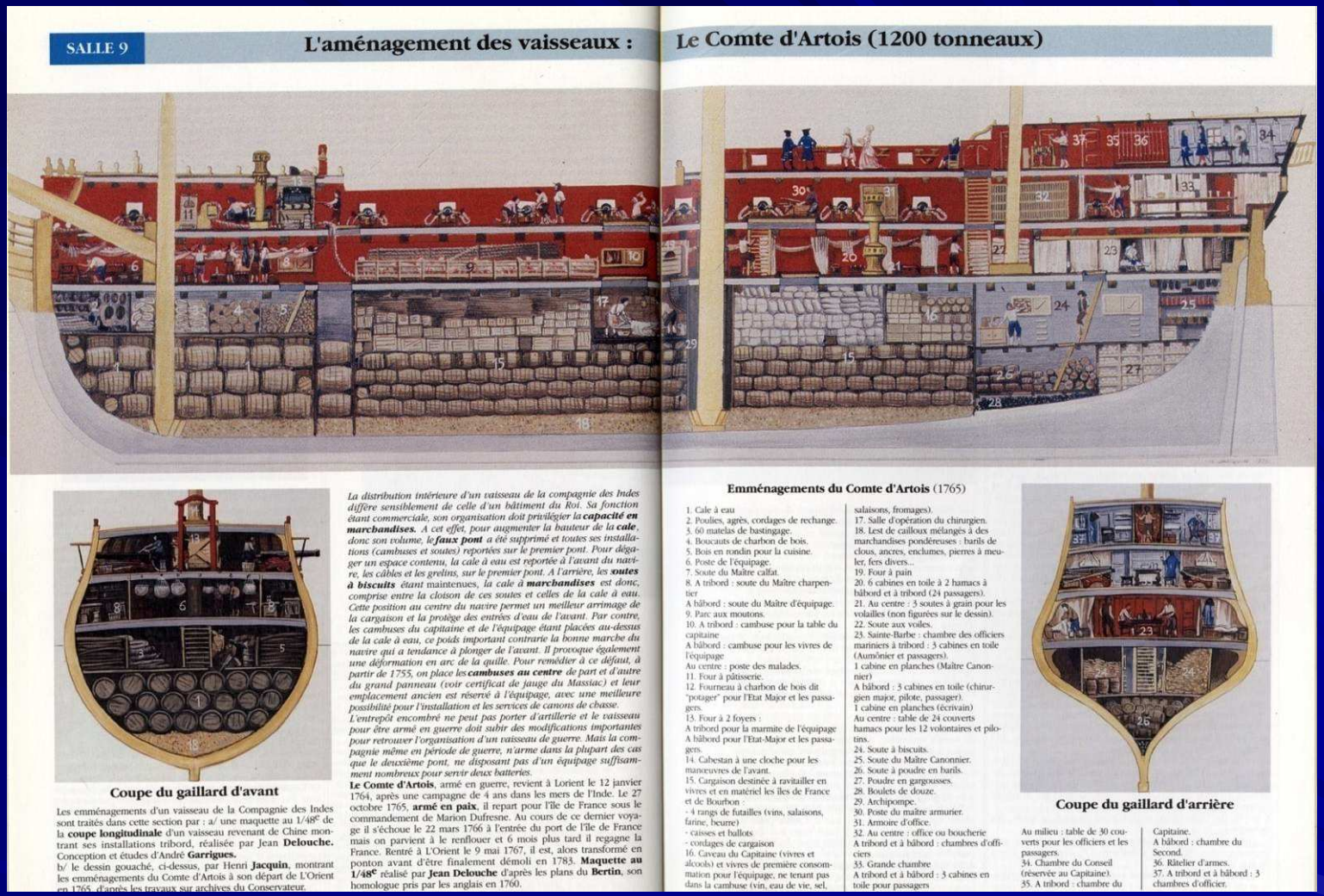

- This cutaway painting of the French East Indiaman *Le Comte d'Artois* of 1200 tons shows the interior spaces of the ship as she prepared for a journey to the East in 1765.
- A typical voyage took six months to reach India – hence the huge quantities of supplies and trade goods stored below deck. Ships would often remain in the Orient for up to two years trading from one place to another before they embarked for home.

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Photo 31: This chest of saucers in position since 21 January 1761 under four metres of sand

- Chinese porcelain recovered from the wreck of the British East Indiaman *Griffin*, which sank with a cargo of silks, tea, and porcelain in the Sulu Sea (the Philippines) in 1761. Her valuable cargo was similar to that carried by the *Duc de Duras* on her four return trips from the East.

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- Antoine Groignard (1727-1798), builder of the *Duc de Duras*.

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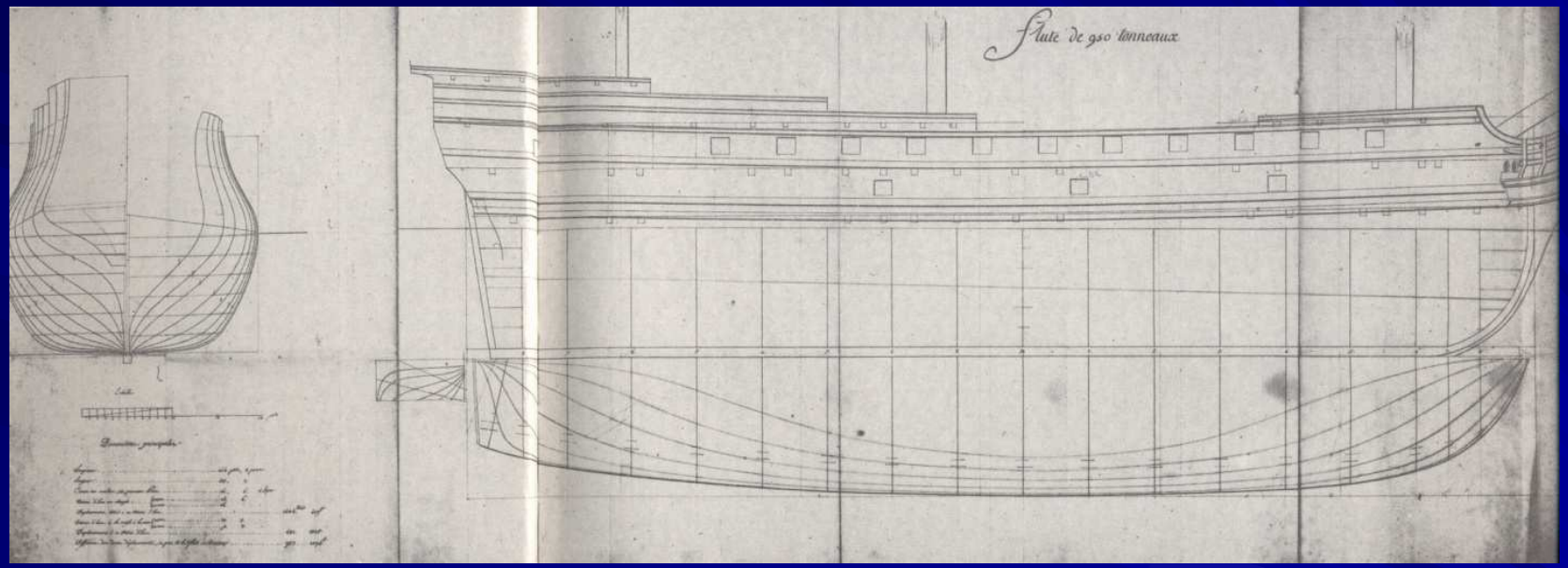

- The building plan or draught of the 900-ton *Massiac* of 1758. Also designed by Groignard, she was very similar to the *Duc de Duras*.

