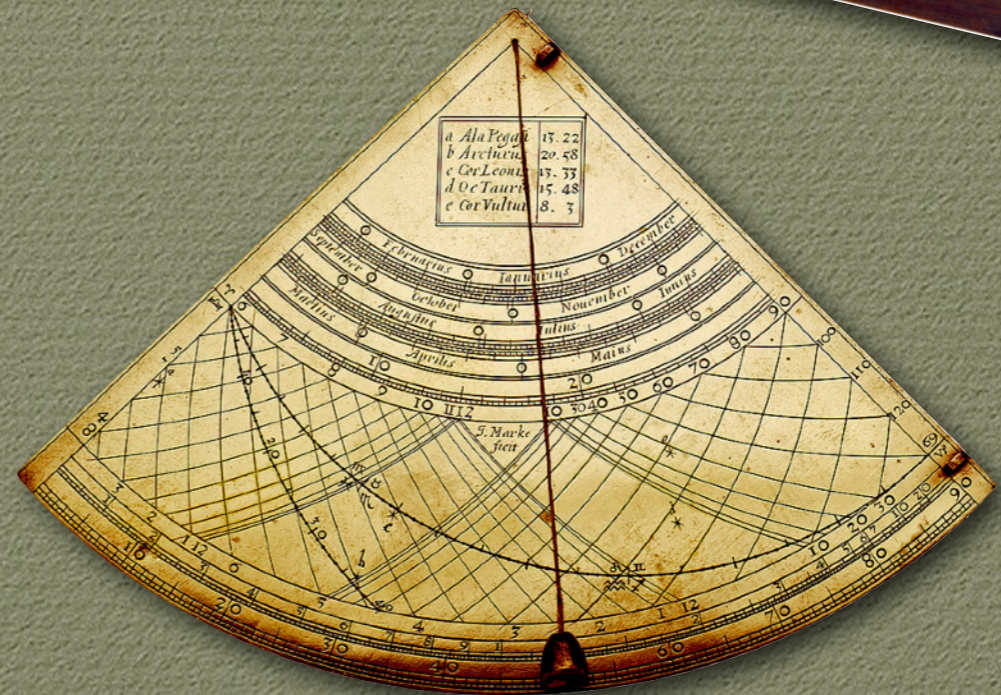
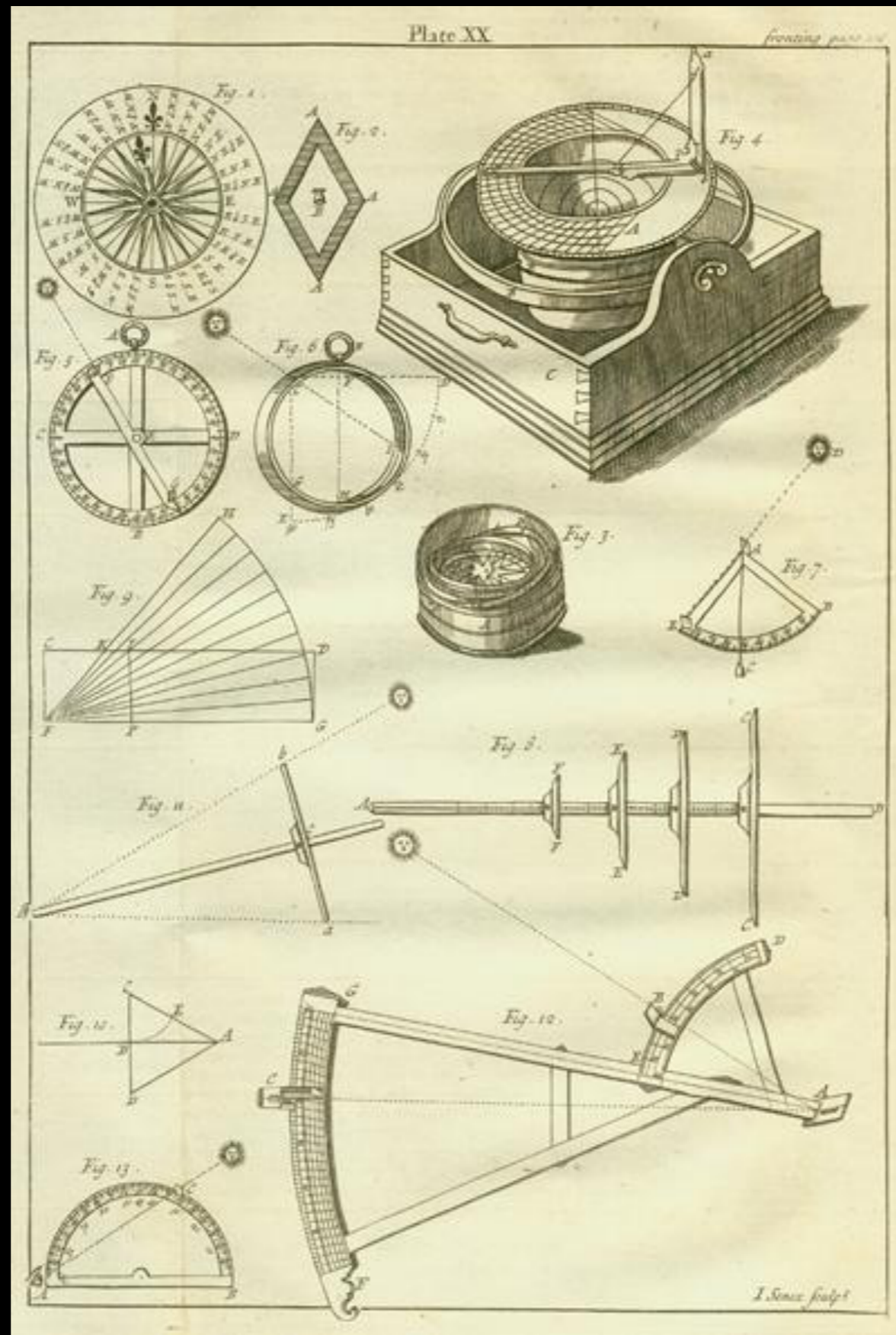


# 18th Century Material Culture

## Quadrants





Navigation Instruments - Plate XX  
From Nicolas Bion, "The Construction and Principal Uses of Mathematical Instruments" 1723  
(Princeton University Library, Rare Books Division)

# Davis Quadrants “Backstaffs”

# Davis Quadrants / “Backstaffs”



“The backstaff was developed by an English Captain named John Davis in the 1590s and—as it enabled a navigator to observe the sun’s altitude with safety and ease—was soon widely used for determining latitude at sea. Some English texts refer to it as Davis’ quadrant, while some Continental European texts refer to it as the English quadrant.

Ref: J. A. Bennett, *The Divided Circle. A History of Instruments for Astronomy, Navigation and Surveying* (Oxford, 1987), pp. 35-36.

Deborah Warner, "Davis’ Quadrants in America," *Rittenhouse* 3 (1988): 23-40.”

From the Website of the Smithsonian Museum of Natural History



English Ivory Davis Quadrant or Backstaff  
by Thomas Tuttell of London c. 1700 - 1750  
(National Maritime Museum, Greenwich)



English Ivory Davis Quadrant or Backstaff  
by Thomas Tuttell of London c. 1700 - 1750  
(National Maritime Museum, Greenwich)



English Ivory Davis Quadrant or Backstaff  
by Thomas Tuttell of London c. 1700 - 1750  
(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff

c. 1700

(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff  
c. 1700  
(National Maritime Museum, Greenwich)



English Labernum, Bone & Ivory Davis Quadrant or Backstaff  
by John Bellinger of London c. 1700  
(National Maritime Museum, Greenwich)



English Labernum, Bone & Ivory Davis Quadrant or Backstaff  
by John Bellinger of London c. 1700  
(National Maritime Museum, Greenwich)



English Labernum, Bone & Ivory Davis Quadrant or Backstaff  
by John Bellinger of London c. 1700  
(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff

c. 1700 - 1750

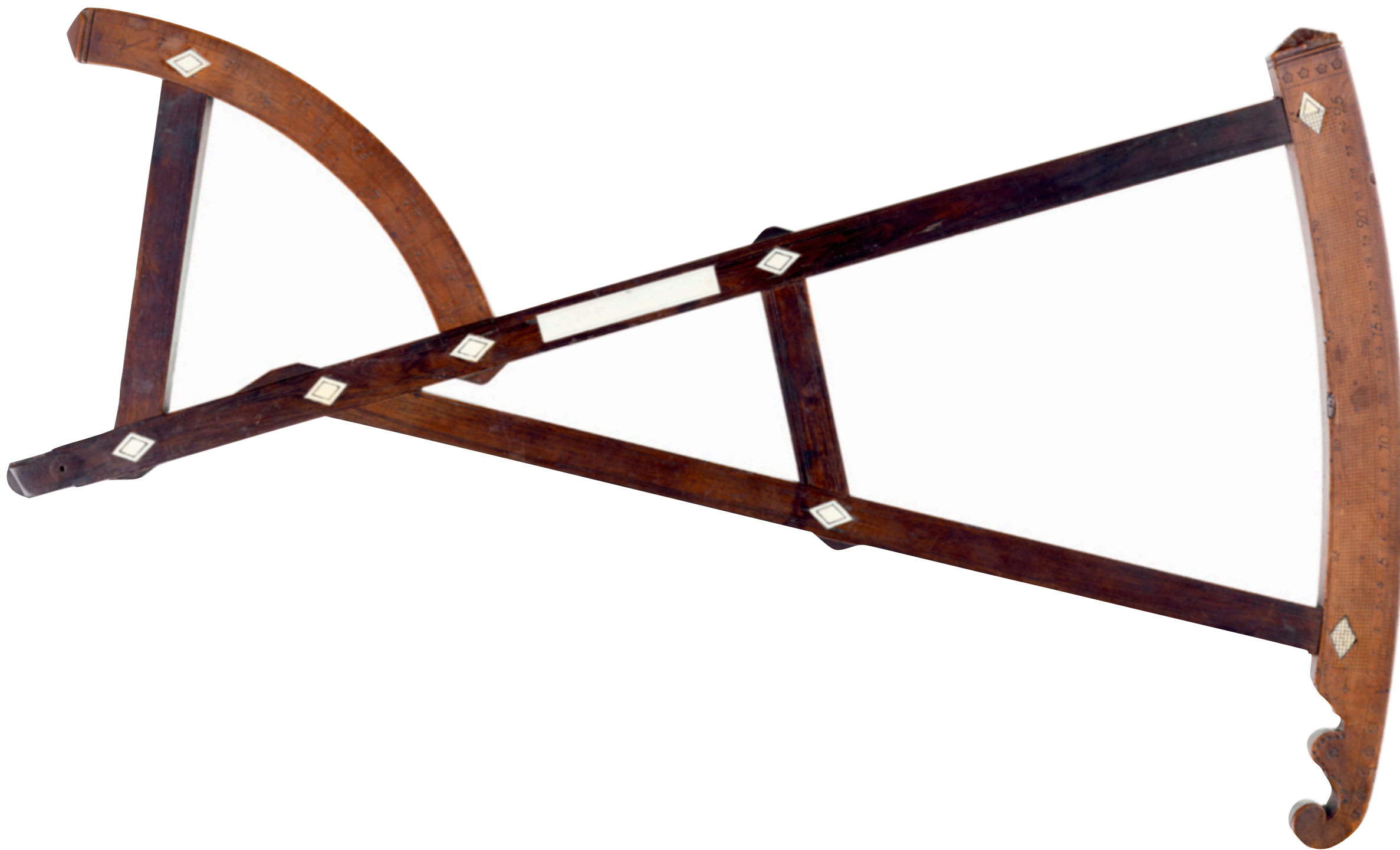
(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff

c. 1700 - 1750

(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff

c. 1720

(National Maritime Museum, Greenwich)



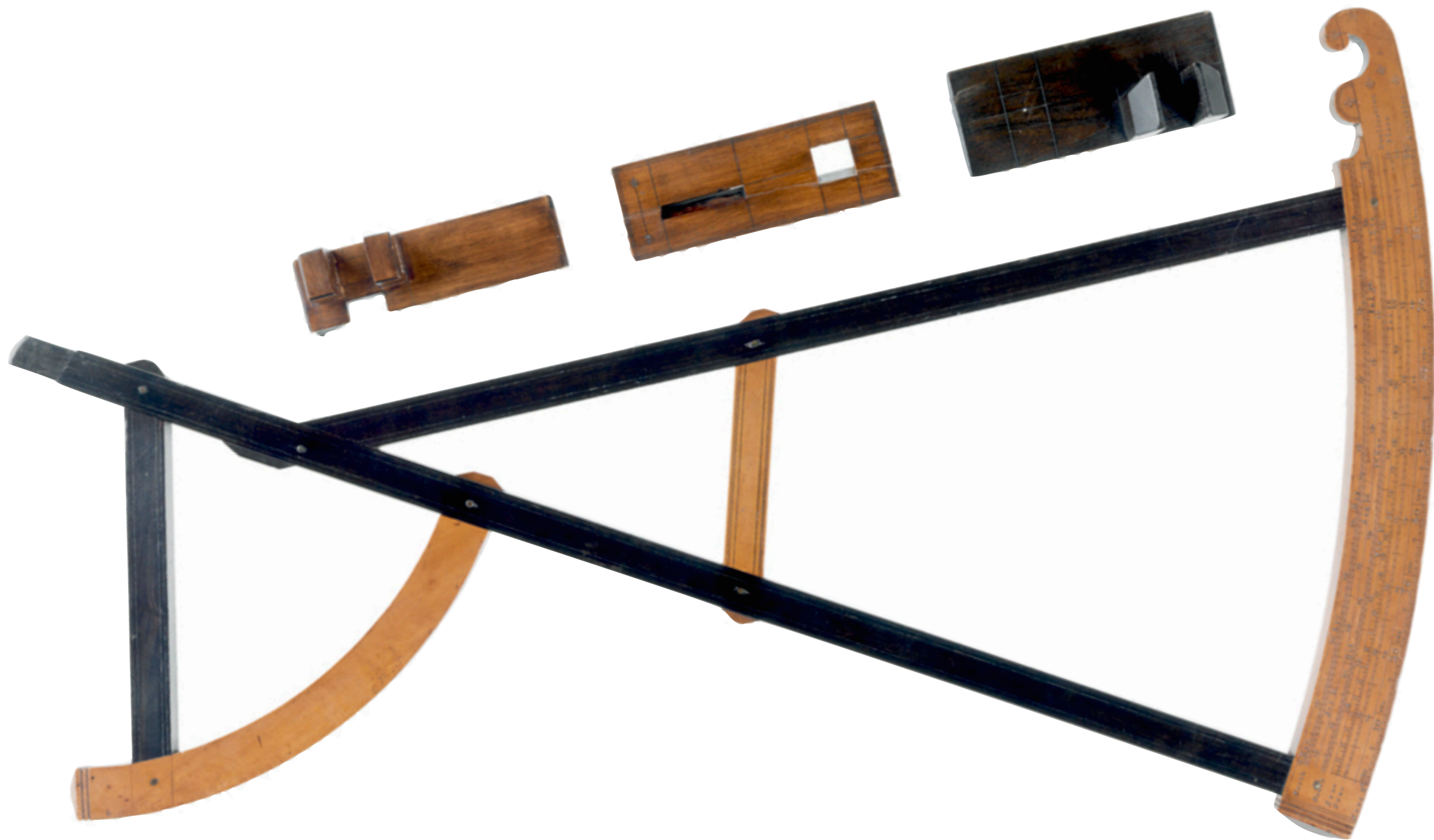
English Lignum Vitae & Boxwood Davis Quadrant or Backstaff

c. 1720

(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff Owned by James Austin  
by Benjamin Macy of London c. 1720  
(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff Owned by James Austin  
by Benjamin Macy of London c. 1720  
(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff Owned by James Austin  
by Benjamin Macy of London c. 1720  
(National Maritime Museum, Greenwich)

R x P 1751



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff  
by John Patrick of London c. 1720  
(National Maritime Museum, Greenwich)

