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Sailing in the Ancient Mediterranean

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SAILING IN THE ANCIENT MEDITERRANEAN

CODY LAWRENCE



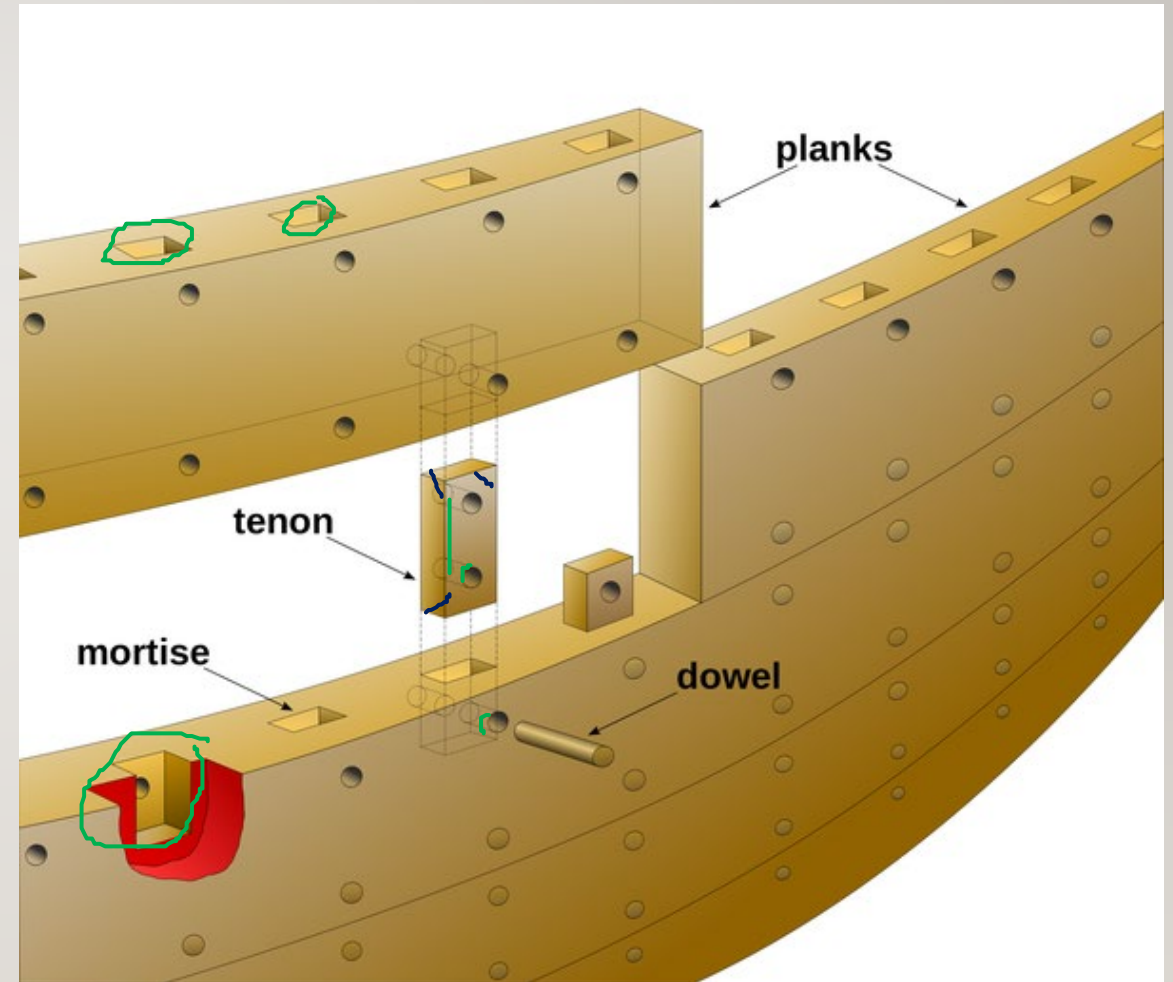
THE MEDITERRANEAN BASIN

- Sailing originated in Egypt prior to the Bronze Age
- Most early boats built from lashed reeds or palm fibers; sailboats originally had a bipod mast and square sail
- These ships were largely river crafts