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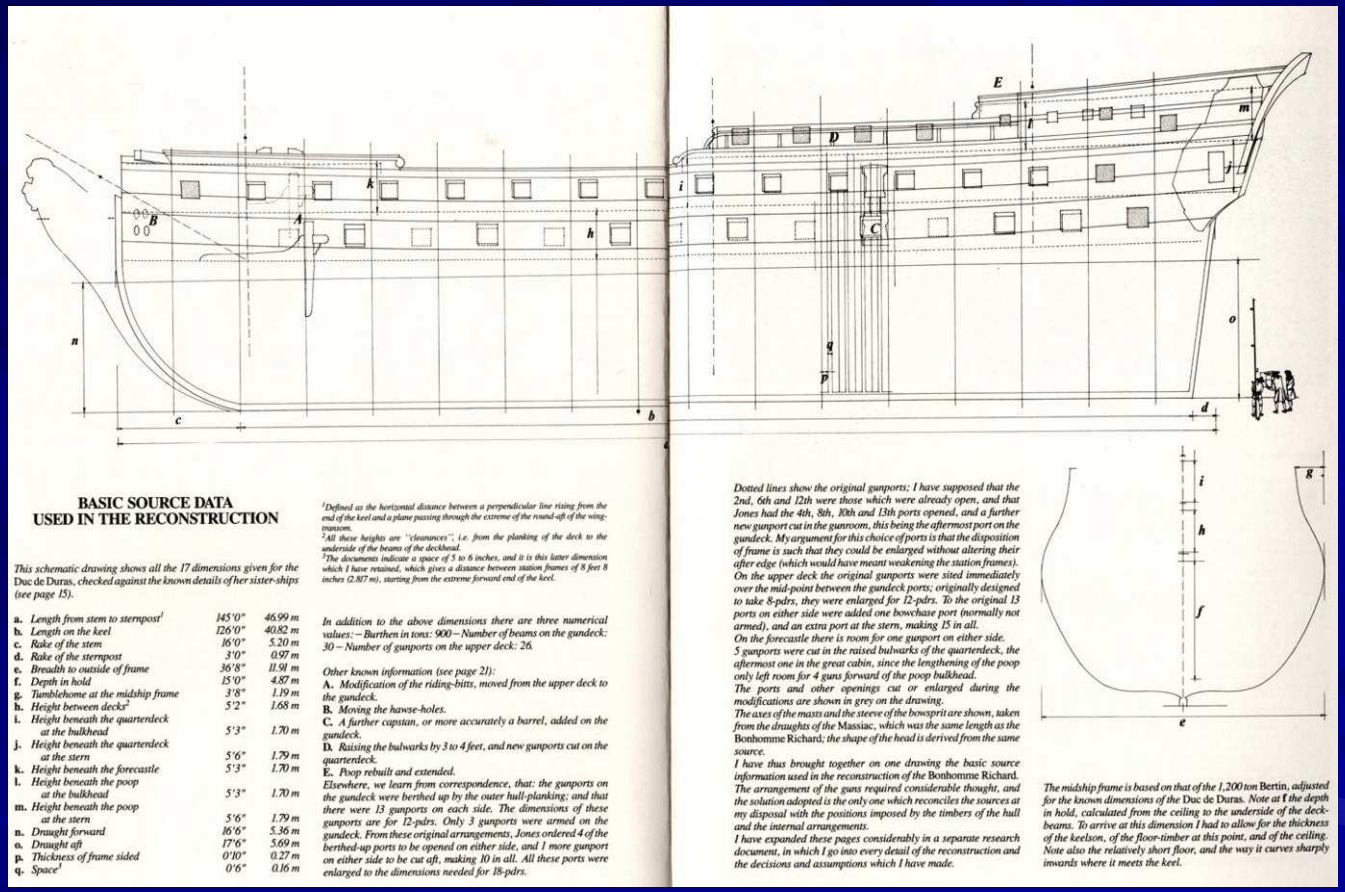

BASIC SOURCE DATA USED IN THE RECONSTRUCTION

This schematic drawing shows all the 17 dimensions given for the Duc de Duras, checked against the known details of her sister-ships (see page 15).

a.	*Length from stem to sternpost*[1]	145'0"	46.99 m
b.	*Length on the keel*	126'0"	40.82 m
c.	*Rake of the stem*	16'0"	5.20 m
d.	*Rake of the sternpost*	3'0"	0.97 m
e.	*Breadth to outside of frame*	36'8"	11.91 m
f.	*Depth in hold*	15'0"	4.87 m
g.	*Tumblehome at the midship frame*	3'8"	1.19 m
h.	*Height between decks*[2]	5'2"	1.68 m
i.	*Height beneath the quarterdeck at the bulkhead*	5'3"	1.70 m
j.	*Height beneath the quarterdeck at the stern*	5'6"	1.79 m
k.	*Height beneath the forecastle*	5'3"	1.70 m
l.	*Height beneath the poop at the bulkhead*	5'3"	1.70 m
m.	*Height beneath the poop at the stern*	5'6"	1.79 m
n.	*Draught forward*	16'6"	5.36 m
o.	*Draught aft*	17'6"	5.69 m
p.	*Thickness of frame sided*	0'10"	0.27 m
q.	*Space*[3]	0'6"	0.16 m

[1]*Defined as the horizontal distance between a perpendicular line rising from the end of the keel and a plane passing through the extreme of the round-aft of the wing-transom.*
[2]*All these heights are "clearances", i.e. from the planking of the deck to the underside of the beams of the deckhead.*
[3]*The documents indicate a space of 5 to 6 inches, and it is this latter dimension which I have retained, which gives a distance between station frames of 8 feet 8 inches (2.827 m), starting from the extreme forward end of the keel.*

In addition to the above dimensions there are three numerical values: – Burthen in tons: 900 – Number of beams on the gundeck: 30 – Number of gunports on the upper deck: 26.

Other known information (see page 21):
A. *Modification of the riding-bitts, moved from the upper deck to the gundeck.*
B. *Moving the hawse-holes.*
C. *A further capstan, or more accurately a barrel, added on the gundeck.*
D. *Raising the bulwarks by 3 to 4 feet, and new gunports cut on the quarterdeck.*
E. *Poop rebuilt and extended.*
Elsewhere, we learn from correspondence, that: the gunports on the gundeck were berthed up by the outer hull-planking; and that there were 13 gunports on each side. The dimensions of these gunports are for 12-pdrs. Only 3 gunports were armed on the gundeck. From these original arrangements, Jones ordered 4 of the berthed-up ports to be opened on either side, and 1 more gunport on either side to be cut aft, making 10 in all. All these ports were enlarged to the dimensions needed for 18-pdrs.

Dotted lines show the original gunports; I have supposed that the 2nd, 6th and 12th were those which were already open, and that Jones had the 4th, 8th, 10th and 13th ports opened, and a further new gunport cut in the gunroom, this being the aftermost port on the gundeck. My argument for this choice of ports is that the disposition of frame is such that they could be enlarged without altering their after edge (which would have meant weakening the station frames). On the upper deck the original gunports were sited immediately over the mid-point between the gundeck ports; originally designed to take 8-pdrs, they were enlarged for 12-pdrs. To the original 13 ports on either side were added one bowchase port (normally not armed), and an extra port at the stern, making 15 in all.
On the forecastle there is room for one gunport on either side.
5 gunports were cut in the raised bulwarks of the quarterdeck, the aftermost one in the great cabin, since the lengthening of the poop only left room for 4 guns forward of the poop bulkhead.
The ports and other openings cut or enlarged during the modifications are shown in grey on the drawing.
The axes of the masts and the steeve of the bowsprit are shown, taken from the draughts of the Massiac, *which was the same length as the* Bonhomme Richard; *the shape of the head is derived from the same source.*
I have thus brought together on one drawing the basic source information used in the reconstruction of the Bonhomme Richard.
The arrangement of the guns required considerable thought, and the solution adopted is the only one which reconciles the sources at my disposal with the positions imposed by the timbers of the hull and the internal arrangements.
I have expanded these pages considerably in a separate research document, in which I go into every detail of the reconstruction and the decisions and assumptions which I have made.

