fife rail                             | 27. Head rails                               |
| 5. Mizzen channel                        | 28. Counter rail                             |
| 6. Eyebolt for the main sheet            | 29. Square tuck transom                      |
| 7. Sheave block for the main sheet       | 30. Rudder                                   |
| 8. Main topmast backstay stool           | 31. Gudgeon braces                           |
| 9. Main channel                          | 32. Eyebolt for the main brace               |
| 10. Entry ladder steps                   | 33. Strake above the wales (black strake)    |
| 11. Sheave block for the fore sheet      | 34. Sweep ports                              |
| 12. Fenders                              | 35. Keel                                     |
| 13. Eyebolt for the fore sheet           | 36. False keel                               |
| 14. Planksheer                           | 37. Scupper discharges                       |
| 15. Sheave block for the spritsail sheet | 38. Chain pump discharge scupper             |
| 16. Sheer rail                           | 39. Ballast port                             |
| 17. Chesstree                            | 40. Rabbet of the keel                       |
| 18. Fore topmast backstay stool          | 41. Hook and butt scarphing                  |
| 19. Sheave block for the main tack       | 42. Upper and lower strakes of the main wale |
| 20. Fore channel                         | 43. Filling strake between the wales         |
| 21. Fish davit cleat                     | 44. Anchor lining                            |
| 22. Eyebolt for the spritsail sheet      | 45. Manger scuppers                          |
| 23. Eyebolt for the bowsprit shroud      | 46. Hawse holes                              |
|  | 47. Trailboard                               |
|  | 48. Slot for the gammon lashing              |

### D1/3



**D2/1****D2/2****D2 HEAD OF THE SHIP (1/96 scale)****D2/1 Side view****D2/2 Front view****D2/3 Plan****D2/4 Cross section (twice scale)**

1. Timberhead
2. Fife rail
3. Drift rail
4. Sheer rail
5. Cathead supporter knee
6. Head of the stem post
7. Boomkin
8. Main head rail
9. Figurehead
10. Middle head rail
11. Lower head rail
12. Holes for the bobstays
13. Head timbers
14. Knee of the head
15. Trailboard
16. Hawse lining
17. Strake above the wales (black strake)
18. Upper and lower strakes of the main wale
19. Hair bracket
20. Lower cheek bracket
21. Fore mast deadeyes
22. Cathead
23. Knighthood timber
24. Roundhouse
25. Catblock sheave block
26. Gunports
27. Anchor lining
28. Strake between the wales
29. Hawse holes
30. Sweep ports
31. Fore channel
32. Grating (forming beakhead)
33. Beakhead support beam
34. Hole for the main stay collar
35. Sheave slot for catblock tackle
36. Forecastle beams
37. Forecastle deck
38. Cattail
39. Head timber moulding
40. Beakhead support beam
41. Knee
42. Lacing

**D2/3****D2/4**

## D External hull

### D3 DECORATION (no scale)

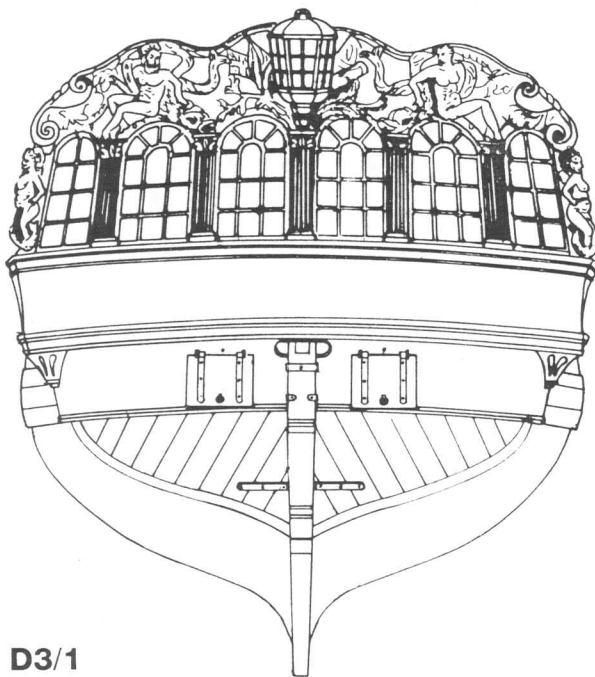
D3/1 Stern, Science Museum model

D3/2 Lion figurehead

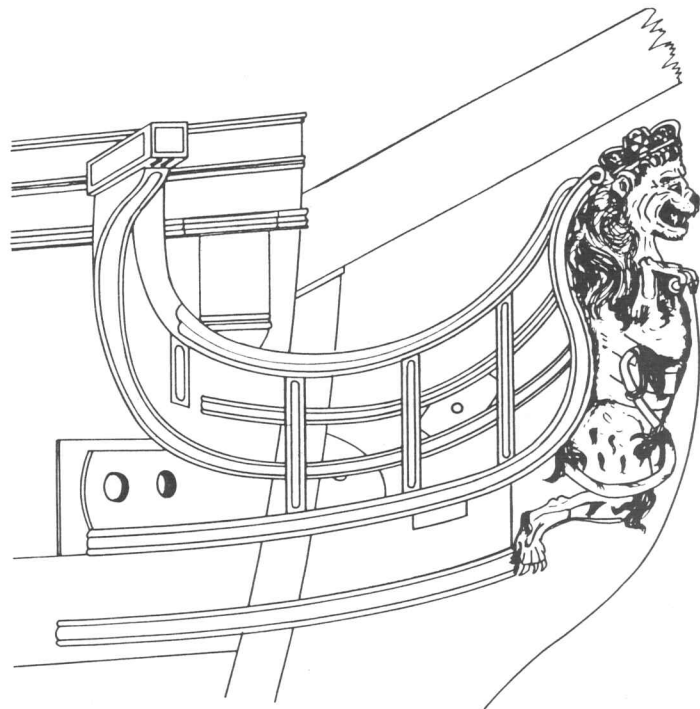
D3/3 Stern of 20-gun ship c1721, Henry Huddleston Rogers Collection

D3/4 Stern of a model

D3/5 Detail of quarter badge and figure

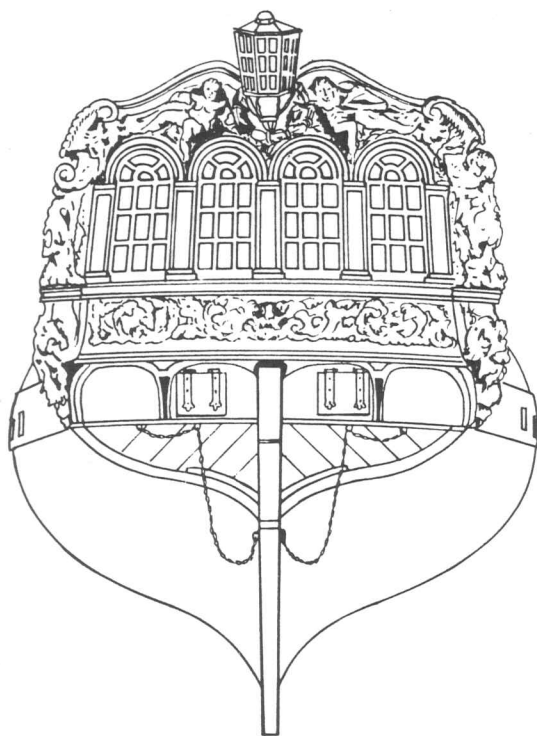


D3/1

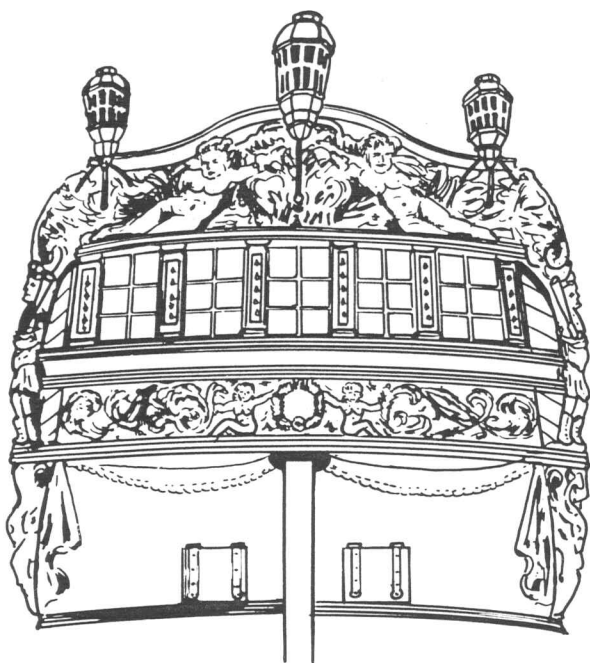


D3/2

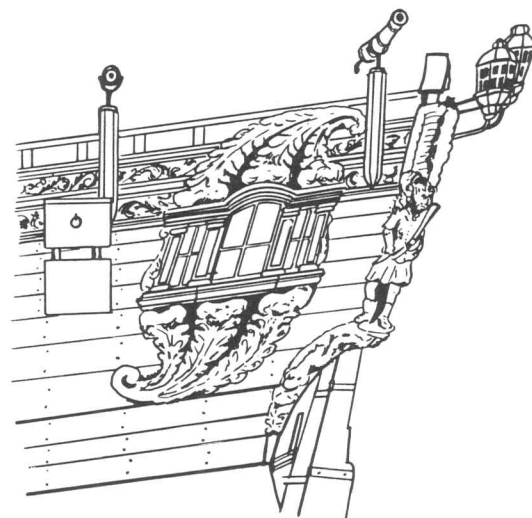
D3/3



D3/4



D3/5



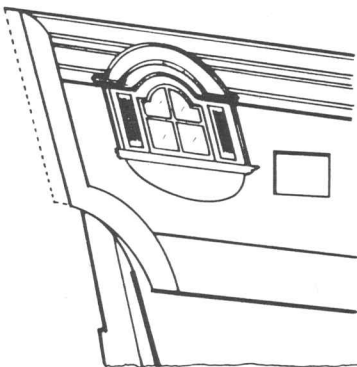
**D4 STYLES OF QUARTER GALLERY**  
(1/96 scale)

**D4/1** *Bideford* of 1727

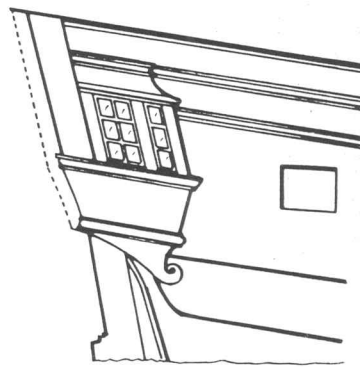
**D4/2** *Dolphin* of 1731

**D4/3** Quarter and stern of *Garland*,  
after great repair completed  
August 1736

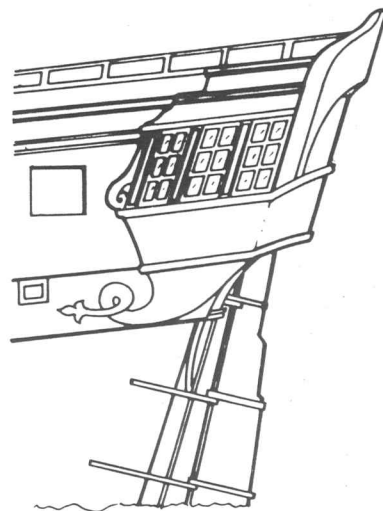
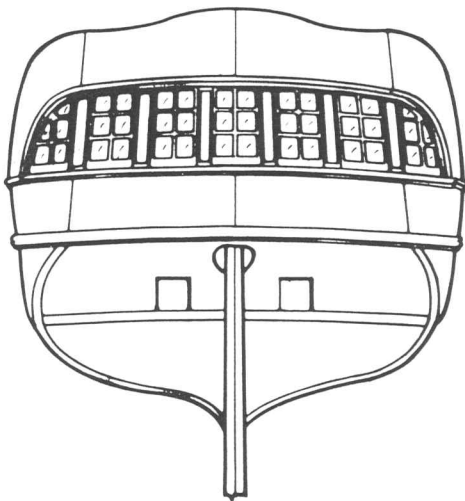
**D4/1**



**D4/2**



**D4/3**



## D External hull

### D5 DETAIL OF ENTRY STEPS AND FENDERS (1/645 scale)

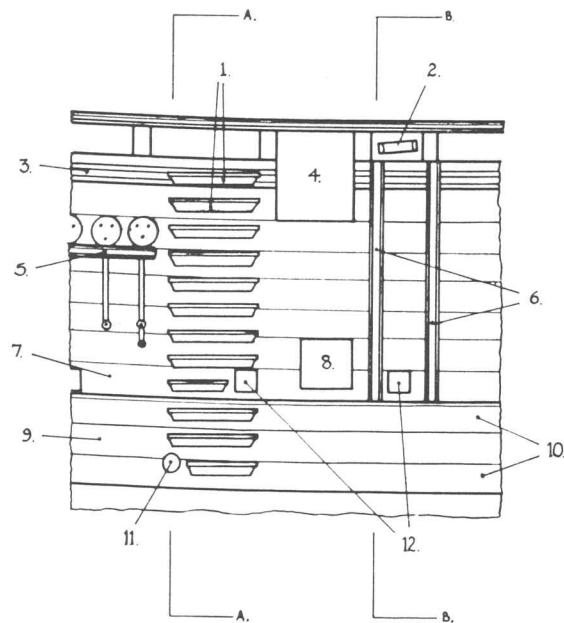
#### D5/1 Side view

#### D5/2 Section A-A

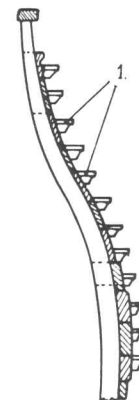
#### D5/3 Section B-B

1. Entry steps or ladder
2. Sheave for the fore sheet
3. Planksheer
4. Gunport
5. Main channel board
6. Fenders
7. Black strake
8. Ballast port
9. Filling strake
10. Main wales
11. Pump dale scupper
12. Sweep ports

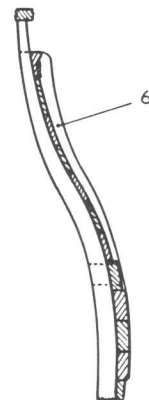
D5/1



D5/2



D5/3



## E Fittings

### E1 THE RUDDER, TILLER AND STEERING WHEEL

#### E1/1 Side and rear view of rudder (1/48 scale)

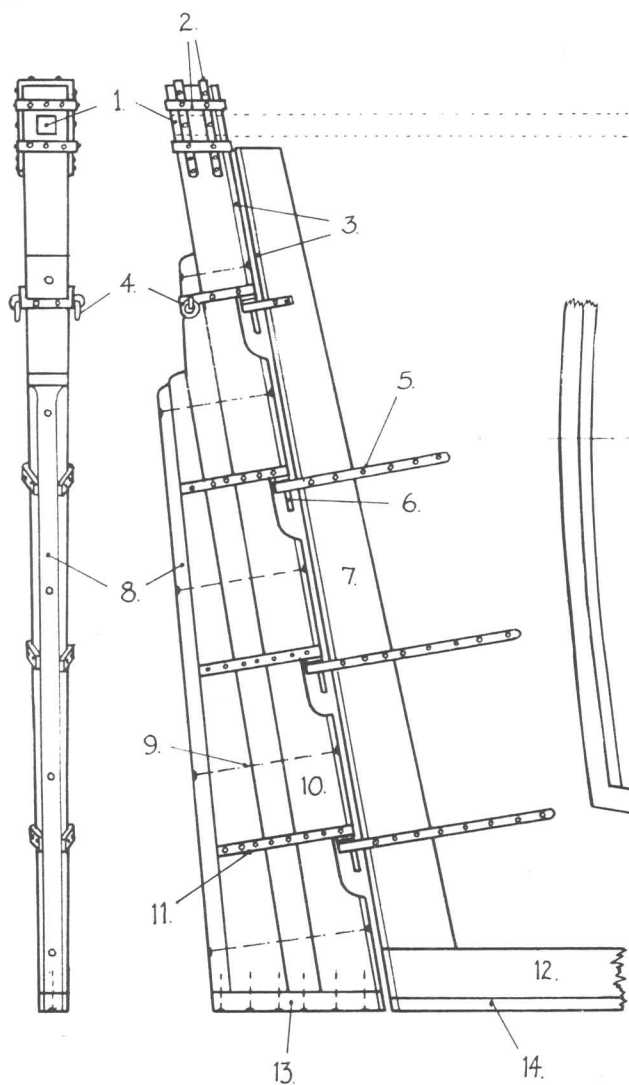
#### E1/2 Elevation of tiller (1/48 scale)

#### E1/3 Plan view of steering mechanism (1/48 scale)

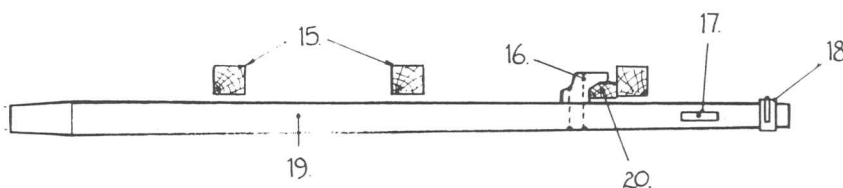
1. Mortice to receive the tiller
2. Iron binding straps
3. Bearding
4. Ringbolt for rudder chains
5. Brace
6. Pintle
7. Stern post
8. The back piece

9. Bolt
10. Main piece
11. Gudgeon
12. Keel
13. Sole
14. False keel
15. Upper deck beams
16. Gooseneck
17. Cleat for the tiller ropes
18. Iron hoop and eyes
19. Tiller
20. Tiller quadrant
21. Helm port
22. Rudder head or stock
23. Tiller ropes
24. Tiller block
25. Eyebolt

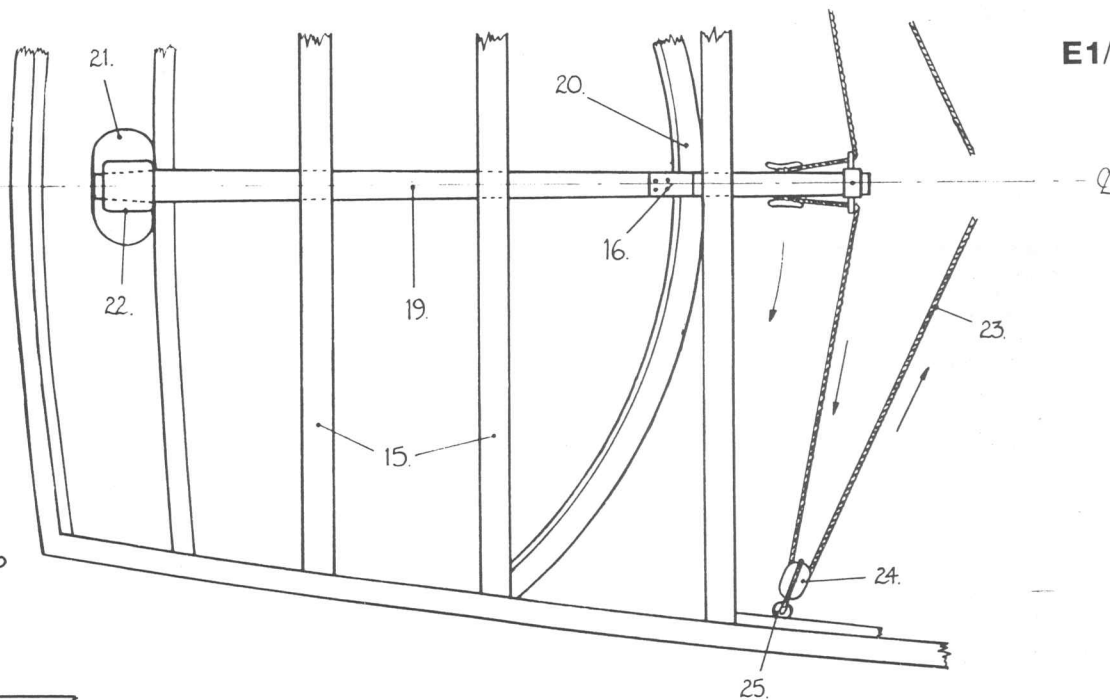
### E1/1



### E1/2

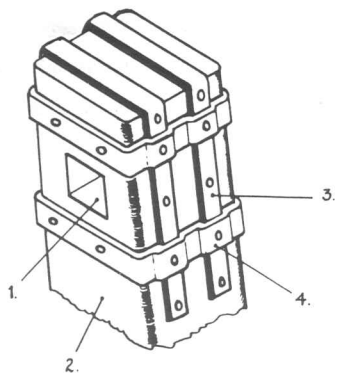


### E1/3

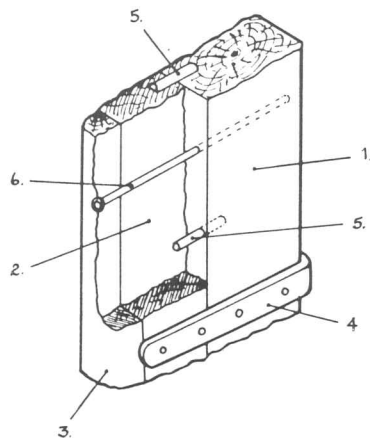


## E Fittings

### E1/4



### E1/5



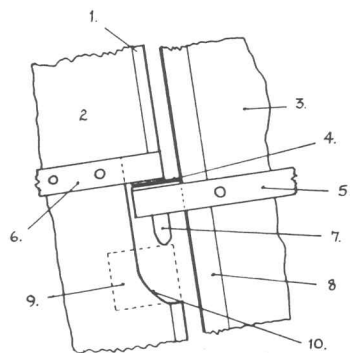
#### E1/4 Detail of the rudder head (no scale)

1. Mortise for the tiller
2. Rudder head
3. Vertical iron strapping
4. Iron hoops

#### E1/5 The construction of the rudder (no scale)

1. The main piece
2. Extension piece
3. Back piece
4. Pintle brace
5. Coak (dowel)
6. Bolt

### E1/6

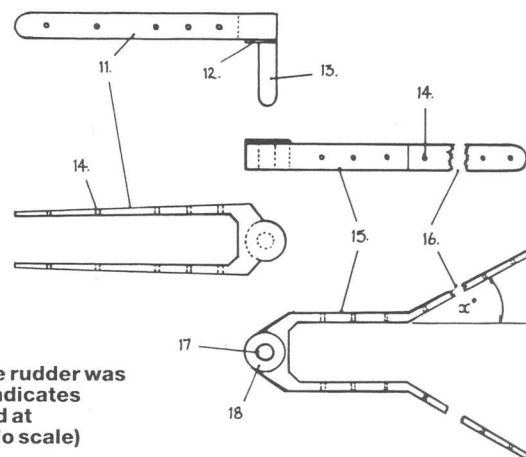


#### E1/6 Side view of how the rudder was hung (dashed line indicates rudder lock inserted at uppermost brace. No scale)

#### E1/7 Details of gudgeons and pintles (1/24 scale)

1. Bearding of the rudder
2. Main piece
3. Stern post
4. Copper washer
5. Gudgeon brace
6. Pintle brace
7. Gudgeon pin (pintle)
8. Bearding of the stern post
9. Position of rudder lock if fitted
10. Recess for clearance
11. Pintle brace
12. Land for the washer
13. Gudgeon pin (pintle)
14. Bolt hole
15. Gudgeon brace
16. Space for variation of brace length
17. Hole for pintle
18. Land for washer

### E1/7

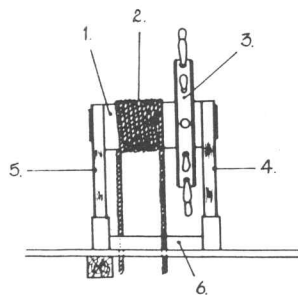


#### E1/8 Side view of single type steering wheel (1/48 scale)

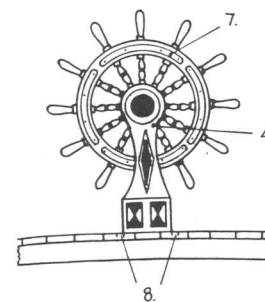
#### E1/9 Front view of single type steering wheel (1/48 scale)

1. Drum
2. Tiller transmission rope
3. Steering wheel
4. Fore support stanchion
5. After support stanchion
6. Wooden spacing block or foot
7. Brass stiffening plate
8. Slots for transmission rope