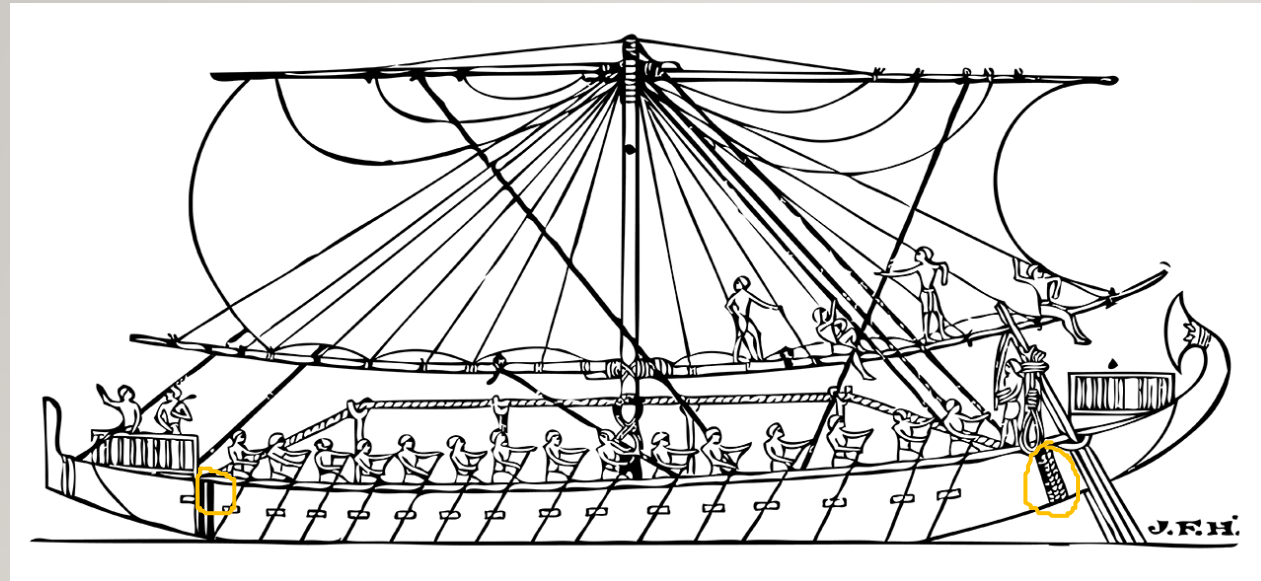


SHIPBUILDING

- Stemming from Egyptian-style reed boats, wooden boats began to be built
- Built “shell-first,” or in Greco-Roman technique
- Mortise and Tenon woodworking skills
 - Evidence for pegged mortise and tenon ships as early as 1300 B.C.
- Ships made “waterproof” via lead sheathing, pitch smears, and plant resins
- Almost all seaworthy ships were equipped with a bilge and a means of removing bilge water

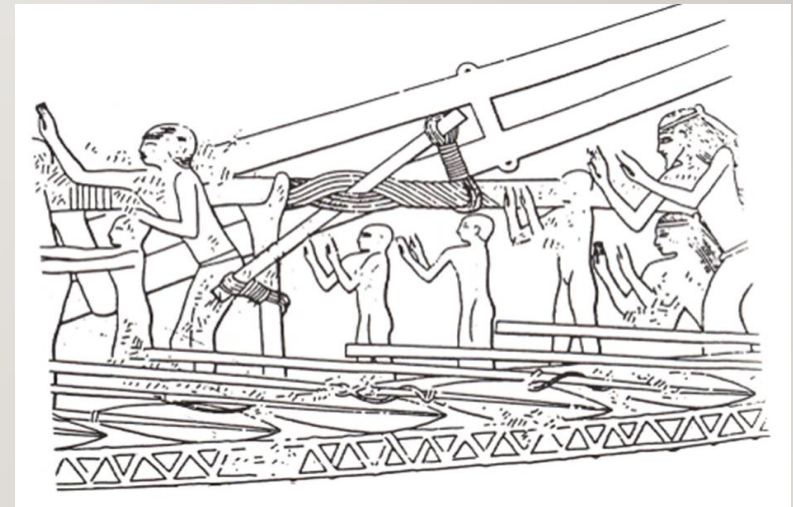


ROPE TRUSS



- Called the ὑποζωματα in Greek, or the *tormentum* in Latin
- As shipbuilding was perfected, these devices were only used during heavy storms, and were fitted and twisted within the hull of a ship
- The ὑποζωματα and *tormentum* were necessary to prevent a ship from hogging when on high waves

- Earliest ancient ships fitted with a rope truss to support the prow and stern
- Two heavy ropes running the length of the ship were twisted and secured with a bar



HOGGING



- *MOL Comfort* hogging before splitting and sinking in 2013
- Wooden ships are much more apt to hog, as wood shrinks overtime on the sea
- Wooden keels and hulls are also more buoyant than prow and stern