The midship frame is based on that of the 1,200 ton Bertin, *adjusted for the known dimensions of the* Duc de Duras. *Note at* f *the depth in hold, calculated from the ceiling to the underside of the deck-beams. To arrive at this dimension I had to allow for the thickness of the keelson, of the floor-timber at this point, and of the ceiling. Note also the relatively short floor, and the way it curves sharply inwards where it meets the keel.*

- Jean Boudriot's re-constructed plan of the *Duc de Duras* of 1765.

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a.	*Length from stem to sternpost*[1]	*145'0"*	*46.99 m*
b.	*Length on the keel*	*126'0"*	*40.82 m*
c.	*Rake of the stem*	*16'0"*	*5.20 m*
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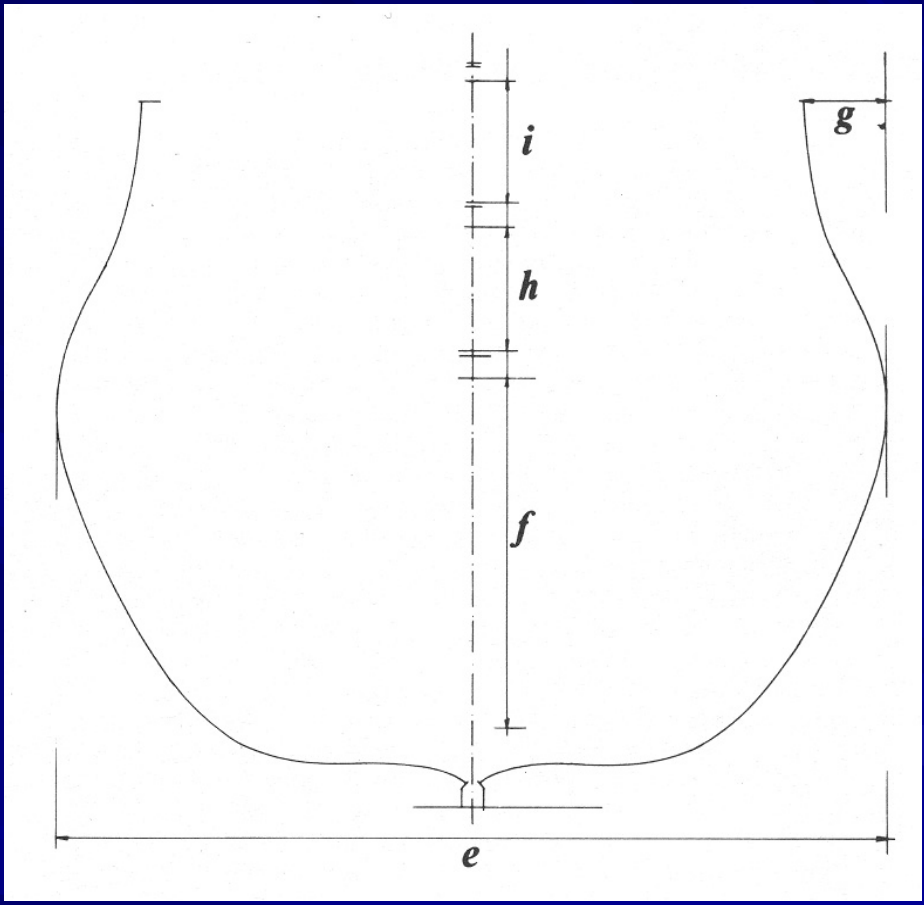

- The midship bend showing the shape of the hull at its widest point. Groignard's ships had a relatively flat floor and a pronounced "tumblehome," with the top of the sides curving inward toward the centerline.

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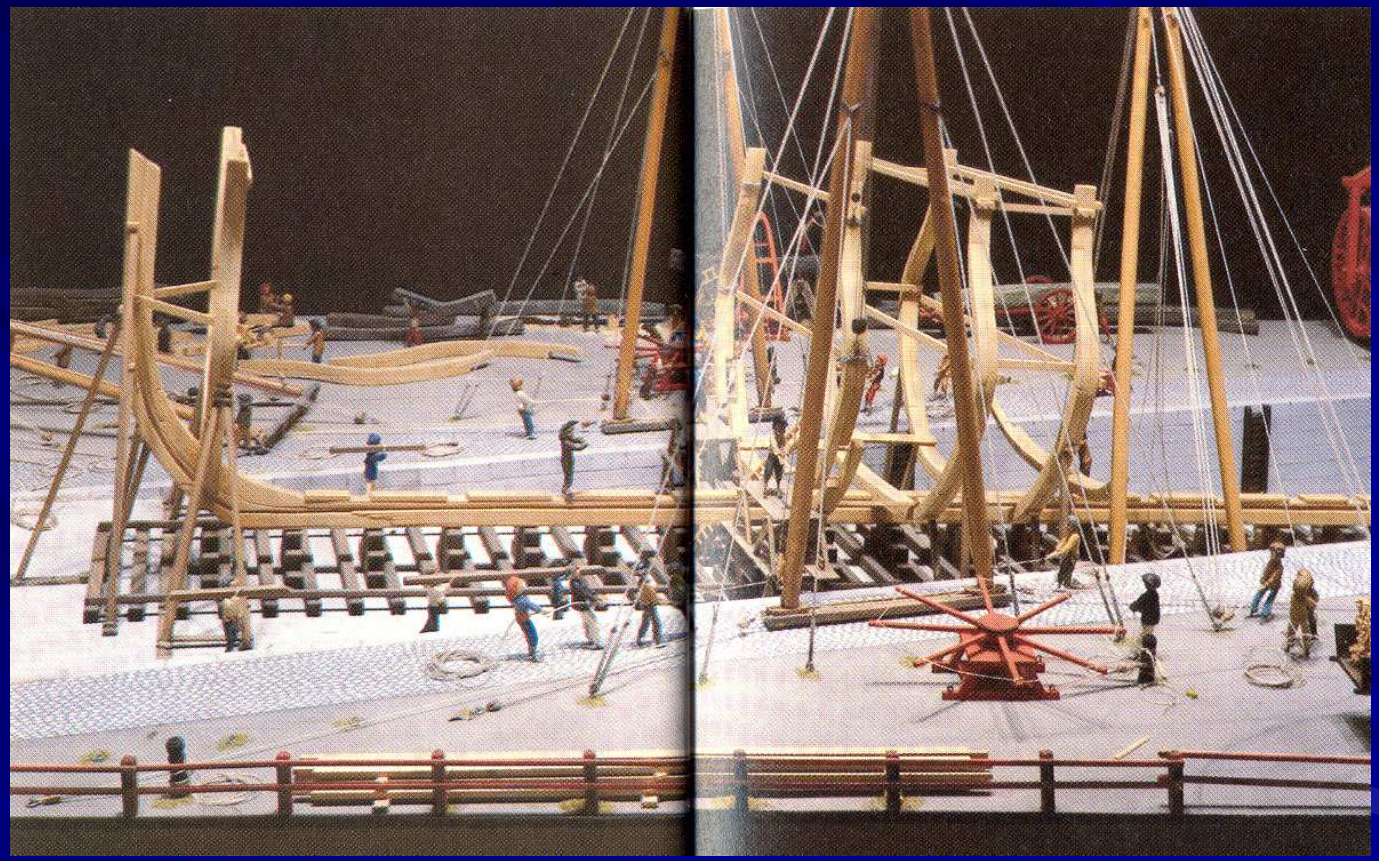

- As with wooden men-of-war, the first steps in the construction of a French East Indiaman were to lay the keel and affix the stem- and stern-posts. The body of the hull was then formed by attaching a series of curved frame timbers to the keel at a 90-degree angle.