R x P 1751



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff  
by John Patrick of London c. 1720  
(National Maritime Museum, Greenwich)

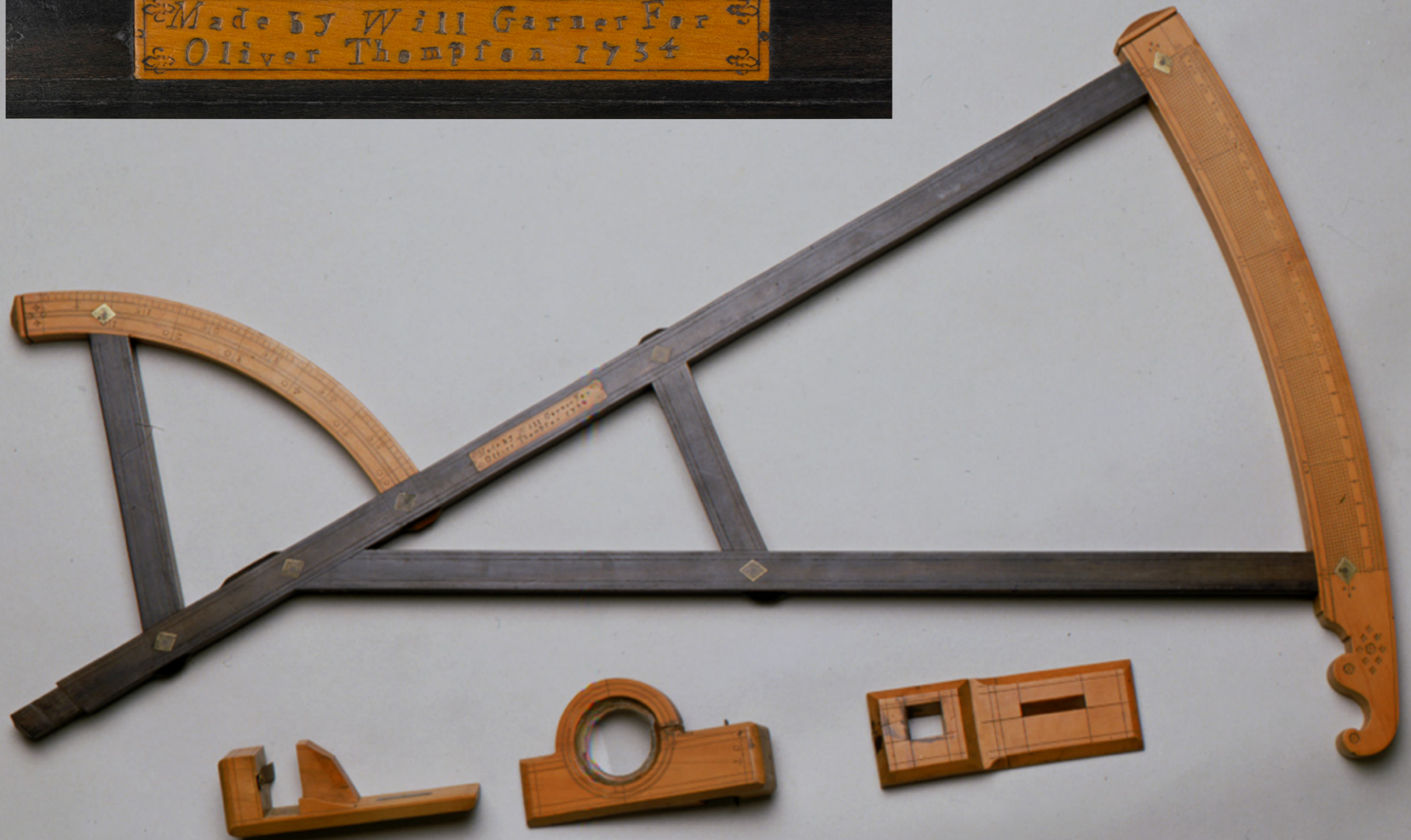


English Lignum Vitae & Boxwood Davis Quadrant or Backstaff  
by William Wright of Bristol, North Somerset c. 1725  
(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff  
by William Wright of Bristol, North Somerset c. 1725  
(National Maritime Museum, Greenwich)

Made by Will Garner For  
Oliver Thompson 1734



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff Owned by Oliver Thompson  
by Will Garner of London 1734  
(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff Owned by Thomas White  
by Will Garner of London 1737  
(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff Owned by Thomas White  
by Will Garner of London 1737  
(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff Owned by Thomas White  
by Will Garner of London 1737  
(National Maritime Museum, Greenwich)



English Mahogany & Boxwood Davis Quadrant or Backstaff

c. 1740

(National Maritime Museum, Greenwich)



English Mahogany & Boxwood Davis Quadrant or Backstaff

c. 1740

(National Maritime Museum, Greenwich)



English Mahogany & Boxwood Davis Quadrant or Backstaff  
by John Gilbert of London c. 1740  
(National Maritime Museum, Greenwich)



English Mahogany & Boxwood Davis Quadrant or Backstaff  
by John Gilbert of London c. 1740  
(National Maritime Museum, Greenwich)

BACKSTAFF  
For taking the Latitude  
CAP<sup>t</sup> DAVIS. 1590.



English Hornbeam & Boxwood Davis Quadrant or Backstaff

c. 1750

(National Maritime Museum, Greenwich)

BACKSTAFF  
For taking the Latitude  
CAP<sup>t</sup> DAVIS. 1590.



English Hornbeam & Boxwood Davis Quadrant or Backstaff

c. 1750

(National Maritime Museum, Greenwich)

Made by In<sup>o</sup> Gilbert, on Tower Hill  
For In<sup>o</sup> Norman, Aug<sup>t</sup> 7: 1755



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff Owned by Jonathan Norman  
by Gilbert & Son c. 1750  
(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Davis Quadrant or Backstaff Owned by Jonathan Norman  
by Gilbert & Son c. 1750  
(National Maritime Museum, Greenwich)



English Rosewood & Boxwood Davis Quadrant or Backstaff  
1st Half 18th Century  
(West Sea Company)



English Rosewood & Boxwood Davis Quadrant or Backstaff  
1st Half 18th Century  
(West Sea Company)



English Boxwood & Rosewood Davis Quadrant or Backstaff  
18th Century  
(Charles Miller Ltd.)

Made by William Clarke near Union  
Stairs for John Quince 1736



English Boxwood & Lignum Vitae Davis Quadrant or Backstaff  
"Made by William Clarke near Union Stairs for John Quince 1736"  
(Charles Miller Ltd.)

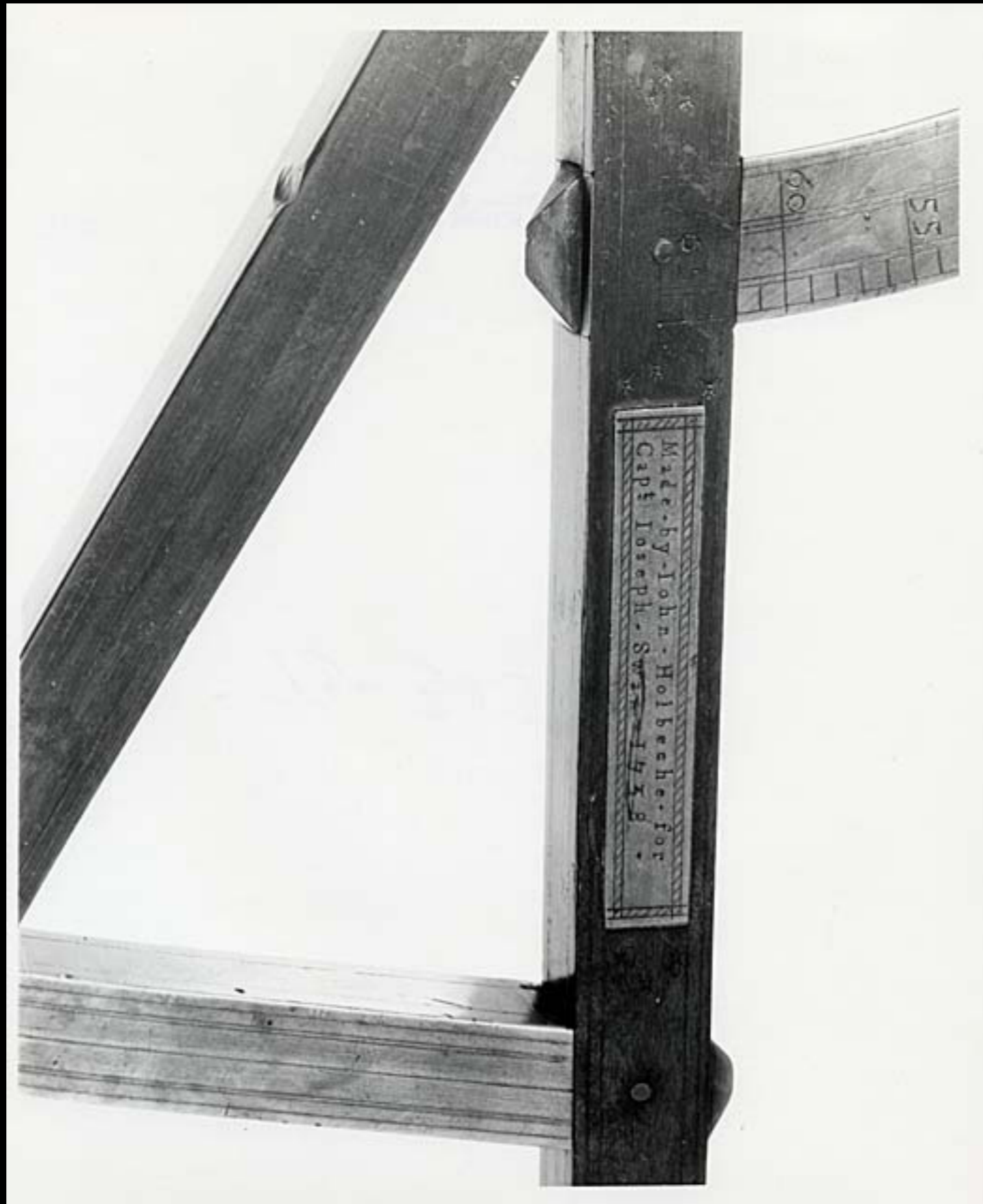
Made by William Clarke near Union Stairs  
In Wapping For John Scott: 1743: —



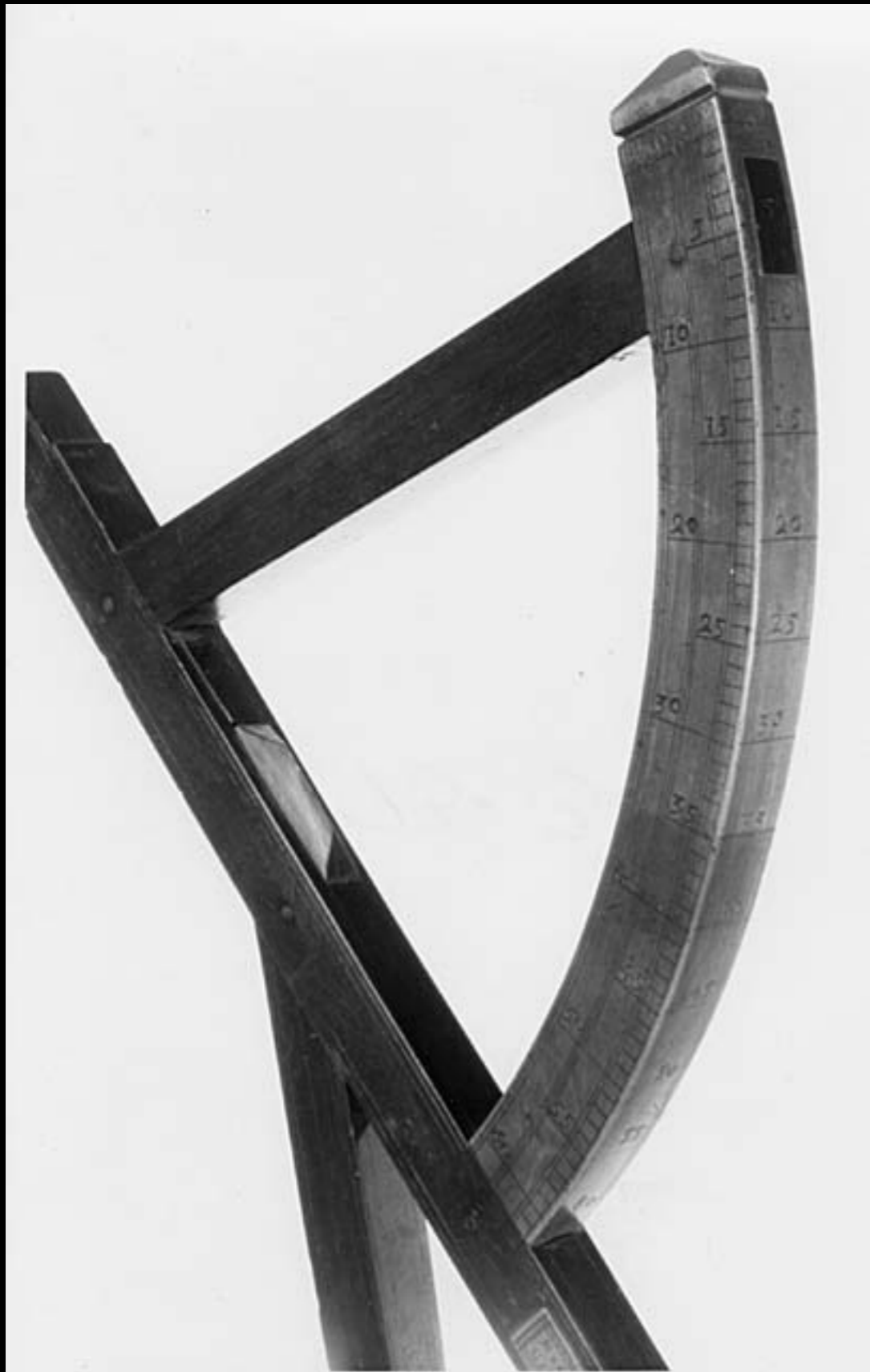
English Boxwood & Lignum Vitae Davis Quadrant or Backstaff  
“Made by William Clarke near Union Stair / In Wapping For John Scott 1743”  
(Charles Miller Ltd.)