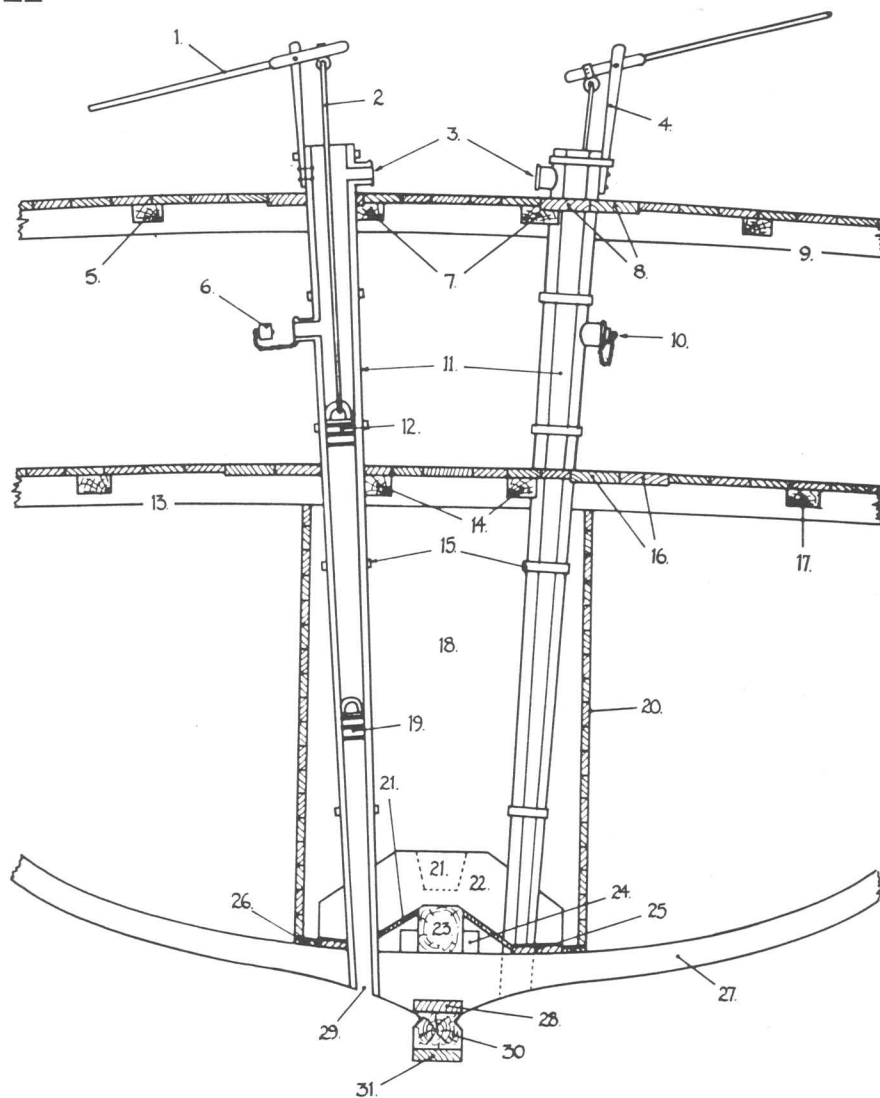
### E1/8



### E1/9



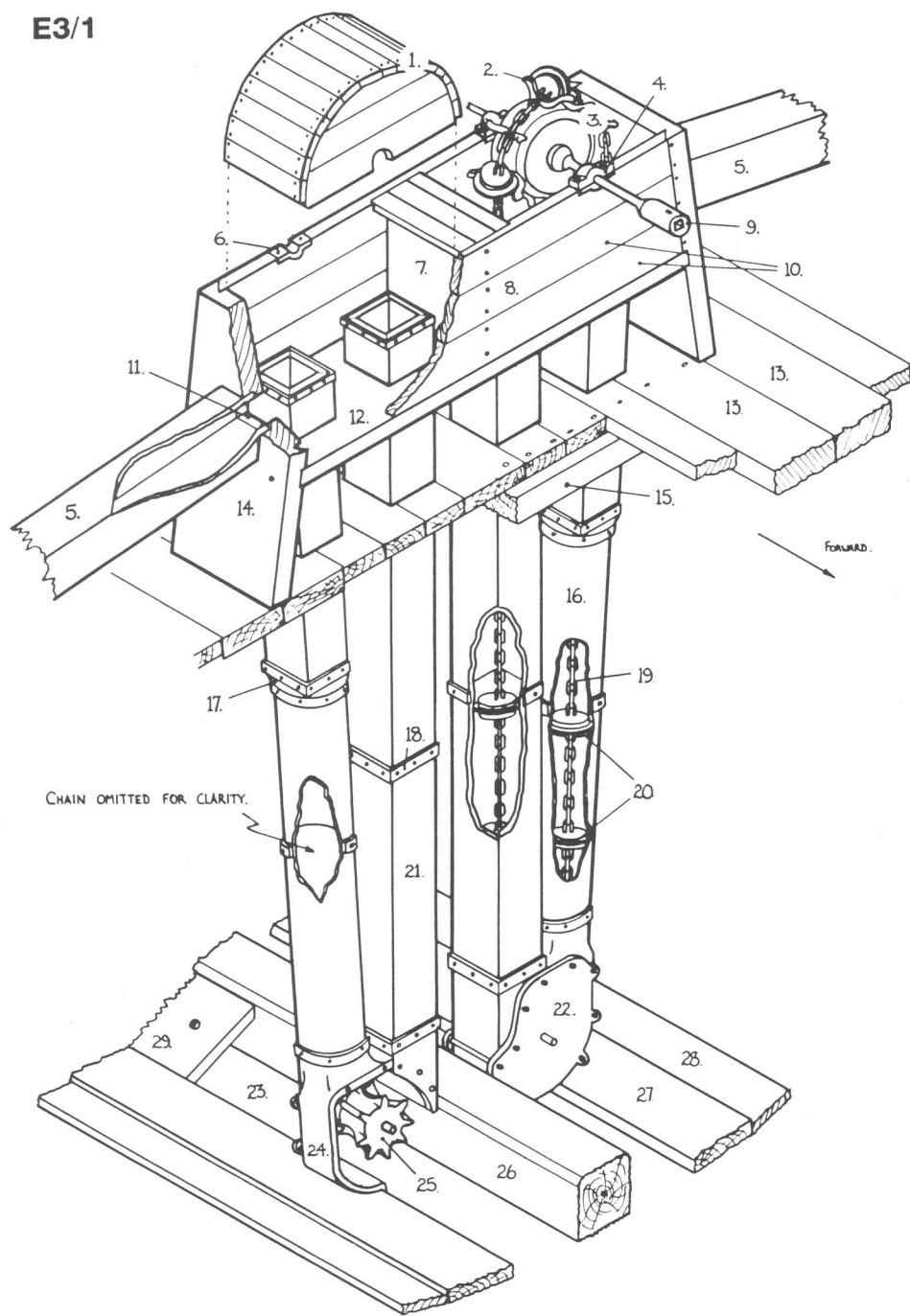
E2



**E2 ELM TREE PUMP (1/48 scale)**

1. Brake handle
2. Connecting rod (spear)
3. Discharge ports
4. Brake handle supporter
5. Carlings
6. Lower discharge port plug and chain
7. Main mast partners
8. Binding strakes
9. Upper deck beam
10. Lower discharge port with plug fitted
11. Pump casings - elm (eight-sided)
12. Valve box - reciprocating
13. Lower deck beam
14. Main mast partners
15. Binding hoops of iron
16. Binding strakes
17. Carlings
18. Pump well
19. Lower valve box (fixed but could be withdrawn for repair)
20. Pump well planking
21. Mortice for main mast tenon
22. Main mast step
23. Keelson
24. Limber channel
25. Limber strakes
26. Footwaling
27. Timber (frame)
28. Hog or rising wood
29. Pump suction from sea
30. Keel
31. False keel

E3/1



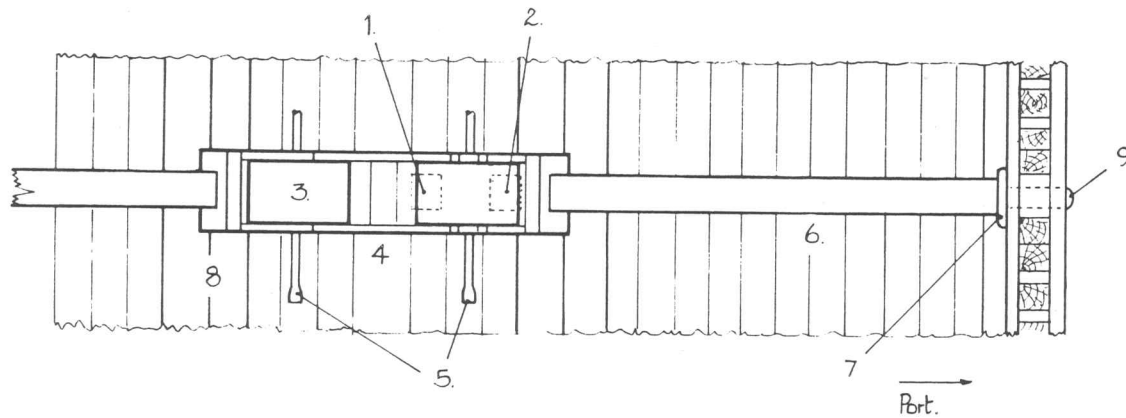
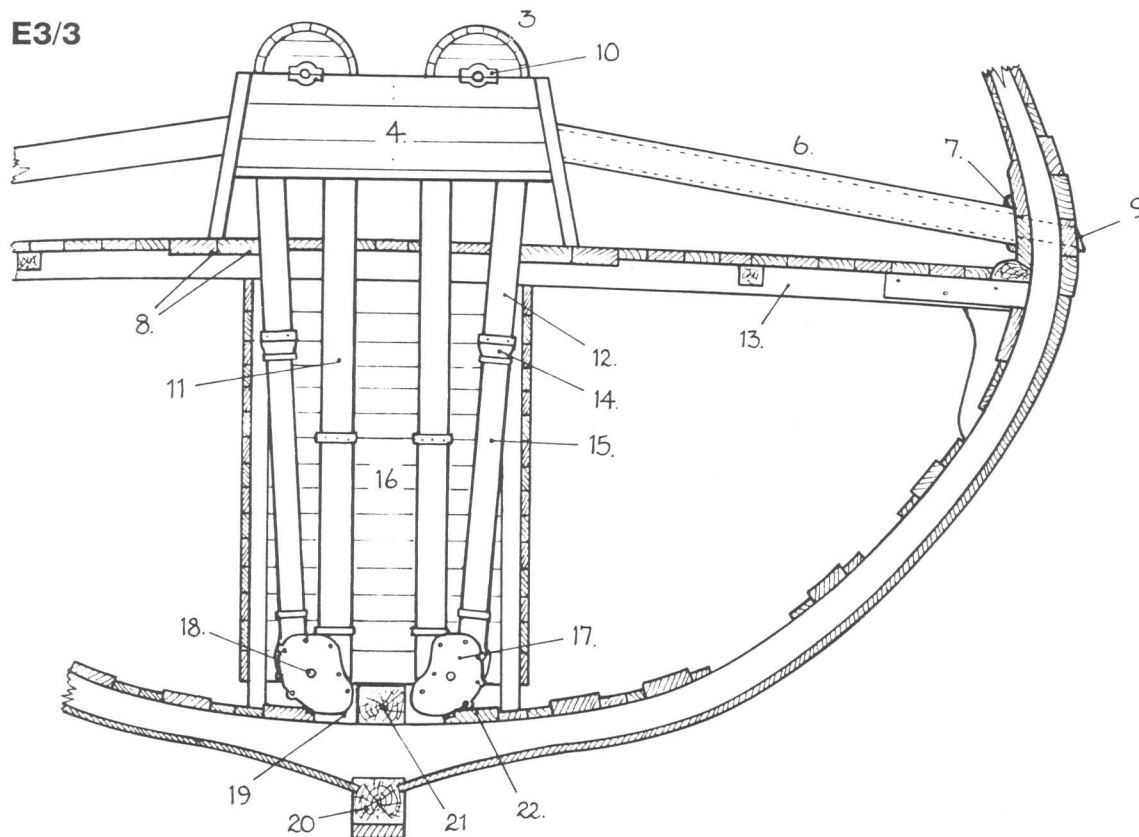
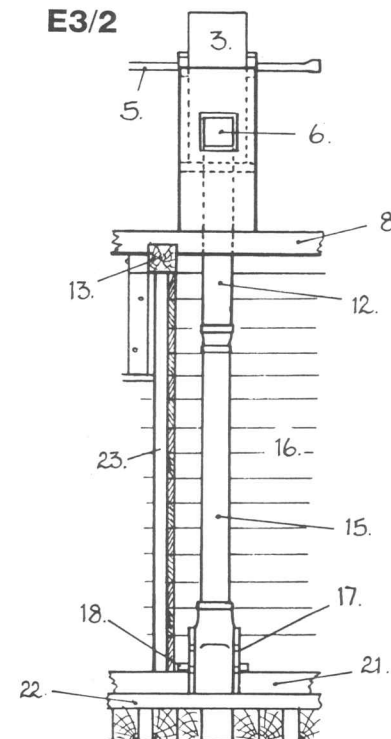
E3 CHAIN PUMP

E3/1 Isometric (adapted from Blankley's *Naval Expositor*; 1/32 scale)

1. Sprocket wheel cover
2. Crutch
3. Sprocket wheel
4. Shaft bearing (top half)
5. Pump dale
6. Shaft bearing (bottom half)
7. Cistern divider and stiffener
8. Cistern
9. Shaft and link
10. Planking, elm
11. Discharge port to pump dale
12. Cistern base, elm
13. Binding strakes
14. Cistern end piece and supporter
15. Deck beam
16. Return case (or working chamber)
17. Transition piece between square and round section of the working chamber
18. Hoop
19. Chain linkage
20. Leather washers and backing plates
21. Back case
22. Inspection plate and lower sprocket wheel housing
23. Limber passage
24. Iron casing for sprocket wheel
25. Lower sprocket wheel (a simple roller was usually fitted)
26. Keelson
27. Limber strake
28. Footwaling
29. Limber board

**E3/2 Starboard side view (1/48 scale)****E3/3 Athwartship view (1/48 scale)****E3/4 Plan (1/48 scale)**

1. Back case
2. Return case (or working chamber)
3. Sprocket wheel cover
4. Cistern
5. Crank shafts
6. Pump dale
7. Retaining block
8. Binding strakes
9. Lead scupper
10. Shaft bearing
11. Back case
12. Return case
13. Lower deck beam
14. Transition piece between square and round section of the working chamber
15. Working chamber
16. Pump well
17. Lower sprocket wheel cover plate
18. Sprocket wheel spindle
19. Limber passage
20. Keel
21. Keelson
22. Limber strake
23. Centre line pillar

**E3/4****E3/3****E3/2**

## E Fittings

**E3/5 Chain and saucers (1/8 scale)**

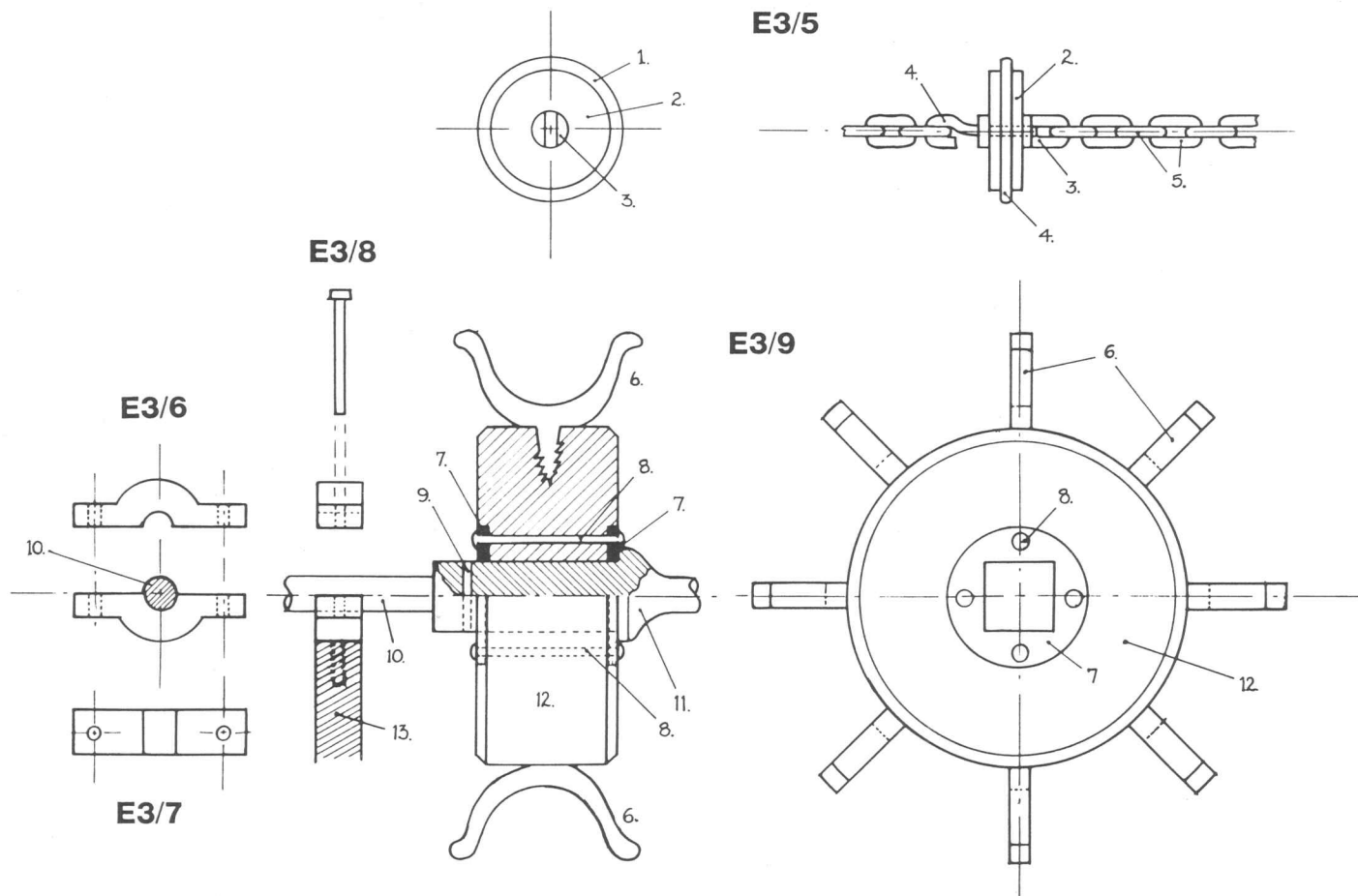
**E3/6 Upper bearing (1/8 scale)**

**E3/7 Lower bearing (1/8 scale)**

**E3/8 Pin (1/8 scale)**

**E3/9 Wheel and sprockets (1/8 scale)**

1. Leather washer
2. Backing plate
3. Swivel eye link
4. Swivel hook link
5. Chain links
6. Crutch
7. Wear plate
8. Wear plate retaining bolt
9. Slot for disengaging pin
10. Shaft of crank handle
11. Sprocket wheel shaft
12. Solid elm wheel
13. Cistern casing



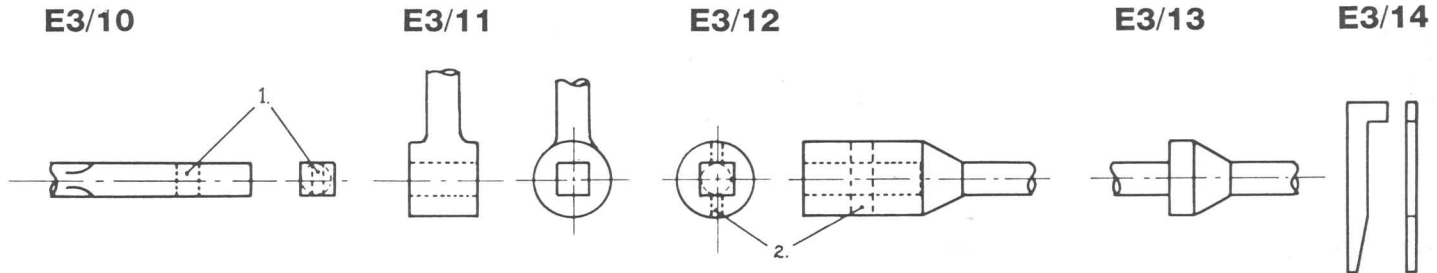
**E3/10 Spindle (1/8 scale)**

**E3/11 Crank handle (1/8 scale)**

**E3/12 Spindle connection socket (1/8 scale)**

**E3/13 Spindle stop (1/8 scale)**

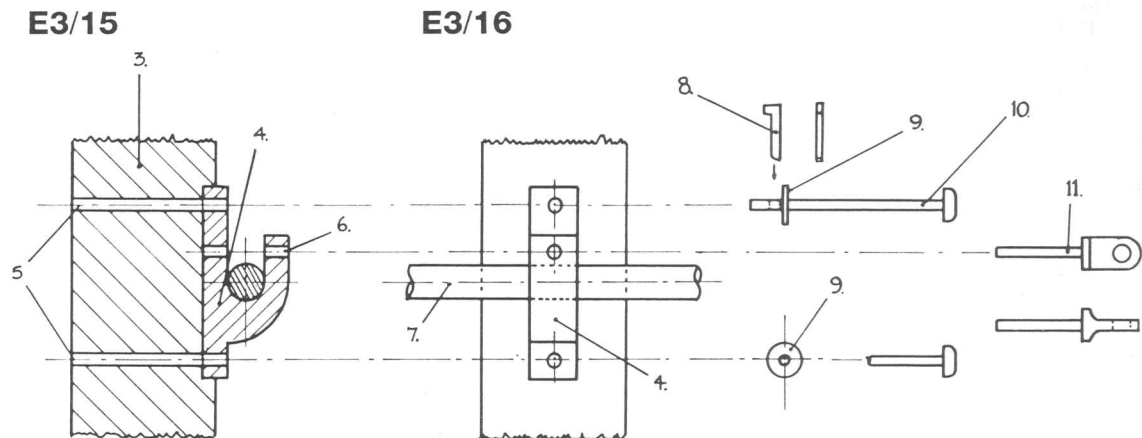
**E3/14 Cotter (1/8 scale)**



**E3/15 Fore and aft view of brackets supporting crank handles (1/8 scale)**

**E3/16 Inboard face of brackets supporting crank handles (1/8 scale)**

1. Slot for cotter pin
2. Slot for cotter pin
3. Pillar
4. Support bracket
5. Bolt holes
6. Retaining pin hole
7. Crank handle shaft
8. Fore lock cotter or gib
9. Washer
10. Fore lock bolt
11. Retaining pin



# E Fittings

## E4 MAIN JEER CAPSTAN AS FITTED TO A 20-GUNSHIP OF c1720 (1/48 scale)

### E4/1 Side view of the capstan

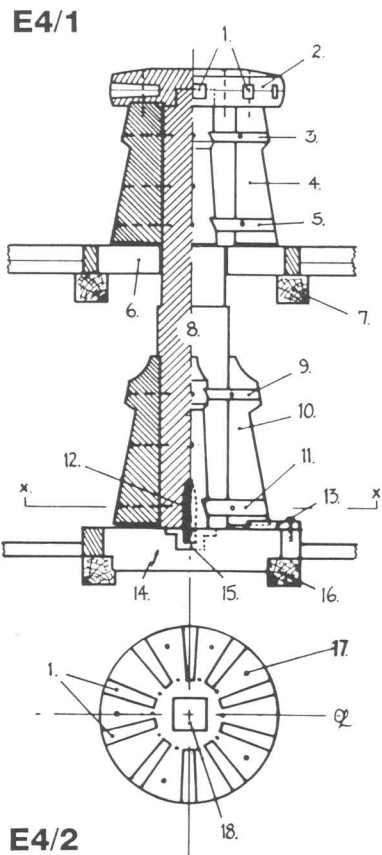
### E4/2 Section of the drumhead

### E4/3 Capstan bars

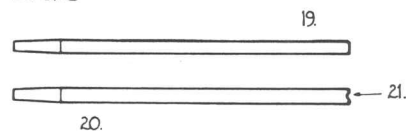
### E4/4 Plan through X-X

### E4/5 Alternative form of lower spindle

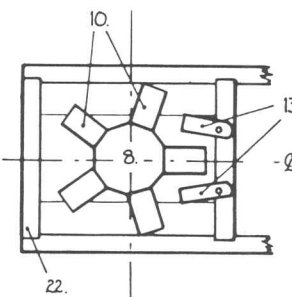
1. Sockets for the capstan bars
2. Drumhead
3. Upper chock piece
4. Whelp
5. Lower chock piece
6. Capstan partners
7. Upper deck beam
8. Barrel (often referred to as the spindle)
9. Upper chock piece
10. Whelps
11. Lower chock piece
12. Iron spindle
13. Iron pawls
14. Capstan step
15. Iron saucer for the spindle
16. Lower deck beams
17. Bolt hole
18. Square mortice for the batten head tenon
19. Plan view of the bar
20. Side elevation of the bar
21. Slot for the swifter rope
22. Head ledges
23. Lower portion of the barrel spindle
24. Iron plate or saucer
25. Capstan step
26. After platform deck



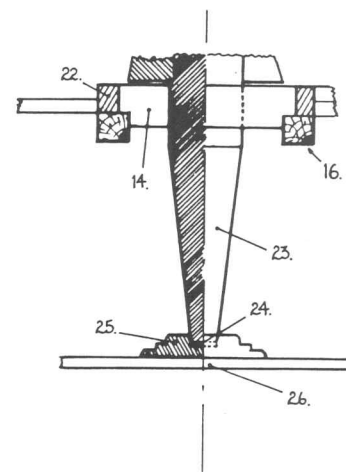
### E4/3



### E4/4



### E4/5



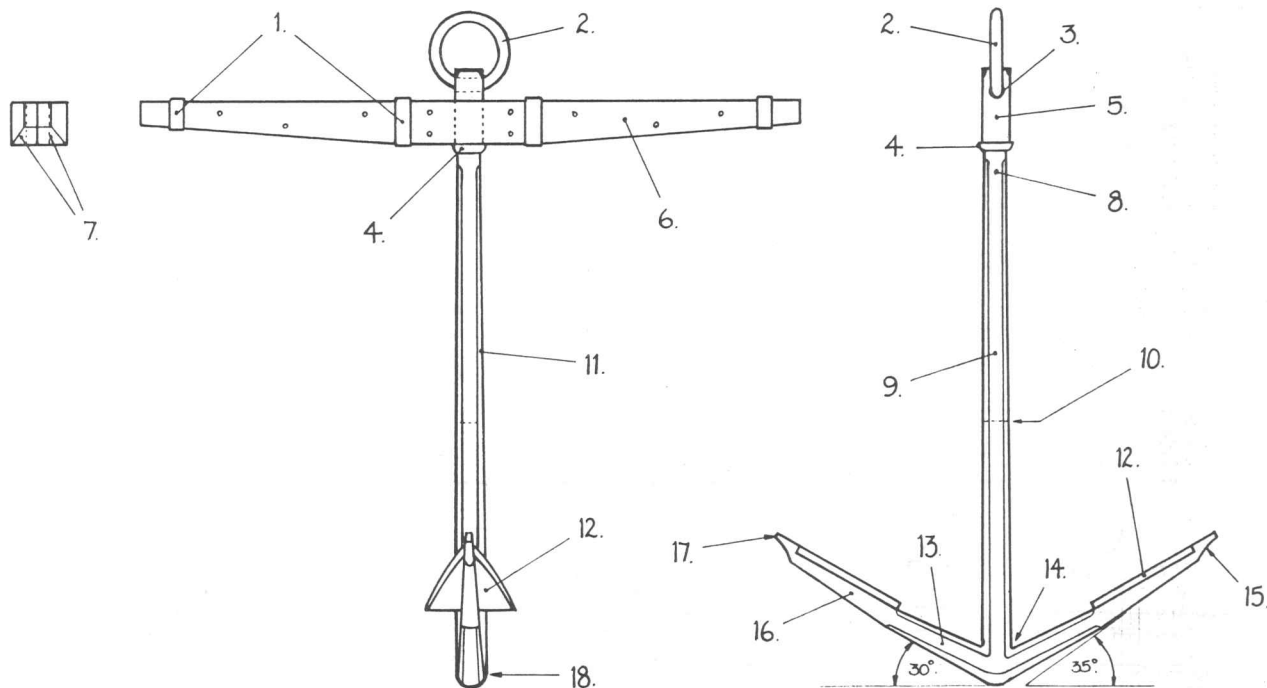
## E5 ANCHORS

**E5/1 Sheet or bower anchor (drawn from dimensions given in Sutherland's *Shipbuilding Unveiled*, 1717. Weight 18cwt 1qtr. 1/48 scale)**

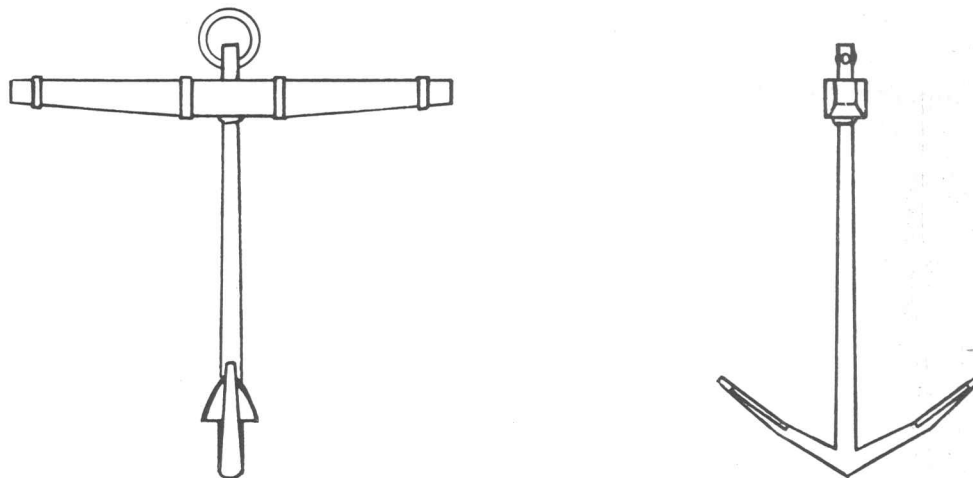
1. Iron bands
2. Anchor ring
3. Hole for the anchor ring
4. Nut (or shoulder)
5. Square of the shank
6. Anchor stock (oak)
7. Two halves of the stock
8. Small of the shank
9. Shank
10. Trend (balance point)
11. Chamfered edging
12. Palm
13. Arm
14. Throat
15. Snipe
16. Blade
17. Bill
18. Crown