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- The Captain's Great Cabin at the aft end of the quarterdeck. At the stern was his meeting room; a pair of transverse bulkheads partitioned the living spaces of the Captain (to starboard) and the 1st Lieutenant (port) from the crewmen manning the ship's double wheel.

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- The Captain's table on East Indiamen – French, Dutch, and English – needed to be large enough to accommodate not only the Captain and his officers, but the highest paying civilian guests as well. Note the six cabins with canvas sides.

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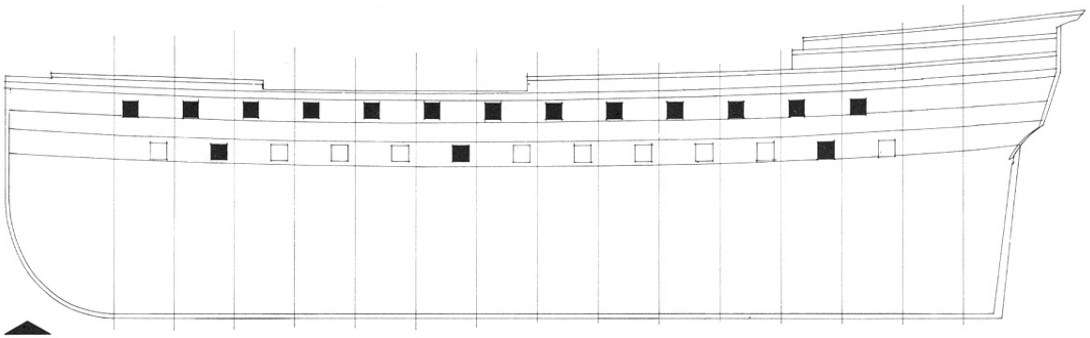
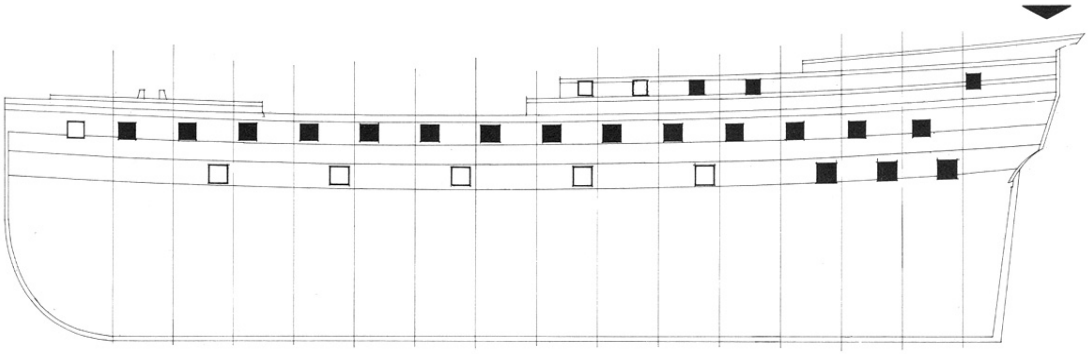


This first drawing shows the original arrangement of the gunports; there are thirteen ports on the lower deck, but ten are covered up by the hull planking on the outside; only those ports shown in black were opened. The thirteen upper deck ports are arranged chequer-board fashion.

This second drawing shows the arrangement of the ports after the modifications had been carried out. On the gundeck a new port was opened at the stern; the other original open ports were retained, and four of the berthed up ports were opened. On the upper deck, a bow-chase port was opened, and another port at the stern. On the quarterdeck five ports were opened. Only the ports shown in black were armed.



- Here we have a very useful pair of diagrams drawn by the renowned French naval historian Jean Boudriot, showing the changes Jones made to the ship's gunport arrangement.

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- The Cook model showing the forecastle. The French habitually fitted a jeer capstan on the fo'c'sle, whereas the British preferred placing it further astern on the upper deck in the waist.

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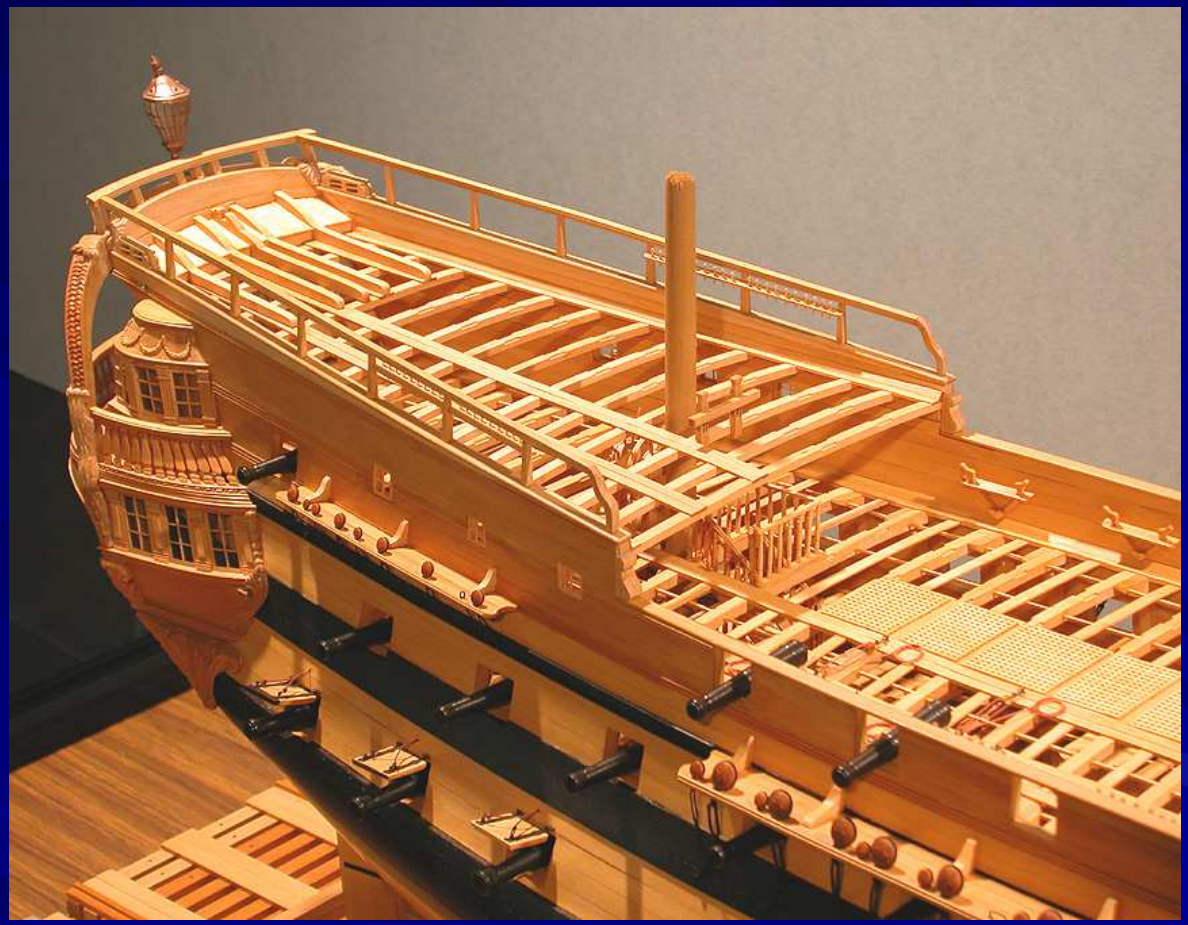

- Here we see the three gunports on the lower deck containing 18-pounders, one or two of which blew up at the start of the engagement with HMS *Serapis*.