English Davis Quadrant or Backstaff from London Marked "Made by John Holbeche for Capt Joseph Swan 1738"  
by John Holbeche 1738  
(Smithsonian National Museum of American History)



English Davis Quadrant or Backstaff from London Marked "Made by John Holbeche for Capt Joseph Swan 1738"  
by John Holbeche 1738  
(Smithsonian National Museum of American History)



English Davis Quadrant or Backstaff from London Marked "Made.by.John.Holbeche.for Capt Joseph.Swan.1738"  
by John Holbeche 1738  
(Smithsonian National Museum of American History)



American Davis Quadrant or Backstaff from Newport, Rhode Island  
by William Guyse Hagger c. 1773  
(Smithsonian National Museum of American History)



American Davis Quadrant or Backstaff from Newport, Rhode Island  
by William Guyse Hagger c. 1773  
(Smithsonian National Museum of American History)



Captain Robert Knox of the East India Company  
by P. Trampon 1711  
(The British Museum)



“The NAVAL NURSE, or Modern Commander.”

by R.T. Attwold 1750

(The British Museum)



Unknown

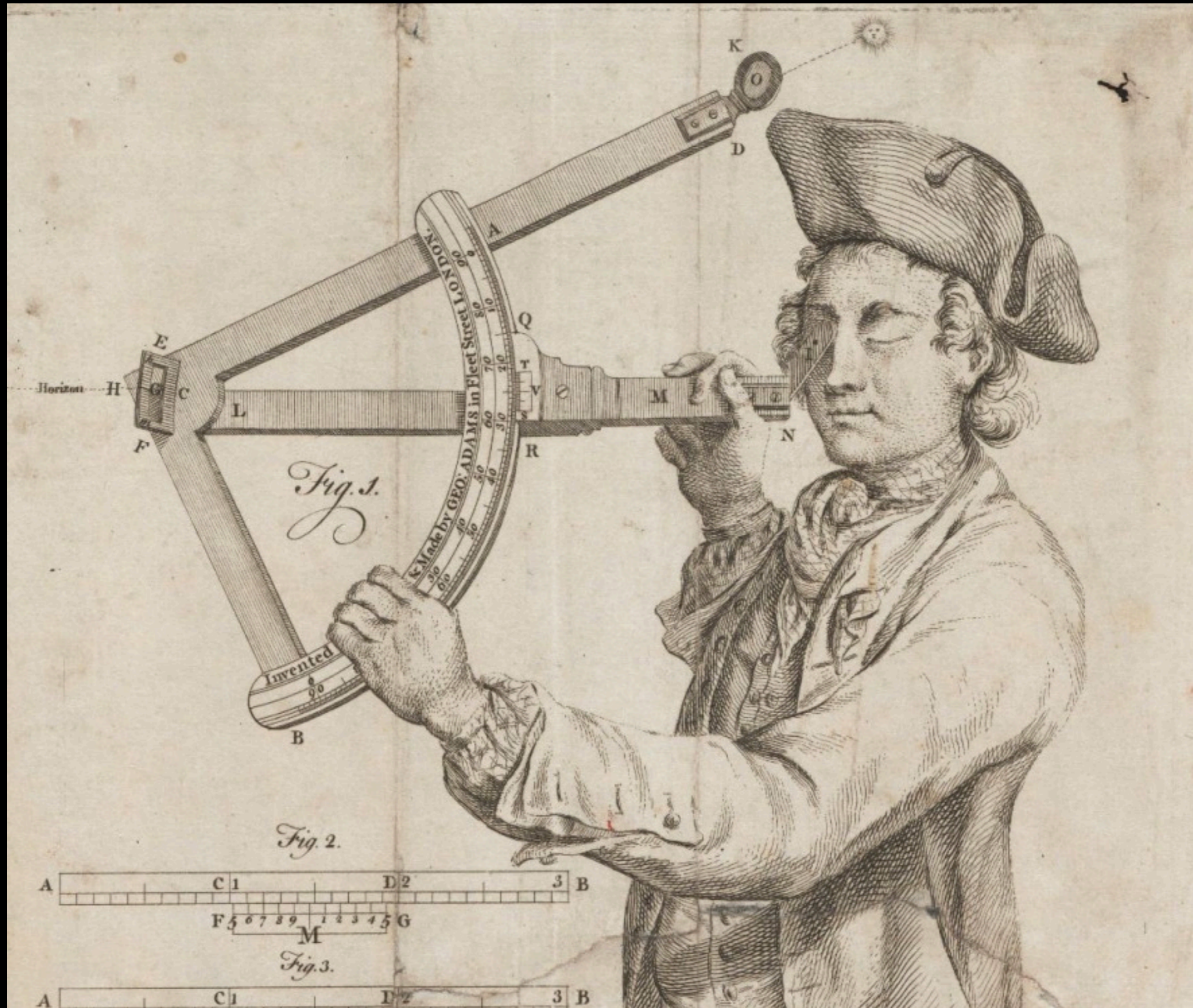
# Adams Quadrants



“A NEW SEA QUADRANT Invented, Made, & Sold by Geo. Adams...”

30 September, 1748

(Harvard University, Houghton Library)



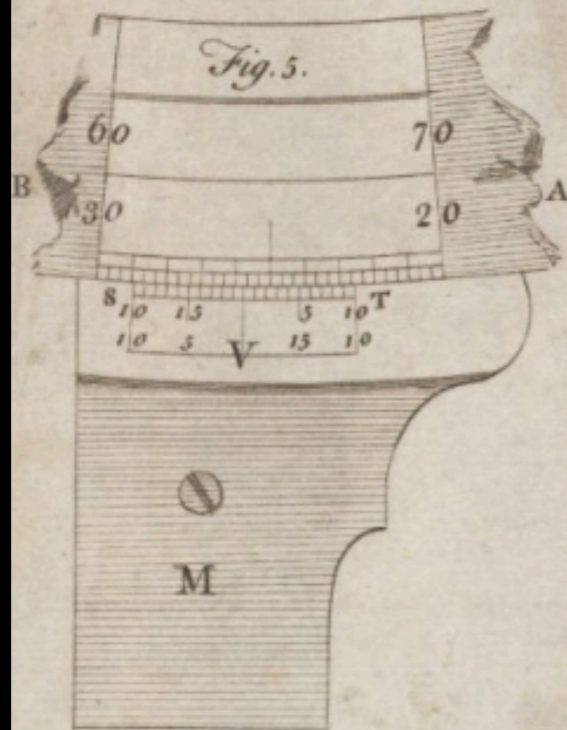
“A NEW SEA QUADRANT Invented, Made, & Sold by Geo. Adams...”

30 September, 1748

(Harvard University, Houghton Library)

*A NEW*  
**SEA QUADRANT.**

*Invented Made & Sold by*  
**GEO. ADAMS,**  
*Mathematical Instrument Maker,*  
*to his Majesty's Office of Ordnance.*  
*At Tycho Brahe's Head, Fleet Street*  
**L O N D O N.**



*Published September*  
*the 30 1748.*

*At the above said place are Also MADE and SOLD. Hadley's, Smith's and Davis's Quadrants. Telescopes either Refracting or Reflecting. Azimuth-Compases. Cases of Drawing Instruments. and all other Sorts of MATHEMATICAL, PHILOSOPHICAL and OPTICAL Instruments.*

“A NEW SEA QUADRANT Invented, Made, & Sold by Geo. Adams...”

30 September, 1748

(Harvard University, Houghton Library)



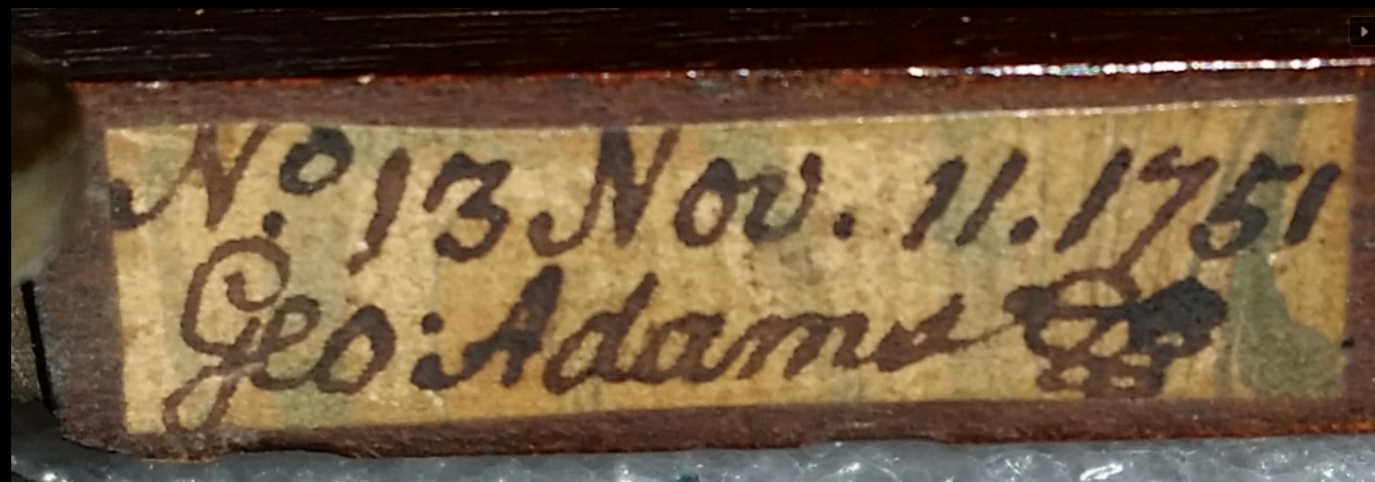
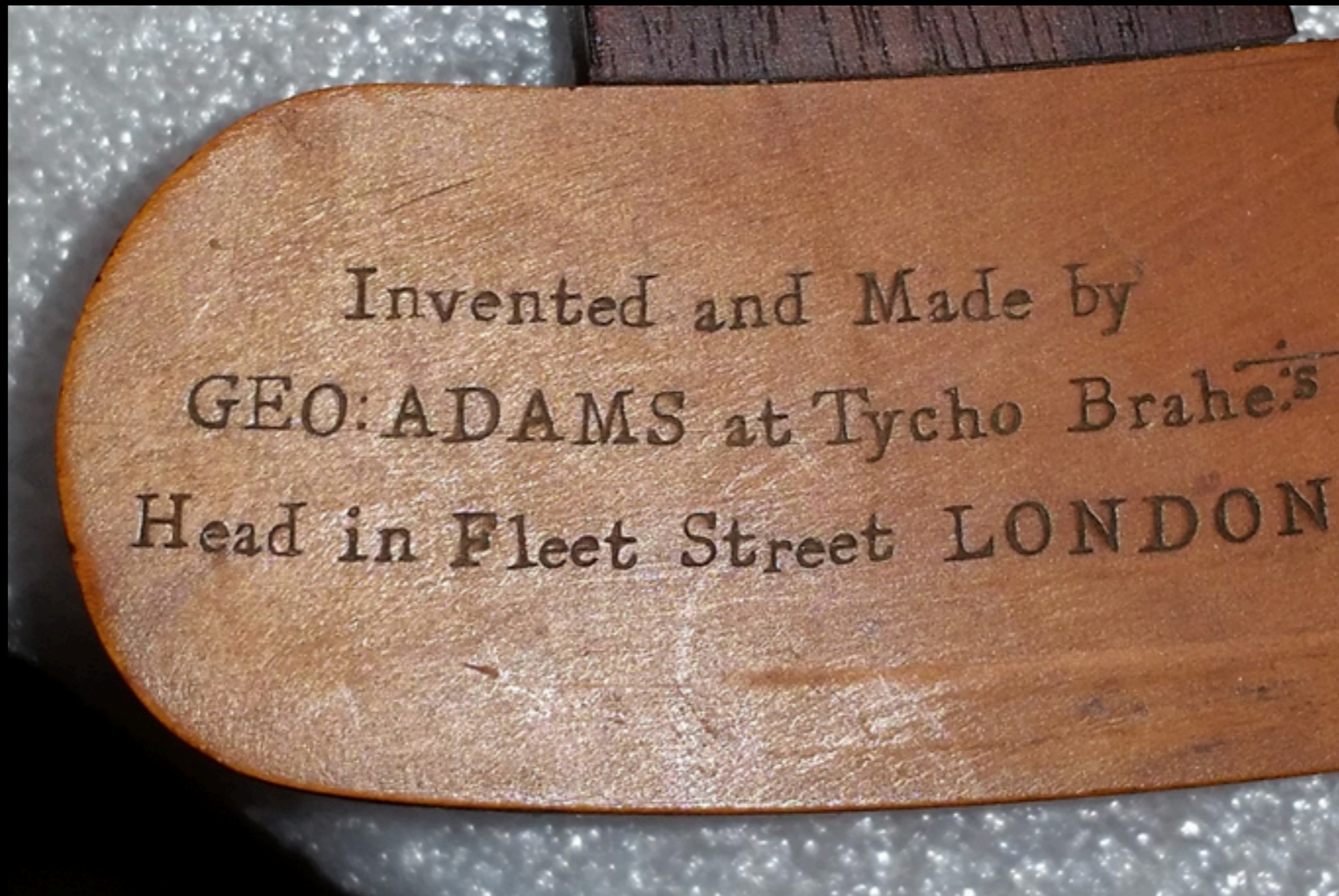
Quadrant "Invented and Made by GEO: ADAMS at Tycho Brahe's Head in Fleet Street LONDON"

By George Adams 1751  
(Mariner's Museum and Park)



Quadrant "Invented and Made by GEO: ADAMS at Tycho Brahe's Head in Fleet Street LONDON"

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Quadrant "Invented and Made by GEO: ADAMS at Tycho Brahe's Head in Fleet Street LONDON"  
By George Adams 1751  
(Mariner's Museum and Park)

**G E O R G E A D A M S,**  
**MATHEMATICAL Instrument-MAKER** *to his Majesty's Office of ORDNANCE,*  
*At Tycho Brahe's Head, the Corner of Racquet-Court, in Fleet-Street, L O N D O N,*

MAKES and SELLS all Sorts of the most curious MATHEMATICAL, PHILOSOPHICAL, and OPTICAL INSTRUMENTS, in Silver, Brass, Ivory, or Wood, with the utmost Accuracy and Exactness, according to the latest and best Discoveries of the modern Mathematicians.



BY Permission of His MAJESTY'S ROYAL LETTERS PATENT, granted to him and Mr. RICHARD JACK, for a New Invented Sea Quadrant and Telescope.

With the Quadrant the Sun's Altitude may be taken under all the Disadvantages of a Rough Sea, by Refraction from Spherical Lenses. Either in a backward or forward Observation, the Sun's Magnetical Azimuth, and thereby the Variation of the Needle, may also be taken by the same Quadrant, by means of a particular Compass, which may be applied to it.

By the NEW REFRACTING TELESCOPE, distant Objects are seen distinct and larger than with Telescopes of the usual Construction of 12 or 15 Feet long; although this Telescope does not exceed four Feet in Length. By this Telescope, which may be of any Length, Observations may be made of the greatest Importance, both in Navigation and Astronomy.

N. B. The Quadrants and Telescopes aforesaid, are only made and sold by the above G. Adams, one of the Patentees: Who will, to prevent the Publick from being impos'd on, put a Check on each Instrument in his own Hand Writing.

He likewise Makes and Sells Hadley's QUADRANTS in the most exact Method, with Glasses whose Plains are truly parallel, Davis's Quadrants, &c.

Large ASTRONOMICAL QUADRANTS, TRANSIT and EQUAL ALTITUDE INSTRUMENTS, for observing the Transits of the Sun and Stars over the Meridian, &c. Telescopes fitted with a Micrometer, &c. Sun Dials HORIZONTAL for Pedestals in any Latitude; with Variety of PORTABLE ones, either UNIVERSAL, or for several different Latitudes, with new Improvements.

Choice of curious Cases of DRAWING INSTRUMENTS, in Silver, Brass, &c. containing a Sector, Scales; Proportionable and other Compasses; Drawing Pens, a Protractor, Parallel Rules, &c.

Also his New invented portable MICROSCOPE for viewing all Kind of Minute Objects, as well Opake as Transparent, in so conspicuous and concise a Manner, as to comprehend all the Uses of all the other Sorts of Microscopes in one Apparatus, and magnifies to so great a Degree, as to discover the Circulation of the Blood in Animals, the Peristaltick Motion in Insects, the Farinae of Vegetables, and many other surprizing Phenomena, otherwise not perceptible. And all other Sorts of MICROSCOPES, either Double or Single.



REFLECTING TELESCOPES, either *Gregorian*, or *Newtonian*, made with the greatest Care.

REFRACTING TELESCOPES for Sea or Land.

ORRERIES and PLANITARIUMS, or both greatly improved by himself in a Machine, called the

COSMOTHEORON, by which all the Celestial Phenomena are plainly and clearly exhibited.

Instruments proper for GUNNERY, FORTIFICATION, &c.

GLOBES and SPHERES of all Sizes, particularly, the FAMOUS GLASS-SPHERE and URANIUM of the Revd. Dr Long's Invention, by which the Real and Apparent Motion of the Heavens are most elegantly represented.

The SOLIDS in EUCLID'S ELEMENTS, with all their proper Sections cut in Wood; designed for the Ease of all Persons who would inform themselves demonstratively in the Practice of PERSPECTIVE, MENSURATION, SPHERICKS, &c. to be had only at the abovesaid Place.

AIR PUMPS, or Engines for exhausting the Air from proper Vessels, with all their Appurtenances: whereby the Properties of that most useful Fluid are discovered and demonstrated by undeniable Experiments; Engines for the Compression of the Air; HYDROSTATICAL BALLANCES, nicely adjusted for determining the specifick Gravity of Fluids and Solids, &c.

Curious BAROMETERS, Diagonal, Wheel, Standard or Portable, with or without Thermometers. Also the so much famed QUICK-SILVER THERMOMETERS, made after any of the Forms.