**E5/2 Kedge anchor, c1720 (1/48 scale)**

**E5/1**

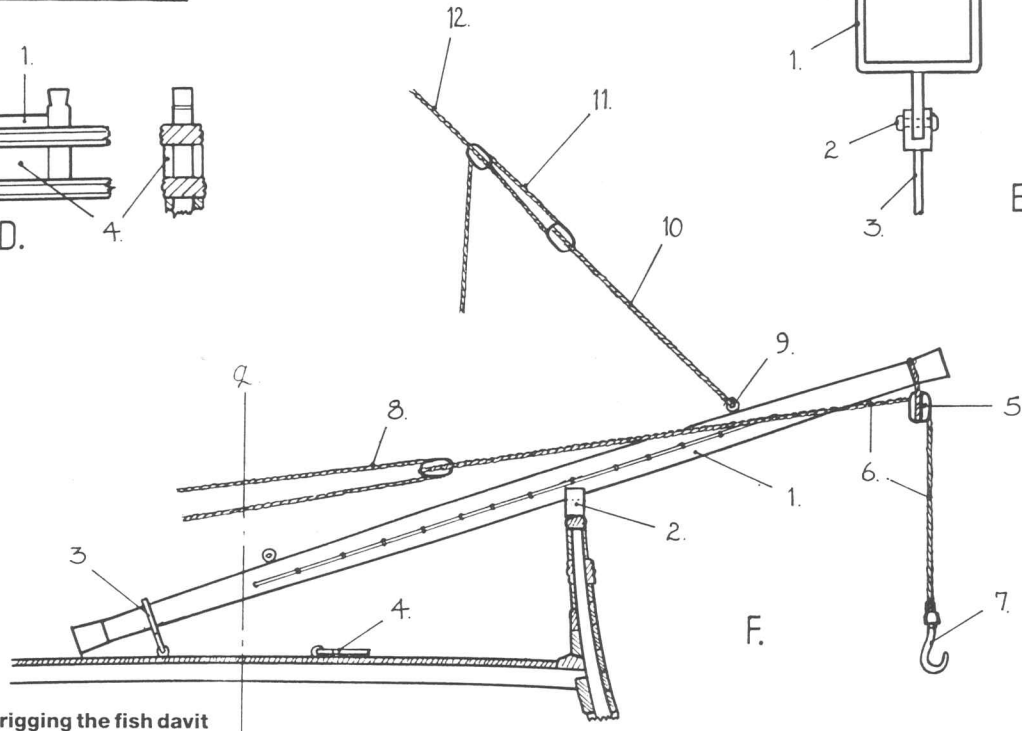
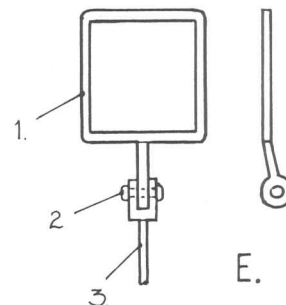
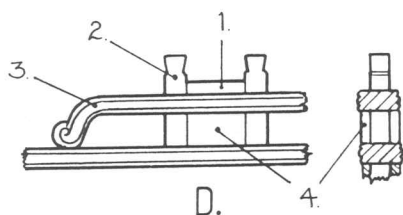
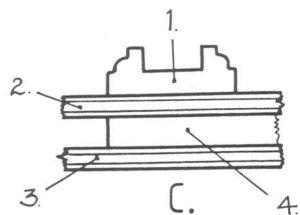
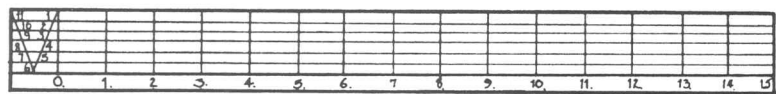
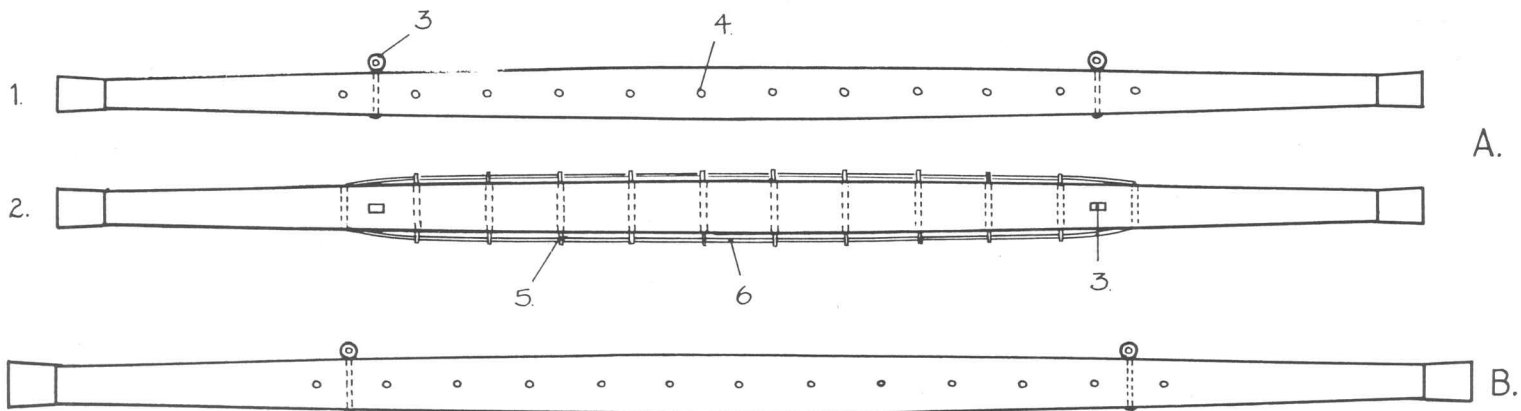


**E5/2**



# E Fittings

E5/3



## E5/3 The fish davit and its associated fittings

### Figure A: fish davit pre 1730 (1/48 scale)

1. Side elevation
2. Plan elevation
3. Topping lift eyebolt
4. Hole for the hand rope lashings
5. Hand rope

### Figure B: fish davit post 1730 (1/48 scale)

### Figure C: davit cleat (1/48 scale)

1. Fish davit cleat
2. Waist rail
3. Planksheer
4. Planking

### Figure D: davit cleat fitted on forecastle rail (1/48 scale)

1. Fish davit cleat bed
2. Timberhead
3. Forecastle fife rail
4. Filling piece to give further support

### Figure E: spanshackle (1/24 scale)

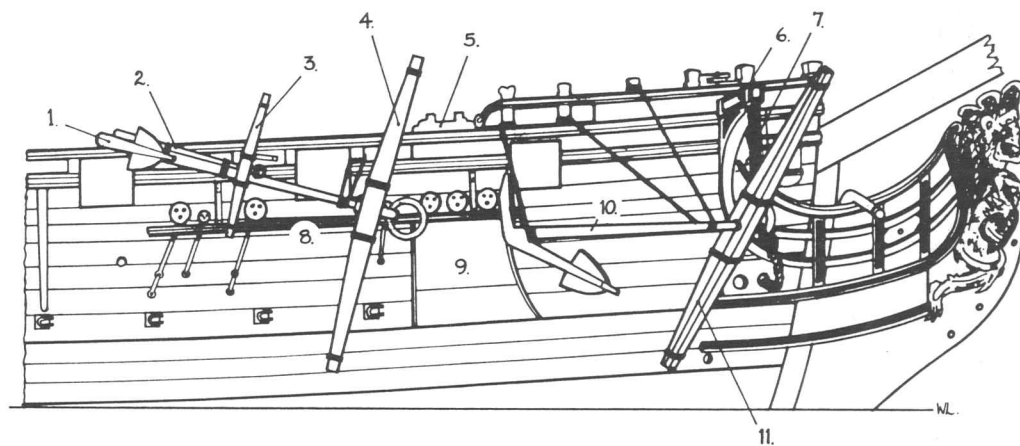
1. Spanshackle
2. Pin
3. Securing bolt

### Figure F: manner of rigging the fish davit (no scale)

1. Fish davit
2. Fish davit cleat
3. Spanshackle
4. Spanshackle not in use
5. Fish tackle block
6. Fish pendant
7. Fish hook
8. Fish tackle
9. Topping lift eyebolt
10. Topping lift
11. Lifting tackle
12. Lifting tackle pendant

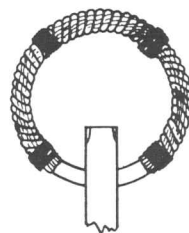
E5/4 Manner in which the anchors were stowed (1/96 scale)

E5/4



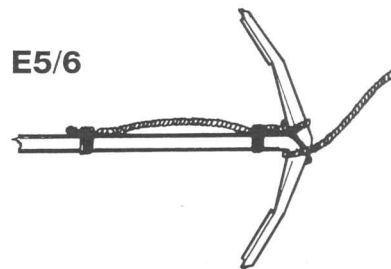
E5/5 Puddening of the anchor ring (no scale)

E5/5



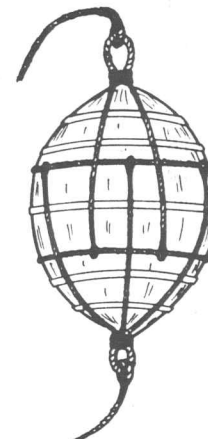
E5/6 Anchor buoy rope (no scale)

E5/6



E5/7 Anchor buoy (no scale)

E5/7



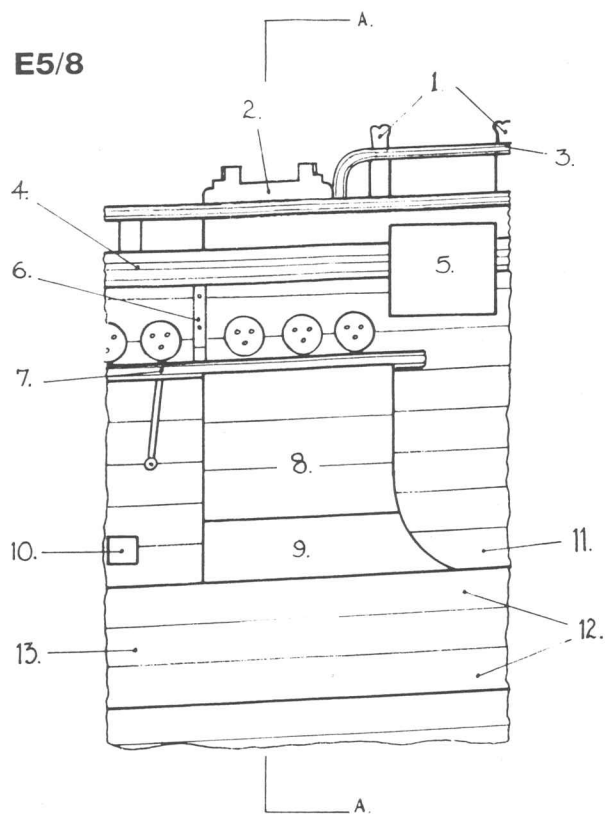
1. Sheet anchor
2. Kedge anchor
3. Kedge anchor stock
4. Sheet anchor stock
5. Fish davit cleat
6. Cathead
7. Cat block tackle
8. Fore channel
9. Anchor lining and billboard
10. Bower anchor
11. Bower anchor stock

## E Fittings

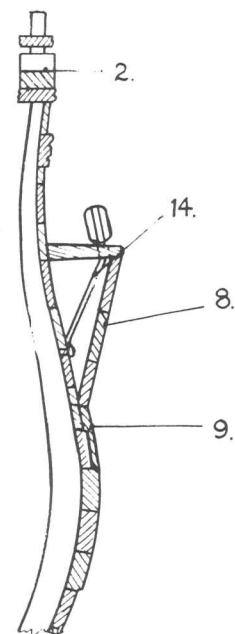
### E5/8 Side view of the anchor lining (1/48 scale)

### E5/9 Section A-A of anchor lining (1/48 scale)

1. 'Finger & thumb' timberheads
2. Fish davit cleat
3. Fife rail
4. Planksheer
5. Gunport
6. Knee
7. Fore channel board
8. Billboard
9. Bolster
10. Sweep port
11. Black strake
12. Main wales
13. Filling strake
14. Chains



### E5/9



- E6 THE GALLEY FIREHEARTH, COPPER KETTLES AND OVENS (1/48 scale)**  
**Kettle capacity 15.5 gallons.**  
**Oven capacity 8 square feet, each oven being divided into 2 tiers, each 4 square feet.**

**E6/1 Detail of top portion of galley flue**

**E6/2 Side elevation of firehearth**

**E6/3 Front elevation of firehearth**

**E6/4 Sectional elevation**

**E6/5 Section A-A**

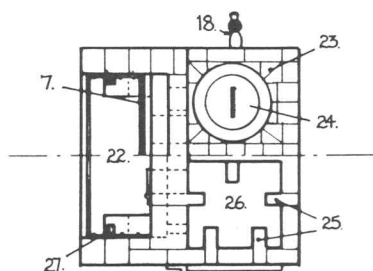
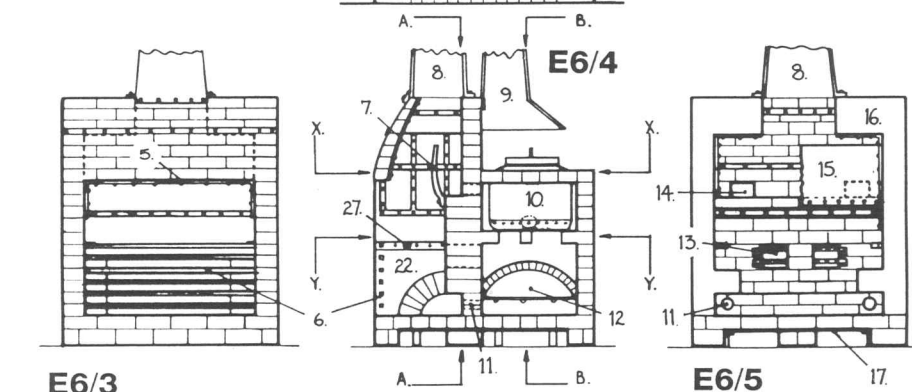
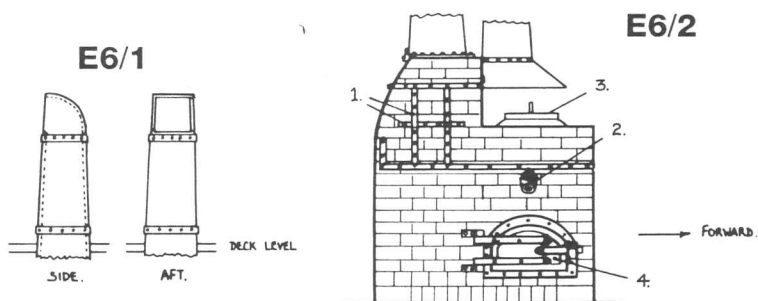
**E6/6 Section B-B**

**E6/7 Plan section X-X (top) and at Y-Y (bottom)**

**E6/8 Plan of starboard kettle (twice scale)**

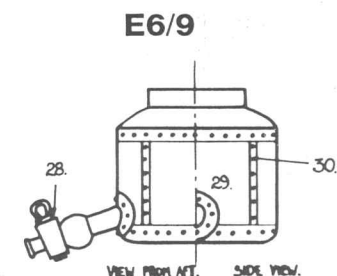
**E6/9 Detail of copper kettle**

1. Iron strapping
2. Drain cock
3. Kettle lid
4. Oven door
5. Iron support bracket
6. Grate bars
7. Baffle
8. Smoke flue
9. Condensation flue
10. Copper kettle
11. Heat ducts to oven
12. Oven space
13. Heat ducts to kettles
14. Heat outlet ducts to flue
15. Baffle
16. Cross section of firehearth brickwork
17. Iron plate supporting hearth floor
18. Nozzle and drain cock
19. Oven grill bars
20. Air space to reduce heat transfer to decking
21. Centre supporting brickwork
22. Firehearth
23. Kettle enclosure brickwork
24. Kettle lid
25. Kettle support bricks
26. Heat space below kettle
27. Spit support and bracket
28. Kettle drain cock
29. Pipe flange
30. Copper joint line



**E6/7**

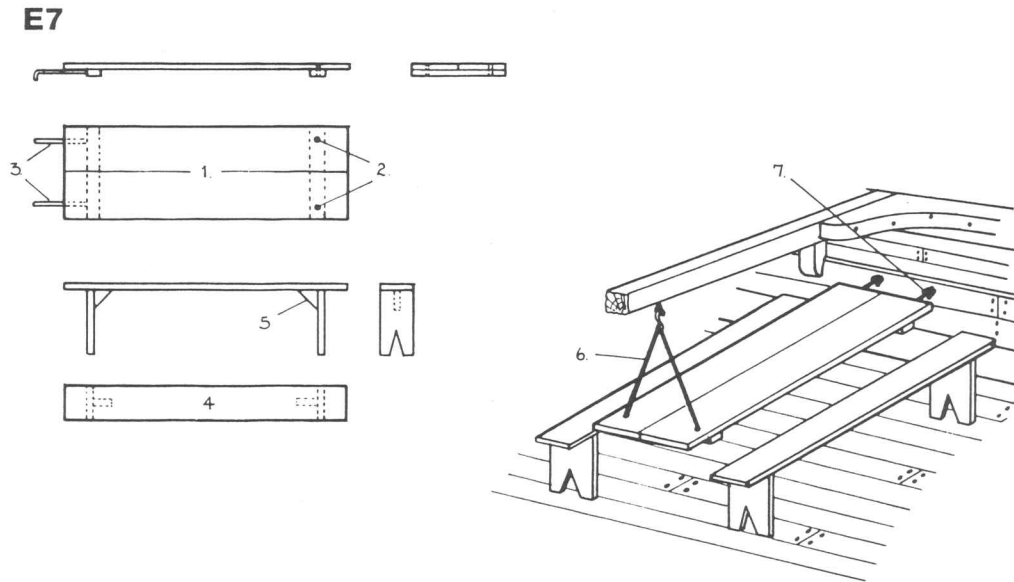
**E6/8**



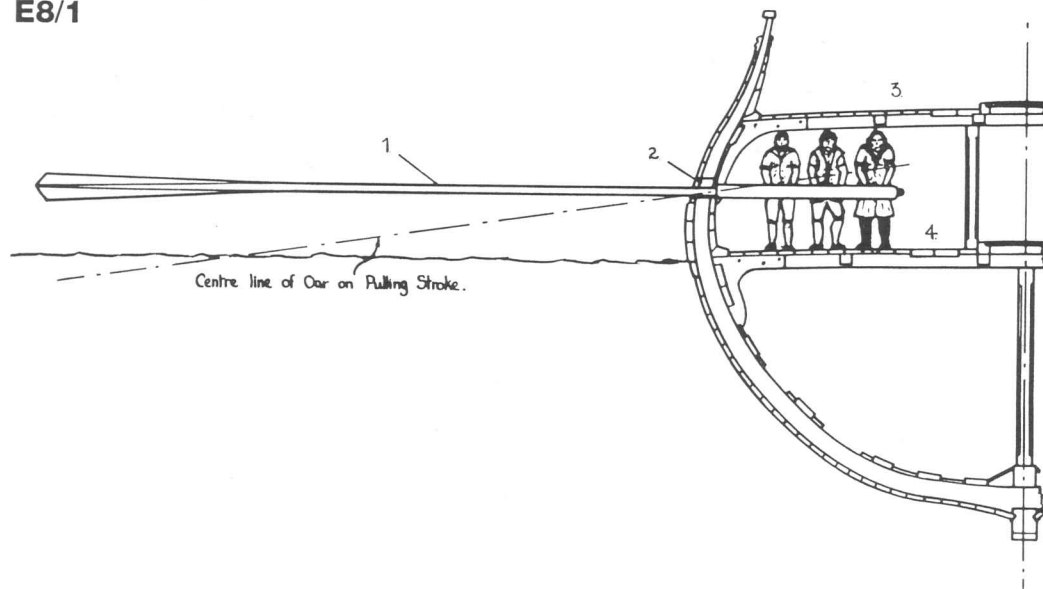
## E Fittings

### E7 MESS TABLE AND STOOLS (1/48 scale)

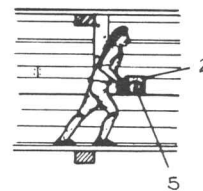
1. Table top
2. Holes for hanging strop
3. Hooks for securing to ship's side
4. Stool
5. Bracket
6. Hanging strop hooked to beam
7. Hooks set into eyebolts



### E8/1



### E8/2



### E8 THE SWEEPS

**E8/1 Midship section looking aft (1/96 scale)**

**E8/2 Interior view from starboard (1/96 scale)**

**E8/3 Various looms, blades and the two sizes of oar (1/64 scale)**

1. Sweep or oar
2. Sweep port
3. Upper deck
4. Lower deck
5. Loom of sweep with its lanyard eye
6. Side elevation of sweep
7. Plan elevation of sweep
8. Alternative form of loom
9. Alternative length of sweep corresponding to the extreme breadth of the ship
10. Alternative blade form, square
11. Alternative blade form, round

**E9 HATCHWAYS AND GRATING DETAILS (1/48 scale)**

**E9/1 Plan view**

**E9/2 Longitudinal section**

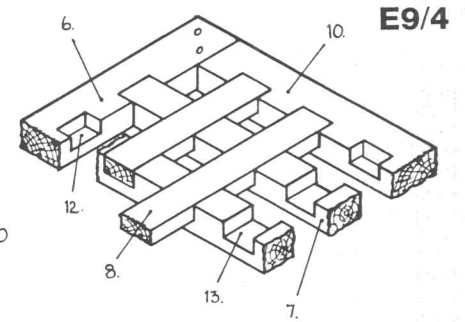
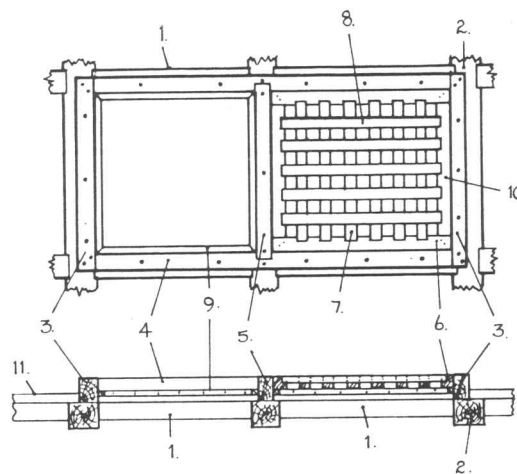
**E9/3 Athwartships section**

**E9/4 Perspective view (no scale)**

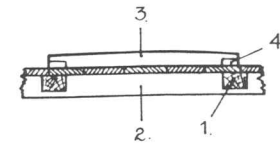
1. Carling
2. Deck beam
3. Head ledges
4. Coaming
5. Centre ledge
6. Grating frame
7. Grating ledges (same depth as the grating frame)
8. Grating battens (half the depth of the grating ledges)
9. Sill
10. Grating frame
11. Deck planking
12. Recess for the grating ledge
13. Halving joint for grating batten

**E9/2**

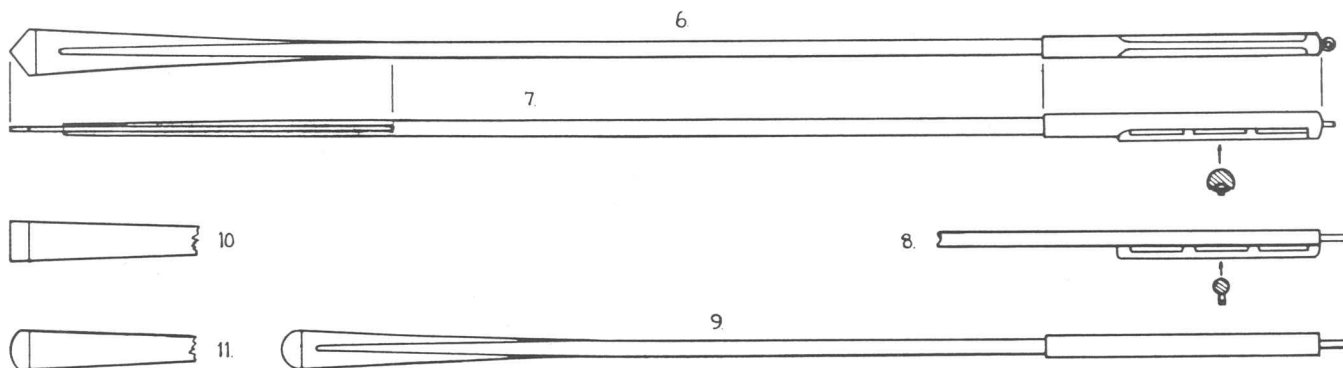
**E9/1**



**E9/3**



**E8/3**



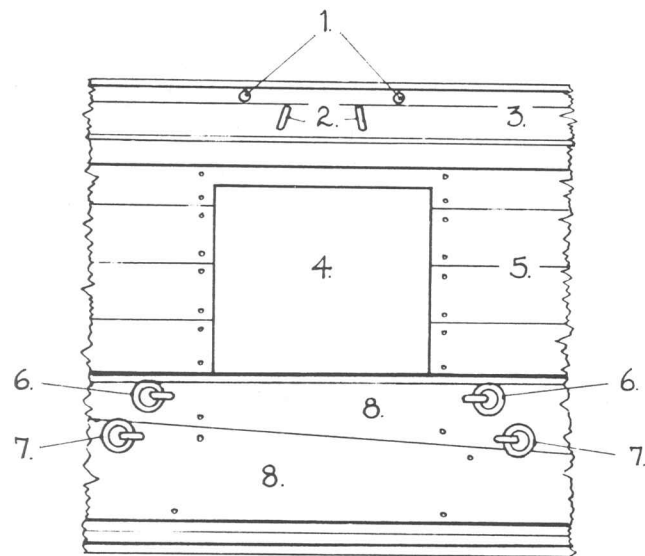
## F Armament

### F1 GUNPORT AND SWEEP PORT LIDS AND THEIR ASSOCIATED FITTINGS

#### F1/1 Inboard view of gunport (1/48 scale)

1. Lead linings for the lead of the gunport lid tackle
2. Eyebolts to secure gun muzzle when lid was shut
3. Inboard sheer rail
4. Gunport
5. Lining (or quickwork)
6. Ringbolts for the gun tackle
7. Ringbolts for the breeching
8. Spirketting

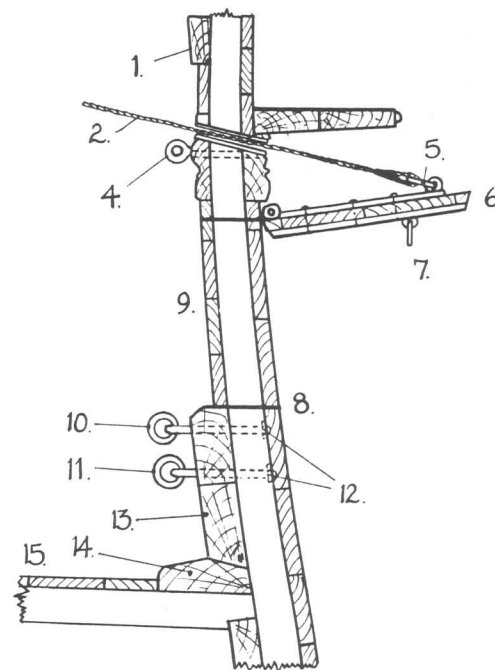
F1/1



#### F1/2 Section through gunport (number 10) (1/48 scale)

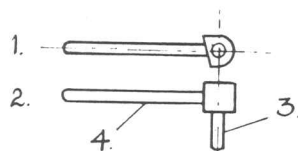
1. Lead lining for the lead of the gunport tackle
2. Gunport tackle halyard
3. Mizzen channel
4. Eyebolt to secure the gun muzzle
5. Ringbolt for gunport lid halyard
6. Gunport lid
7. Ringbolt for closing the lid and securing shut
8. Ship's side planking
9. Lining (or quickwork)
10. Ringbolt for the gun tackle
11. Ringbolt for the breeching
12. Clenching of the ringbolts
13. Spirketting
14. Waterway
15. Upper deck

F1/2



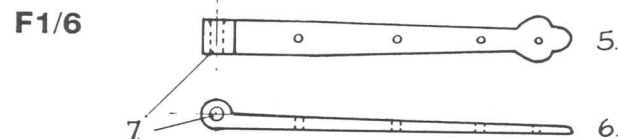
#### F1/3 External view of lid (1/48 scale)

1. Hinge pintle
2. Hinge and gudgeon
3. Port lid planking (conforms to the sheer of the ship's side planking)
4. Ringbolts for the halyards



#### F1/4 Internal view of lid (1/48 scale)

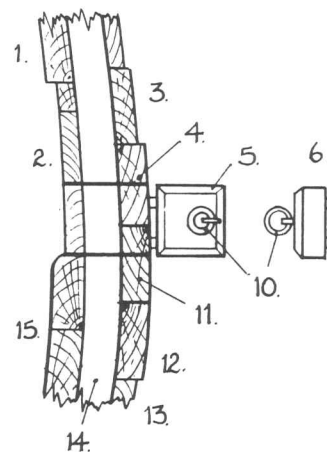
1. Vertical stiffening planks
2. Ringbolt for closing and securing lid



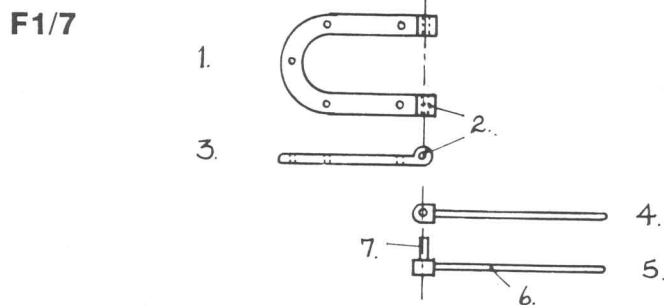
#### F1/5 Section through sweep port (1/48 scale)

1. Deck clamp
2. Lining (or quickwork)
3. Black strake (strake above the main wale)
4. Upper strake of the main wale
5. Internal view of sweep port lid
6. End view of sweep port lid
7. External view of sweep port lid
8. Sweep port lid hinge
9. Hinge pintle
10. Securing ringbolt
11. Strake between the wales (filling strake)
12. Lower strake of the main wale
13. Strake below the main wale
14. Timber (or frame)
15. Spirketting

F1/5



F1/6



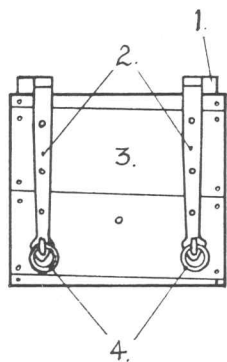
F1/6 Detail of the gunport lid hinge (1/12 scale)

1. Side elevation of the pintle
2. Plan of the pintle
3. Pintle (or pin)
4. Securing bolt
5. Plan of the hinge
6. Side elevation of the hinge
7. Gudgeon of the hinge

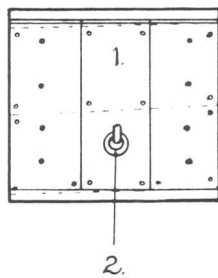
F1/7 Detail of the sweep port lid hinge (1/12 scale)

1. Side elevation of the hinge
2. Gudgeon of the hinge
3. Plan of the hinge
4. Side elevation of the pintle
5. Plan of the pintle
6. Securing bolt
7. Pintle (or pin)

F1/3



F1/4



**F2 RECONSTRUCTION OF THE 6-POUNDER CARRIAGE GUN AS AUTHORIZED BY THE GUN ESTABLISHMENT OF 1716 (1/24 scale)**  
 Gun 7ft 6in long, 18 cwt, 3½in bore.  
 Carriage 4ft 3in long, 3½in thick, made from elm.  
 Trucks made from oak.