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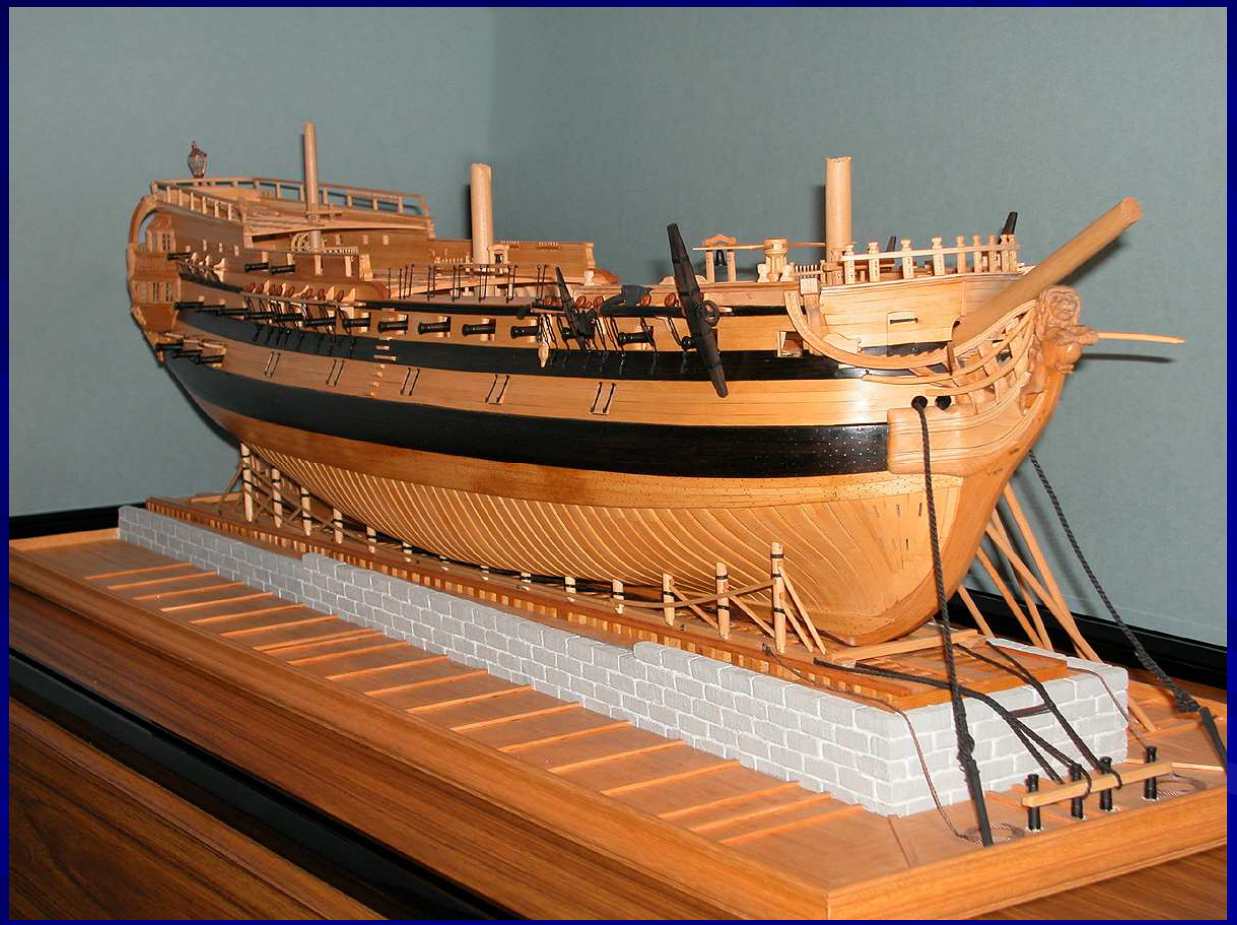

- This view of the Cook model shows the ship as modified by Jones. Along with the new gun arrangement, he added chase ports to the bow and lowered the hawse holes (for the anchor cables) down a deck.

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- In this photo you can clearly see the projecting stern gallery for the Captain's pleasure.

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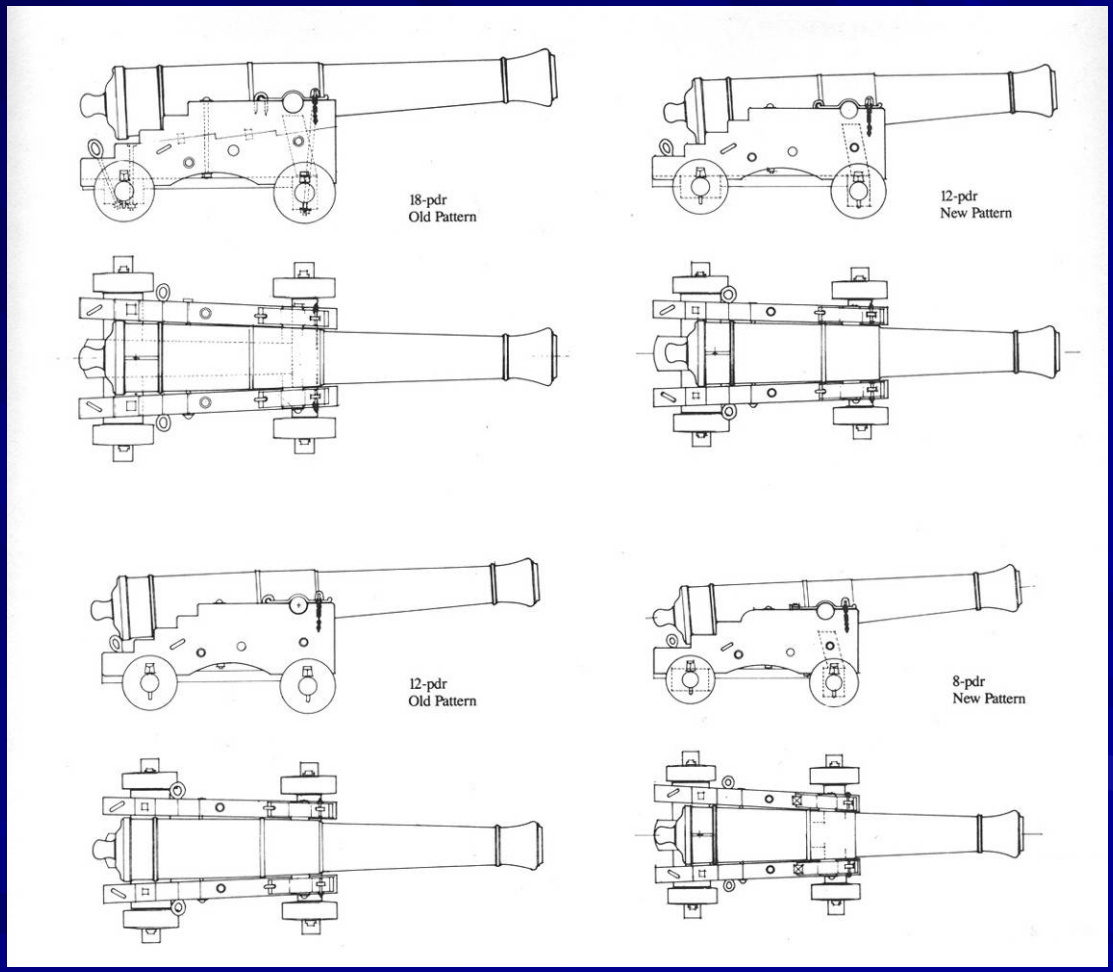

- Guns carried aboard the *Bonhomme Richard* while under Jones' command.