THEODOLITES of the latest Construction; WATER LEVELS, which may be adjusted at one Station: MEASURING WHEELS, Pocket and Coach WAY-WIZERS, for Measuring the Way, &c.

MERIDIAN and AZIMUTH Sea Compasses of all Sorts, either for the Cabin, Steerage, or Pocket; artificial Magnets, particularly useful for touching Mariners Compasses.

SPECTACLES ground on Brass Tools, in the Manner approved of by the ROYAL SOCIETY, set in Variety of convenient Frames: Also READING GLASSES of all Sorts, set in Silver or other Metal, to turn into Cases of various Kinds.

PRISMS for demonstrating the Theory of Light and Colour.

The CAMERA OBSCURA, for Drawing in Perspective, in which all external Objects are represented in their proper Colours, and exact Proportions.

CONCAVE, CONVEX, and CYLINDRICAL Looking Glasses, CAMERA GLASSES, MULTIPLYING GLASSES, SPECTACLES of the true green Glass, MAGICK Lanterns, &c.

N. B. Gentlemen may have any Model or Instrument made in Metal or Wood, from Directions given, with the greatest Expedition and Accuracy.

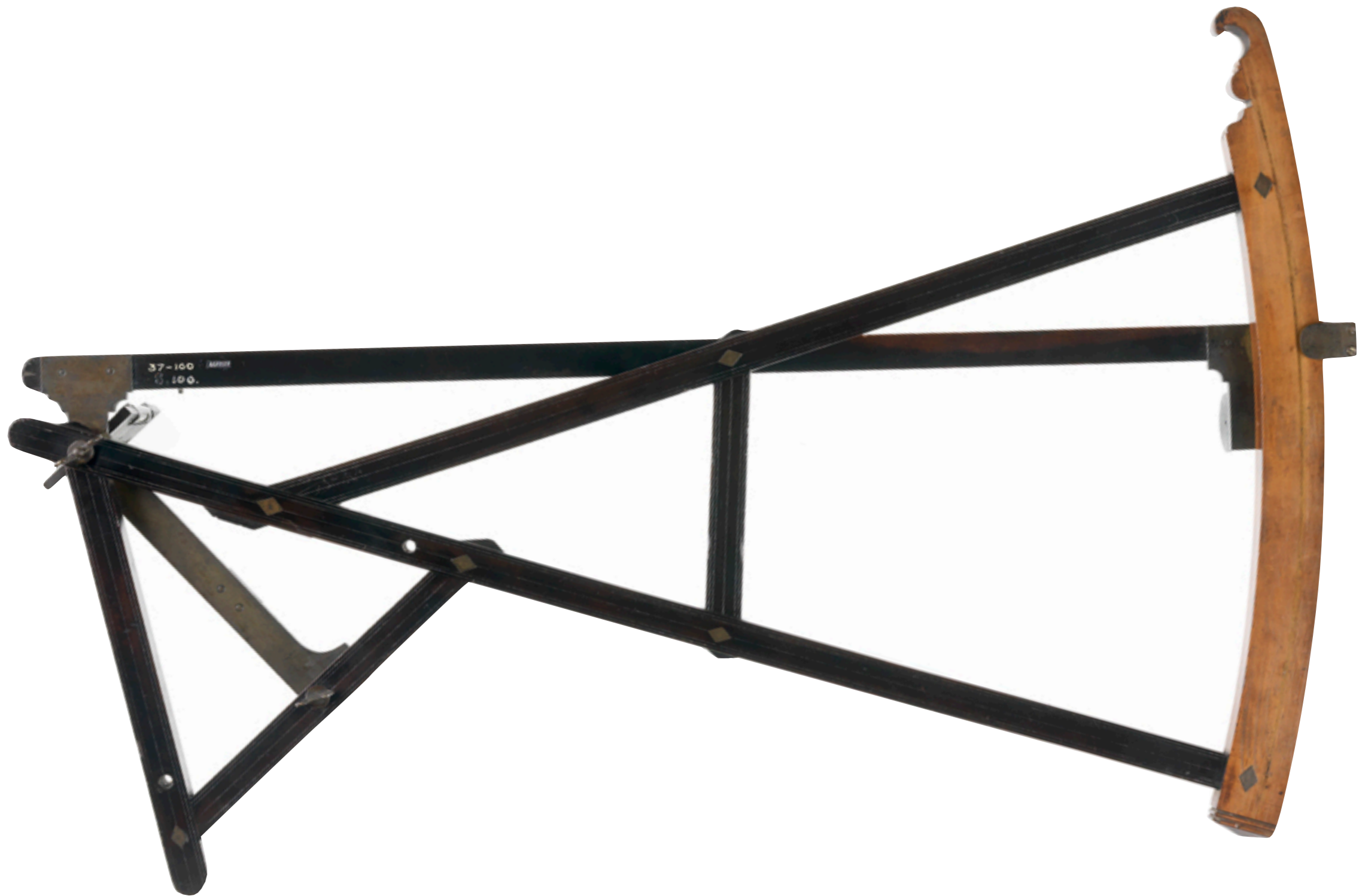
Quadrant "Invented and Made by GEO: ADAMS at Tycho Brahe's Head in Fleet Street LONDON"

By George Adams 1751  
 (Mariner's Museum and Park)

# Elton Quadrants



English Lignum Vitae & Boxwood Modified Davis Quadrant or Backstaff  
by John Elton / Jonathan Sisson of London c. 1732  
(National Maritime Museum, Greenwich)



English Lignum Vitae & Boxwood Modified Davis Quadrant or Backstaff  
by John Elton / Jonathan Sisson of London c. 1732  
(National Maritime Museum, Greenwich)

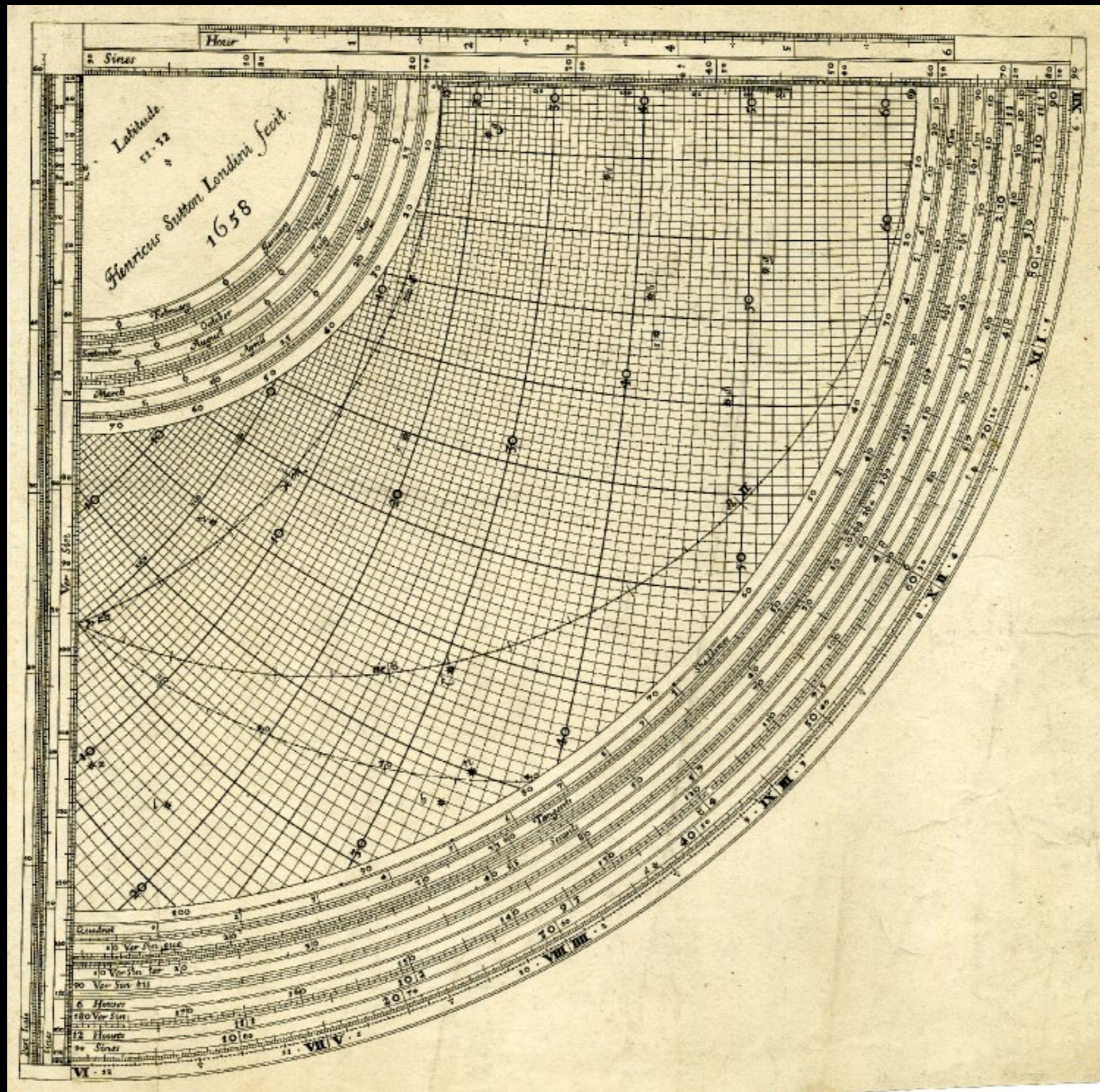


English Lignum Vitae & Boxwood Modified Davis Quadrant or Backstaff  
by John Elton / Jonathan Sisson of London c. 1732  
(National Maritime Museum, Greenwich)



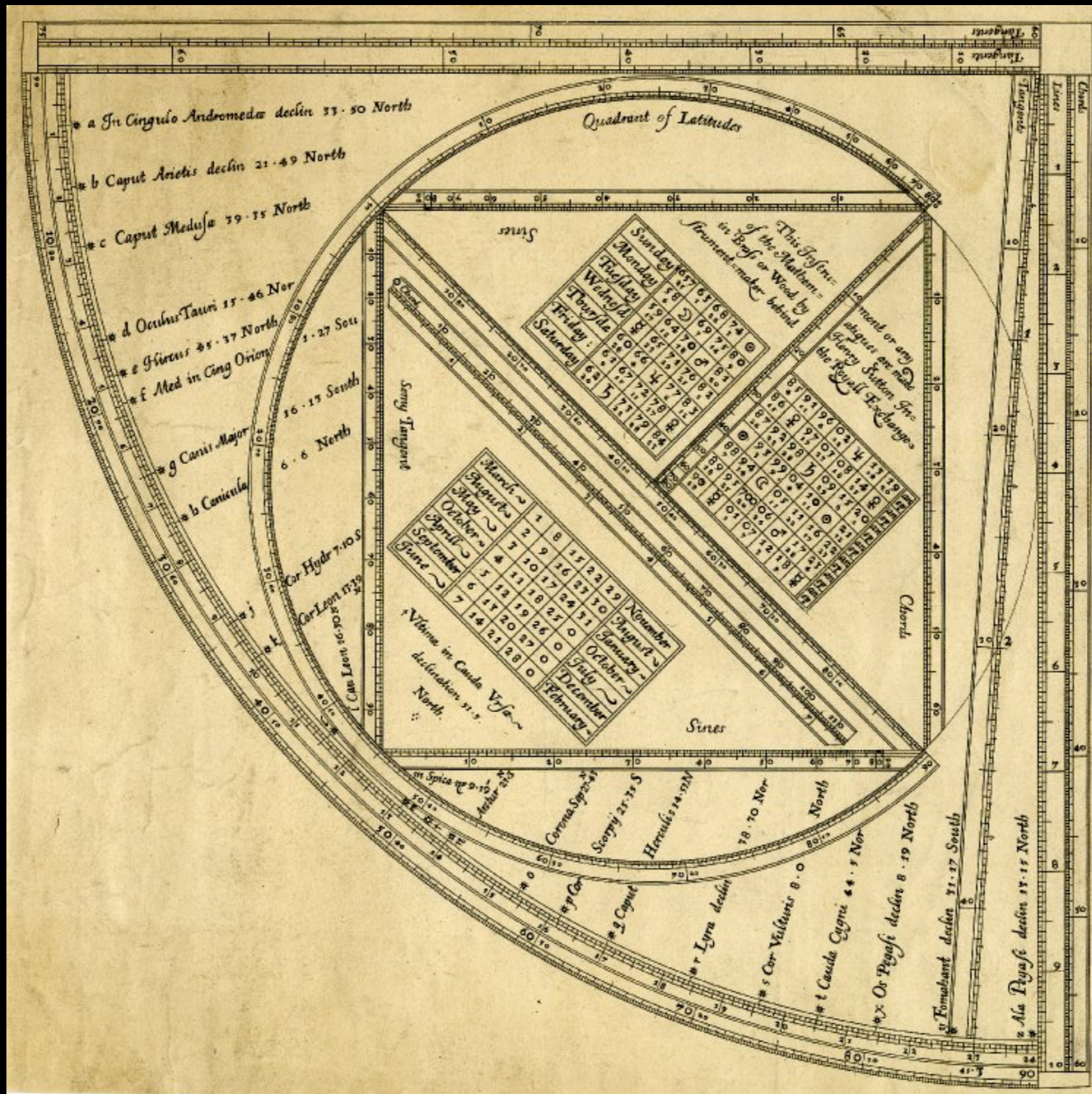
A Seaman Holding an Elton Quadrant, Possibly Elton Himself or Captain Walter Hoxton of the "Baltimore"  
by John Verbank c. 1735  
(National Maritime Museum, Greenwich)