COMPARISON OF SHIP TYPES

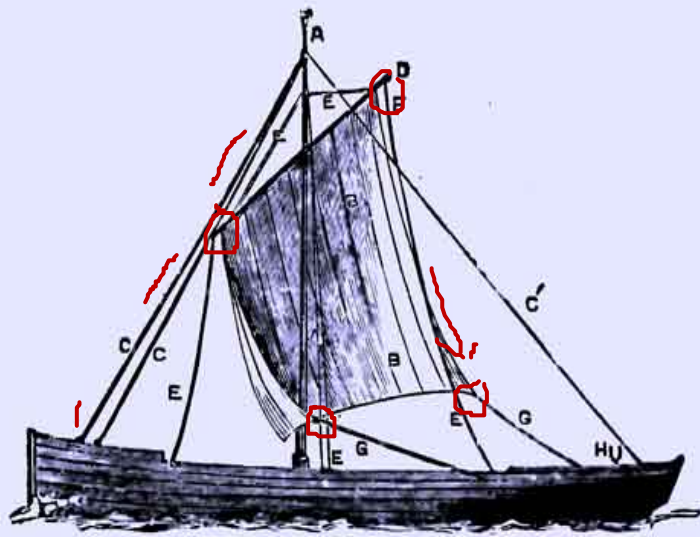


FIG. 1.—RIGGING OF HOMERIC SHIP.

- | | |
|-----------------------------------|--|
| A. Mast (ιστός). | E E. Halliards (κάλτοι, ε 260; cf. β 426). |
| B. Sail (ιστίον). | F F. Braces (ὑπεραι, ε 260). |
| C C. Forestays (πρότονοι, β 425). | G G. Sheets (πόδες, ε 260). |
| C'. Backstay (ἐπίτονος, μ 423). | H. Mast-crutch (ιστοδόκη, A 434). |
| D. Yard (ἐπικριον, ε 254). | |



FIG. 2.—MAST-BOX.

μεσόδημη, mast-box
(drawn on a larger
scale), β 424, cf. τ 37.



Ship diagram illustrating significant lines of a ship:
πρότονοι, ὑπεραι, & πόδες

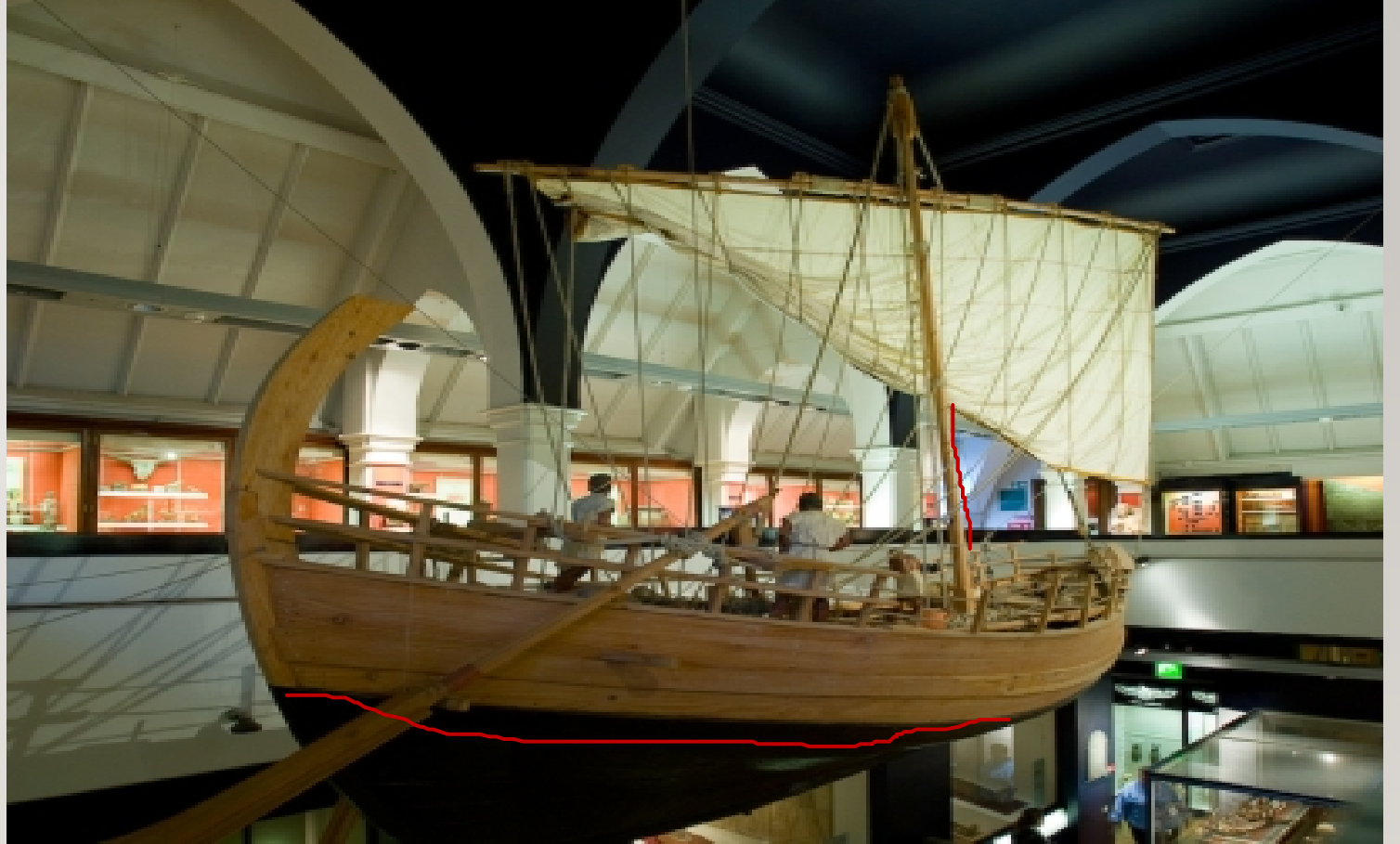
Ancient Phoenician γαυλος, a trading boat fitted with
a brailed sail