**F2/1 Plan of gun**

**F2/2 Side elevation of gun**

**F2/3 Rear elevation of carriage**

**F2/4 Side elevation of carriage**

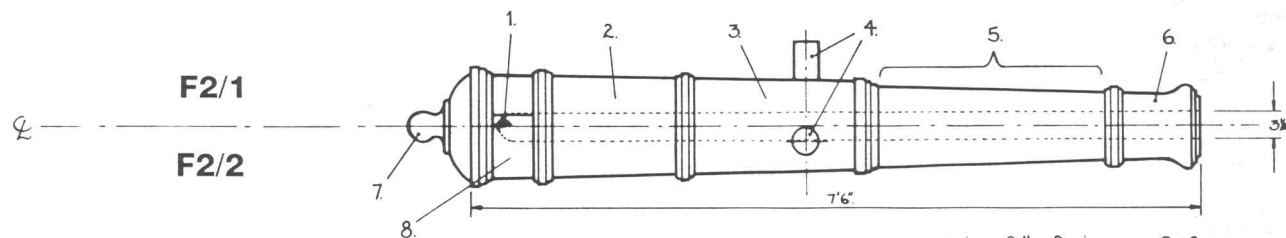
**F2/5 Front elevation of carriage**

**F2/6 Plan view of carriage**

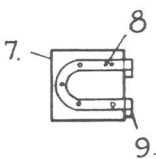
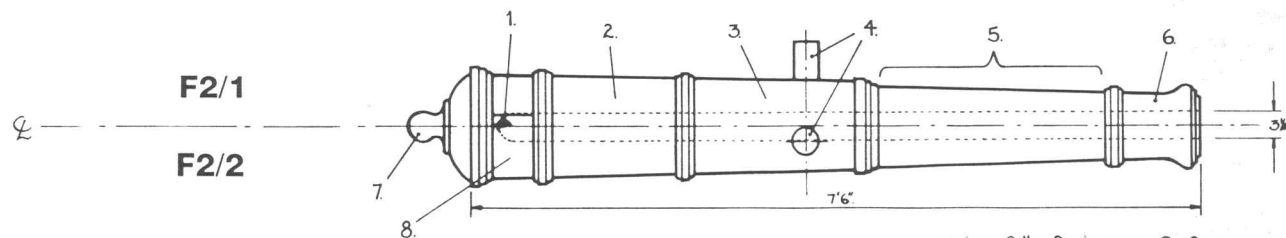
1. The vent or touch hole
2. First reinforce
3. Second reinforce
4. Trunnion
5. Chase
6. Muzzle
7. Cascable

8. Breech
9. Cap square
10. Steps for handspike
11. Carriage cheek
12. Quoin
13. Training tackle ringbolt
14. Rear truck
15. Rear axletree
16. Front axletree
17. Front truck
18. Truck dowels
19. Removable pin
20. Transom
21. Ringbolt
22. Bolster or pig
23. Tie bolt
24. Quoin
25. Bed
26. Ringbolts for the breeching
27. Ring for the gun tackle
28. Cap square retaining bolt

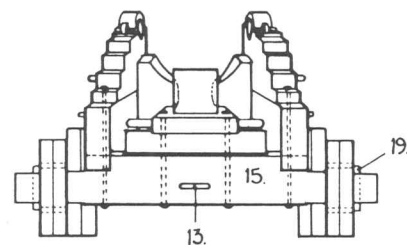
F2/1



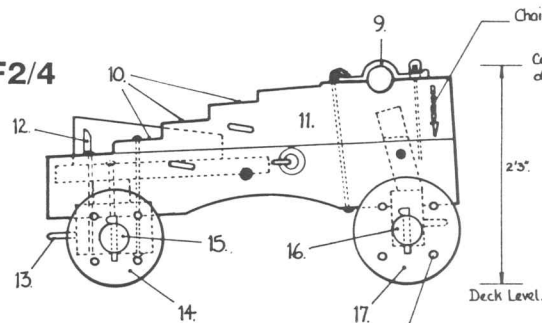
F2/2



F2/3



F2/4

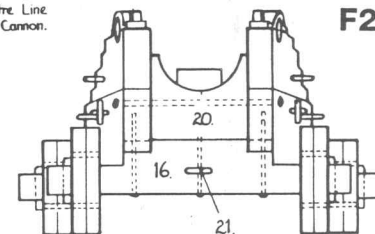


Chain & Cotter Pin to secure Cap Square.

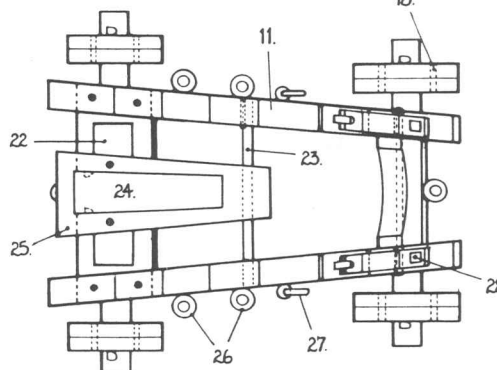
Centre Line of Cannon.

Deck Level.

F2/5



F2/6



# F Armament

## F3 GUN TACKLE, SHOT AND EQUIPMENT (1/96 scale)

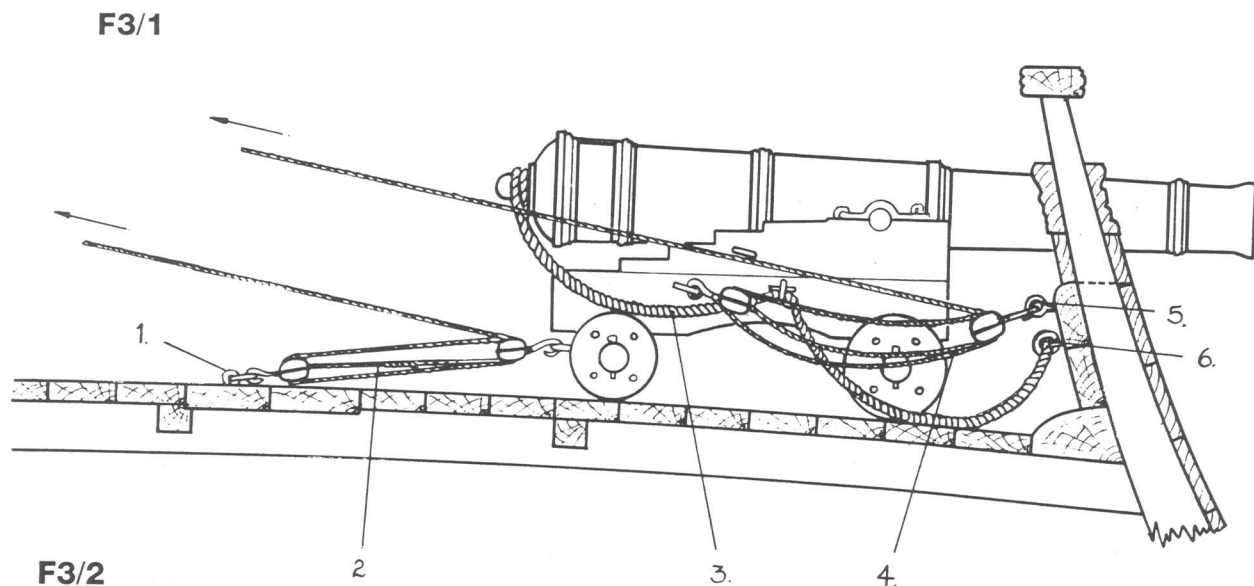
### F3/1 Side view of the gun run out

### F3/2 Plan view of the gun run out

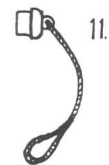
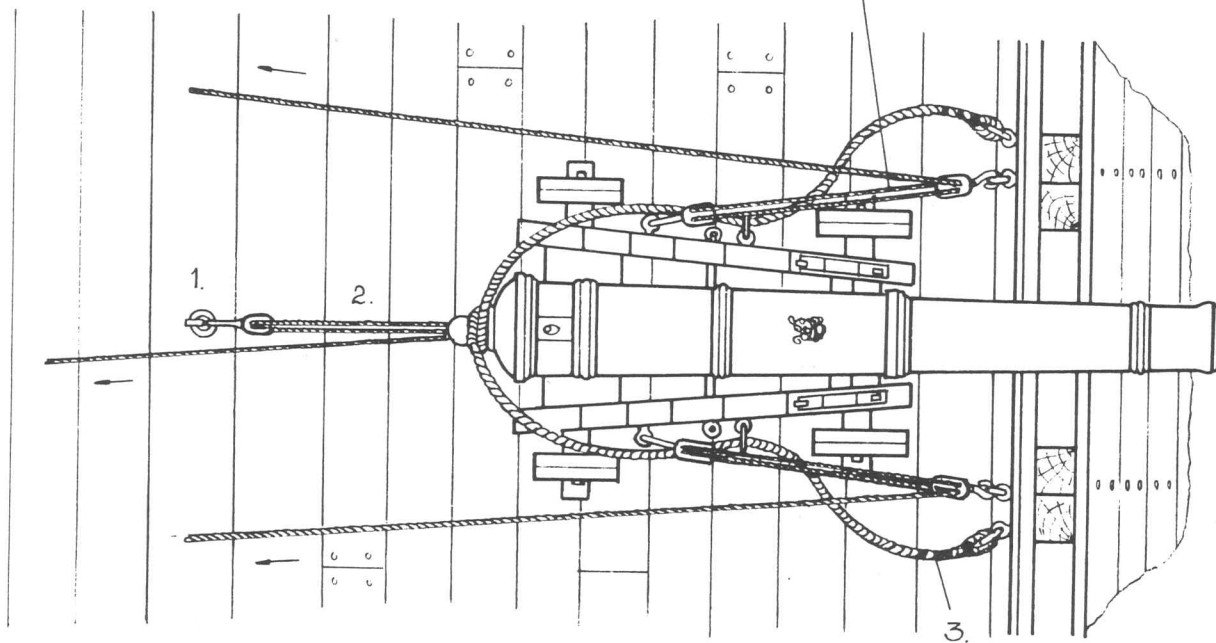
### F3/3 Shot

### F3/4 Gun tools

1. Ringbolt
2. Traversing tackle
3. Breeching rope
4. Gun tackle
5. Eyebolt
6. Ringbolt
7. Solid round shot
8. Chain shot
9. Bar shot
10. Expanding shot
11. Tampion
12. Ram rod
13. Sponge
14. Worm
15. Flexible rammer and sponge combined



**F3/2**



**F4 HALF-POUNDER SWIVEL GUN,  
c1720 (1/12 scale)  
Weight 3qtrs 18lb**

**F4/1 Plan**

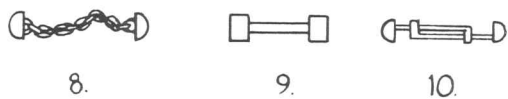
**F4/2 Side elevation**

**F4/3 Athwartship section of stock**

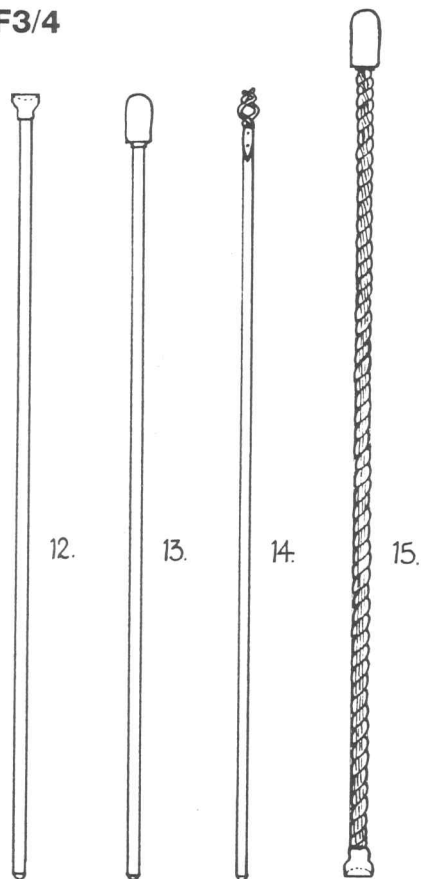
**F4/4 Side elevation of stock**

1. Trunnion
2. Vent or touch hole
3. Protruding part of trunnion
4. Yoke or swivel crutch
5. Shoulder or stop
6. Spike or swivel crutch
7. Alternative type of cascable
8. Spike hole for swivel crutch
9. Oak pedestal
10. Waist rail
11. Toptimber or frame
12. Planksheer
13. Lining planking
14. Ship's side planking

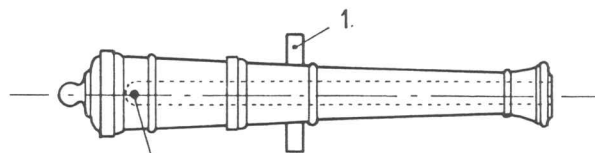
**F3/3**



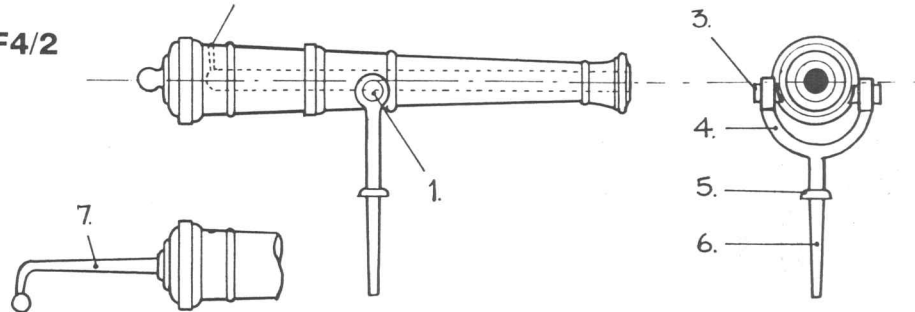
**F3/4**



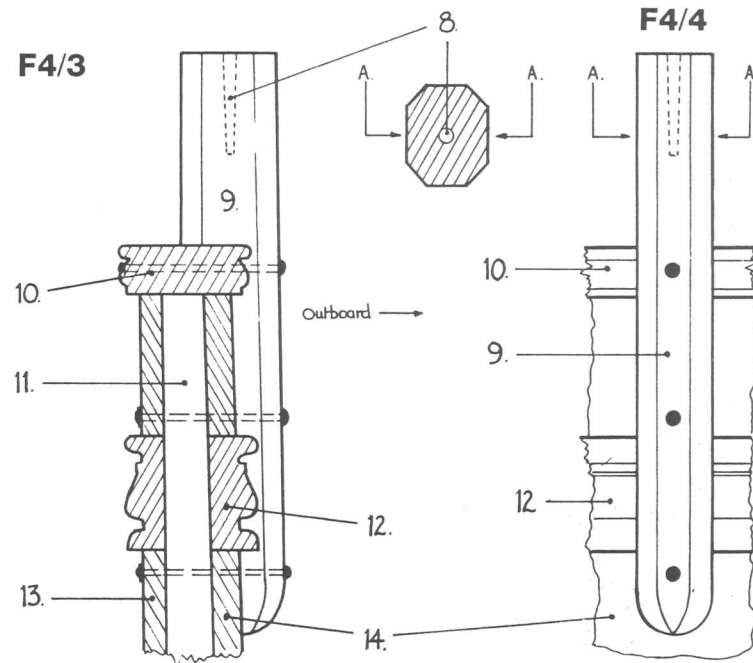
**F4/1**



**F4/2**



**F4/3**



**F4/4**

# F Armament

## F5 13-INCH SEA MORTAR AND SHELL (BOMB) DETAILS (1/48 scale)

### F5/1 Plan view of mortar

### F5/2 Plan view of bed

### F5/3 End elevation from front of bed

### F5/4 Side elevation of bed

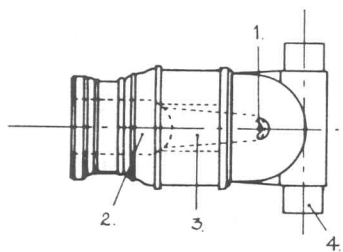
### F5/5 Side elevation of bed and mortar combined

### F5/6 Side elevation of mortar

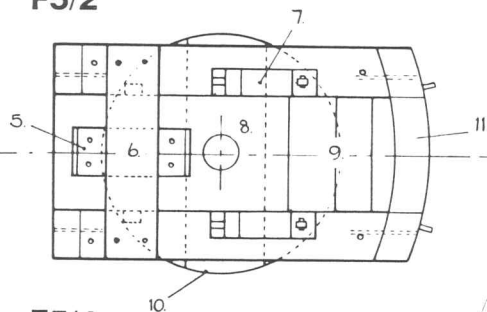
## F5/7 Details of mortar shell

1. Vent and pan
2. Shell chamber
3. Charge chamber
4. Trunnion
5. Centre support block
6. Mortar supporter
7. Cap square
8. Spindle for rotation
9. Cross blocks
10. Rotating base
11. Rear transom
12. Bed cheeks
13. Front transom
14. Section of base keyed into bed
15. Lower section of spindle (set into a step)
16. Iron keep plates
17. Reinforcing
18. Shoe for locating the mortar to support
19. Shell, with fuse (the profile and size of solid shot were the same without the fuse and cone)
20. Timing cone
21. Fuse
22. Fuse passing through holes
23. Shell casing
24. Explosive
25. Timing hole for fuse to weave through
26. Tail end of fuse in explosive

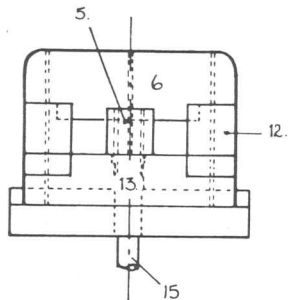
F5/1



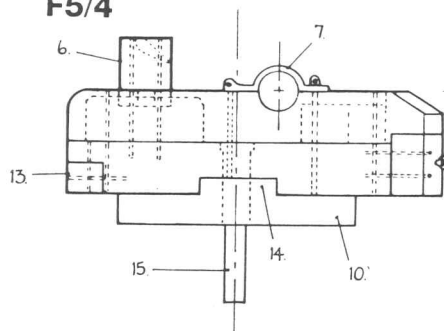
F5/2



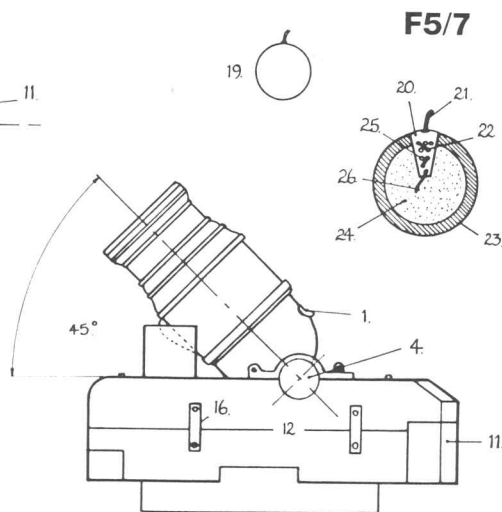
F5/3



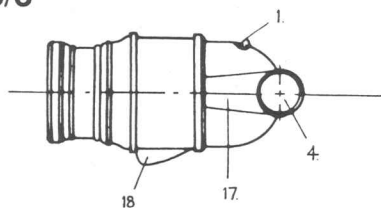
F5/4



F5/5



F5/6



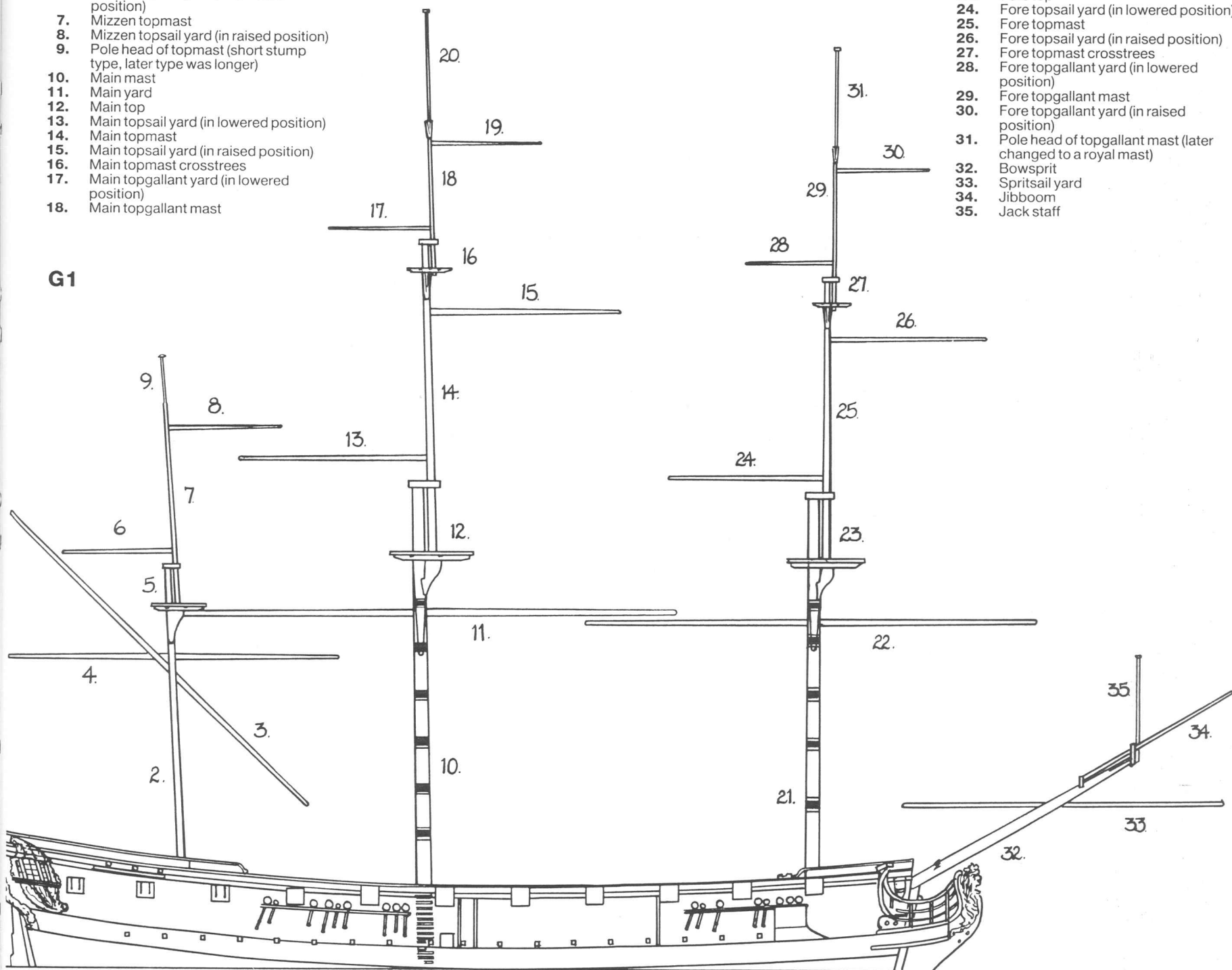
## G Masts and spars

### G1 MASTS AND YARDS (1/192 scale)

1. Ensign staff
2. Mizzen mast
3. Mizzen yard (lateen yard)
4. Crossjack yard
5. Mizzen top
6. Mizzen topsail yard (in lowered position)
7. Mizzen topmast
8. Mizzen topsail yard (in raised position)
9. Pole head of topmast (short stump type, later type was longer)
10. Main mast
11. Main yard
12. Main top
13. Main topsail yard (in lowered position)
14. Main topmast
15. Main topsail yard (in raised position)
16. Main topmast crossrees
17. Main topgallant yard (in lowered position)
18. Main topgallant mast

19. Main topgallant yard (in raised position)
20. Pole head of topgallant mast (later changed to a royal mast)
21. Fore mast
22. Fore yard
23. Fore top
24. Fore topsail yard (in lowered position)
25. Fore topmast
26. Fore topsail yard (in raised position)
27. Fore topmast crossrees
28. Fore topgallant yard (in lowered position)
29. Fore topgallant mast
30. Fore topgallant yard (in raised position)
31. Pole head of topgallant mast (later changed to a royal mast)
32. Bowsprit
33. Spritsail yard
34. Jibboom
35. Jack staff