# Horary Quadrants



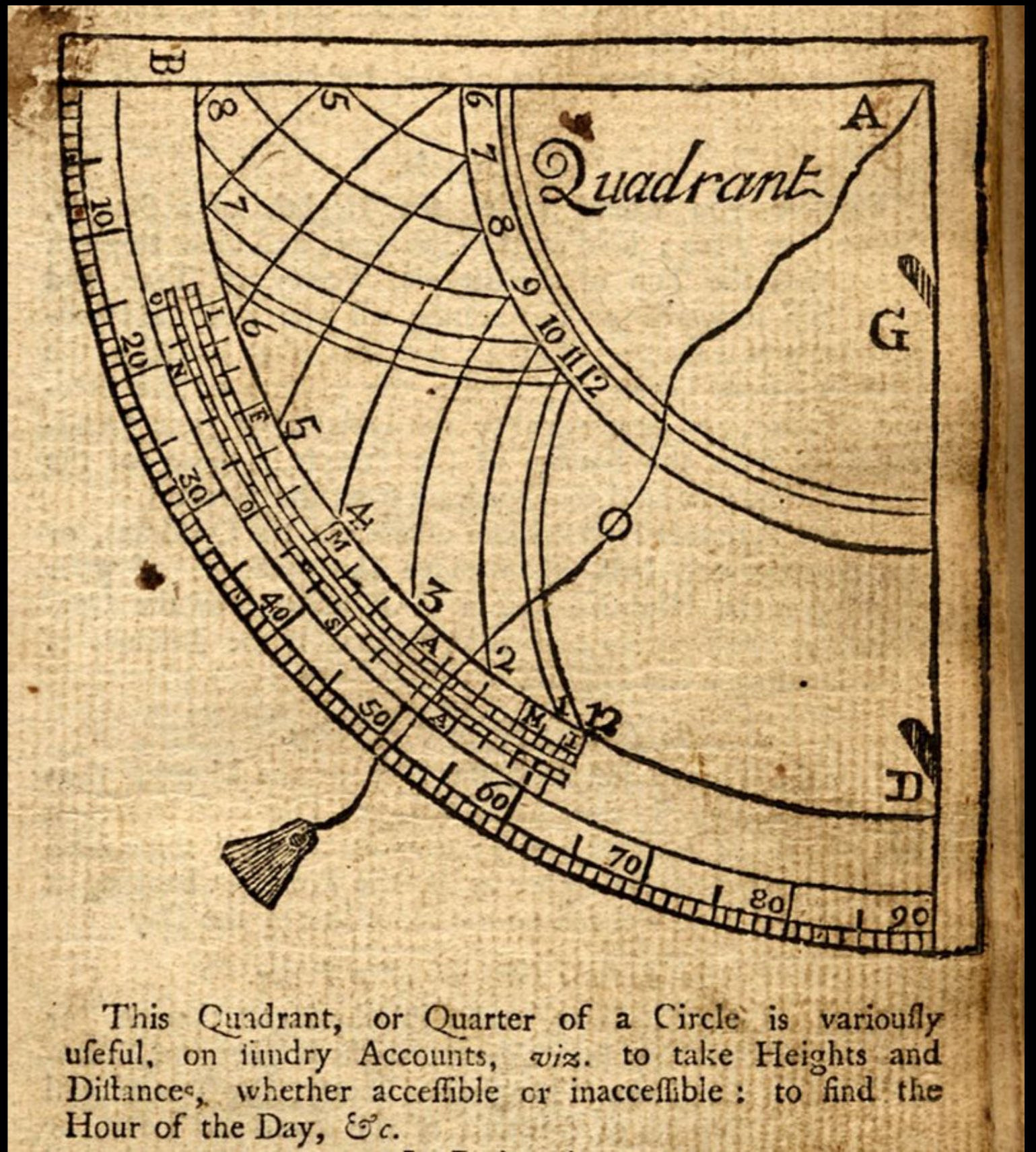
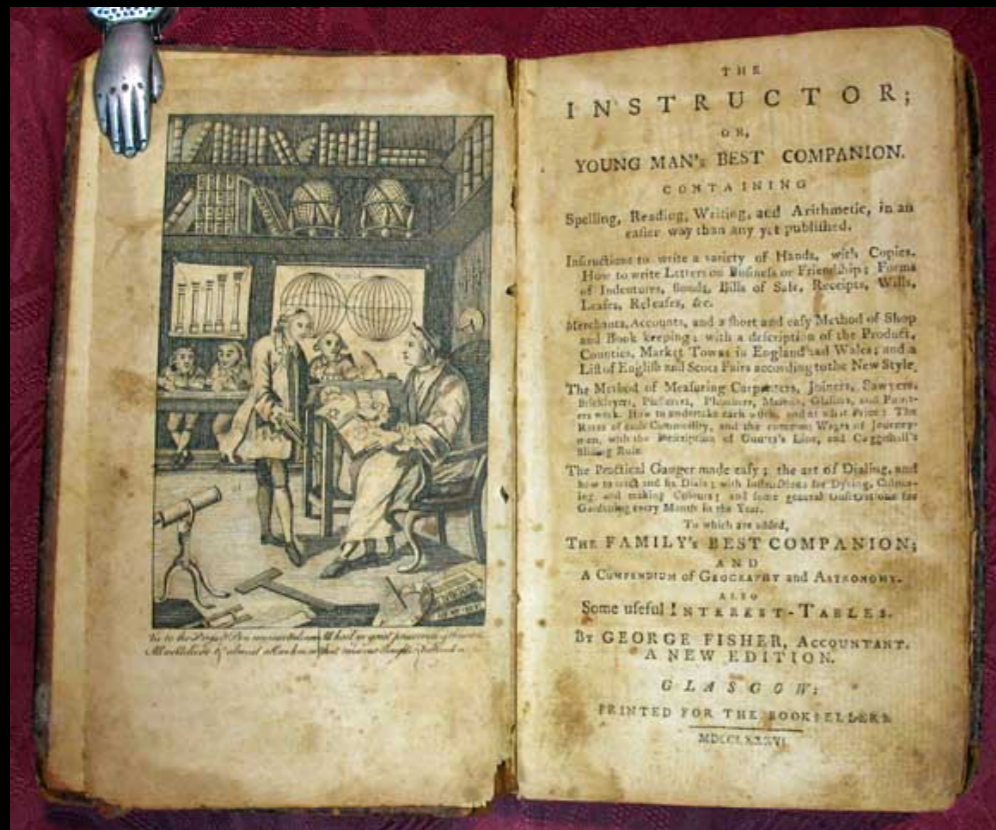
Quadrant, with Inscriptions and Scales for Measuring Latitude

John Collins: "The Sector on a Quadrant, or A Treatise Containing the Description and Use of Four Several Quadrants" London, 1659  
 (The British Museum)

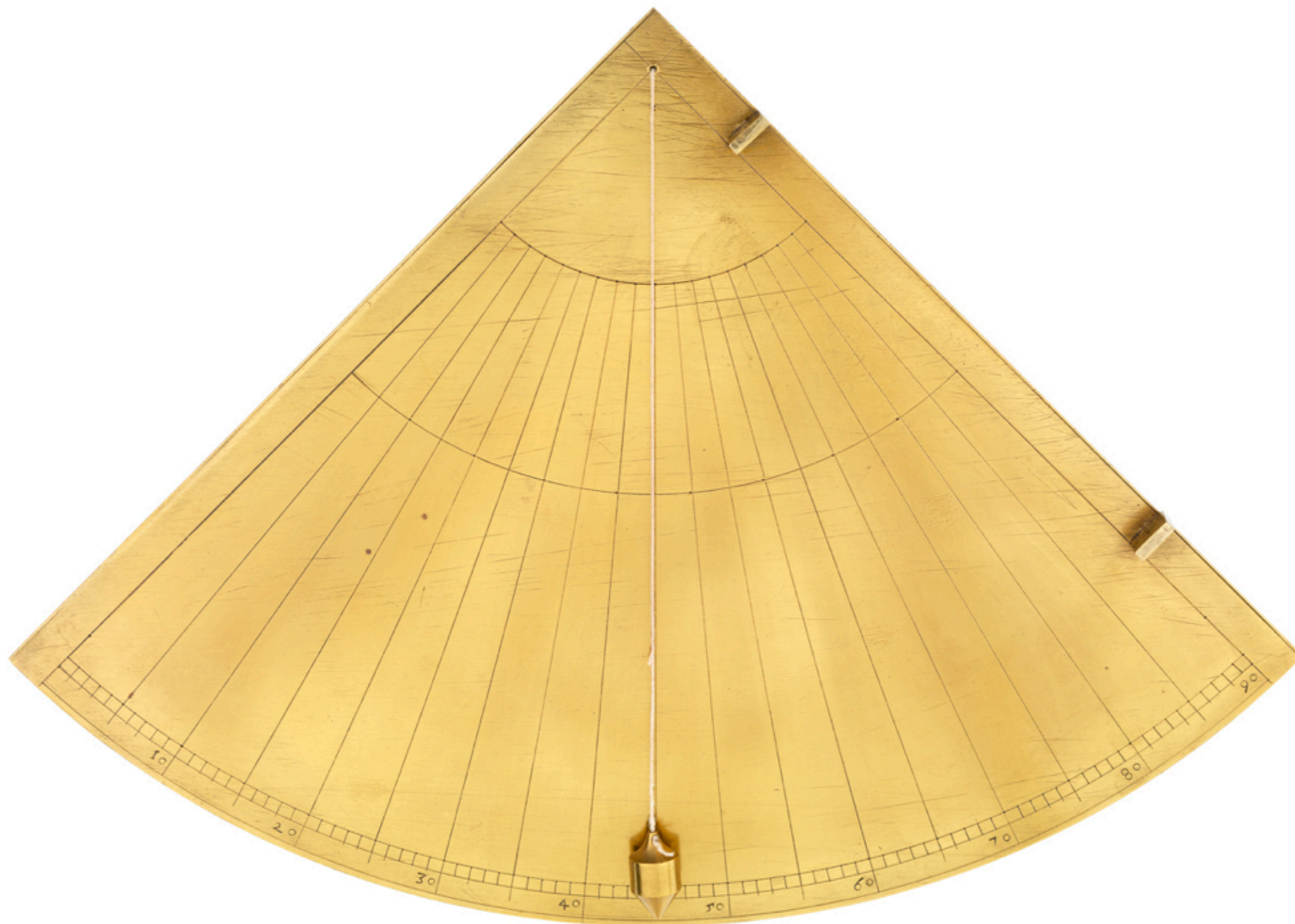


Quadrant, with Inscriptions and Scales for Measuring Latitude

John Collins: "The Sector on a Quadrant, or A Treatise Containing the Description and Use of Four Several Quadrants" London, 1659 (The British Museum)



Horary Quadrant  
George Fisher: "The Instructor: or, Young Man's Best Companion" 7th ed. 1744  
(The British Museum)



Mariner's Brass Quadrant  
c. 1600  
(National Maritime Museum, Greenwich)



MAV1053 Q28  
47-210c

Mariner's Brass Quadrant  
c. 1600  
(National Maritime Museum, Greenwich)



French (Likely) Brass Horary Quadrant  
c. 1600  
(National Maritime Museum, Greenwich)



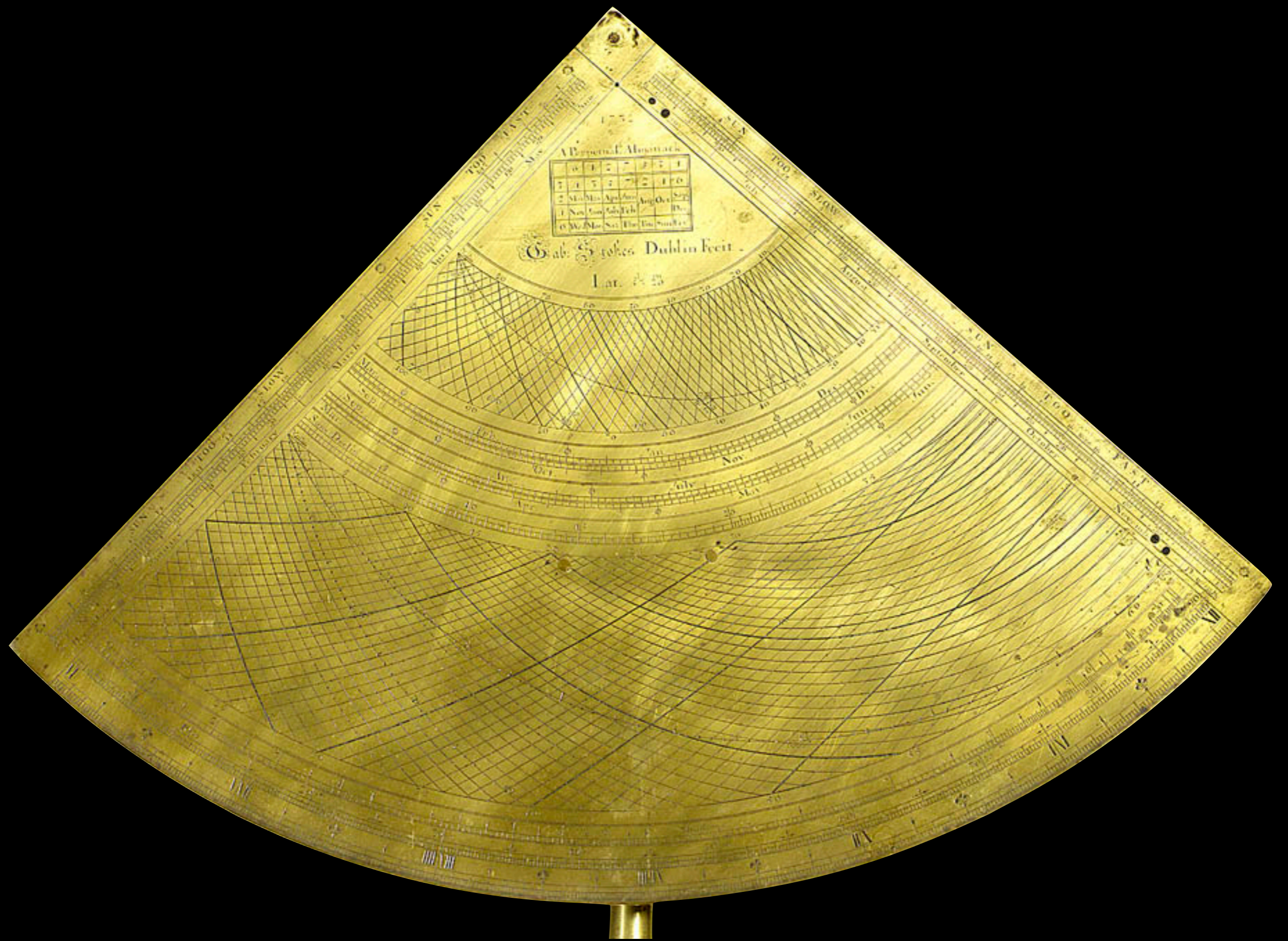
French (Likely) Brass Horary Quadrant  
c. 1600  
(National Maritime Museum, Greenwich)







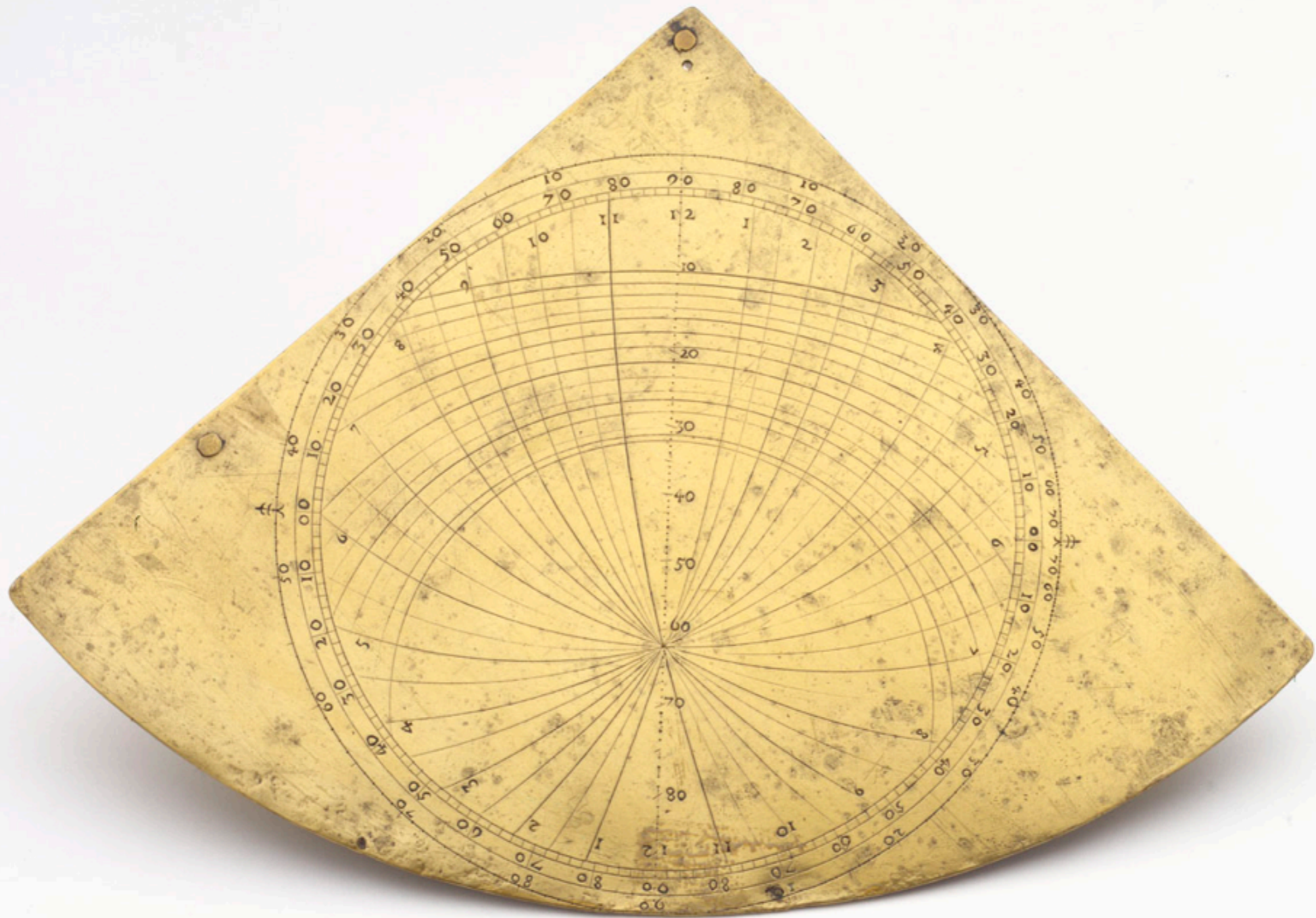
Irish Brass Horary Quadrant with Stand  
by Gabriel Stokes of Dublin 1738  
(National Maritime Museum, Greenwich)