COMPARISON OF SHIP TYPES

ὄλκας

- Typical Greek merchantman:
“towed ships”
- Most likely towed by
merchant galleys
- Prevalent in the Classical Age
Mediterranean



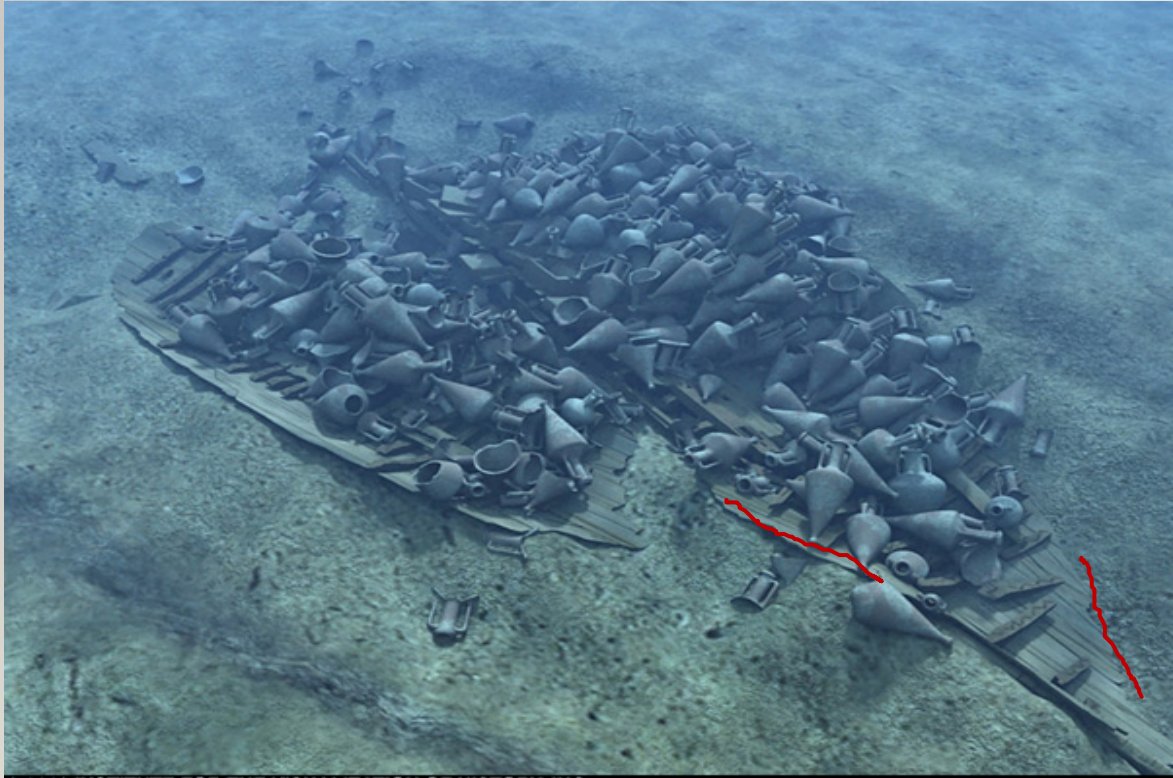
KYRENIA SHIPWRECK



- Most famous recovered όλκας
- Dated to 4th Century B.C.
- Excavated throughout 1968 and '69



KYRENIA SHIPWRECK



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RENDERED IMAGE OF *KYRENIA* SHIPWRECK

- Discovery of epoxy-like resin on ship's hull, brailing rings, and, of course, trade goods
- The *Kyrenia* was the average merchantman of this period, having a length-to-beam of about 4:1





Kyrenia II

- Constructed in 1985
- Constructed only using 4th Century B.C. mortise and tenon methods
- Successfully sailed several voyages using only traditional methods and procedures



NAVIS ONERARIA: THE “SHIP OF BURDEN”