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- Cannon emblazoned with the Arms of the French East India Company and the date 1766.

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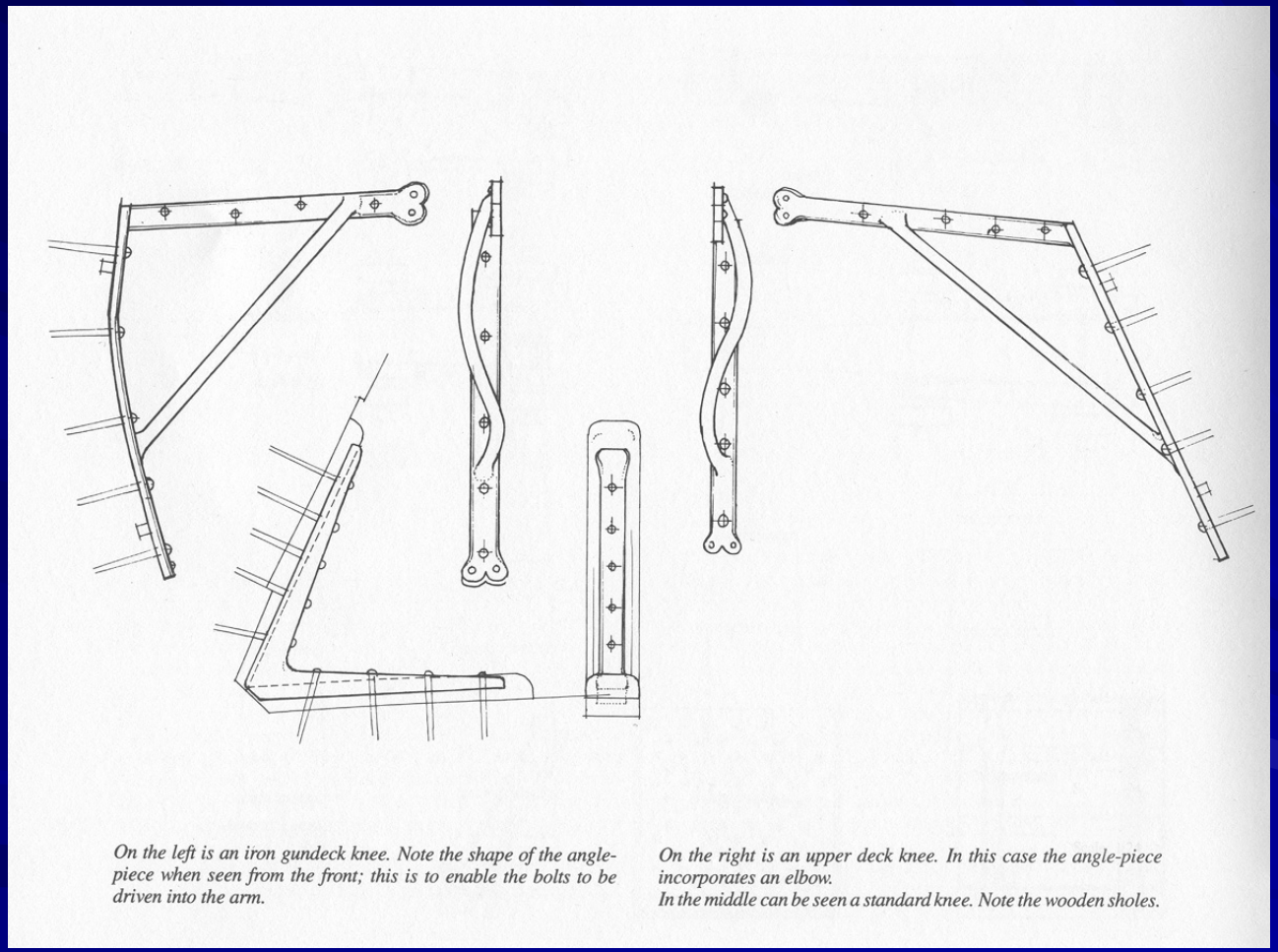

On the left is an iron gundeck knee. Note the shape of the angle-piece when seen from the front; this is to enable the bolts to be driven into the arm.

On the right is an upper deck knee. In this case the angle-piece incorporates an elbow.
In the middle can be seen a standard knee. Note the wooden sholes.

- Some of the iron work thought to have been used in the construction of the *Duc de Duras*.

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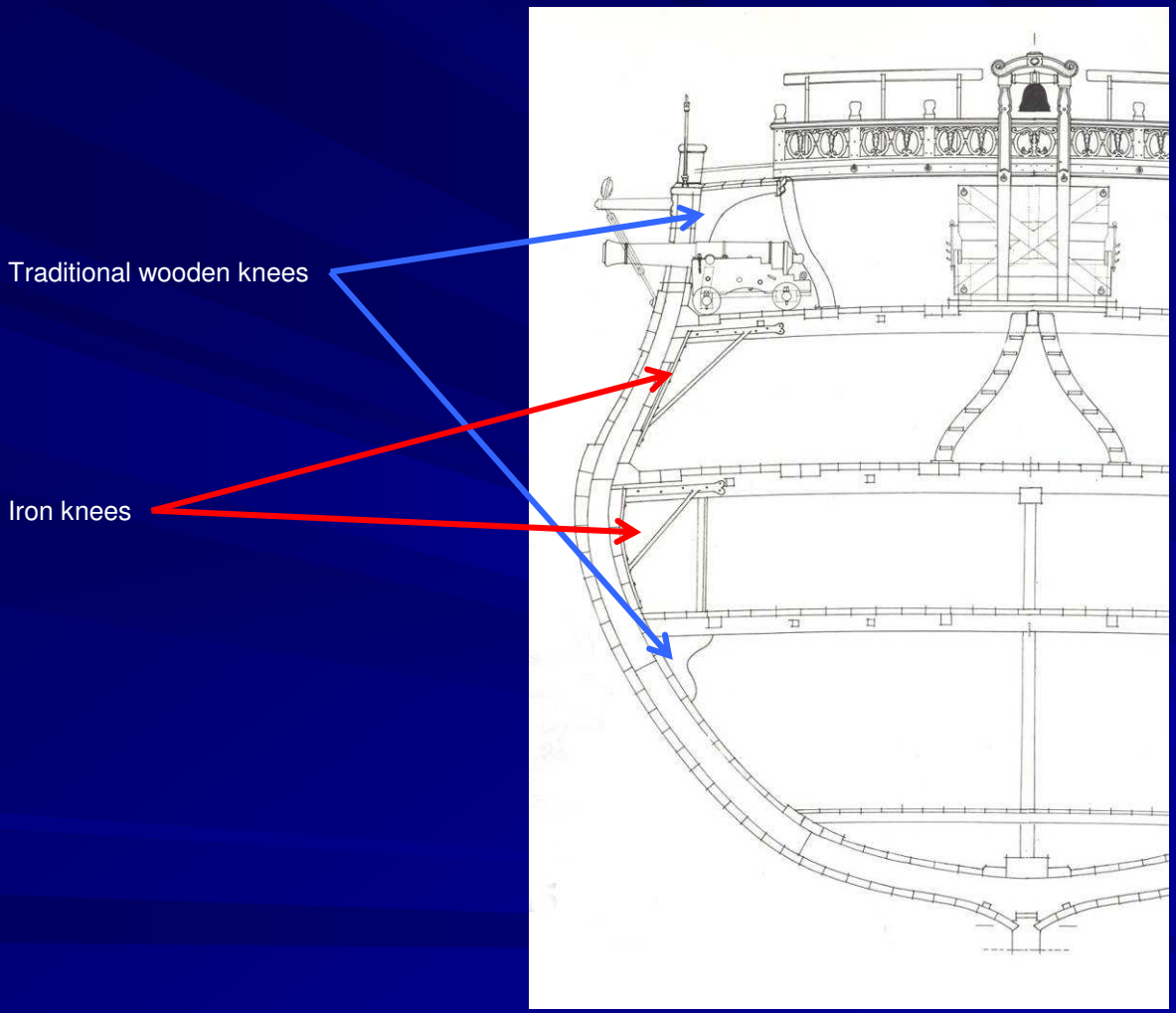

- Section showing both wood and iron knees used to support the ends of the transverse deck beams.