Irish Brass Horary Quadrant with Stand  
by Gabriel Stokes of Dublin 1738  
(National Maritime Museum, Greenwich)



Irish Brass Horary Quadrant with Stand  
by Gabriel Stokes of Dublin 1738  
(National Maritime Museum, Greenwich)



English Brass Horary Quadrant Engraved with Oughtred's Horizontal Projection

c. 1750

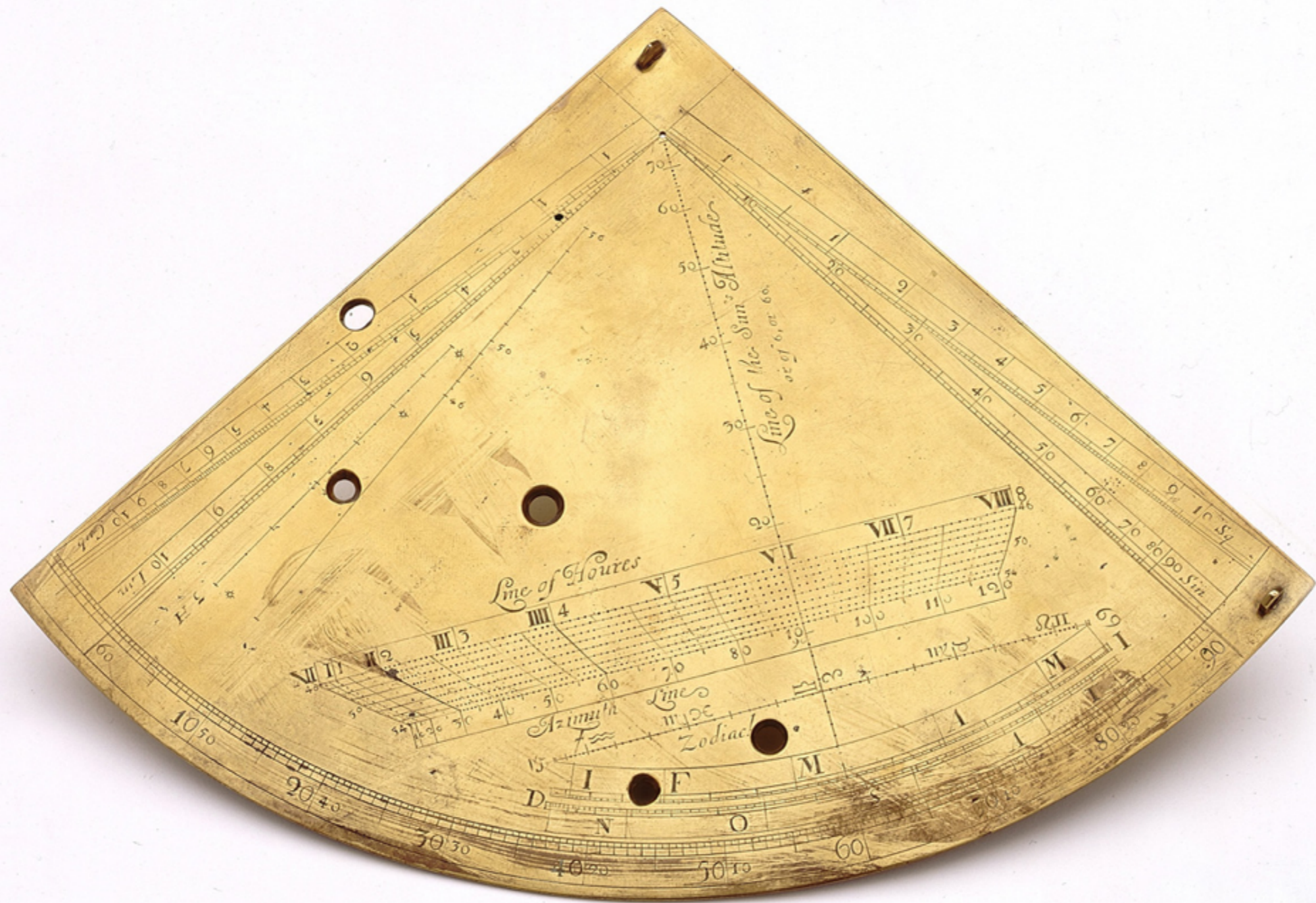
(National Maritime Museum, Greenwich)



English Brass Horary Quadrant Engraved with Oughtred's Horizontal Projection

c. 1750

(National Maritime Museum, Greenwich)



English Brass Horary Quadrant  
c. 1750  
(National Maritime Museum, Greenwich)



English Brass Horary Quadrant  
 c. 1750  
 (National Maritime Museum, Greenwich)



Irish Brass Horary Quadrant Stand  
Dublin 1738  
(National Maritime Museum, Greenwich)

# Horary Quadrants / Gunter Scales

“Edmund Gunter, an English mathematician, described this type of pocket-sized instrument in 1618. Like other horary quadrants, this one is designed to find the time of day by finding the altitude of the sun. When the sunlight passes through the two sights on the top edge of the instrument, a thread with a weight on the end indicates the altitude. The Gunter quadrant is unique in that it is also imprinted with projections of the tropics, equator, ecliptic and the horizon. Using these scales and curves along with related tables, a mariner or surveyor could sight the sun, moon, or stars to find the time of day or night, the date, the length of the day, the times of sunset and sunrise, and the meridian. The Gunter quadrant was cheap, portable, and compact, but because its scales and lines applied to only one specific latitude, it was primarily used on land.

Ref: Bennett, J.A. *The Divided Circle: A History of Instruments for Astronomy Navigation and Surveying* (Oxford: Phaidon, 1987), p. 79-80.

Waters, David W. *The Art of Navigation in England in Elizabethan and Early Stuart Times* (New Haven: Yale University Press, 1958), p. 438.

Gunter, Edmund, *The Works of Edmund Gunter...* (London: F. Eglesfield, 1673), p. 113-120.”

From the Website of the Smithsonian Museum of Natural History



English Brass Horary Quadrant Marked with Gunter Scales, Likely from London  
c. 1640  
(National Maritime Museum, Greenwich)



English Wood Gunter Quadrant  
 by John Browne 1662  
 (National Maritime Museum, Greenwich)





English Brass Horary Quadrant Marked with Gunter Scales Likely from London  
by John Chatfield c. 1630  
(National Maritime Museum, Greenwich)



English Brass Horary Quadrant Marked with Gunter Scales Likely from London

c. 1640

(National Maritime Museum, Greenwich)



English Brass Horary Quadrant Marked with Gunter Scales Likely from London

c. 1640

(National Maritime Museum, Greenwich)



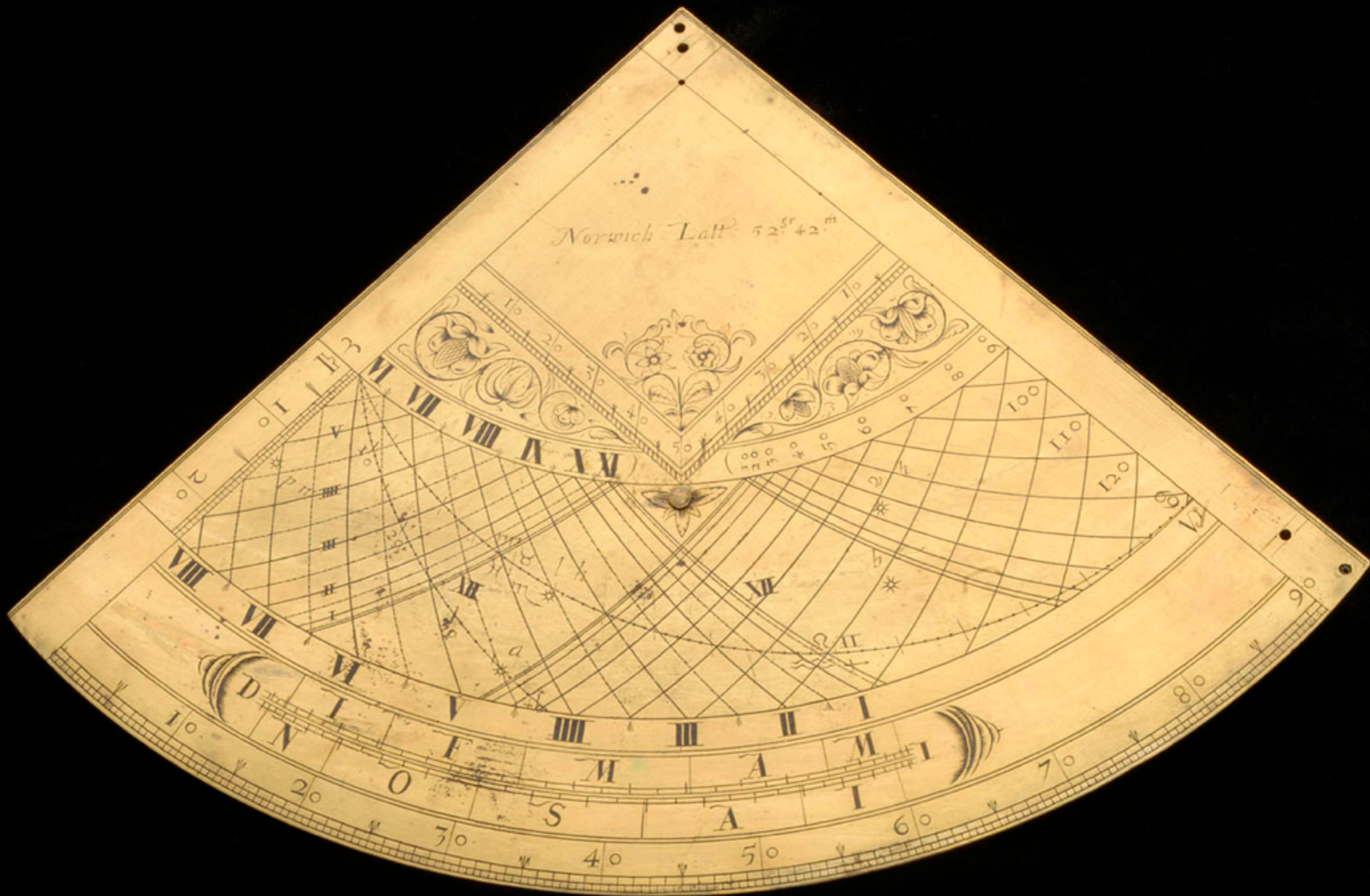
English Brass Horary Quadrant Marked with Gunter Scales Likely from London

c. 1640

(National Maritime Museum, Greenwich)



English Ivory Horary Quadrant Marked with Gunter Scales Likely from London  
Possibly by Walter Hayes c. 1650  
(National Maritime Museum, Greenwich)



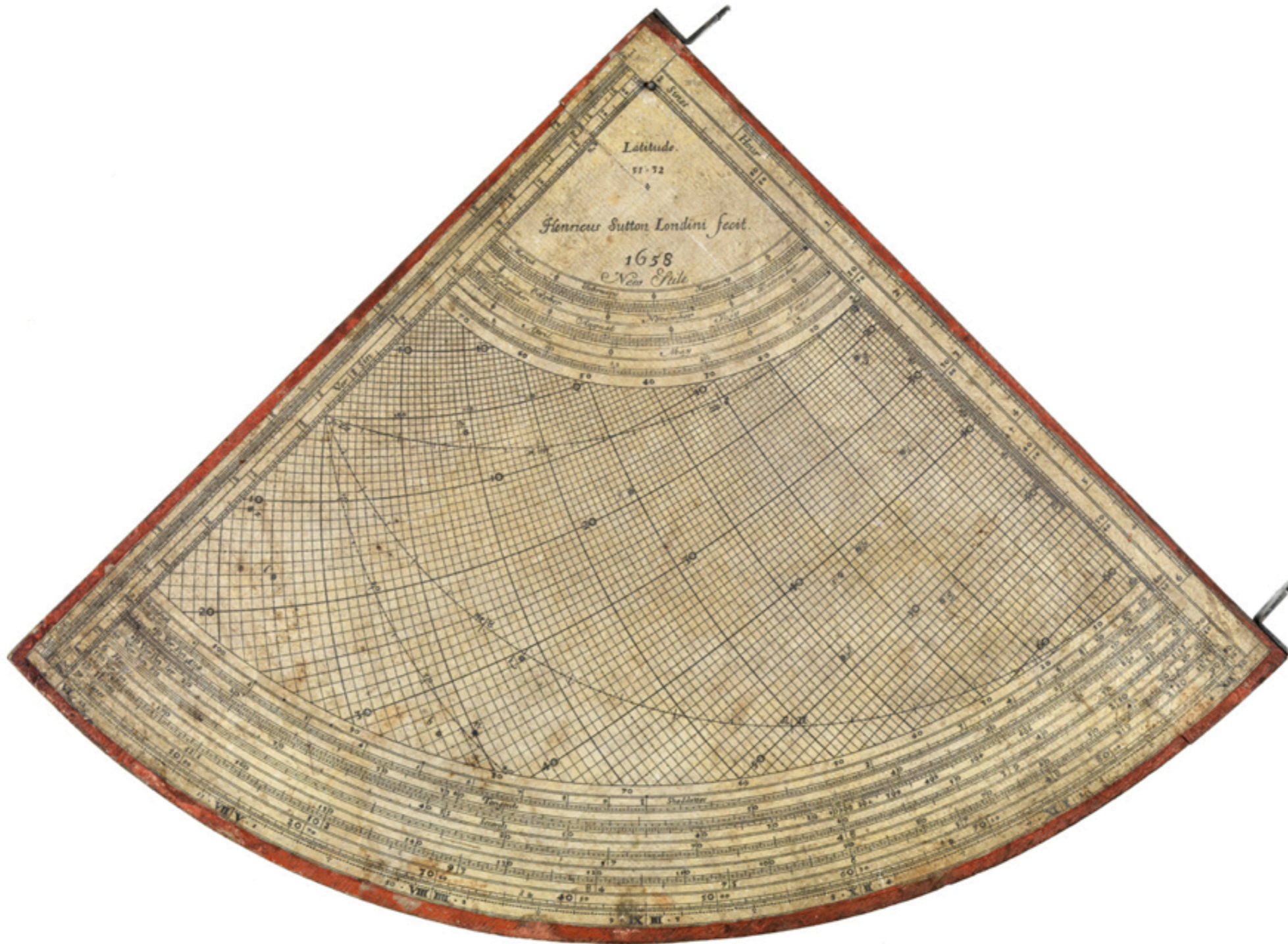
English Ivory Horary Quadrant Marked with Gunter Scales Likely from London  
Possibly by Walter Hayes c. 1650  
(National Maritime Museum, Greenwich)



English Wood & Brass Horary Quadrant Marked with Gunter Scales Likely from London  
by Henry Sutton 1658  
(National Maritime Museum, Greenwich)



English Wood & Brass Horary Quadrant Marked with Gunter Scales Likely from London  
 by Henry Sutton 1658  
 (National Maritime Museum, Greenwich)