CORBITA

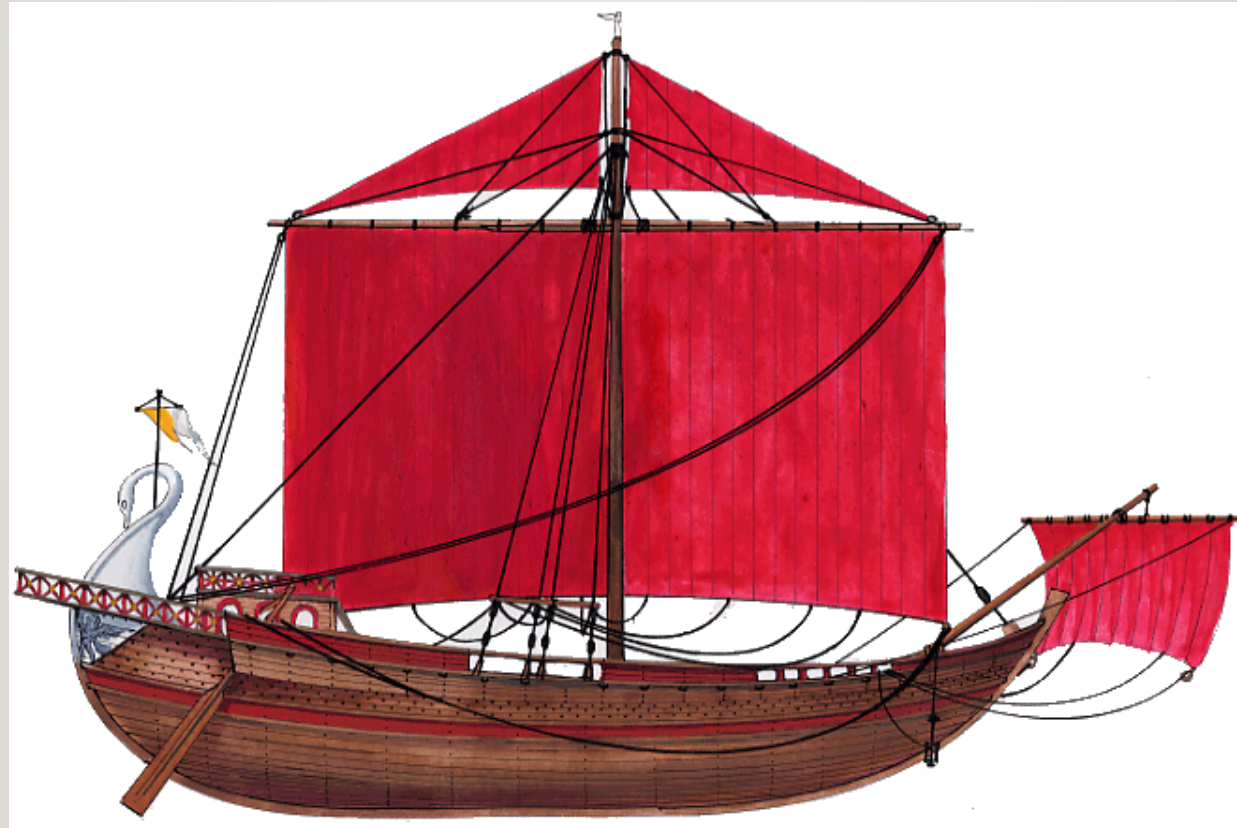
- Largest Roman merchantman
- Steered with two distinctive rudders
- Often fitted with topsails and a fore sail for additional steering mechanics