G1



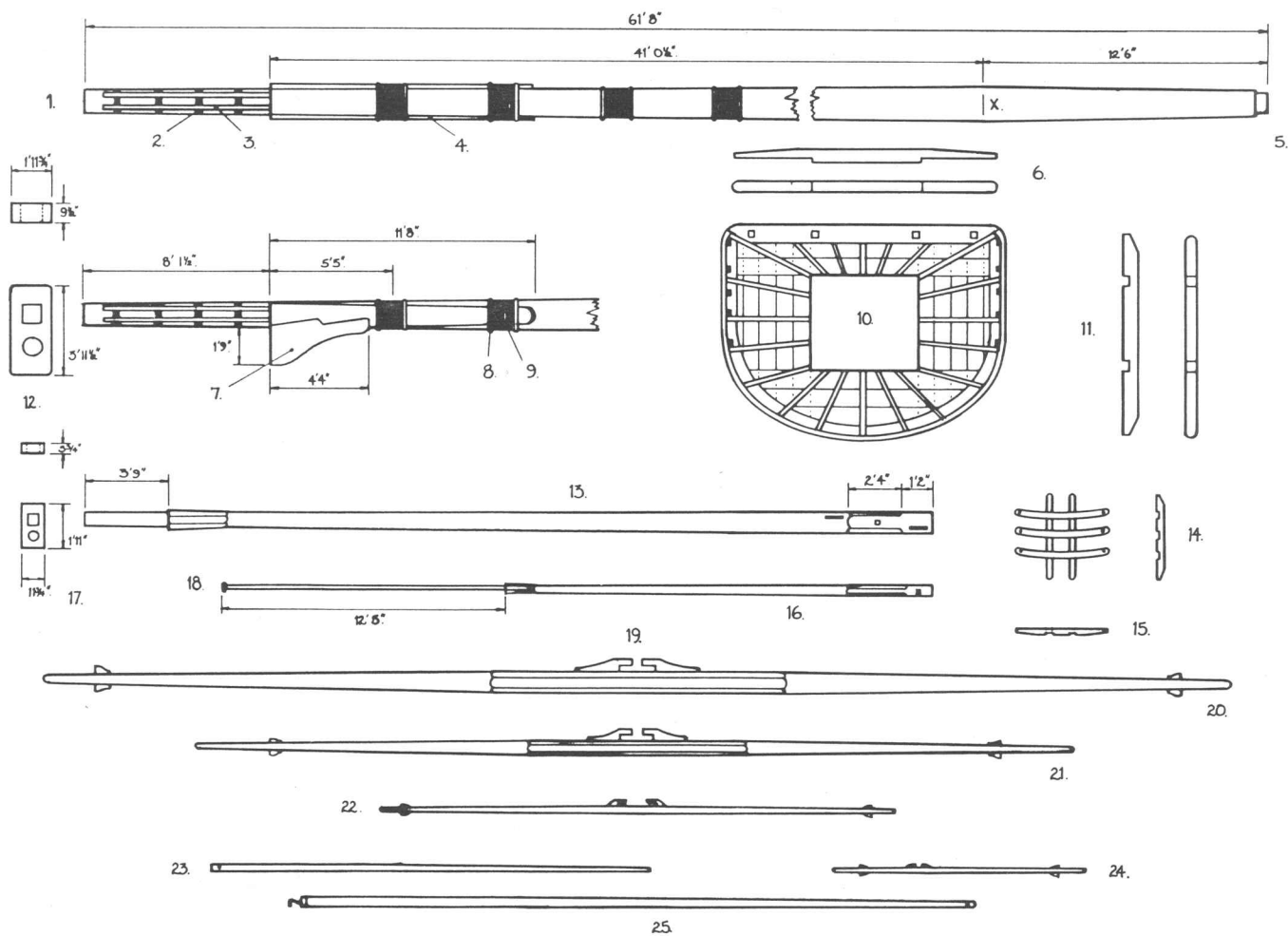
# G Masts and spars

## G2 FORE MAST (1/96 scale)

### G2/1 Mast, yards, tops and caps

1. Fore mast
2. Iron hoops
3. Masthead battens
4. Cheeks
5. Heel tenon
6. Fore mast crosstrees
7. Bibs
8. Woolding hoop
9. Woolding
10. Fore top
11. Fore mast trestletrees
12. Fore mast cap
13. Fore topmast
14. Topmast trestletrees
15. Topmast crosstrees
16. Fore topgallant mast
17. Fore topmast cap
18. Royal mast truck
19. Sling cleats
20. Fore yard
21. Fore topsail yard
22. Fore topgallant yard
23. Upper studdingsail boom
24. Studdingsail yard
25. Lower studdingsail boom
- X. Partners

### G2/1





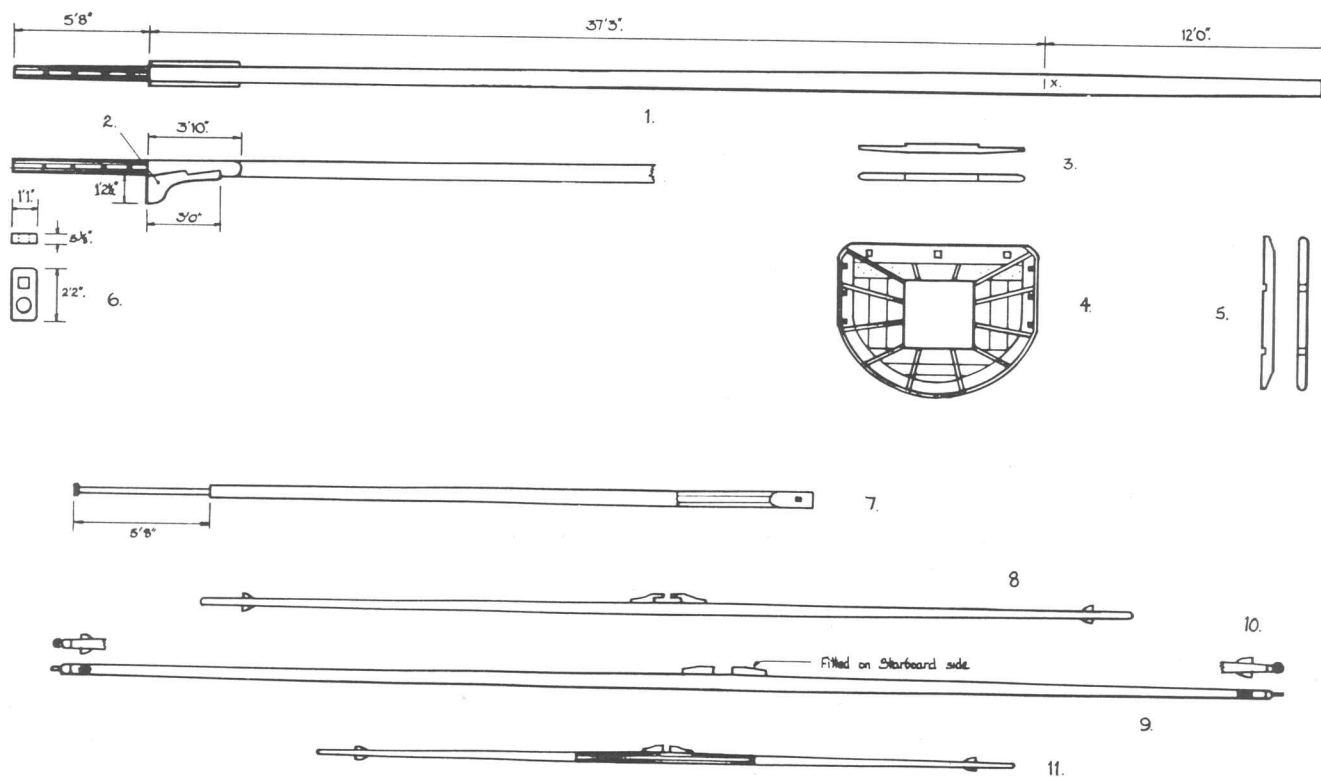
## G Masts and spars

### G4 MIZZEN MAST

**Note:** Rope woodings were not introduced until 1733, when only three were fitted.

#### G4/1 Masts, yards, top and cap (1/96 scale)

1. Mizzen mast
2. Bibs
3. Crosstrees
4. Mizzen top
5. Trestletrees
6. Mizzen mast cap
7. Mizzen topmast
8. Crossjack yard
9. Plan elevation of mizzen yard (lateen yard)
10. Side elevation of yardarm
11. Mizzen topsail yard
- X. Partners



#### G4/1

### G5 BOWSPRIT, JIBBOOM AND SPRITSAIL YARD (1/96 scale)

#### G5/1 Bowspit

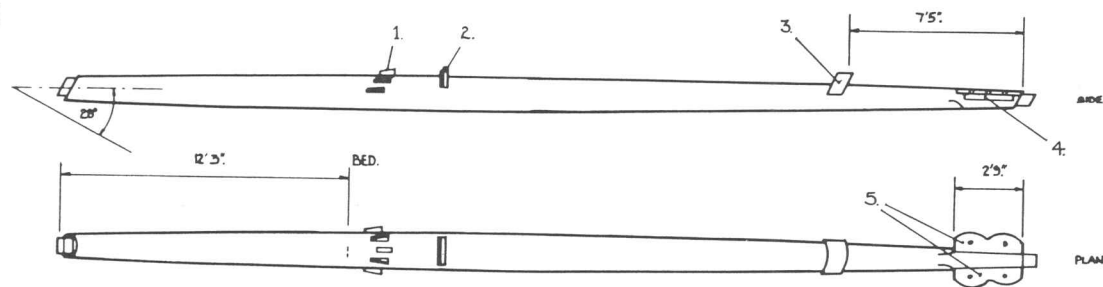
#### G5/2 Jibboom

#### G5/3 Bowspit cap

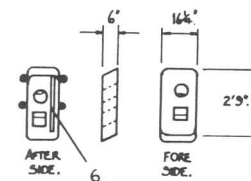
#### G5/4 Spritsail yard

1. Gammoning cleats
2. Spritsail yard sling cleat or stop
3. Stop or heel for the jibboom
4. Bee blocks
5. The bees
6. Slot for the jack staff
7. Sling cleats

#### G5/1

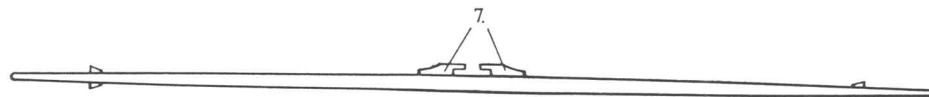


#### G5/2



#### G5/3

#### G5/4



G6  
G6  
G6  
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G6  
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19.

**G6 MAIN TOP AND MAST CAP (1/96 scale)**

**G6/1 Section**

**G6/2 Athwartships section**

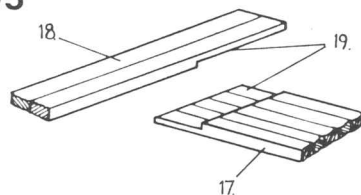
**G6/3 Crosstrees and trestletrees from above**

**G6/4 Plan view of the top**

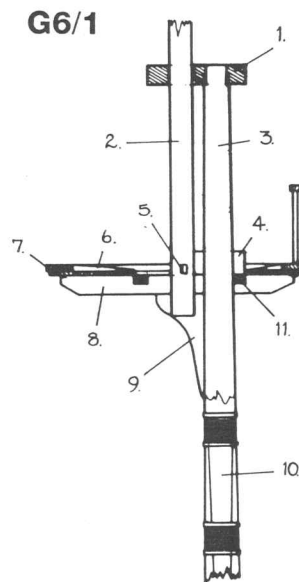
**G6/5 Planking of the top**

1. Mast cap
2. Main topmast
3. Head of the main mast
4. Bolster
5. Iron fid
6. Battens
7. Rim of the top
8. Trestletrees
9. Bibs
10. Cheeks
11. Crosstrees
12. Rail
13. Slots for the topmast deadeye plates
14. Lubber's hole
15. Planking of the top
16. Iron plate for the fid to rest upon
17. Fore and aft planking of the top
18. Athwartships planking of the top
19. Halving joint for the top planking

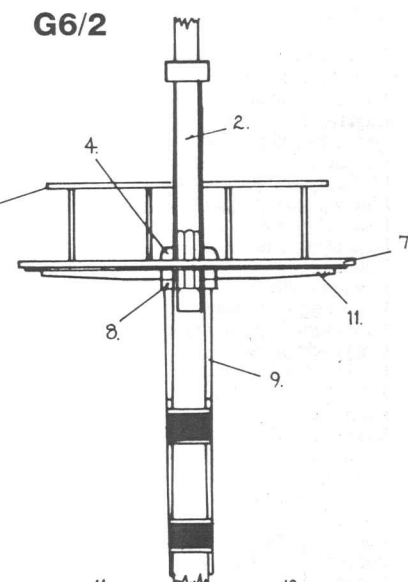
**G6/5**



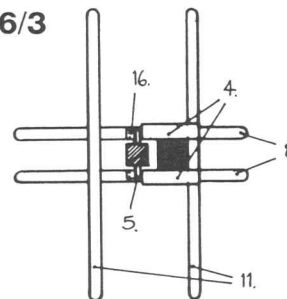
**G6/1**



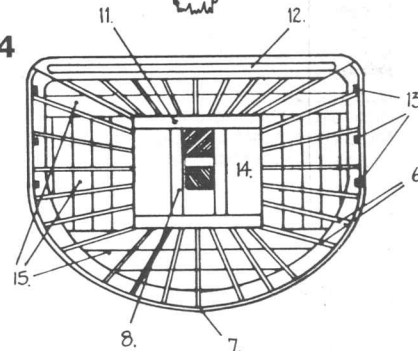
**G6/2**



**G6/3**



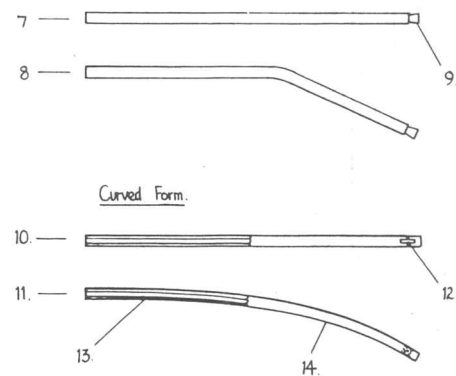
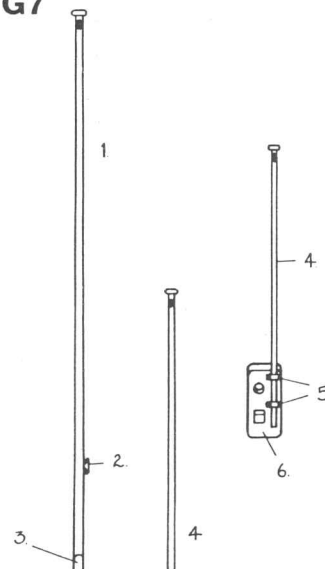
**G6/4**



**G7 Flagstaffs and boomkins (1/96 scale)**

1. Ensign staff
2. Halyard cleat
3. Heel
4. Jack staff
5. Retaining brackets
6. Bowsprit cap
7. Plan view of square type boomkin
8. Side elevation of the square section boomkin
9. Timberhead stop for tack lead block
10. Plan view of curved type of boomkin
11. Side elevation of curved type of boomkin
12. Sheave slot
13. Octagonal section
14. Round section

**G7**

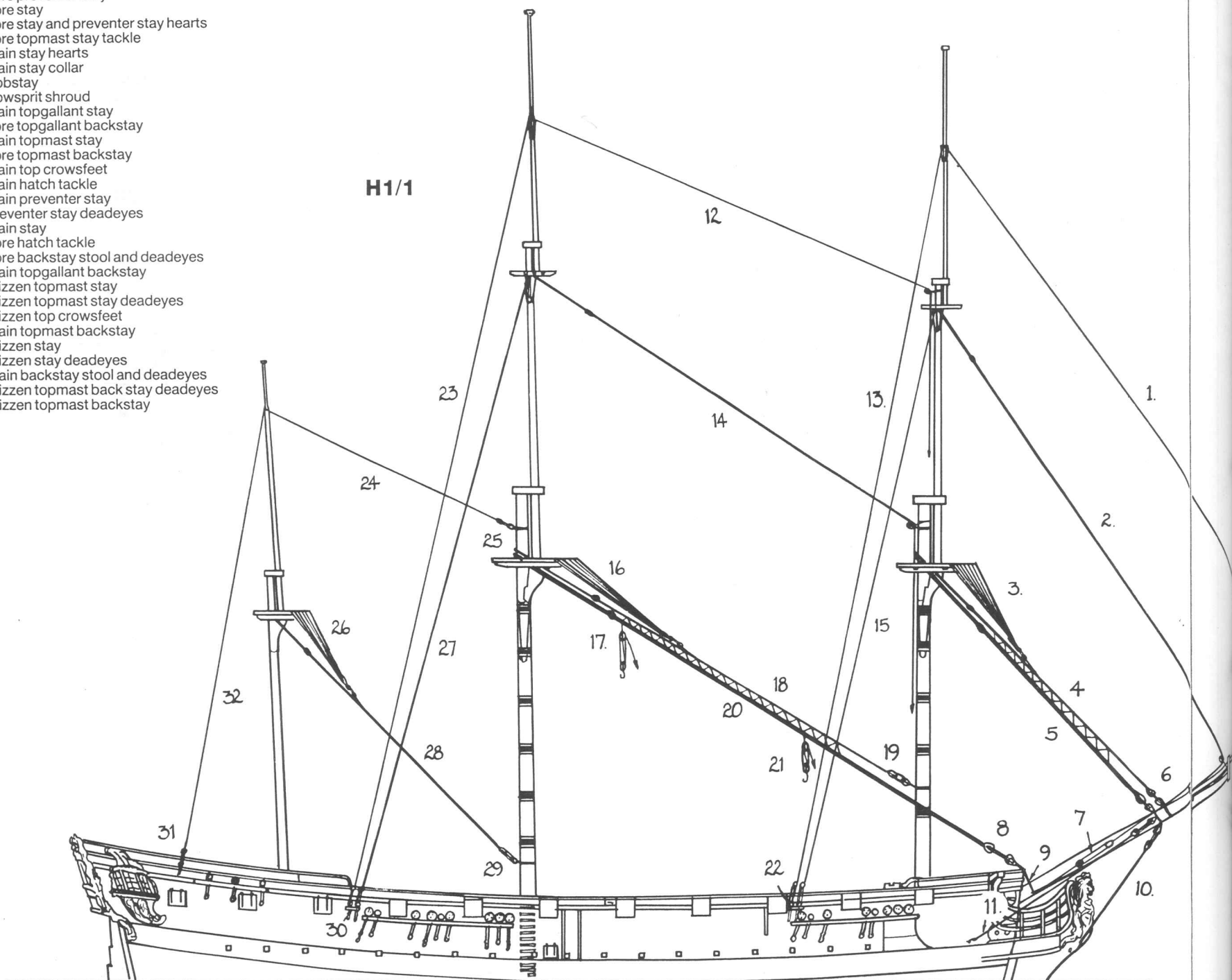


# H Rigging

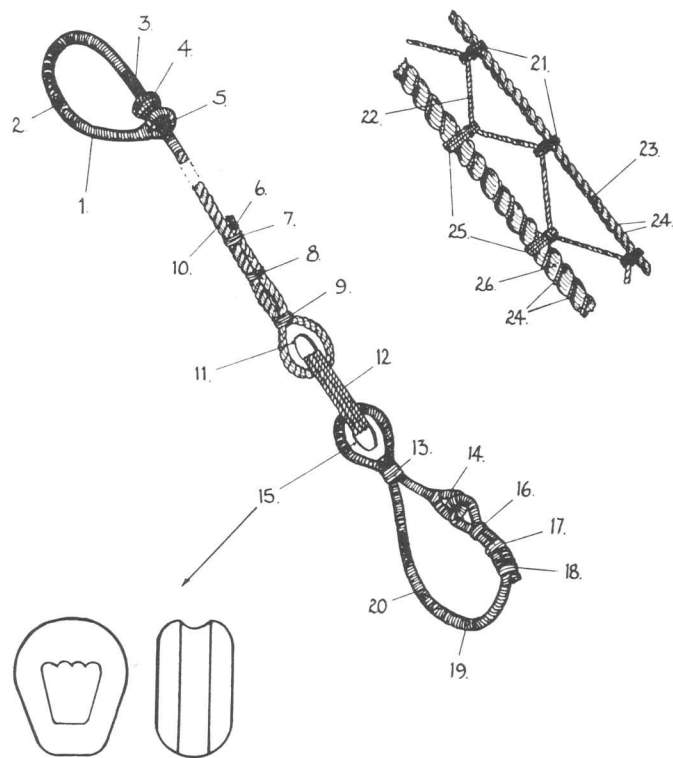
## H1 STANDING RIGGING

### H1/1 Stays and backstays (1/192 scale)

1. Fore topgallant stay
2. Fore topmast stay
3. Fore top crow'sfeet
4. Fore preventer stay
5. Fore stay
6. Fore stay and preventer stay hearts
7. Fore topmast stay tackle
8. Main stay hearts
9. Main stay collar
10. Bobstay
11. Bowsprit shroud
12. Main topgallant stay
13. Fore topgallant backstay
14. Main topmast stay
15. Fore topmast backstay
16. Main top crow'sfeet
17. Main hatch tackle
18. Main preventer stay
19. Preventer stay deadeyes
20. Main stay
21. Fore hatch tackle
22. Fore backstay stool and deadeyes
23. Main topgallant backstay
24. Mizzen topmast stay
25. Mizzen topmast stay deadeyes
26. Mizzen top crow'sfeet
27. Main topmast backstay
28. Mizzen stay
29. Mizzen stay deadeyes
30. Main backstay stool and deadeyes
31. Mizzen topmast back stay deadeyes
32. Mizzen topmast backstay



## H1/2



## H1/2 Detail of the mainstay and its heart (both the head of the stay and the collar were wormed, then parcelled and served, prior to rigging. No scale)

1. Mast head eye formed in end of stay
2. Serving of the eye
3. Parcelling
4. Mouse made up of spun yarn
5. Eye set up at extreme end of stay
6. Seizing and canvas cap
7. Seizing
8. Seizing
9. Seizing
10. Worming of the stay
11. Upper heart, set up in stay
12. Lanyard
13. Eye seizing
14. Eye seized in end of collar
15. Lower heart set up in collar
16. Seizing
17. Seizing
18. Seizing and canvas cap
19. Collar
20. Serving of the collar
21. Seizing
22. Snaking
23. Main preventer stay
24. Worming
25. Seizing
26. Main stay

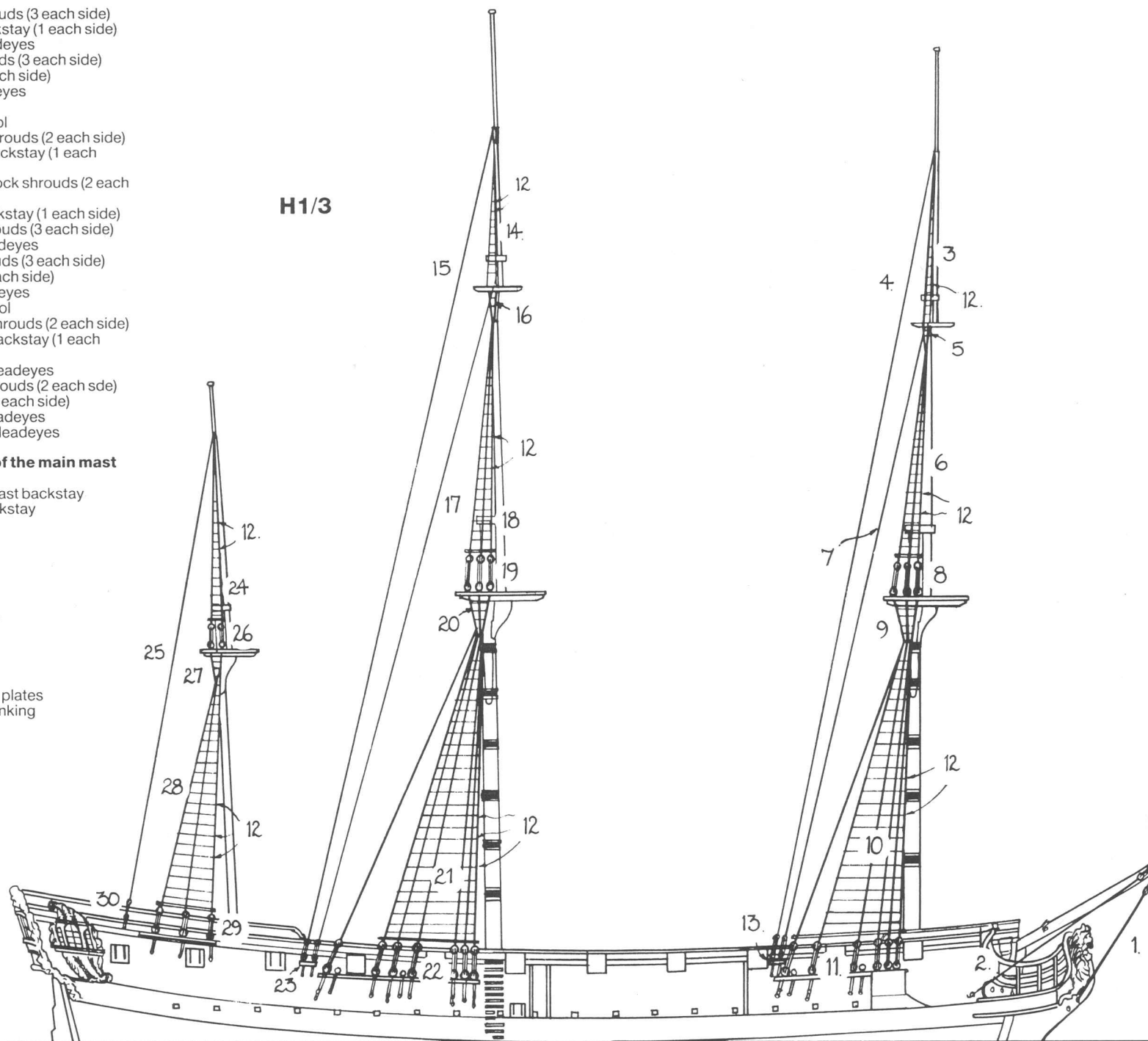
# H Rigging

## H1/3 Shrouds and ratlines (1/192 scale)

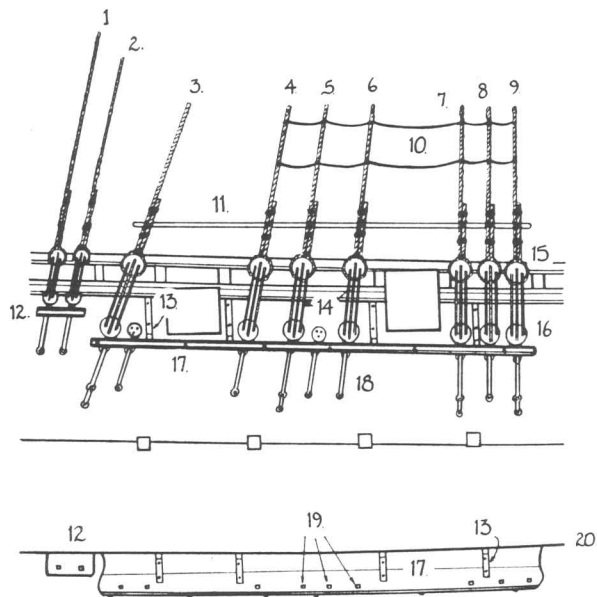
1. Bobstay (1)
2. Bowsprit shrouds (1 each side)
3. Fore topgallant shrouds (2 each side)
4. Fore topgallant backstay (1 each side)
5. Fore topmast futtock shrouds (2 each side)
6. Fore topmast shrouds (3 each side)
7. Fore topmast backstay (1 each side)
8. Fore topmast deadeyes
9. Fore futtock shrouds (3 each side)
10. Fore shrouds (6 each side)
11. Fore shroud deadeyes
12. Ratlines
13. Fore backstay stool
14. Main topgallant shrouds (2 each side)
15. Main topgallant backstay (1 each side)
16. Main topmast futtock shrouds (2 each side)
17. Main topmast backstay (1 each side)
18. Main topmast shrouds (3 each side)
19. Main topmast deadeyes
20. Main futtock shrouds (3 each side)
21. Main shrouds (7 each side)
22. Main shroud deadeyes
23. Main backstay stool
24. Mizzen topmast shrouds (2 each side)
25. Mizzen topmast backstay (1 each side)
26. Mizzen topmast deadeyes
27. Mizzen futtock shrouds (2 each side)
28. Mizzen shrouds (3 each side)
29. Mizzen shroud deadeyes
30. Mizzen backstay deadeyes