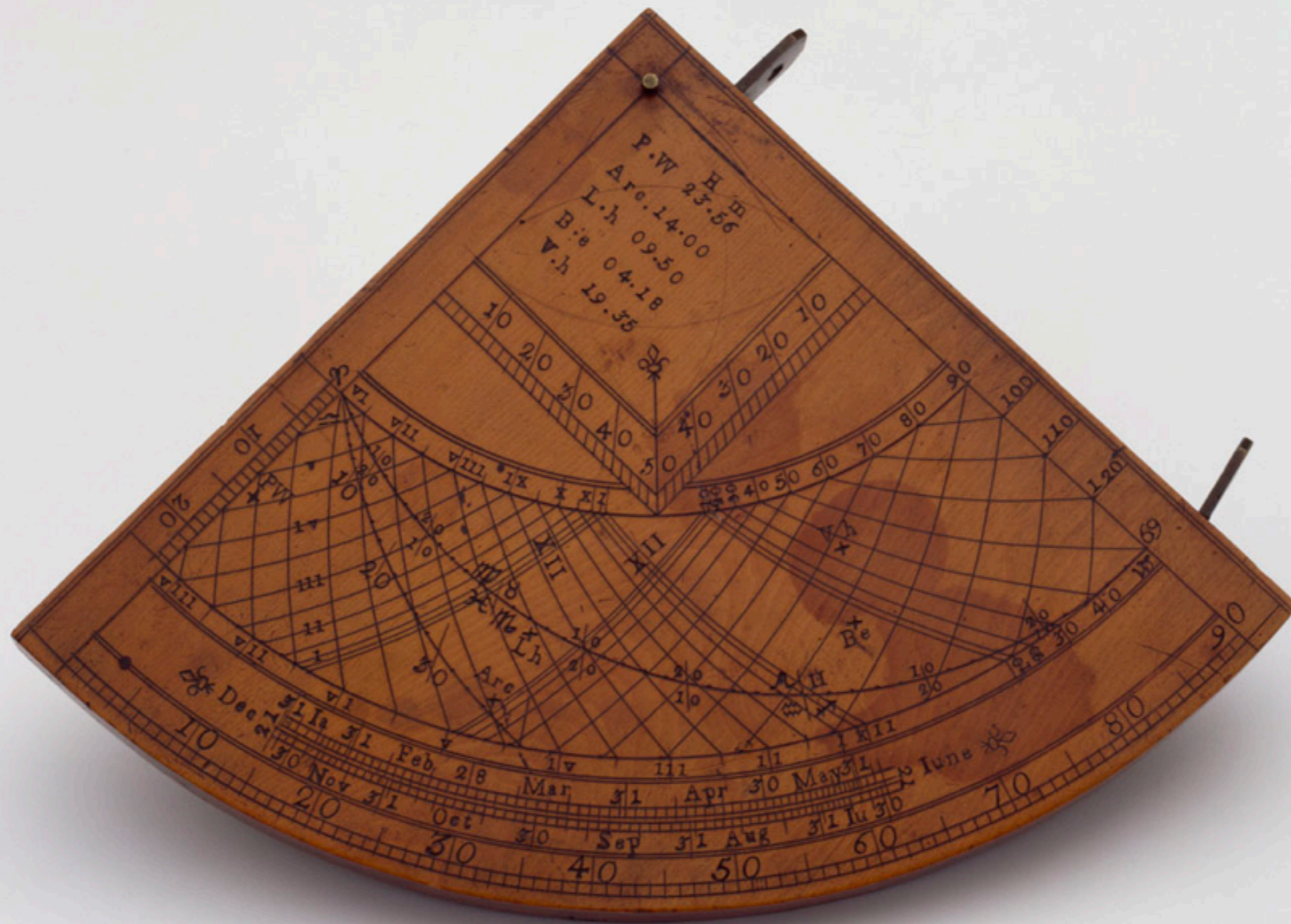
English Wood, Paper, Lead & Brass Horary Quadrant Marked with Gunter Scales Likely from London  
by Henry Sutton 1658  
(National Maritime Museum, Greenwich)



English Wood, Paper, Lead & Brass Horary Quadrant Marked with Gunter Scales Likely from London by Henry Sutton 1658 (National Maritime Museum, Greenwich)



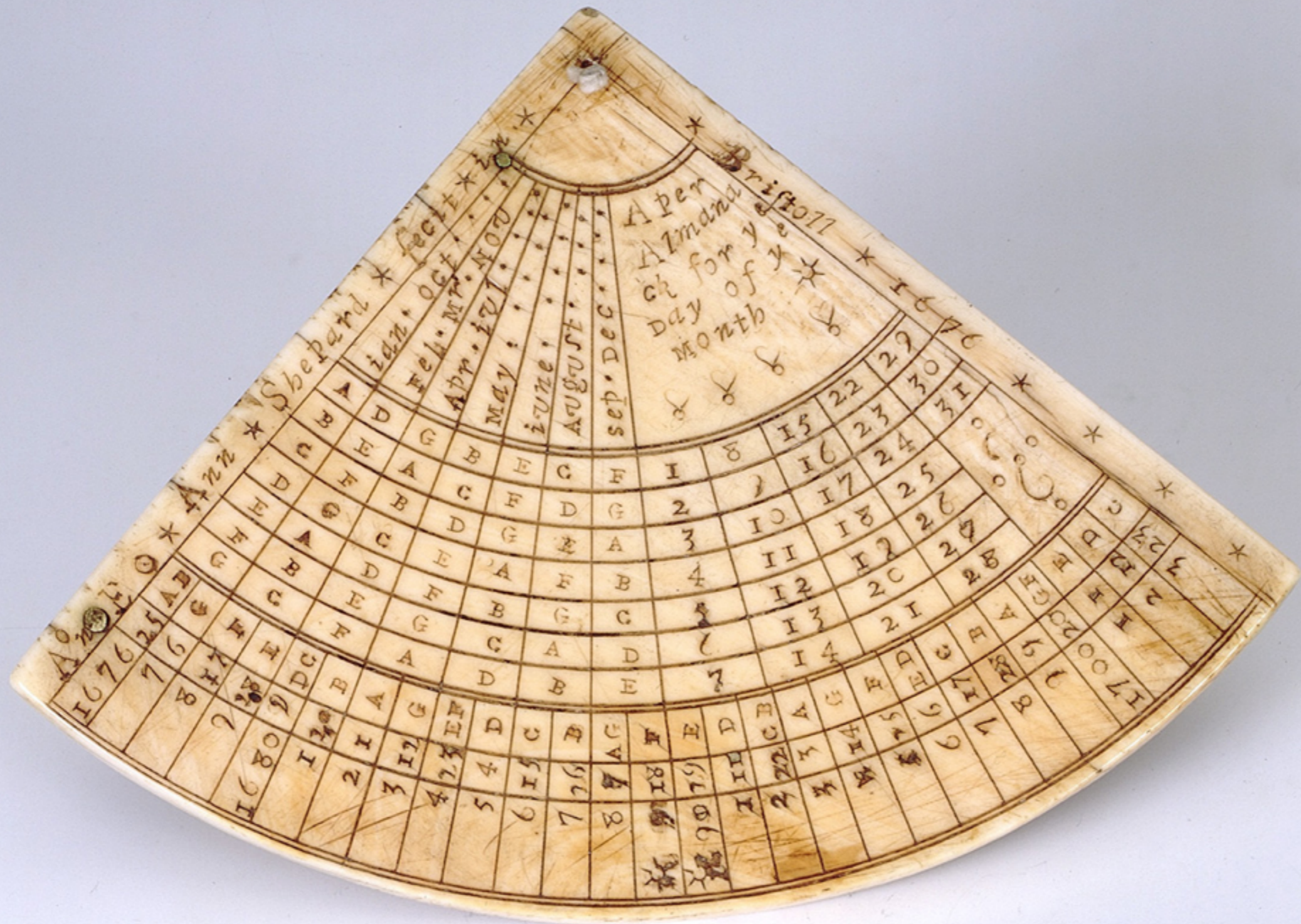
English Wood, Paper, Lead & Brass Horary Quadrant Marked with Gunter Scales Likely from London  
by Henry Sutton 1658  
(National Maritime Museum, Greenwich)



English Wood Horary Quadrant Marked with Gunter Scales Likely from London

c. 1675

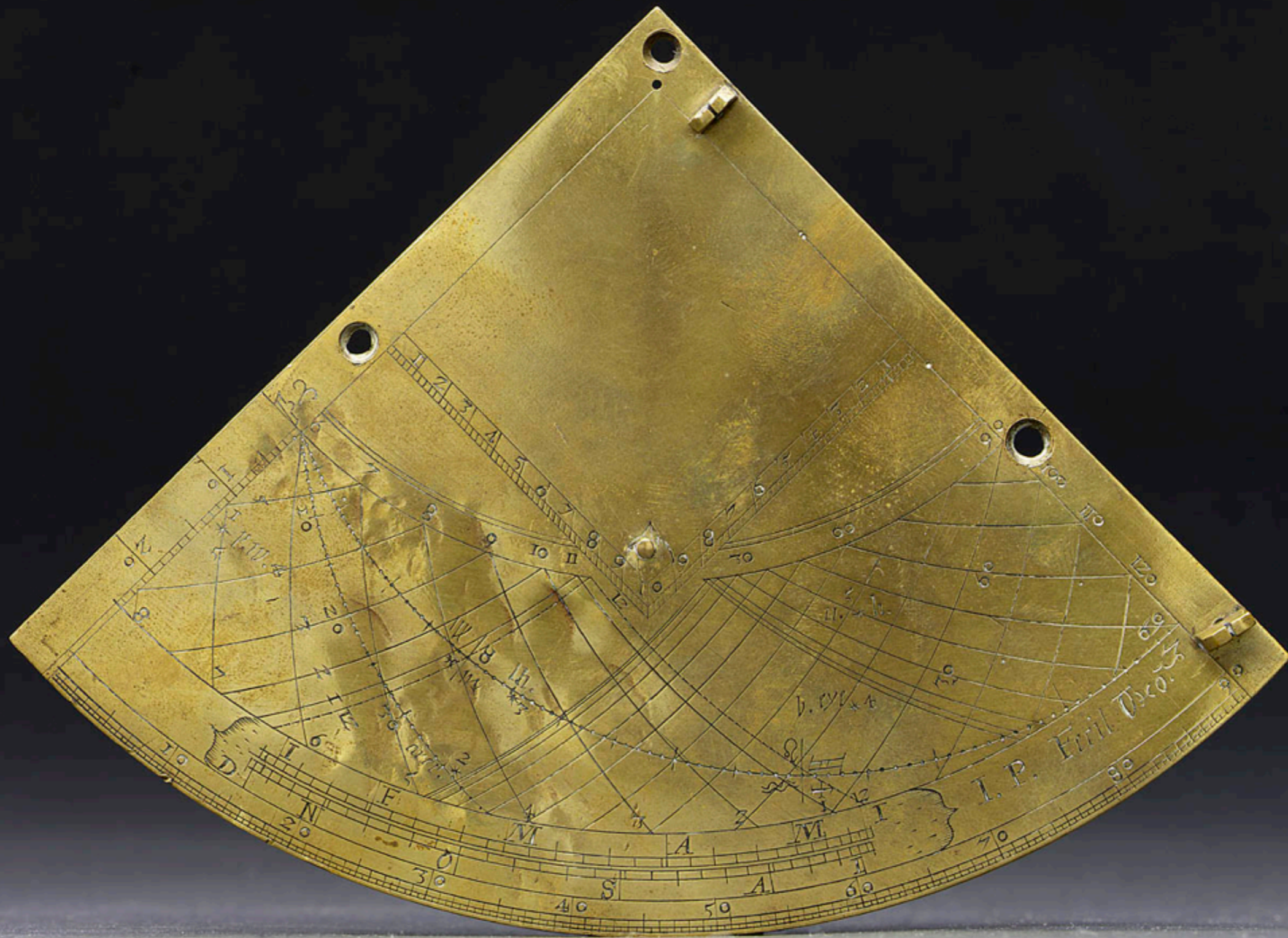
(National Maritime Museum, Greenwich)



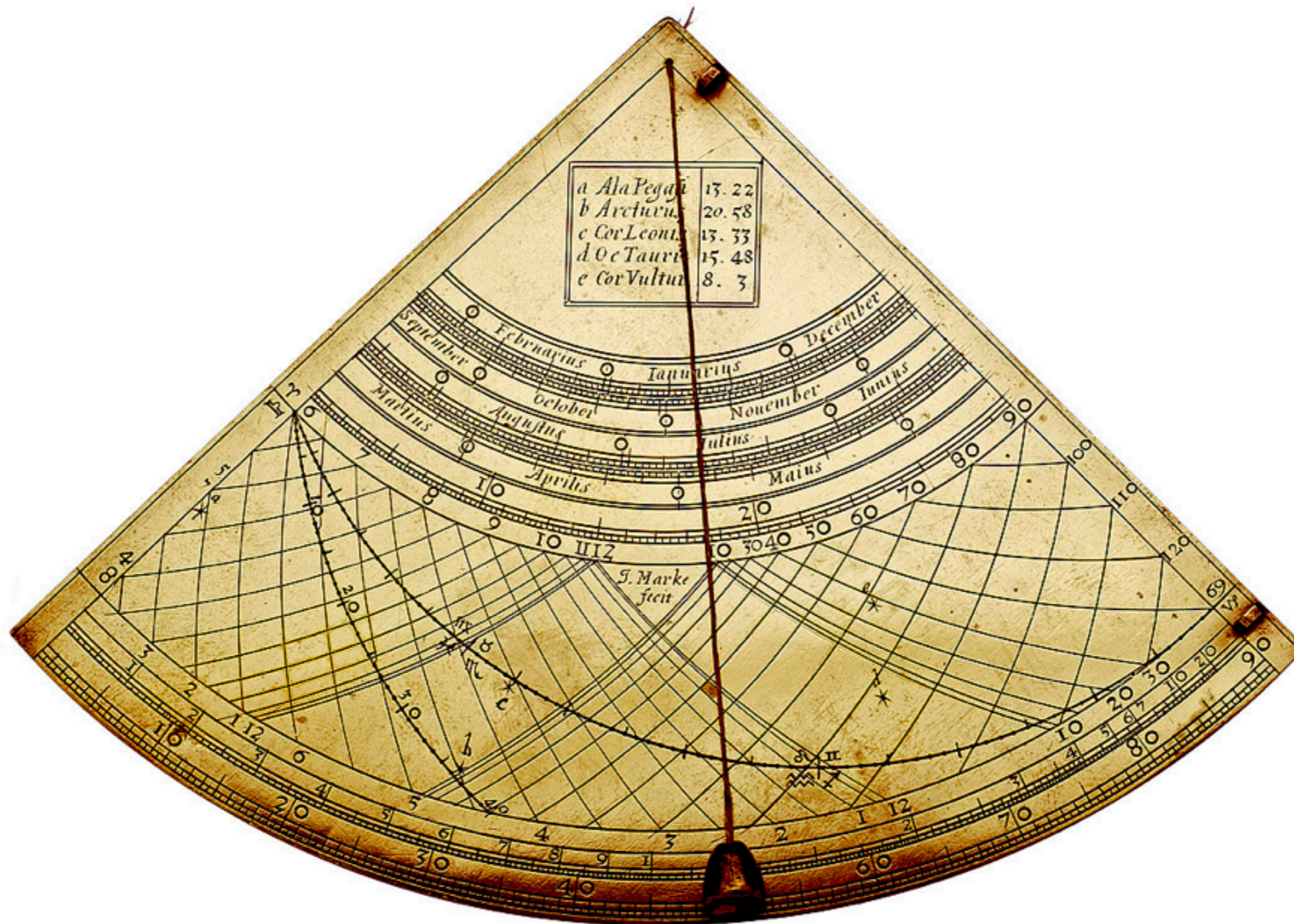
English Ivory and Brass Horary Quadrant Marked with Gunter Scales from Bristol  
 by Ann Sheppard 1676  
 (National Maritime Museum, Greenwich)