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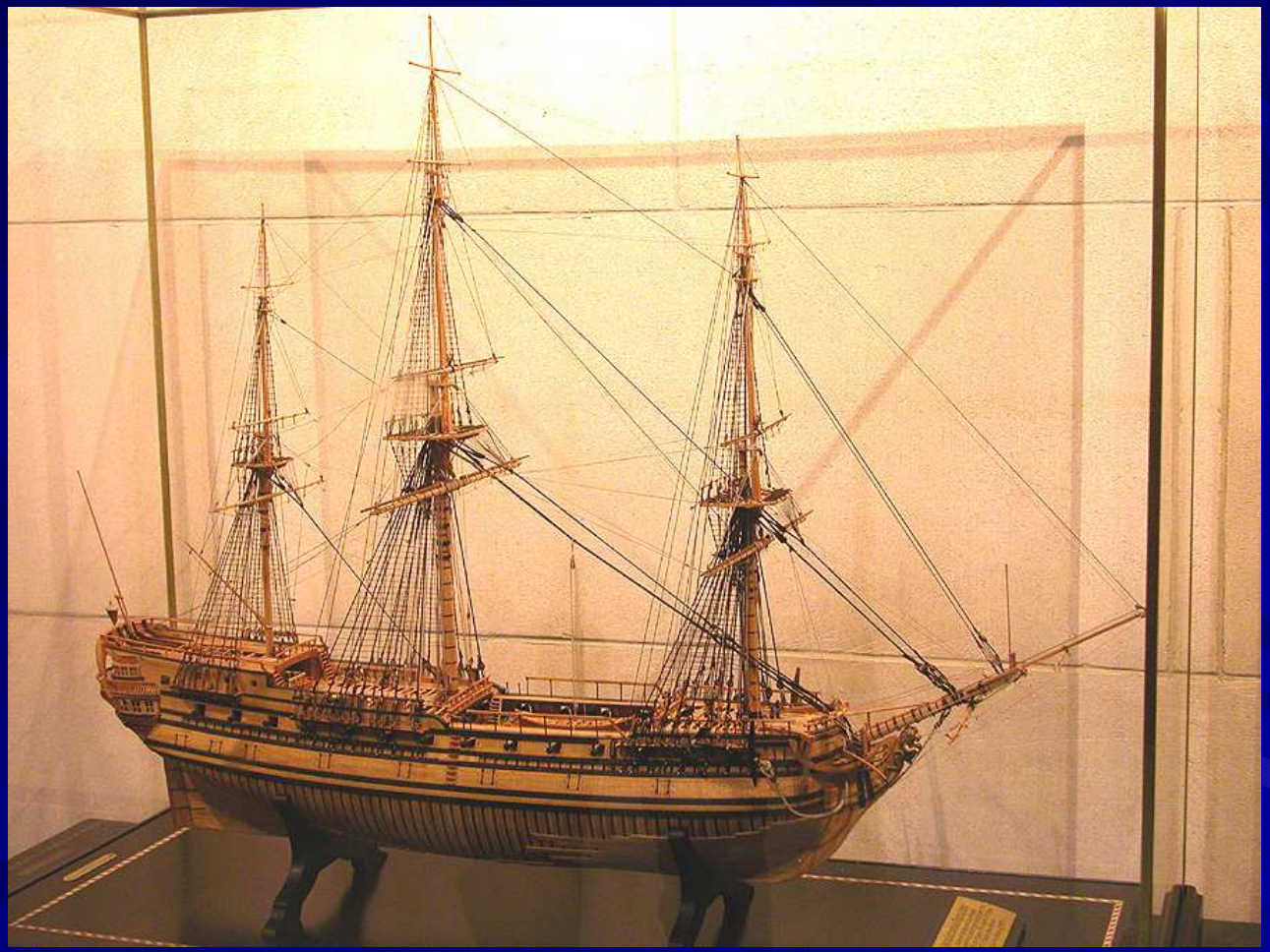

- Alain Benoit's model of the *Bonhomme Richard*.

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- The Cook-Roddis model. The port side depicts the *Duc de Duras* as she appeared when handed to Jones by the French.

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- The model's starboard side shows the *Bonhomme Richard*, incorporating all of Jones' modifications.

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- The ship's vertical hull frames were composed of several smaller timbers joined ("scarphed") together. These were then covered or sheathed both inside and out with strakes of horizontal planking.

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- The same is true at the ship's bow. Like Benoit, Bob Cook chose to leave off the lower hull planking of his model to expose the vertical frame timbers beneath.

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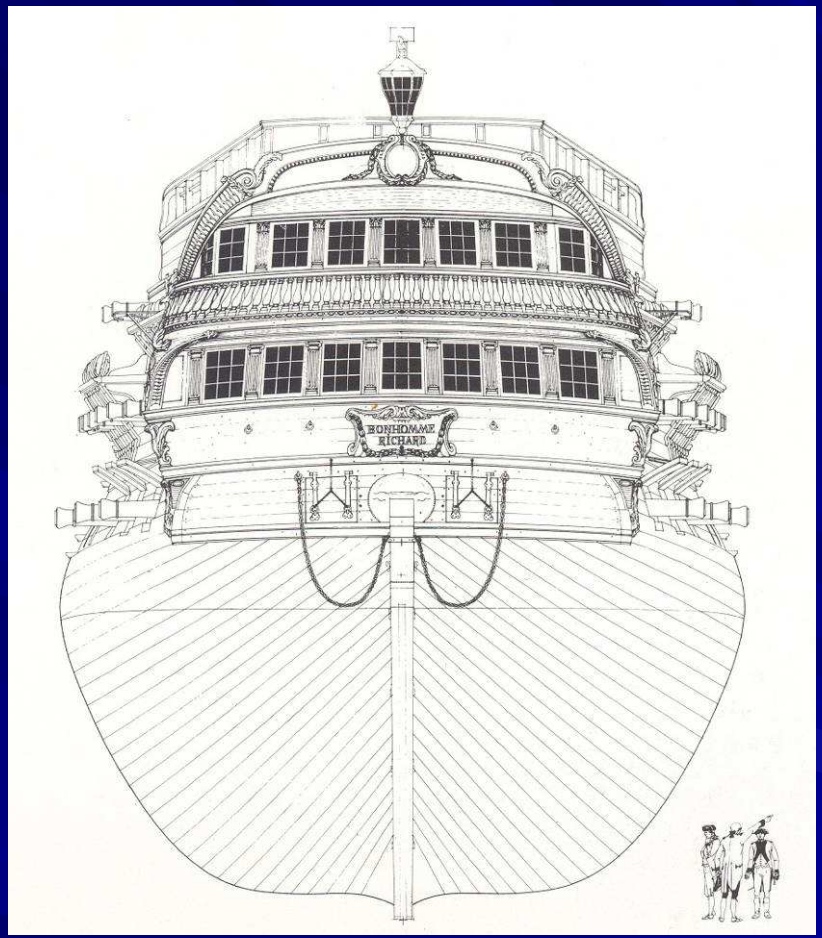

- The ship's noticeable "tumblehome" in effect brought the guns on the upper and quarter decks closer to the centerline, theoretically improving stability. This was later proven to be a false premise, and after the 1790s most Indiamen were built with slab, boxy sides to expand their carrying capacity.