## H1/4 Lower shrouds of the main mast (1/96 scale)

1. Main topgallant mast backstay
2. Main topmast backstay
3. Main backstay
- 4-9. Main shrouds
10. Ratlines
11. Shroud batten
12. Backstay stool
13. Channel knee
14. Deadeye lanyards
15. Upper deadeye
16. Lower deadeye
17. Main channel
18. Chain plates
19. Slots for the chain plates
20. Line of the hull planking



### H1/4



### H1/5 Lower shroud details (no scale)

- 21. Shroud
- 22. Canvas cover over shroud tail end
- 23. Loose end of lanyard, seized to shroud
- 24. Shroud seizing
- 25. Upper deadeye
- 26. Monkey fist end of lanyard
- 27. Deadeye lanyard
- 28. Iron chain
- 29. Lower deadeye
- 30. Clenched part of the chain

### H1/7 Disposition of the main shroud eyes at the mast head (no scale)

- 40. Larboard (port) main backstay
- 41. Starboard main backstay
- 42. No 6 port shroud
- 43. No 5 port shroud
- 44. No 6 starboard shroud
- 45. No 5 starboard shroud
- 46. No 4 port shroud
- 47. No 3 port shroud
- 48. No 4 starboard shroud
- 49. No 3 starboard shroud
- 50. No 2 port shroud
- 51. No 1 port shroud
- 52. No 2 starboard shroud
- 53. No 1 starboard shroud
- 54. Main mast head

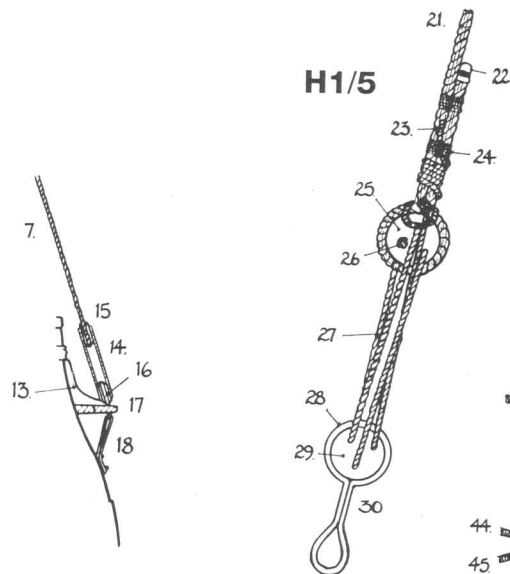
### H1/8 The gammon lashing (no scale)

- 1. Bowsprit
- 2. Gammon lashing
- 3. Gammon cleats
- 4. Hair bracket
- 5. Hardwood wedge
- 6. Slot for the gammon lashing
- 7. Trailboard
- 8. Knee of the head
- 9. Cheek
- 10. Bolster
- 11. Hawse holes
- 12. Hole for the main stay collar
- 13. Manner in which the gammon lashing was rove. The numbers depict the order of the turns
- 14. Line of the top surface of the bowsprit
- 15. Line of the upper edge of the slot
- 16. Eye spliced in one end of lashing
- 17. End of lashing seized in place

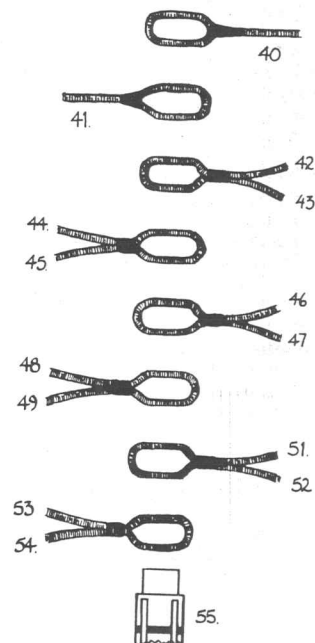
### H1/6 Futtock shrouds (no scale)

- 31. Chain
- 32. Lower deadeye of the topmast shrouds
- 33. Chain plate
- 34. Main top rim
- 35. Futtock shroud hook
- 36. Futtock shroud
- 37. Eye and seizing of the futtock shroud
- 38. Main shroud
- 39. Futtock shroud stave

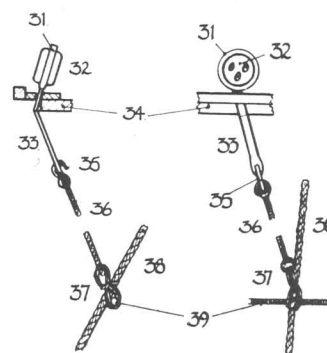
### H1/5



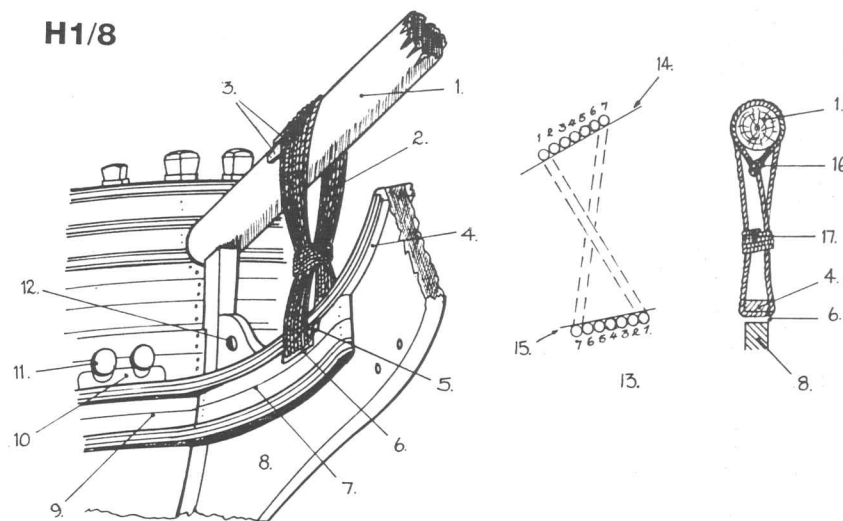
### H1/7



### H1/6



### H1/8





**H3 THE RUNNING RIGGING OF THE MAIN MAST (no scale)**

**H3/1 View from aft**

**H3/2 Side view**

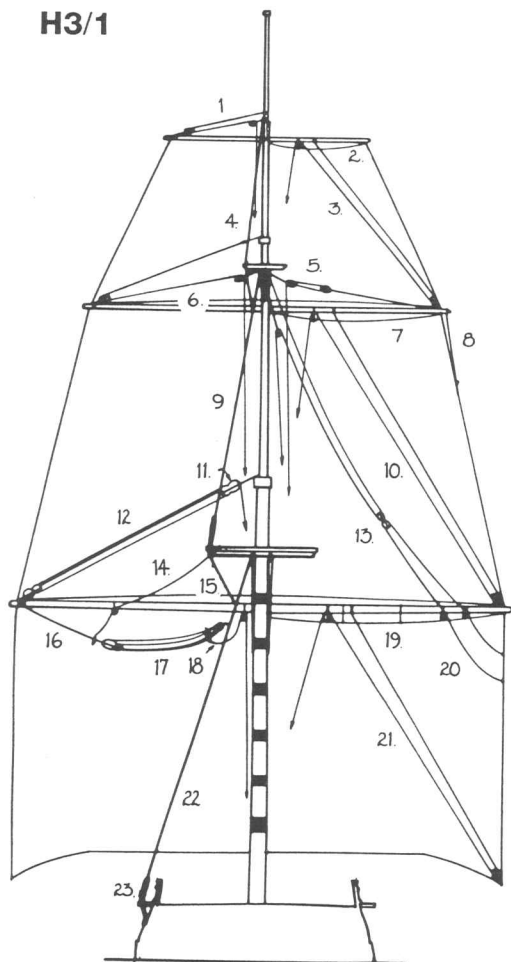
1. Topgallant lift
2. Foot rope
3. Topgallant clewline
4. Topgallant mast shroud
5. Topsail reef tackle fall blocks
6. Topsail yard lift
7. Foot rope
8. Reef tackle fall
9. Main topmast shrouds

10. Topsail clewline
11. Long tackle block
12. Main yard lifts
13. Reef tackle fall blocks (long tackle block)
14. Yard tackle outer tricing line
15. Futtock shrouds
16. Tackle pendant
17. Yard tackle
18. Yard tackle inner tricing line
19. Foot rope and stirrups
20. Main course reef tackle falls
21. Main course clewline
22. Main shrouds
23. Main shroud deadeyes

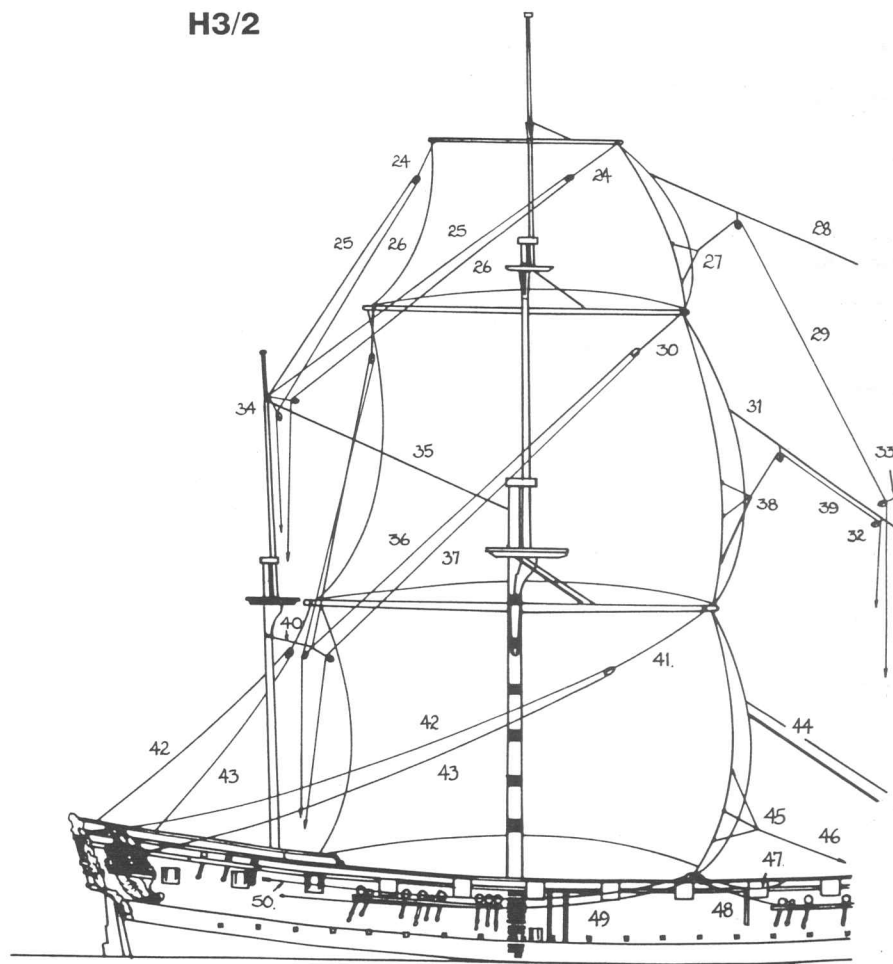
24. Topgallant sail yard brace pendants
25. Standing part of brace
26. Running part of brace
27. Topgallant sail bridle
28. Topgallant mast stay
29. Topgallant sail bowline
30. Topsail yard brace pendant
31. Topmast stay
32. Bowline tackle
33. Bowline tackle pendant to fore topmast
34. Topgallant brace tackle pendants
35. Mizzen topmast stay
36. Standing part of brace
37. Running part of brace

38. Topsail bridle
39. Topsail bowline
40. Topsail brace tackle pendant
41. Brace pendant
42. Standing part of brace
43. Running part of brace
44. Main and preventer stays
45. Main course bridle
46. Main course bowline
47. Standing part of main tack
48. Running part of main tack
49. Standing part of main sheet
50. Running part of main sheet

**H3/1**

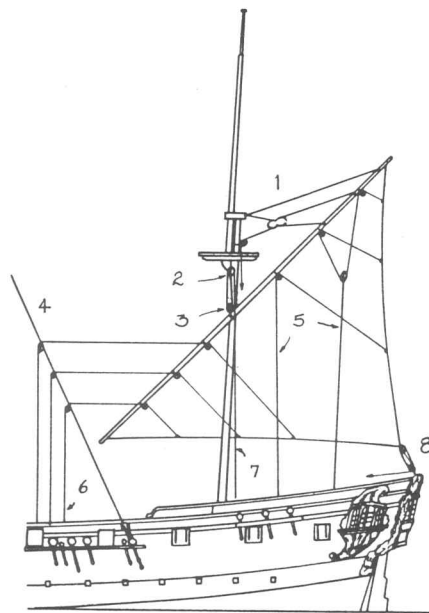


**H3/2**

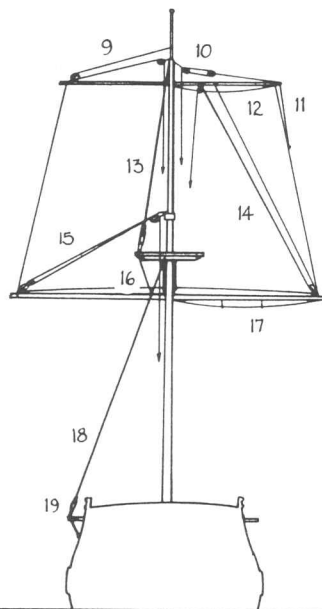


# H Rigging

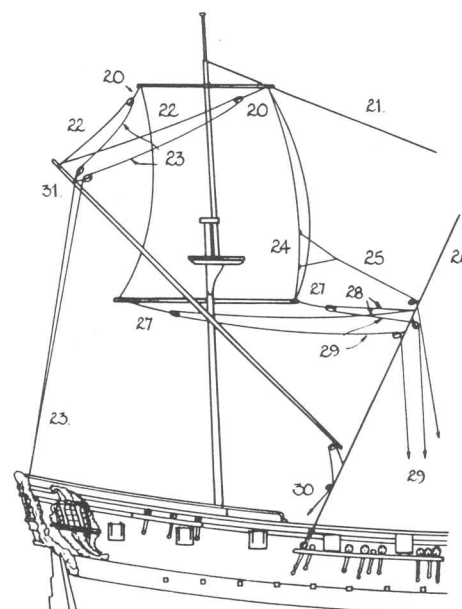
## H4/1



## H4/2



## H4/3



### H4 THE RUNNING RIGGING OF THE MIZZEN MAST (no scale)

#### H4/1 Port side view with mizzen set

#### H4/2 View from aft

#### H4/3 Starboard side view

1. Mizzen yard lift
2. Standing jeer block
3. Jeer block
4. Aftermost main shroud
5. Peak and throat brails
6. Foot brails
7. Jeer halyard
8. Mizzen sheets
9. Mizzen topmast lift
10. Reef tackle fall blocks
11. Reef tackle falls
12. Foot rope
13. Mizzen topmast shrouds
14. Topsail clewlines
15. Crossjack lifts
16. Mizzen futtock shrouds
17. Foot rope and stirrups
18. Mizzen shrouds
19. Mizzen shroud deadeyes
20. Topsail brace pendant
21. Mizzen topmast stay
22. Standing part of topsail brace
23. Running part of topsail brace
24. Topsail bridle
25. Topsail bowline
26. Main topmast back stay
27. Crossjack brace pendant
28. Standing part of crossjack brace
29. Running part of crossjack brace
30. Mizzen bowline
31. Mizzen topsail brace block pendants

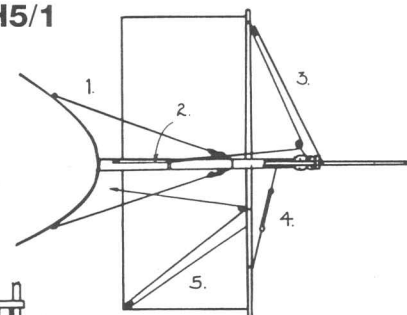
### H5 THE RUNNING RIGGING OF THE SPRITSAIL (no scale)

#### H5/1 Plan view

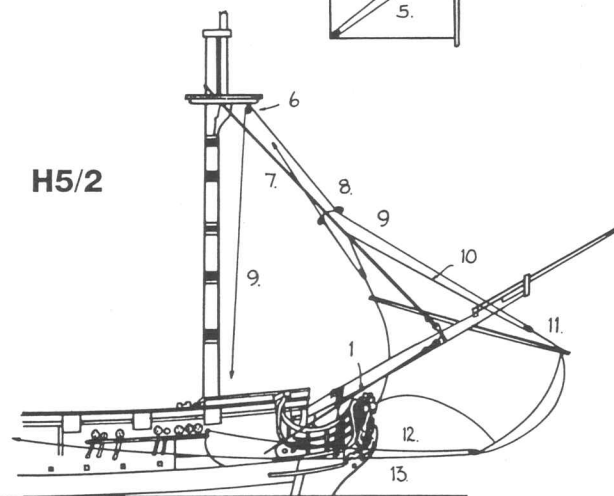
#### H5/2 Side view

1. Bowsprit shroud
2. Fall of the spritsail yard lift
3. Spritsail lift
4. Standing lift
5. Clewline
6. Brace block
7. Fore stay
8. Pendant blocks
9. Fall and running part of the brace
10. Standing part of the brace
11. Brace block and pendant
12. Standing part of the spritsail sheet
13. Running part of the spritsail sheet

## H5/1



## H5/2



## H6 YARDARM FITTINGS AND RIGGING

### H6/1 Stunsail boom and yardarm (1/24 scale)

1. Upper stunsail boom
2. Lower yard
3. Yardarm cleat
4. Outer stunsail boom iron
5. Inner stunsail boom iron
6. Boom iron yoke
7. Retaining hoops

### H6/2 Boom iron hoops (1/24 scale)

1. Outer stunsail boom iron hoop
2. Hoop around yardarm
3. Boom iron yoke
4. Inner stunsail boom iron hoop
5. Hoop around yard

### H6/3 Plan view of yardarm (1/24 scale)

1. Yardarm
2. Yardarm cleat

### H6/4 Yardarm and brace pendant (no scale)

1. Yardarm cleat
2. Yardarm
3. Brace pendant
4. Brace block
5. Running part of the brace

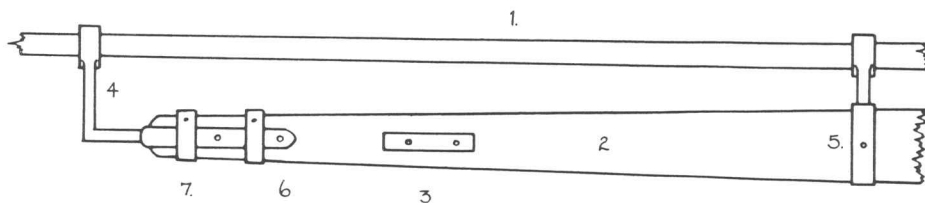
### H6/5 Lower mast cap (no scale)

1. Lower mast cap
2. Long tackle pendant
3. Fall of the lift
4. Long tackle block
5. Running part of the lift

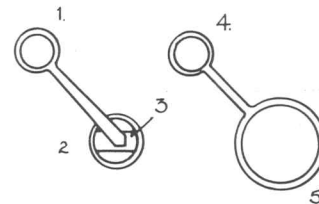
### H6/6 Yardarm and associated blocks (no scale)

1. Running part of the lift
2. Single block seized to topsail sheet block
3. Standing part of the lift
4. Lift and sheet block strop
5. Yardarm
6. Topsail sheet block
7. Yardarm cleat
8. Strop for standing part of lift

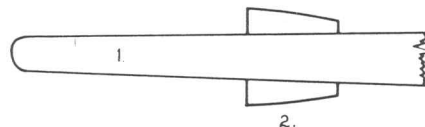
### H6/1



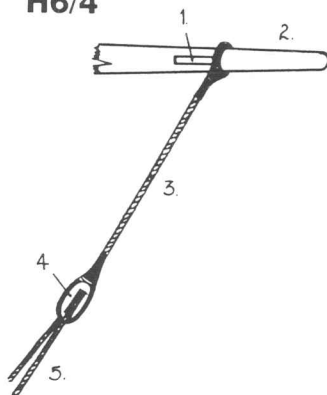
### H6/2



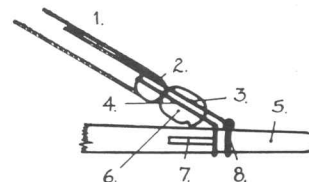
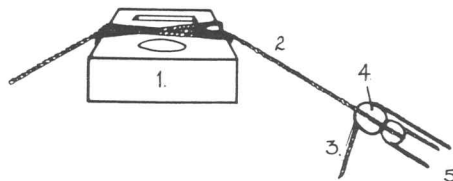
### H6/3



### H6/4



### H6/5



### H6/6

# H Rigging

## H7 ARRANGEMENT OF THE YARD BLOCKS (no scale)

**Note** This entry applies to the fore mast and mizzen mast yards. However, no stunsails were fitted on the mizzen mast and foot ropes were not always fitted on the crossjack yard.

### H7/1 Main yard

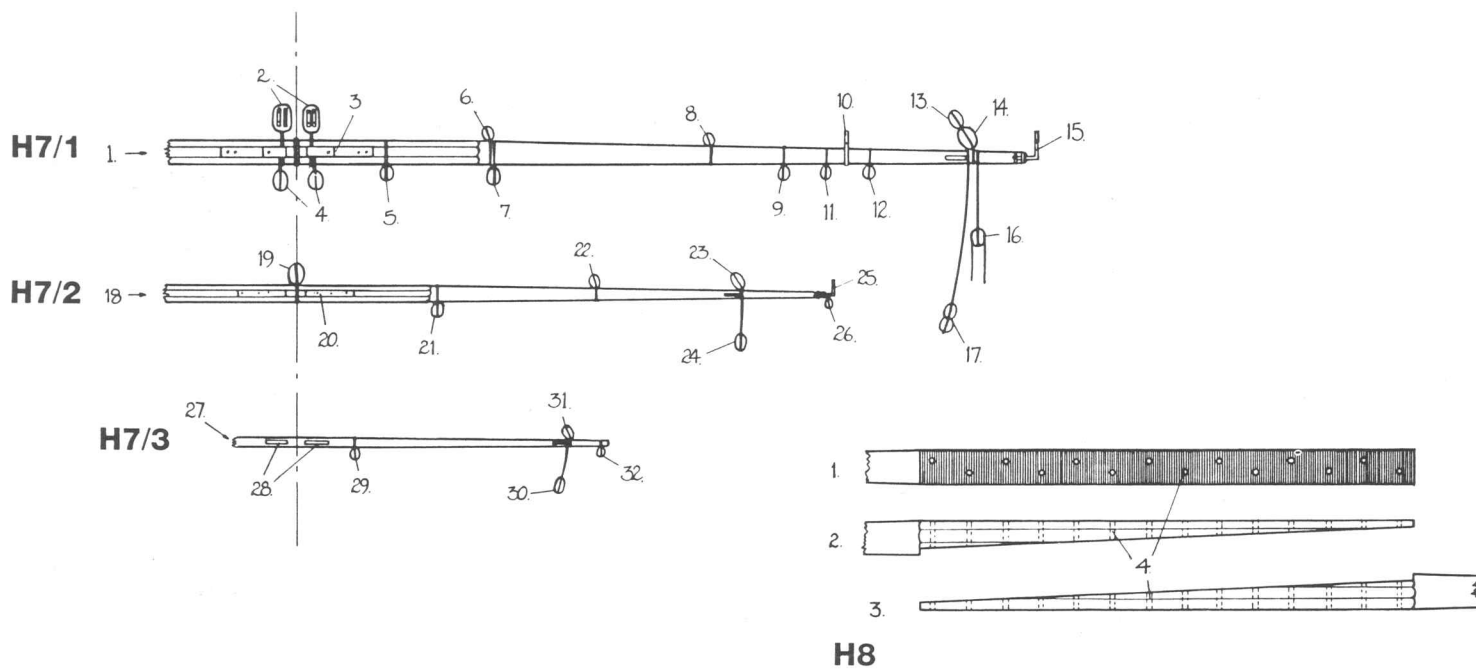
### H7/2 Topsail yard

### H7/3 Topgallant yard

1. Main yard
2. Jeer blocks
3. Sling cleat
4. Quarter block for horses (foot ropes)
5. Lower stunsail inner halyard block
6. Buntline block
7. Clewline block
8. Buntline block
9. Block for the tricing line
10. Inner stunsail boom iron
11. Horse block
12. Lower stunsail inner halyard block
13. Main yard lift block
14. Main topsail sheet block
15. Outer stunsail boom iron
16. Main brace block
17. Yard tackle
18. Topsail yard
19. Tie block
20. Sling cleat
21. Clewline block
22. Buntline block
23. Topsail yard lift block
24. Brace block
25. Stunsail yard boom iron
26. Jewel block for the topmast stunsail halyard
27. Topgallant yard
28. Sling cleats
29. Clewline block
30. Brace block
31. Topgallant yard lift block
32. Jewel block for topgallant stunsail yard halyard (if fitted)

## H8 METHOD OF SCARPHING THE YARDS (no scale)

1. Side elevation showing scarph face of one half of the yard
2. Plan of one half of the yard
3. Plan of opposite half of the yard
4. Dowel (or coak) holes, adjoining the two portions of the opposite.

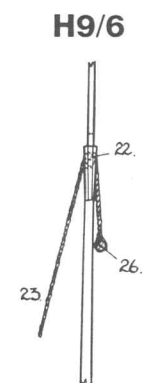
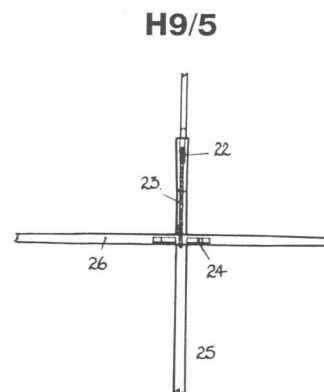
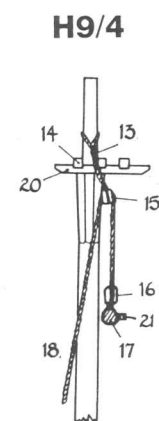
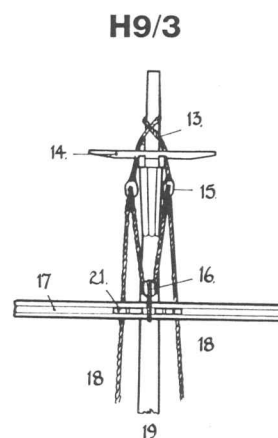
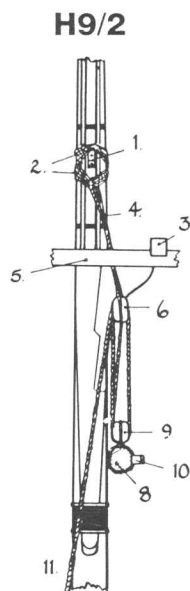
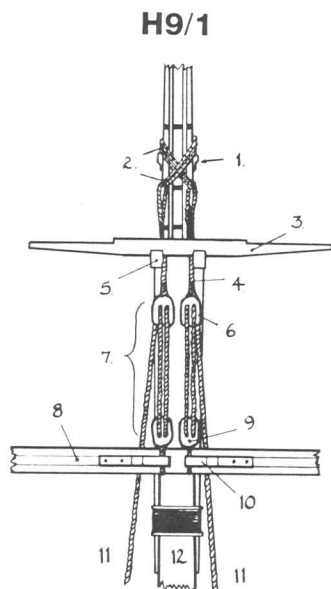


**H9 JEERS AND TIES (no scale)**

**Note** The yards of the other masts were rigged in a similar manner except for the mizzen topsail yard which was rigged as a topgallant yard.