PONTO

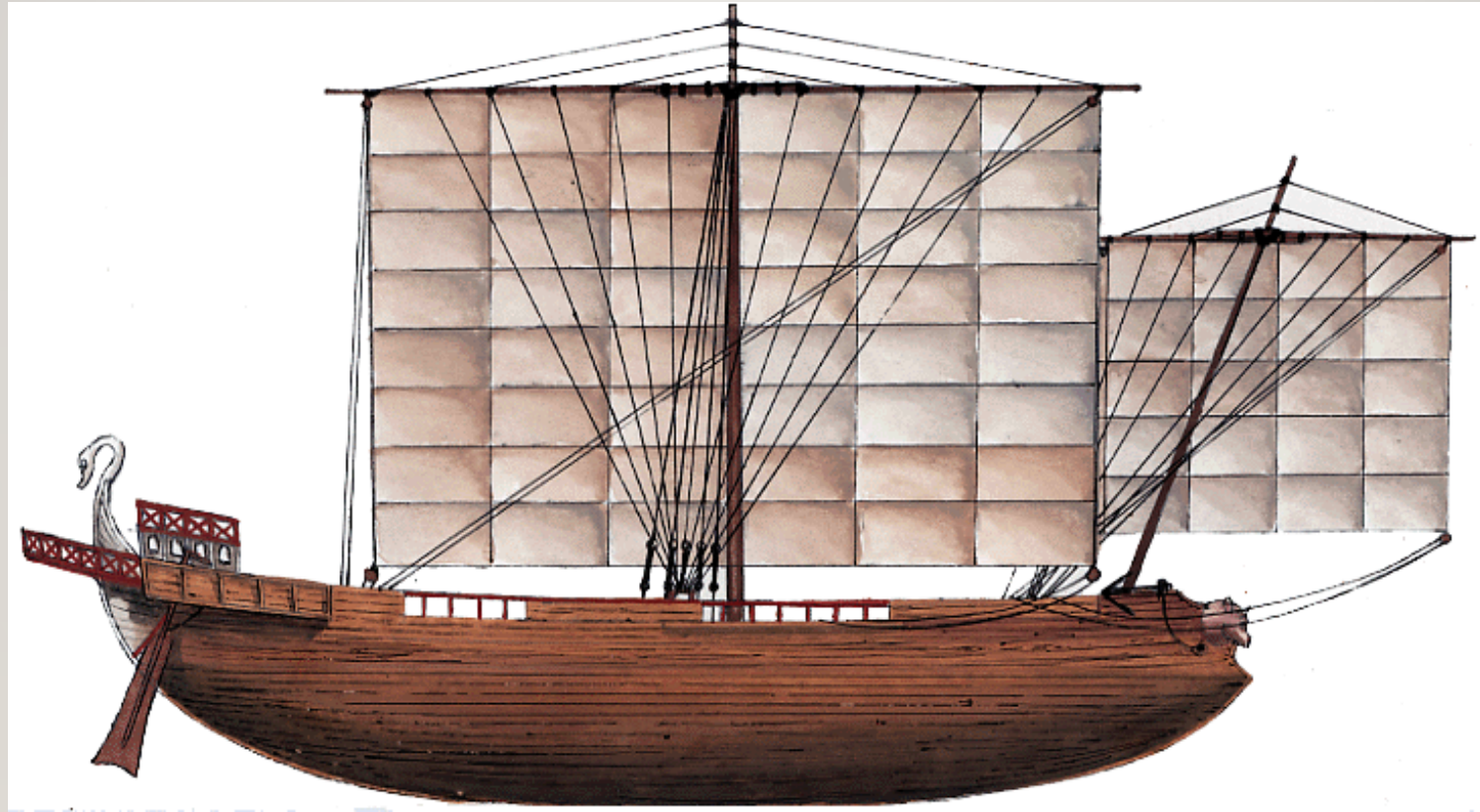
- Large, basket-like freighter
- Fitted with a rostrum at the prow, either as an ornamental figurehead or as an actual ram