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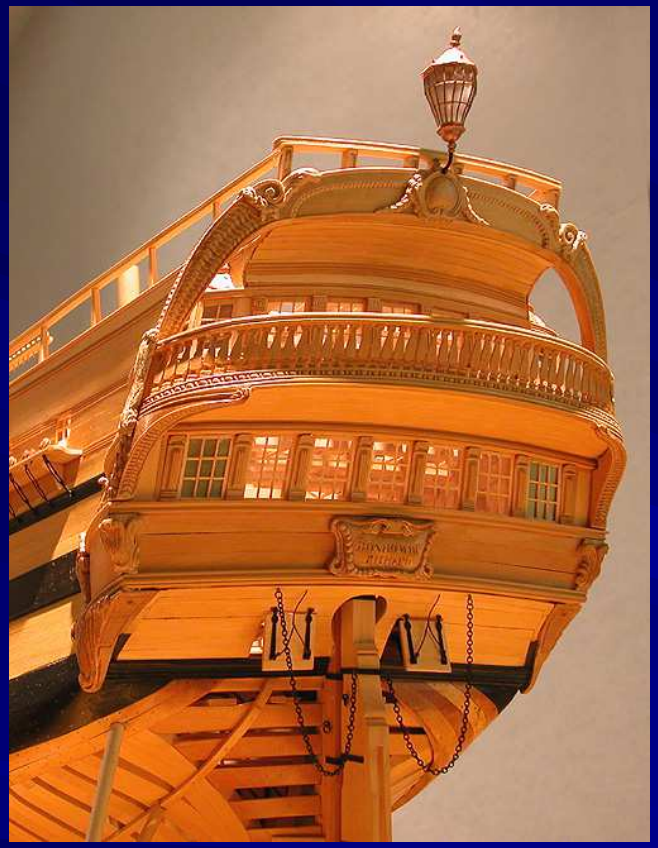

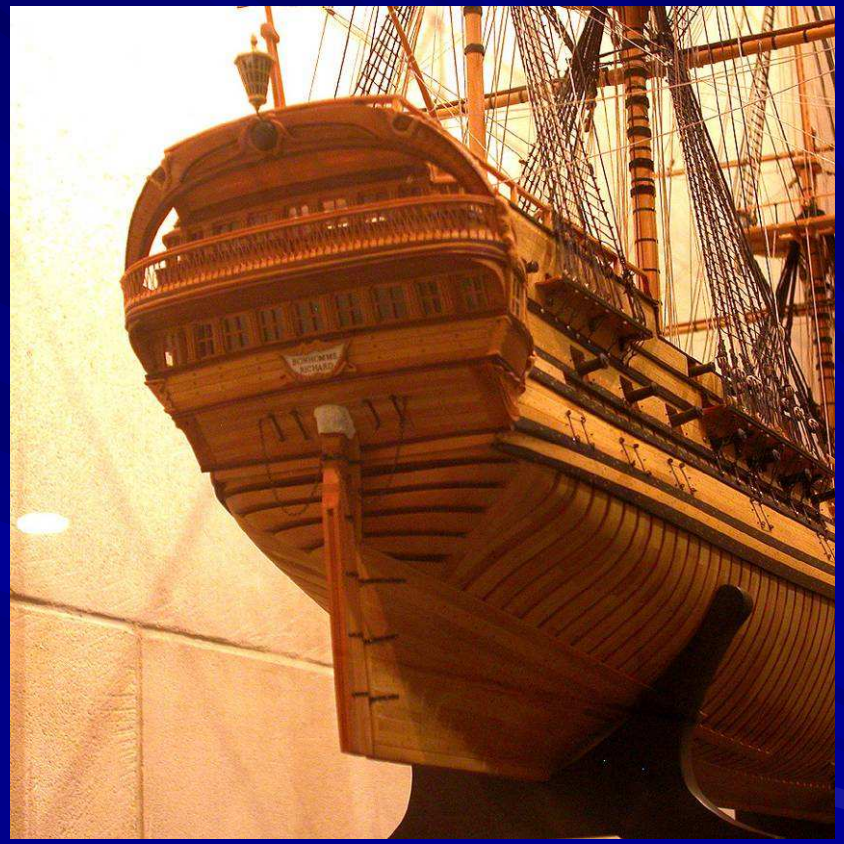

Both the Cook model (left) and the Benoit model (right) show the Captain's open stern gallery at the quarterdeck level and the closed tier of windows ("lights") for the other officers and passengers at the upper deck level.

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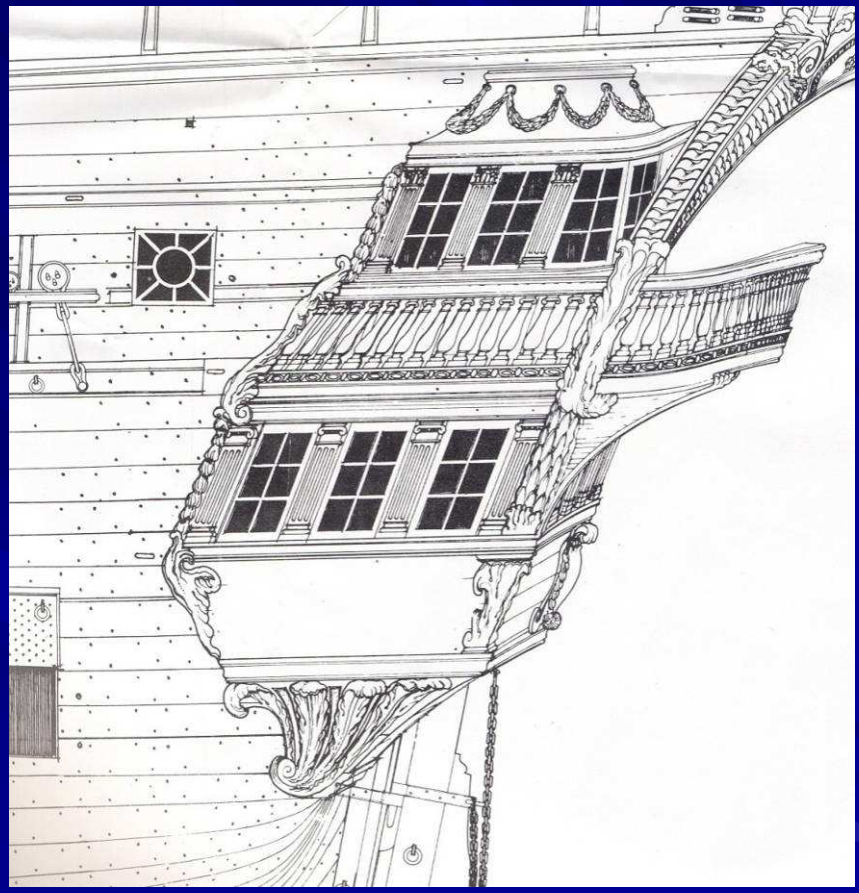

The quarter galleries with their walkways, windows, and ornate decoration were really little more than elaborate privies for the Captain and his officers and guests.