**H9/1 Main yard viewed from forward****H9/2 Main yard viewed from side****H9/3 Main topsail yard viewed from forward****H9/4 Main topsail yard viewed from side****H9/5 Main topgallant yard viewed from forward****H9/6 Main topgallant yard viewed from side**

1. Masthead cleat
2. Lashing for the jeer strop
3. Crosstrees
4. Jeer strop
5. Tresstletree
6. Jeer block (double)
7. Jeer tackle
8. Main yard
9. Lower jeer block (double)
10. Yard sling cleat
11. Fall of the jeers
12. Main mast
13. Tie pendants
14. Topmast crosstree
15. Standing tie block (single)
16. Single tie block
17. Main topsail yard
18. Falls of the ties
19. Main topmast
20. Topmast tresstletree
21. Yard sling cleat
22. Tie sheave set into masthead
23. Tie
24. Yard sling cleat
25. Topgallant mast



# H Rigging

## H10 YARD PARRELS AND SLINGS (no scale)

### H10/1 General arrangement

1. Mast
2. Yard
3. Sling
4. Thimble (seized to sling)
5. Parrel rib
6. Parrel truck
7. Fall of the parrel rope
8. End of the parrel rope seized to fall
9. Eyes of the parrel rope (to pass around yard)
10. Rose lashing

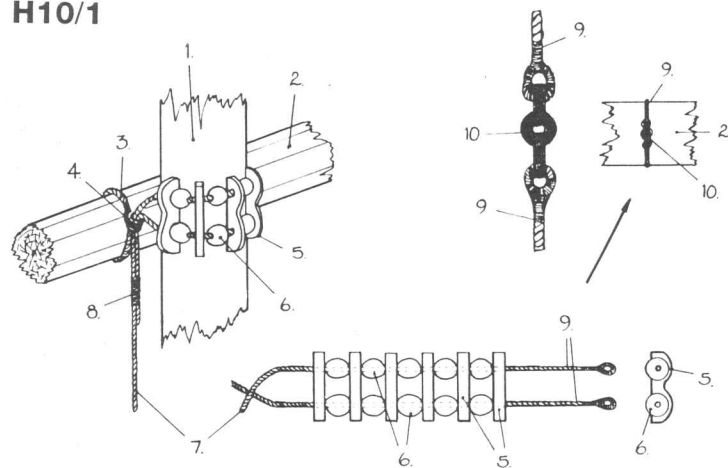
### H10/2 Sprintsail yard

1. Sling
2. Bowsprit
3. Sprintsail yard
4. Saddle
5. Leather pad (apron)
6. Halyard sling

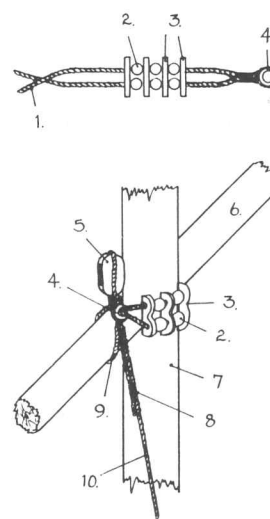
### H10/3 Mizzen yard

1. Parrel rope
2. Parrel truck
3. Parrel rib
4. Thimble (seized to sling)
5. Jeer block
6. Mizzen yard
7. Mizzen mast
8. Seizing of the end of the parrel rope to fall
9. Sling
10. Fall of the parrel rope

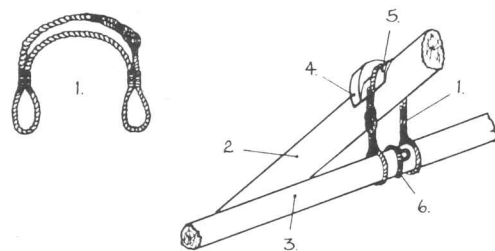
### H10/1



### H10/3



### H10/2



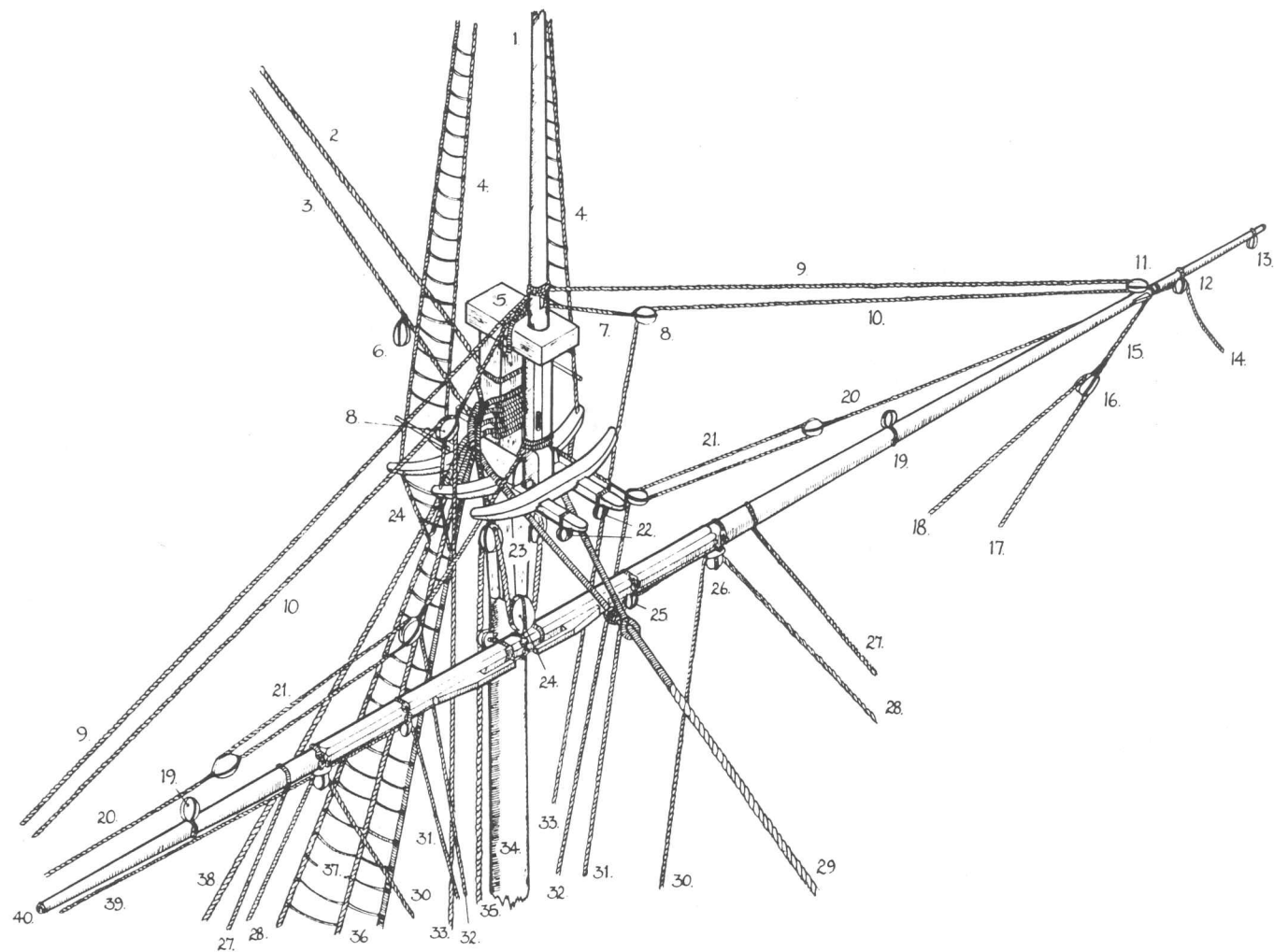


# H Rigging

## H12 DETAIL OF THE FORE TOPMAST HEAD (no scale)

1. Fore topgallant mast
2. Main topgallant stay
3. Main topgallant staysail stay
4. Fore topgallant shrouds and ratlines
5. Fore topmast cap
6. Main topgallant staysail downhauler block
7. Lift block (halyard) pendant
8. Lift halyard block
9. Standing part of the fore topsail yard lift
10. Running part of the fore topsail yard lift
11. Fore topsail yard lift block
12. Fore topsail reef tackle outer block
13. Jewel block for the topmast stunsail halyard
14. Fore topsail reef tackle
15. Fore topsail yard brace pendant
16. Fore topsail yard brace block
17. Running part of the fore topsail yard brace
18. Standing part of the fore topsail yard brace
19. Outer topsail buntline block
20. Reef tackle lead
21. Reef tackle blocks and tackle
22. Inner topsail buntline blocks
23. Standing tie blocks for the topsail yard
24. Tie block of the topsail yard
25. Fore topgallant sail inner sheet block
26. Fore topsail clewline block
27. Standing part of the clewline
28. Running part of the clewline
29. Fore topmast stay
30. Fore topsail clewline fall
31. Fore topgallant sail sheet fall
32. Topsail reef tackle fall
33. Topsail yard lift fall
34. Fore topmast
35. Topsail yard tie fall (only one side shown for clarity)
36. Fore topmast shrouds, 3 in total (one side only shown for clarity)
37. Ratlines
38. Fore topmast standing backstay
39. Fore topgallant sail sheet
40. Fore topsail yard

H12



**I1 SQUARE SAILS OF THE FORE MAST (1/192 scale)**  
The fore side of the sail is shown on the left, the after side on the right

**I1/1 Fore topsail**

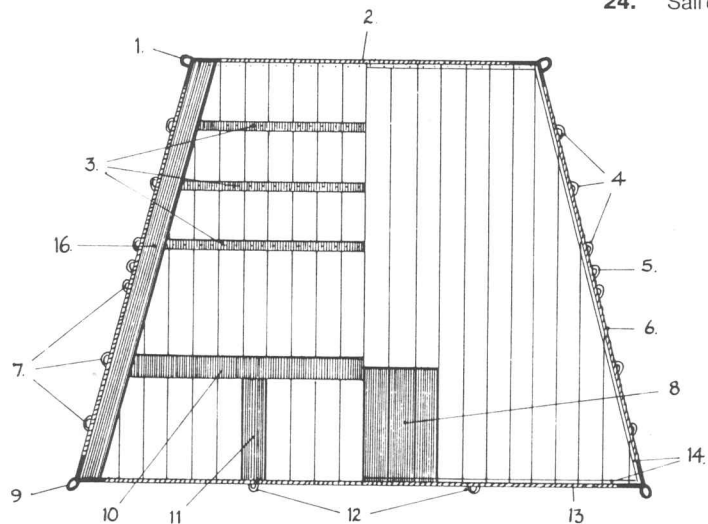
**I1/2 Fore topgallant**

**I1/3 Fore course**

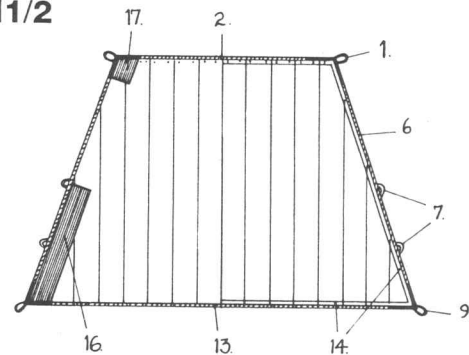
**I1/4 Detail of securing sail to yard (no scale)**

1. Earing
2. Head bolt rope
3. Reef linings
4. Reef cringles
5. Leechline cringles
6. Leech bolt rope
7. Bowline and bridle cringles
8. Top lining
9. Clew
10. Middle band lining
11. Clewline lining
12. Clew cringles
13. Foot bolt rope
14. Sail cloth seam
15. Robband gaskets
16. Leech lining
17. Head lining
18. Robbands
19. Head bolt rope
20. Yard
21. Head seam
22. Robband gaskets
23. Sail cloths
24. Sail cloth seams

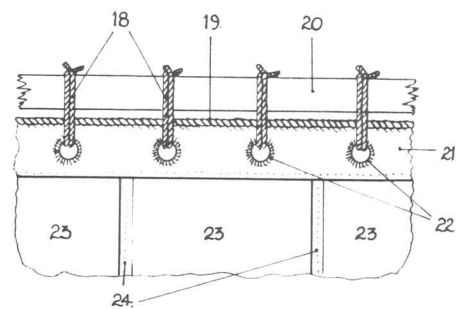
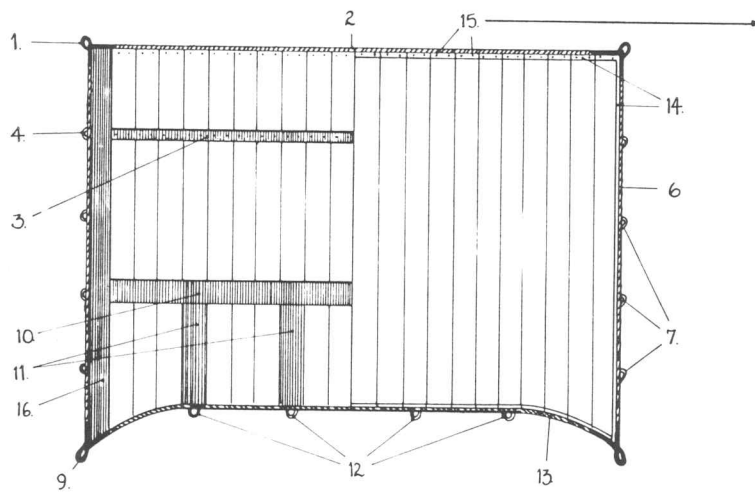
**I1/1**



**I1/2**



**I1/3**



**I1/4**

# I Sails

## 12 THE SQUARE SAILS OF THE MAIN MAST (1/192 scale) The fore side of the sail is shown to the left, the after side to the right

### 12/1 Main topsail

### 12/2 Main topgallant

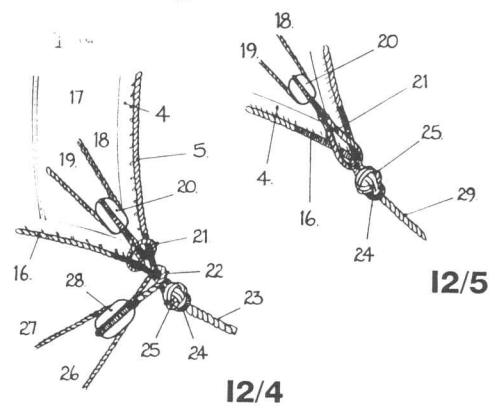
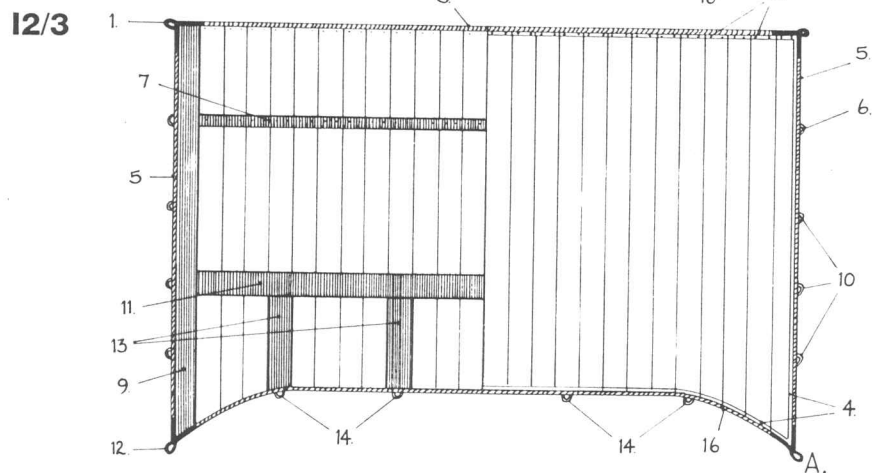
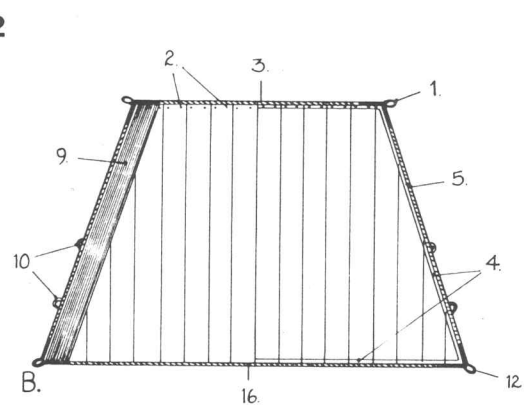
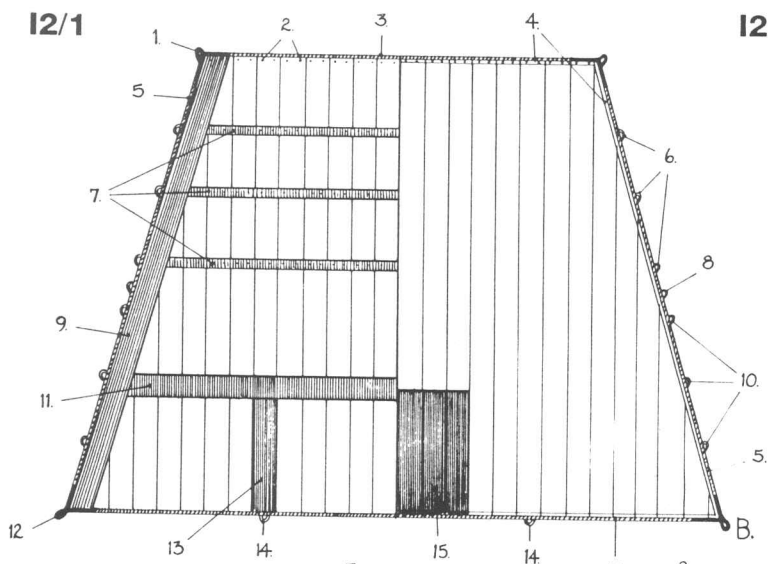
### 12/3 Main course

### 12/4 Main course clue (no scale)

### 12/5 Main topsail and topgallant clew (no scale)

1. Earing
2. Robband gaskets
3. Head bolt rope
4. Seams
5. Leech bolt rope
6. Reef cringles
7. Reef linings
8. Leechline cringle
9. Leech lining
10. Bowline and bridle cringles
11. Middle band lining
12. Clew
13. Clewline lining
14. Clewline cringles

15. Top lining
16. Foot bolt rope
17. Sail cloth
18. Standing part of clewline
19. Running part of clewline
20. Clew block
21. Clew block stop
22. Sheet block stop
23. Tack
24. Eye of the clew around the tack
25. Monkey fist end of tack
26. Standing part of the sheet
27. Running part of the sheet
28. Sheet block
29. Topsail or topgallant sail tack



**I3 MIZZEN SAILS, SPRITSAIL AND DETAILS**

**I3/1 Mizzen topsail (1/192 scale)**

**I3/2 Spritsail (1/192 scale)**

**I3/3 Mizzen sail (1/192 scale)**

1. Head bolt rope
2. Earing
3. Reef cringles
4. Reef band linings
5. Middle band lining
6. Leechline cringle
7. Bowline and bridle cringles
8. Leech lining
9. Seams
10. Clew
11. Top lining
12. Foot bolt rope
13. Leech bolt rope
14. Water hole
15. Brail cringles
16. Leech bolt rope
17. Sheet cringle
18. Foot brail cringle
19. Tack cringle
20. Luff tackle cringle

**I3/4 Triple bowline and bridle (no scale)**

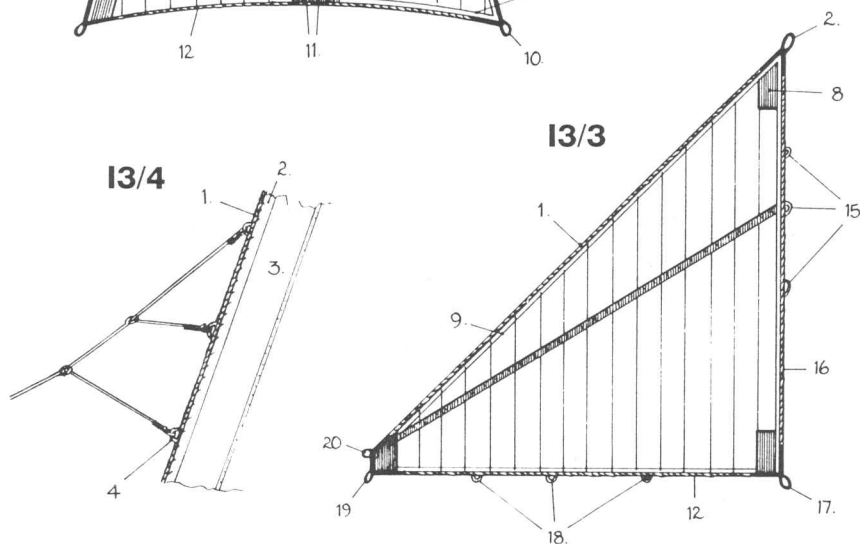
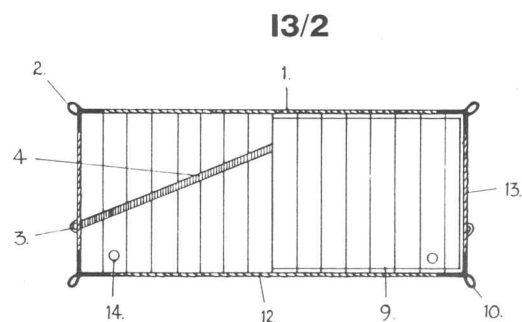
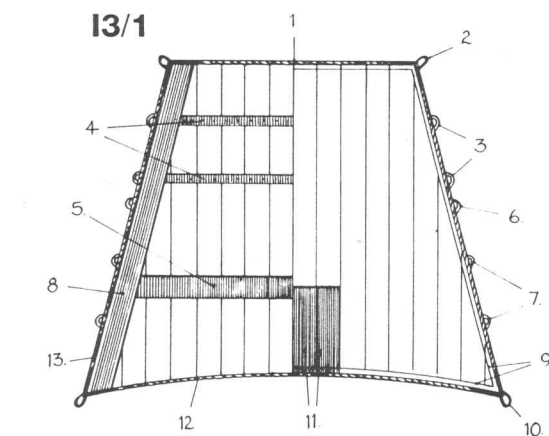
1. Leech bolt rope
2. Sail cloth seam
3. Sail cloth
4. Cringle

**I3/5 Detail of a cringle (no scale)**

1. Cringle
2. Bolt rope
3. Sail cloth seam

**I3/6 Double bowline and bridle (no scale)**

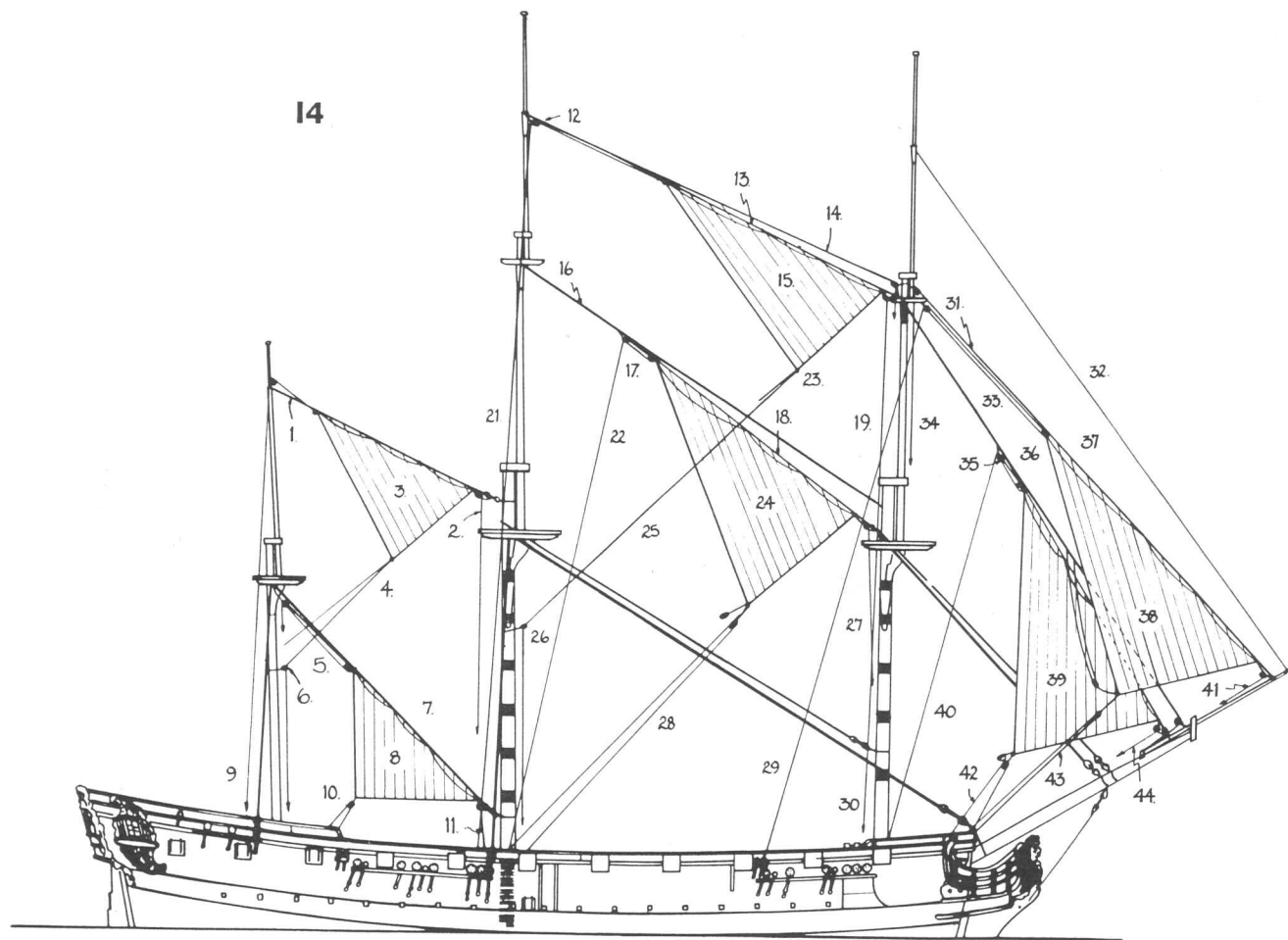
1. Leech bolt rope
2. Sail cloth seam
3. Sail cloth
4. Cringle



# I Sails

## 14 STAYSAILS (no scale)

1. Mizzen topmast stay
2. Mizzen topmast staysail downhauler
3. Mizzen topmast staysail
4. Staysail sheets
5. Mizzen staysail halyard
6. Thimble fitted to foremost mizzen shroud
7. Mizzen stay
8. Mizzen staysail
9. Mizzen topsail staysail halyard
10. Staysail sheets
11. Mizzen staysail downhauler
12. Main topgallant staysail halyard block
13. Staysail stay
14. Main topgallant stay
15. Main topgallant staysail
16. Main topmast stay
17. Main topmast stay halyard tackle
18. Staysail stay
19. Main topgallant staysail downhauler
20. Main topgallant stay fall
21. Main topgallant staysail halyard fall
22. Main topmast staysail halyard
23. Note, no blocks fitted for topgallant staysails
24. Main topmast staysail
25. Topgallant staysail sheets
26. Thimble fitted to foremost main shroud
27. Main topmast staysail downhauler
28. Main topmast staysail sheets
29. Jibsail halyard fall
30. Main topgallant staysail downhauler
31. Jibsail staysail stay
32. Fore topgallant stay
33. Fore topmast stay
34. Jibsail staysail stay fall
35. Fore staysail halyard tackle
36. Fore staysail staysail stay
37. Fore stay and preventer stay
38. Jibsail
39. Fore staysail
40. Fore staysail halyard fall
41. Jibsail downhauler
42. Fore staysail sheets
43. Jibsail sheets
44. Fore staysail downhauler