CORBITA

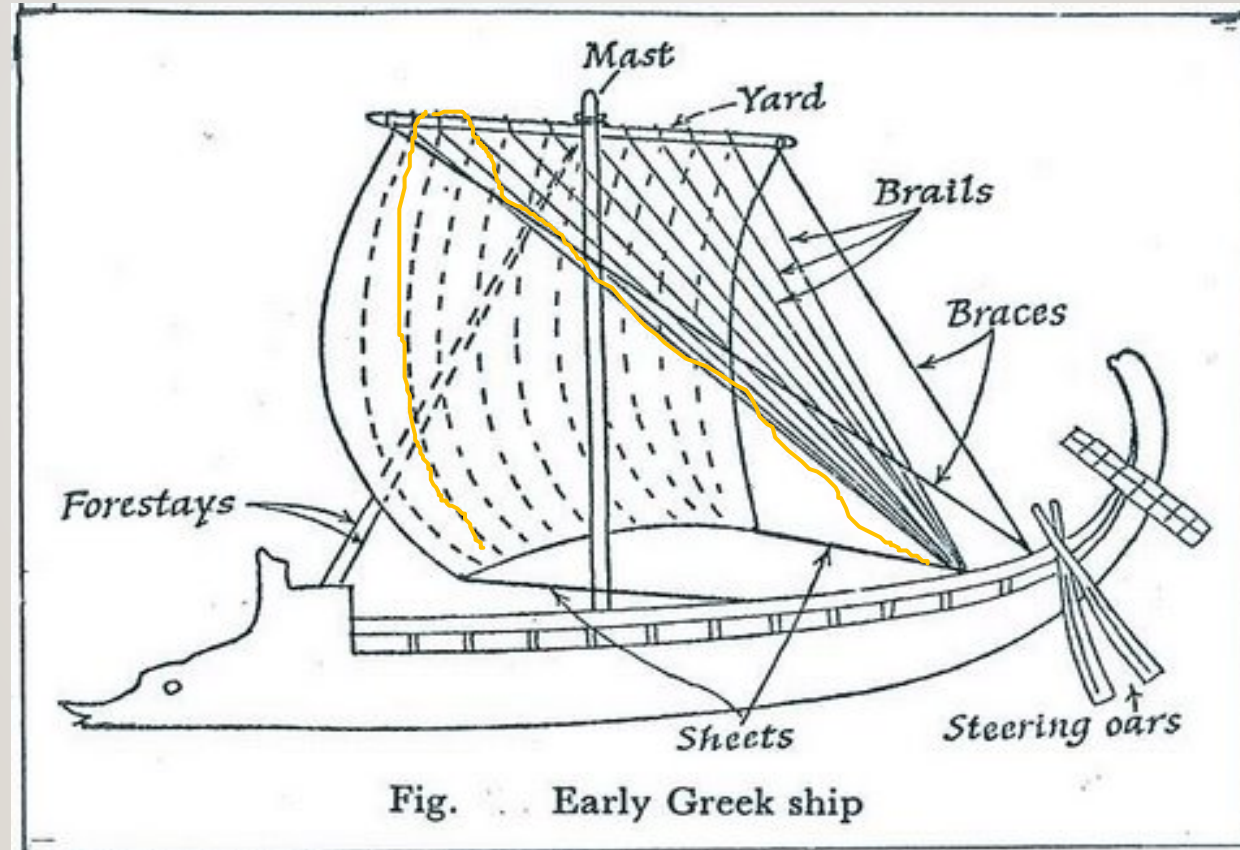


PONTO



PROCEDURES AND PHYSICS

- Forestays = προτονοι
 - Secured at ship's prow; supports the mast
- Braces = ὑπεραι
 - Secured at ship's stern; lowers and rotates the yard
- Sheets = ποδες
 - Secured or manned on the sides of the ship, most often at the stern with helmsman



(Early Greek Trireme, rigged in popular fashion)



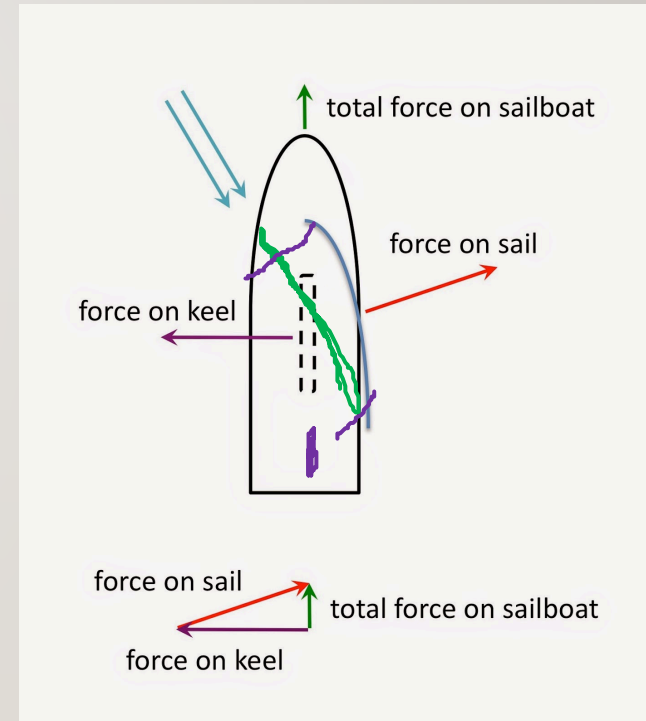
PROCEDURES AND PHYSICS

Sailing with winds blowing abeam:

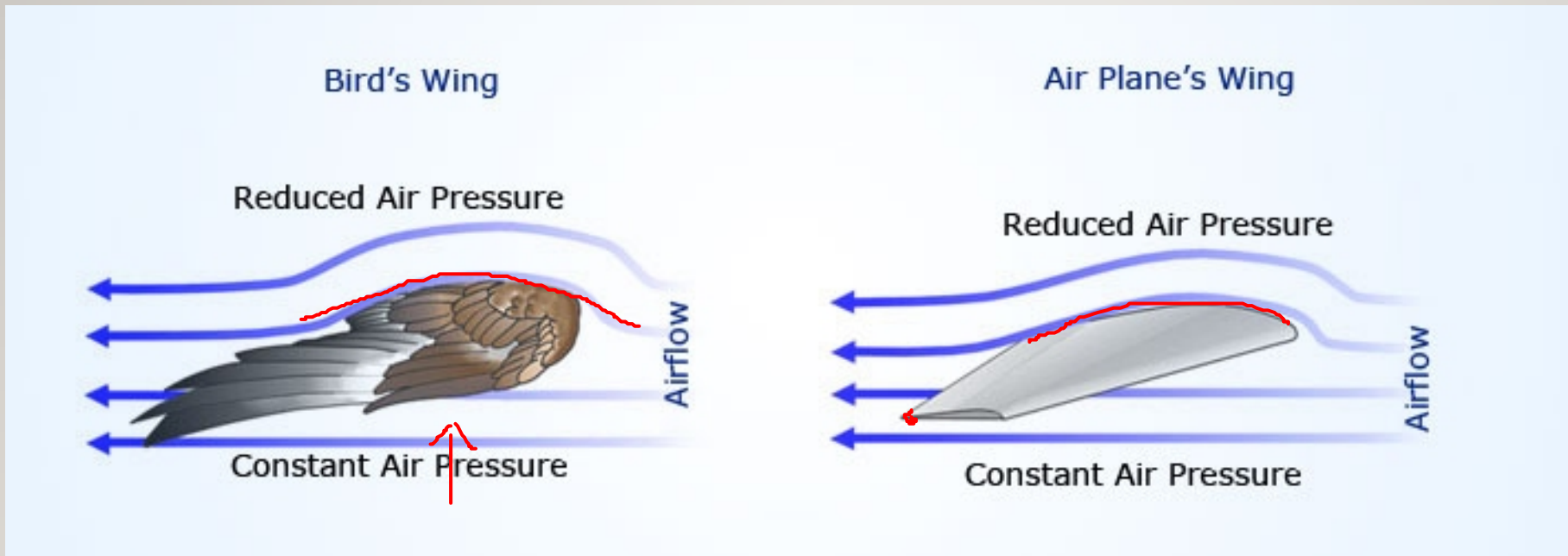
- Yard made askew the length of the ship via the ὑπεραι
- Windward sheet tied to a cleat in front of the mast
- Leeward sheet manned by Helmsman at ship's stern

Results:

- Ship is propelled forward, while simultaneously drifting leeward and “heading” into the wind



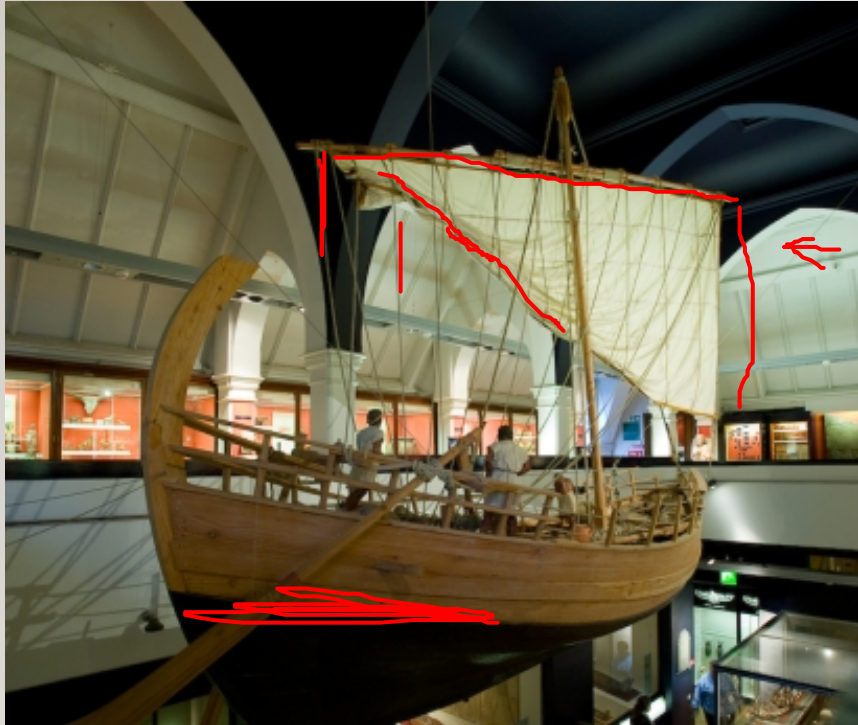
PROCEDURES AND PHYSICS



Wings achieve flight due to their shape, which displaced the air; likewise, mariners control the shape of the sail to propel themselves against wind



PROCEDURES AND PHYSICS



Reducing Heading:

The leeward half of the sail is brailed up, reducing the area of sail catching the wind

Results:

Ensures ship maintains course yet limits the propelling force



PROCEDURES AND PHYSICS

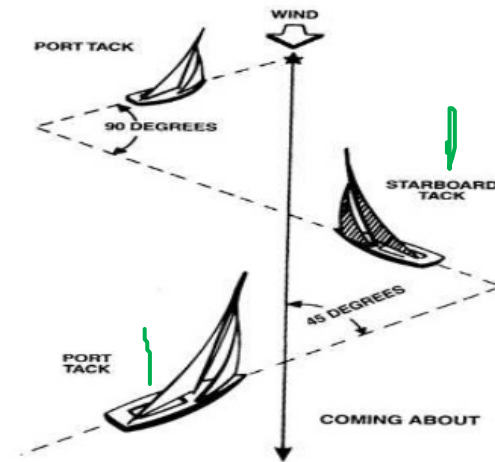
Tacking (Sailing into the wind):

- Navigators and Helmsman prepare ship as though they are sailing with winds abeam
- Intentionally sail off course to the right or left (starboard and port tack) and repeat

Results:

- Ship successfully sails against wind towards destination, but at a rate 5x slower than with wind astern

Tacking Into the Wind



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