**15 FORE AND AFT SAILS (Port side only shown to reveal lining details; 1/192 scale)**

**15/1 Jibsail**

**15/2 Main topgallant staysail**

**15/3 Mizzen topmast staysail**

**15/4 Mizzen staysail**

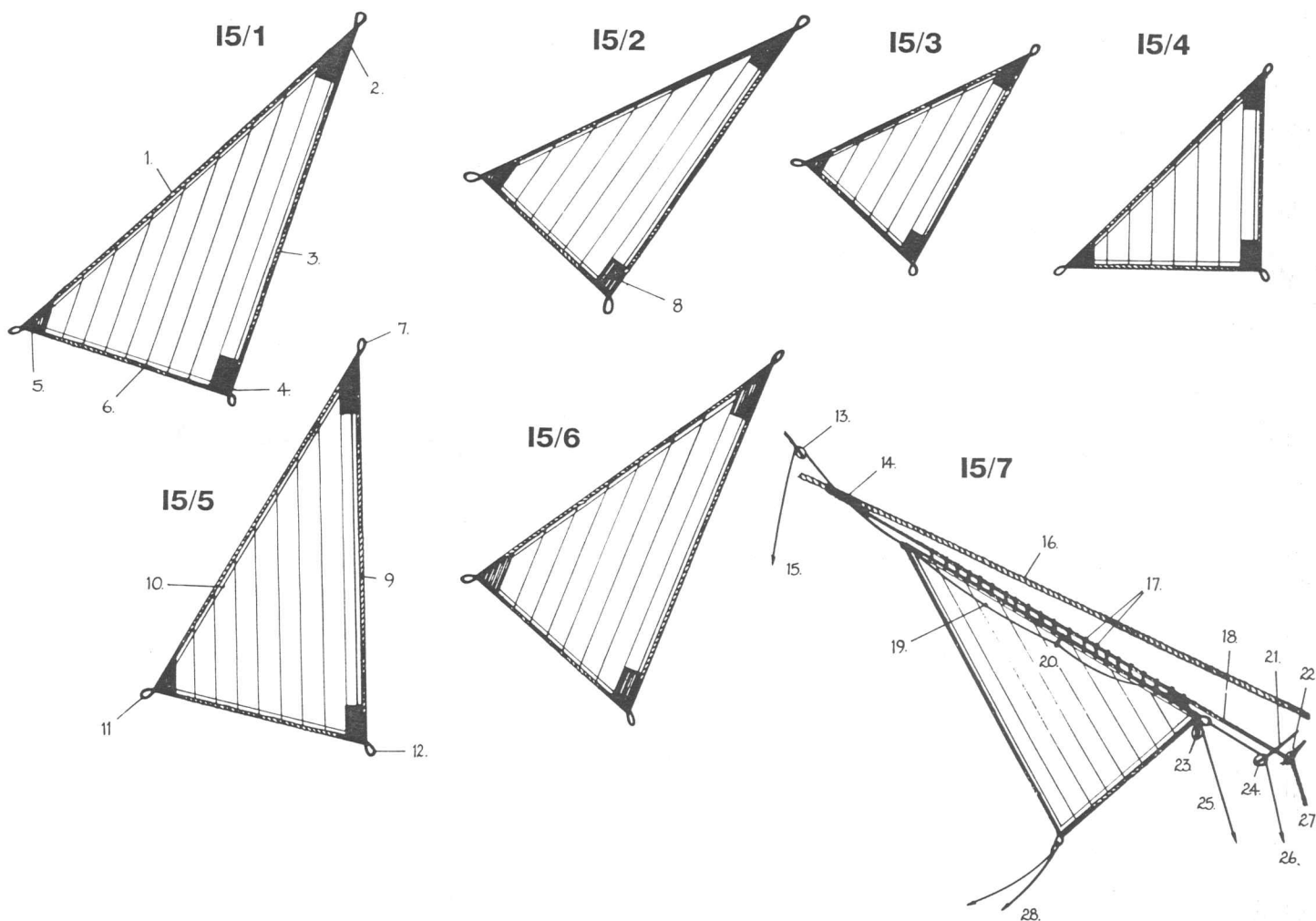
**15/5 Fore topmast staysail**

**15/6 Main topmast staysail**

**15/7 Detail of staysail stay (main topgallant staysail)**

1. Luff bolt rope
2. Peak and its lining
3. Leech bolt rope
4. Clew and its lining
5. Tack and its lining
6. Foot bolt rope
7. Halyard earing
8. Clew lining
9. Leech bolt rope
10. Seam
11. Tack cringle
12. Clew
13. Halyard block
14. Seizing of the staysail stay to the topgallant stay

15. Fall of the halyard
16. Topgallant stay
17. Robbands
18. Staysail stay
19. Downhauler
20. Thimble for downhauler
21. Tack block pendant
22. Thimble for staysail stay fastened to fore topmast head
23. Downhauler block seized to bolt rope
24. Tack block
25. Downhauler fall
26. Tack
27. Fall of the staysail stay secured to fore top
28. Sheets fitted to clew with a thimble



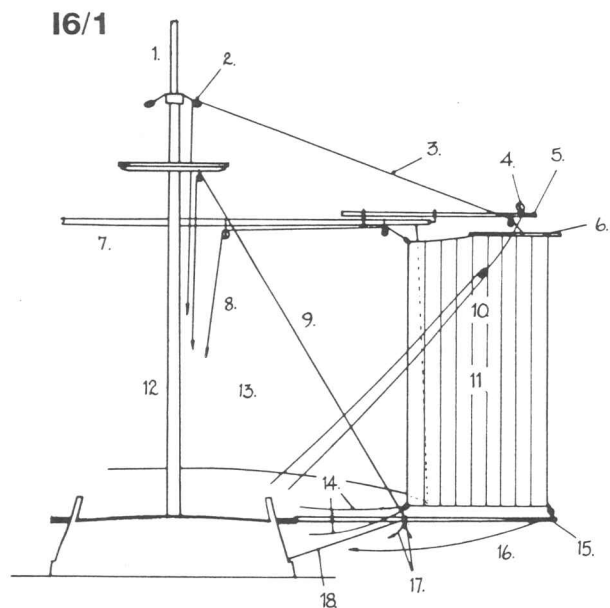
# I Sails

## 16 MAIN LOWER AND TOPMAST STUDDING SAILS (no scale)

**Note** Fore mast rigged in the same way

### 16/1 The rigging of the lower studding sail

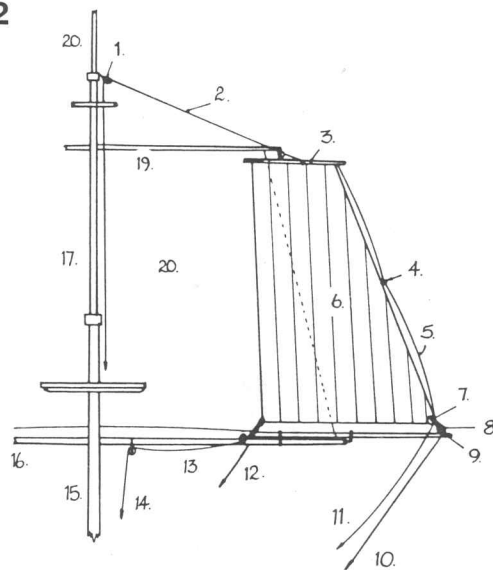
1. Main topmast
2. Outer halyard block
3. Outer halyard
4. Topmast stunsail sheet block
5. Main stunsail boom
6. Main stunsail yard
7. Main yard
8. Inner halyard
9. Topping lift
10. Brace
11. Main lower stunsail
12. Main mast
13. Main course
14. Tacks (one leading forward, one aft)
15. Lower stunsail boom
16. Sheet
17. Guys (one leading forward, one aft)
18. Guy



### 16/2 The rigging of the topmast studding sail

1. Halyard block
2. Halyard
3. Topmast stunsail yard
4. Thimble for downhauler
5. Downhauler
6. Topmast stunsail
7. Downhauler block
8. Sheet block
9. Main stunsail boom
10. Topmast stunsail sheet
11. Fall of the downhauler
12. Tack (leading forward)
13. Sheet
14. Fall of the sheet
15. Main mast
16. Main yard
17. Main topmast
18. Main topsail
19. Main topsail yard
20. Main topgallant mast

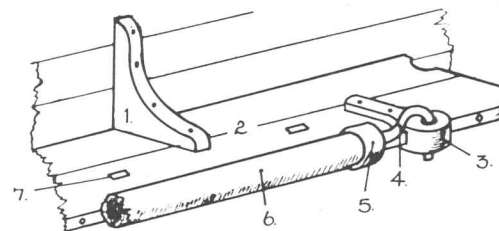
### 16/2

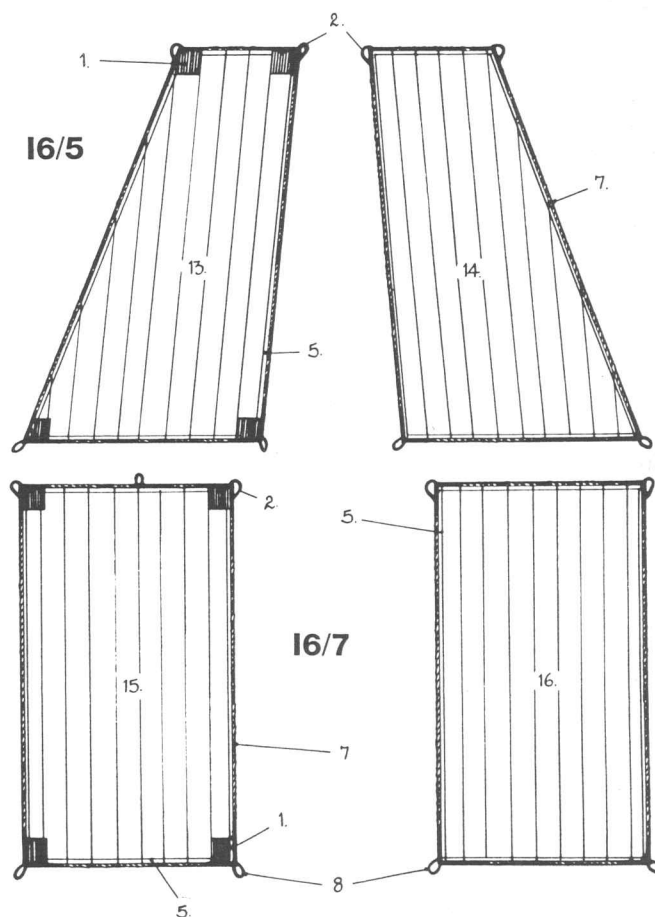
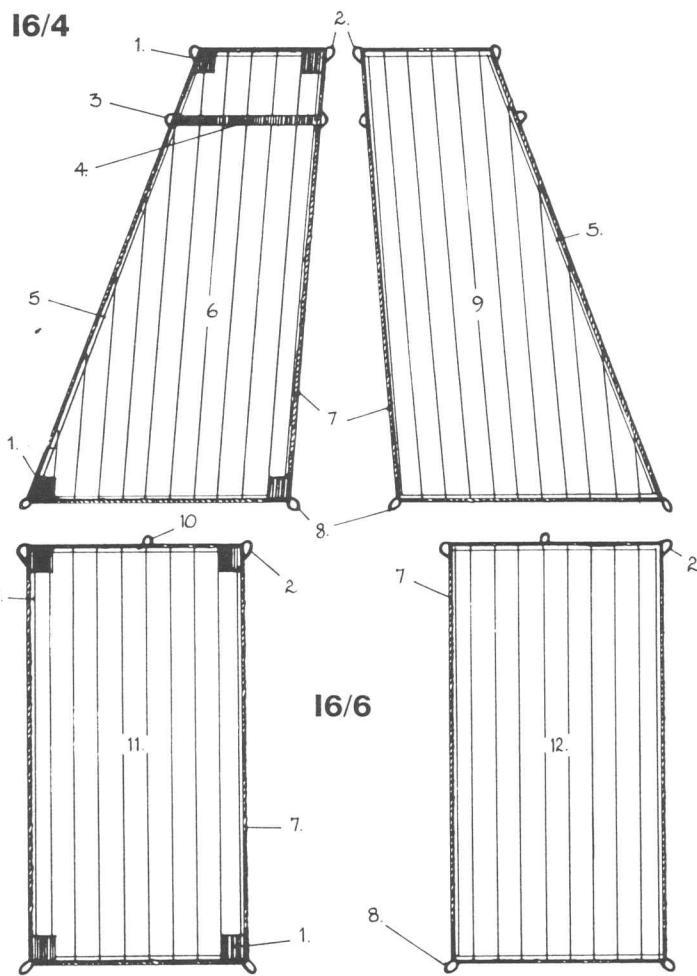


### 16/3 The fitting of the lower studding sail boom

1. Channel knee
2. Main channel
3. Eyeplate
4. Hook or gooseneck
5. Ferrule
6. Boom
7. Chain plate slot

### 16/3





**I6/4 Main topmast studding sail**

**I6/5 Fore topmast studding sail**

**I6/6 Main lower studding sail**

**I6/7 Fore lower studding sail**

1. Lining
2. Earrings
3. Reef cringle
4. Reef band lining
5. Seam
6. Fore side of main topmast stunsail
7. Bolt ropes
8. Clews
9. After side of main topmast stunsail
10. Halyard cringle
11. Fore side of main lower stunsail
12. After side of main lower stunsail
13. Fore side of fore topmast stunsail
14. After side of fore topmast stunsail
15. Fore side of fore lower stunsail
16. After side of fore lower stunsail

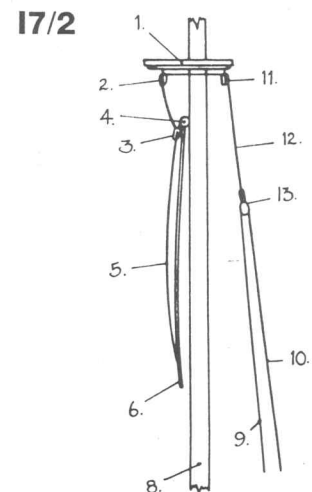
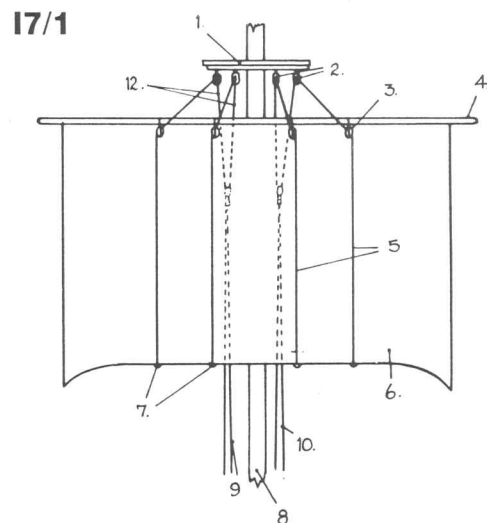
**I7 BUNTLINES (no scale)**

The fore course was rigged in the same manner whereas all of the topsails and topgallant sails were rigged with only two buntlines instead of four. The blocks for these sails were rigged on pendants fastened to their respective mastheads.

**I7/1 View from forward**

**I7/2 View from side**

1. Main top
2. Single sheave blocks
3. Buntline blocks
4. Main yard
5. Buntlines
6. Main course
7. Buntline cringles
8. Main mast
9. Fall of the buntline tackle
10. Standing part of the buntline tackle
11. Single sheave block
12. Fall of the buntline
13. Double block



# I Sails

## 18 INBOARD FITTINGS ASSOCIATED WITH THE RIGGING (1/192, except details 1/48 scale)

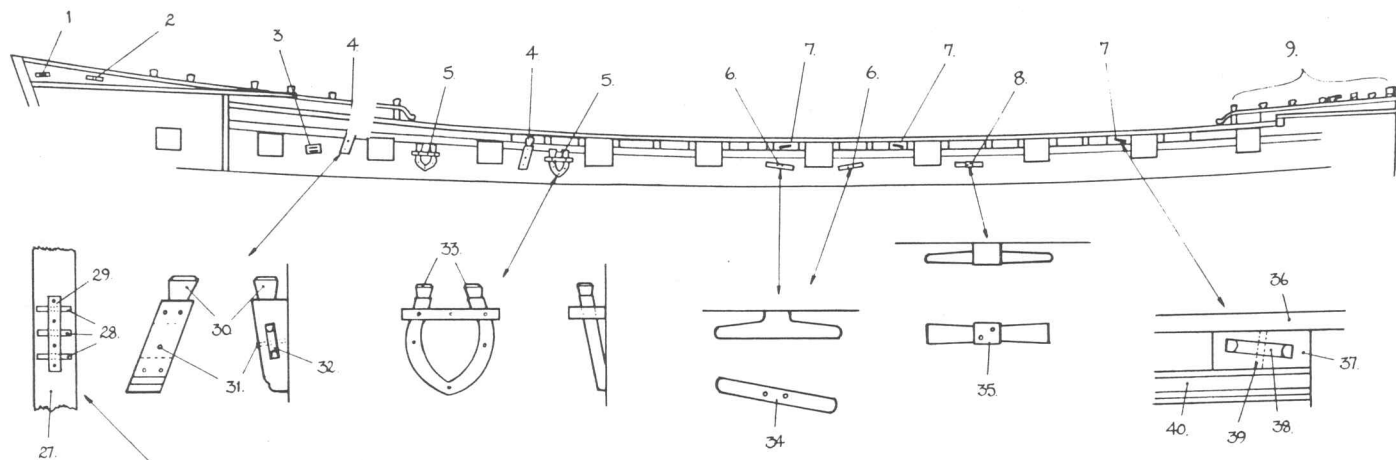
### 18/1 Inboard elevation of bulwarks

#### 18/2 Plan

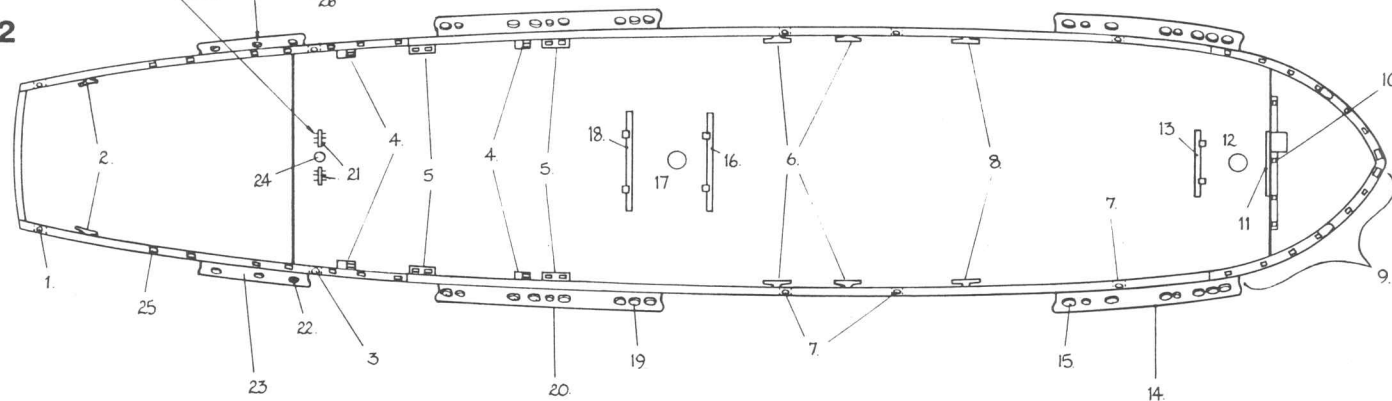
1. Sheave for main brace
2. Cleat for main brace
3. Sheave block (double for main sheet)
4. Kevel blocks
5. Kevel cleats
6. Cleats (could be of iron)
7. Sheave blocks (single for fore sheet)
8. Timber cleat
9. Timberheads (generally 'finger & thumb' type)
10. Timberheads on forecastle breast rail (square form)
11. Fore topsail sheet bits
12. Fore mast
13. Fore jeer bits
14. Fore channel
15. Lower shroud deadeyes
16. Main topsail sheet bits
17. Main mast

18. Main jeer bits
19. Lower shroud deadeyes
20. Main channel
21. Pin racks, attached to the mizzen mast
22. Lower shroud deadeyes
23. Mizzen channel
24. Mizzen mast
25. Timberheads (generally square form)
26. Pin rail, fastened to the lower mizzen mast shrouds
27. Mizzen mast
28. Belaying pins
29. Pin rack, attached to mast
30. Timberhead of kevel block
31. Sheave pin
32. Sheave
33. Timberheads of kevel cleat
34. Cleat (detail)
35. Cleat, timber form (detail)
36. Planksheer rail
37. Sheave block
38. Sheave
39. Sheave pin
40. Sheer rail

### 18/1



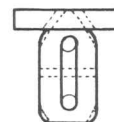
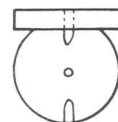
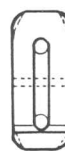
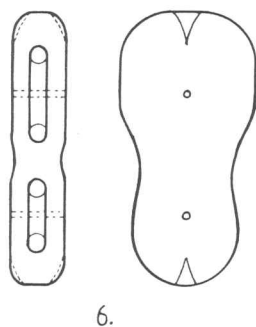
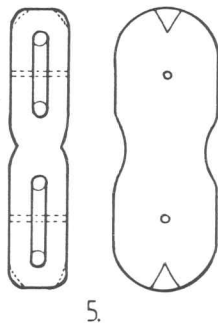
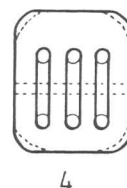
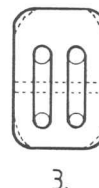
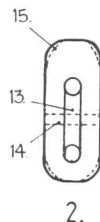
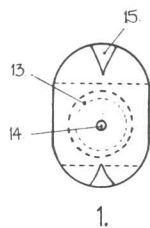
### 18/2



**19 VARIETIES OF BLOCK (1/16 scale)**

1. Common single-sheaved block, side elevation
2. Common single-sheaved block, end elevation
3. Double-sheaved block (type used for the jeers)
4. Treble-sheaved block (type used for the catblock)
5. Sister block
6. Long tackle block
7. Sheet block
8. Spritsail sheet block
9. Shoulder block (type used for clewlines)
10. Deadeye with concave groove for shrouds
11. Deadeye with flat groove for chain plates
12. Shoe block (used for buntline falls)
13. Lignum vitae sheave
14. Sheave pin
15. Score for pendant rope

19

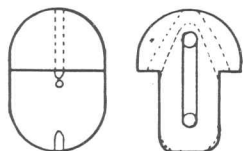


7.

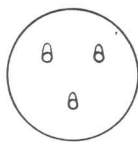
8.

5.

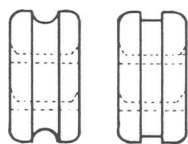
6.



9.



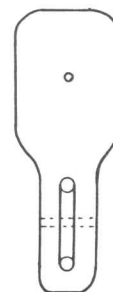
10.



11.



12.



# J Boats

## J1 THE PINNACE, c1715 (1/64 scale)

Length 27ft  
Breadth 6ft  
Depth 2ft 5in

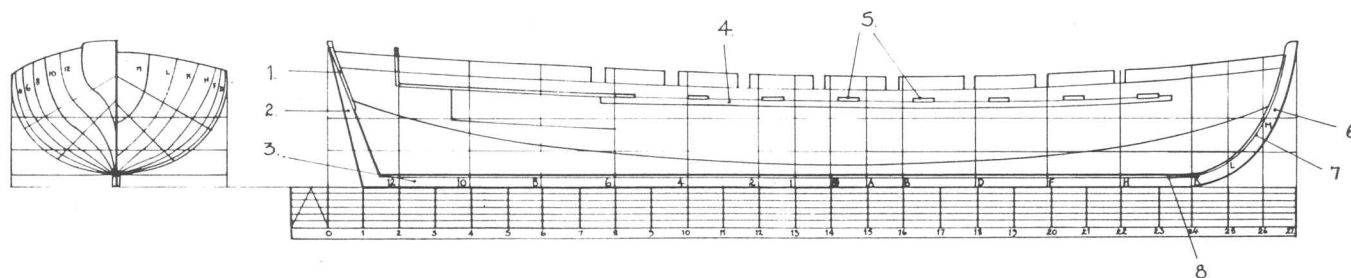
### J1/1 Lines and arrangement

### J1/2 Plan and waterlines

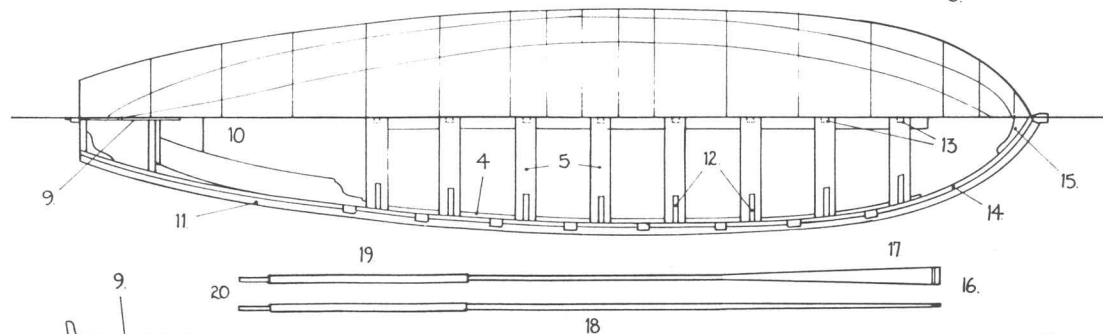
### J1/3 Elevation and section

1. Transom
2. Stern post
3. Keel
4. Stringer supporting the thwarts
5. Thwarts
6. Stem post
7. Rabbet of the stem post
8. Rabbet of the keel
9. Tiller
10. Stern sheets
11. Sheer strake
12. Knees
13. Pillars supporting the thwarts
14. Gunwale
15. Breast hook
16. Oar, 15ft 3in
17. Oar blade
18. Shaft
19. Loom
20. Handle
21. Frame
22. Bottom boards
23. Keelson
24. Stringer

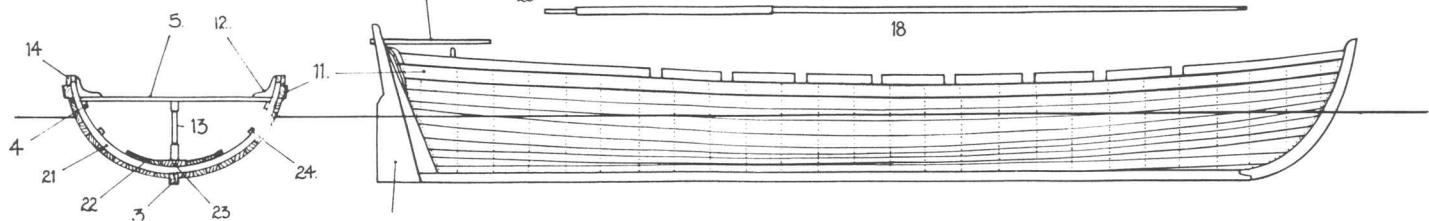
### J1/1



### J1/2



### J1/3



**J2 YAWL, c1715 (1/64 scale)**  
**Length 17ft**  
**Breadth 5ft**  
**Depth 2ft**

**J2/1 Lines and arrangement**

**J2/2 Plan and waterlines**

**J2/3 Elevation and section**

**J2/4 Bow view showing anchor transportation**

1. Gunwale
2. Stringer supporting the thwarts
3. Thwarts
4. Transom
5. Stem post
6. Stern post
7. Rabbet of the stem post
8. Keel
9. Rabbet of the keel
10. Trunk
11. Pawl ring
12. Pawl
13. Sternsheets
14. Windlass
15. Windlass retaining block
16. Knees
17. Gunwale
18. Thwarts

19. 14ft oar
20. Oar blade
21. Shaft
22. Loom
23. Handle
24. Stringers
25. Tiller
26. Sheer strake
27. Handspike for the windlass
28. Keel
29. Keelson
30. Bottom boards
31. Windlass cable entering trunk
32. After anchor painter
33. Anchor cable
34. Cable from windlass
35. Fore anchor painter
36. Strop around anchor palms
37. Crown of the anchor