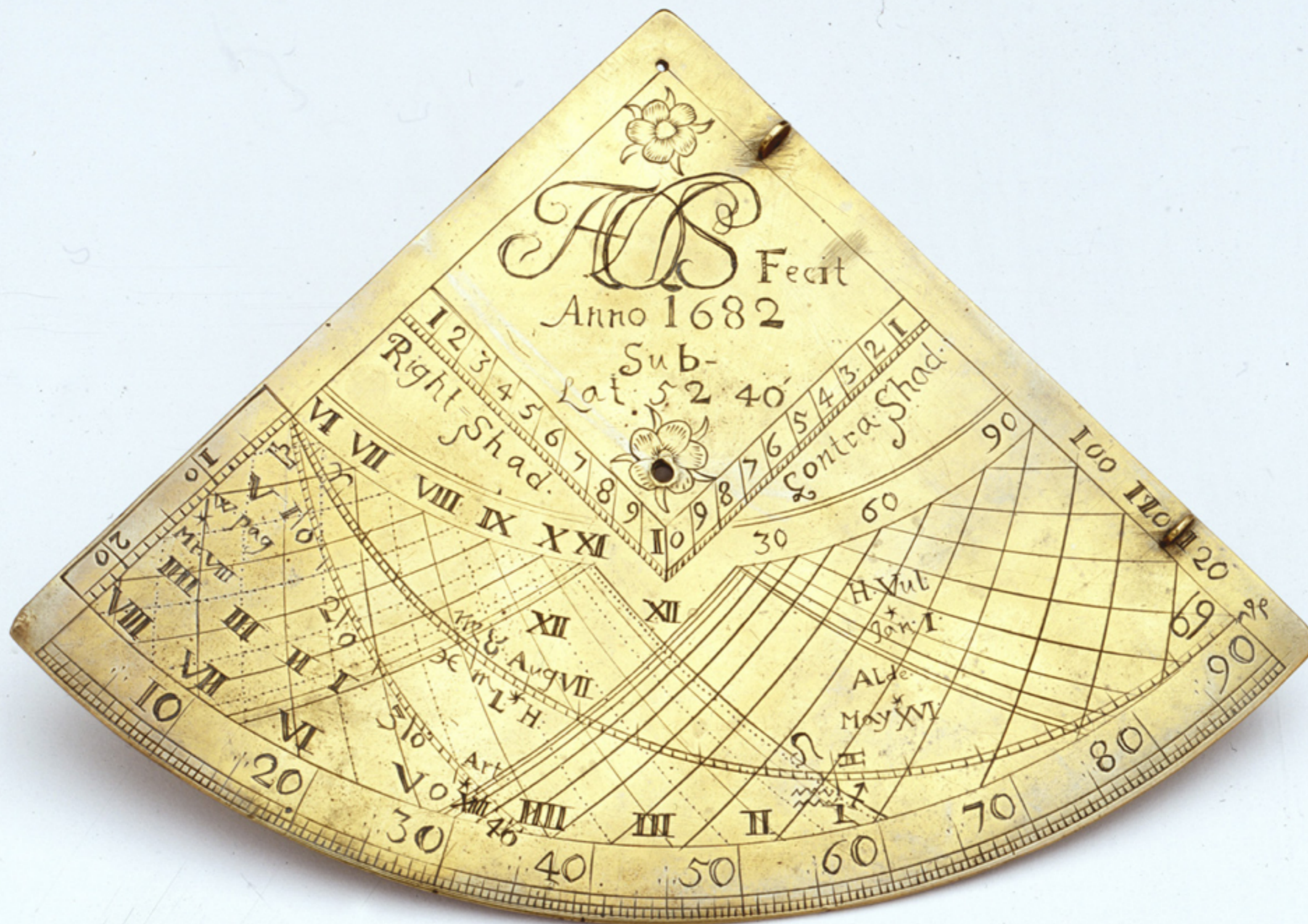
English Brass Horary Quadrant Marked with Gunter Scales from London  
by John Prujean c. 1670  
(National Maritime Museum, Greenwich)



English Brass Horary Quadrant Marked with Gunter Scales from London  
 by John Marke c. 1680  
 (National Maritime Museum, Greenwich)



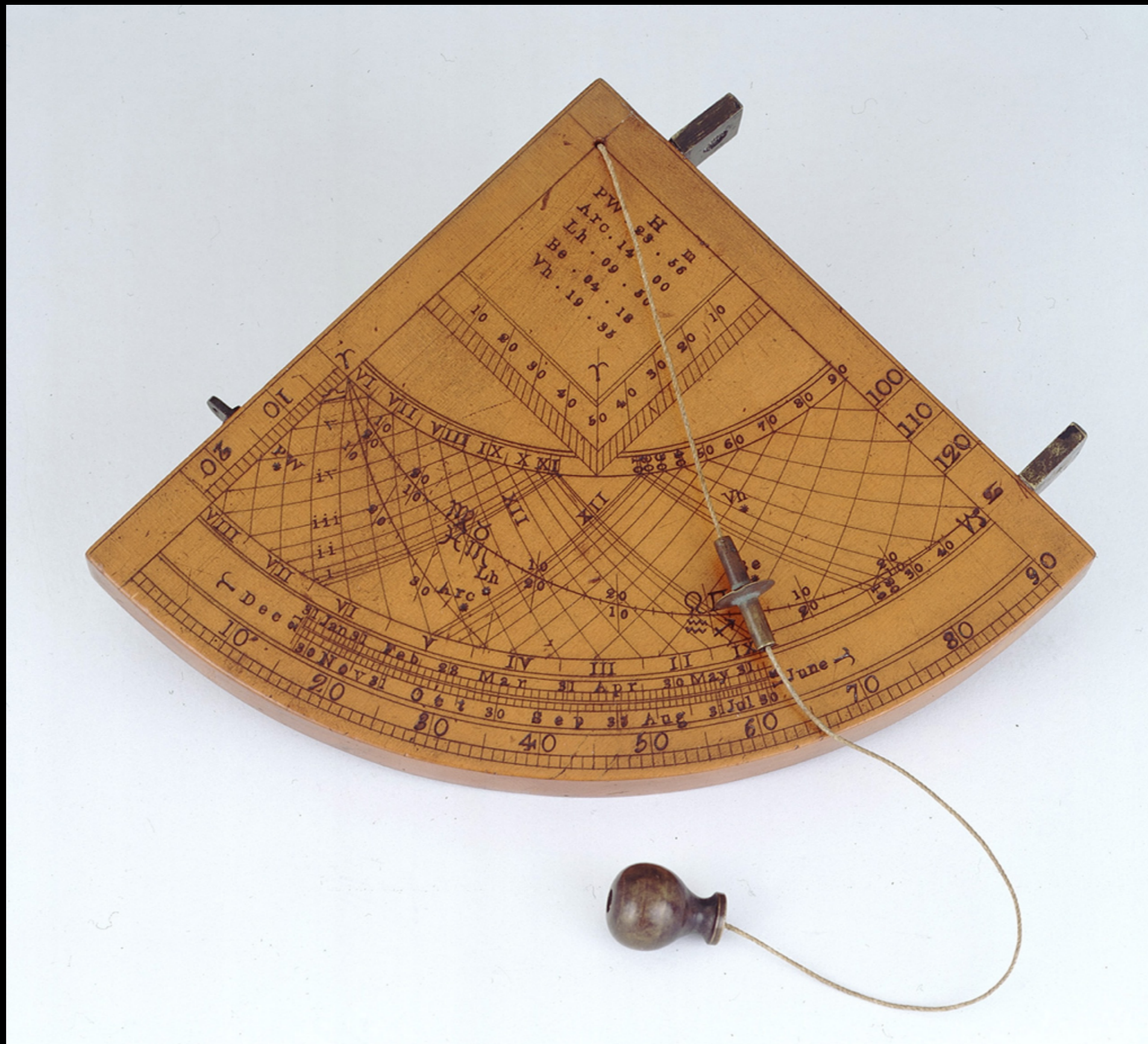
English Brass Horary Quadrant Marked with Gunter Scales, Likely from London  
Late 17th Century  
(National Maritime Museum, Greenwich)



English Brass Horary Quadrant Marked with Gunter Scales, Likely from Norwich  
Marked "A.O.S. Fecit Anno 1682"  
(National Maritime Museum, Greenwich)



English Brass Horary Quadrant Marked with Gunter Scales, Likely from Norwich  
Marked "A.O.S. Fecit Anno 1682"  
(National Maritime Museum, Greenwich)



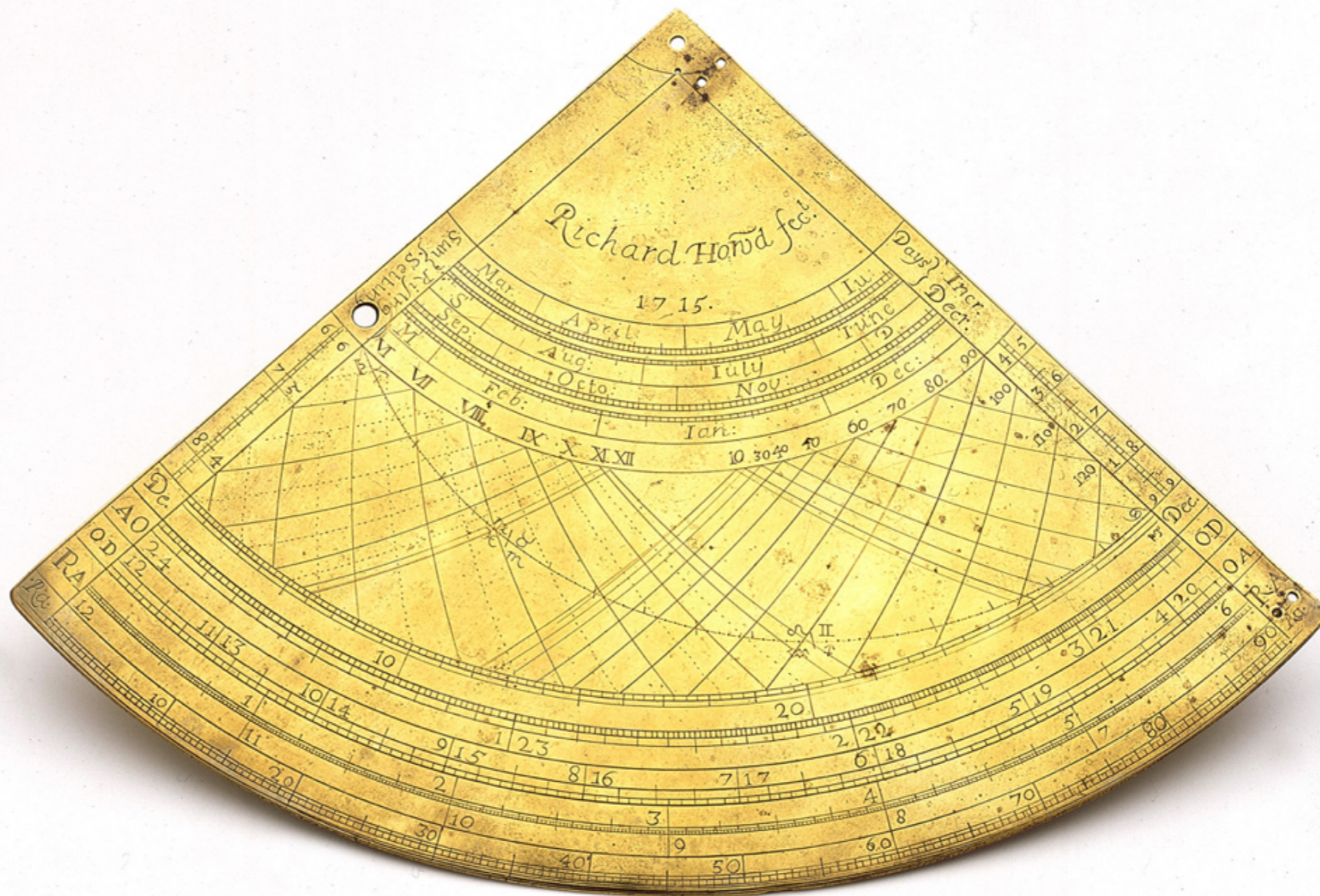
English Wood & Brass Horary Quadrant Marked with Gunter Scales, Likely from London  
c. 1675 - 18th Century  
(National Maritime Museum, Greenwich)



English Wood & Brass Horary Quadrant Marked with Gunter Scales, Likely from London

c. 1700

(National Maritime Museum, Greenwich)



English Brass Horary Quadrant Marked with Gunter Scales, Likely from London  
by Richard Howd (Howard 1715  
(National Maritime Museum, Greenwich)



English Brass Gunter Quadrant  
by John Checkley, Marked "Living in Everdon / \* Thomas Burton \* 1691\*" c. 1691 - 1730  
(Charles Miller Ltd.)



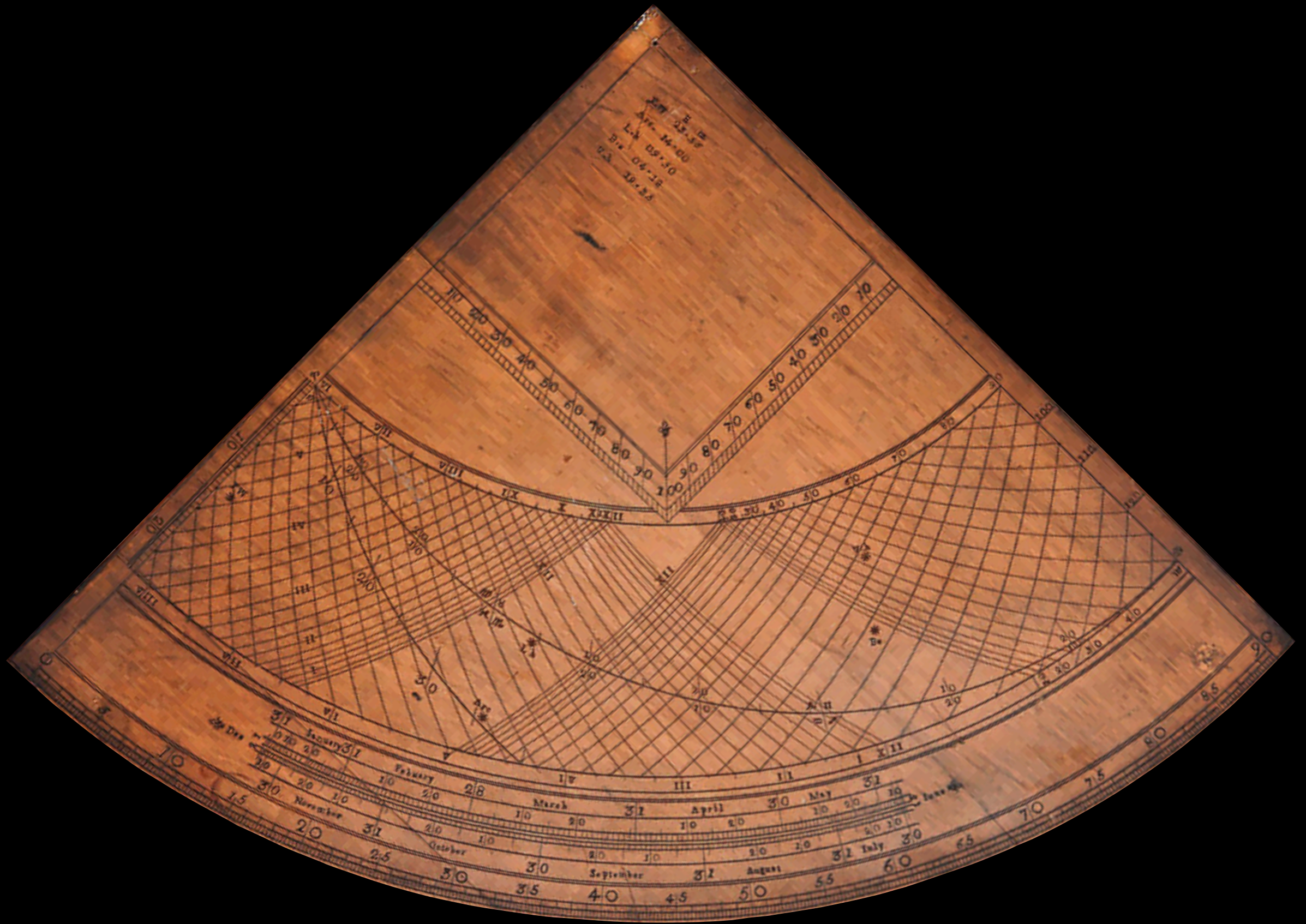
English Brass Gunter Quadrant  
by John Checkley, Marked "Living in Everdon / \* Thomas Burton \* 1691\*" c. 1691 - 1730  
(Charles Miller Ltd.)



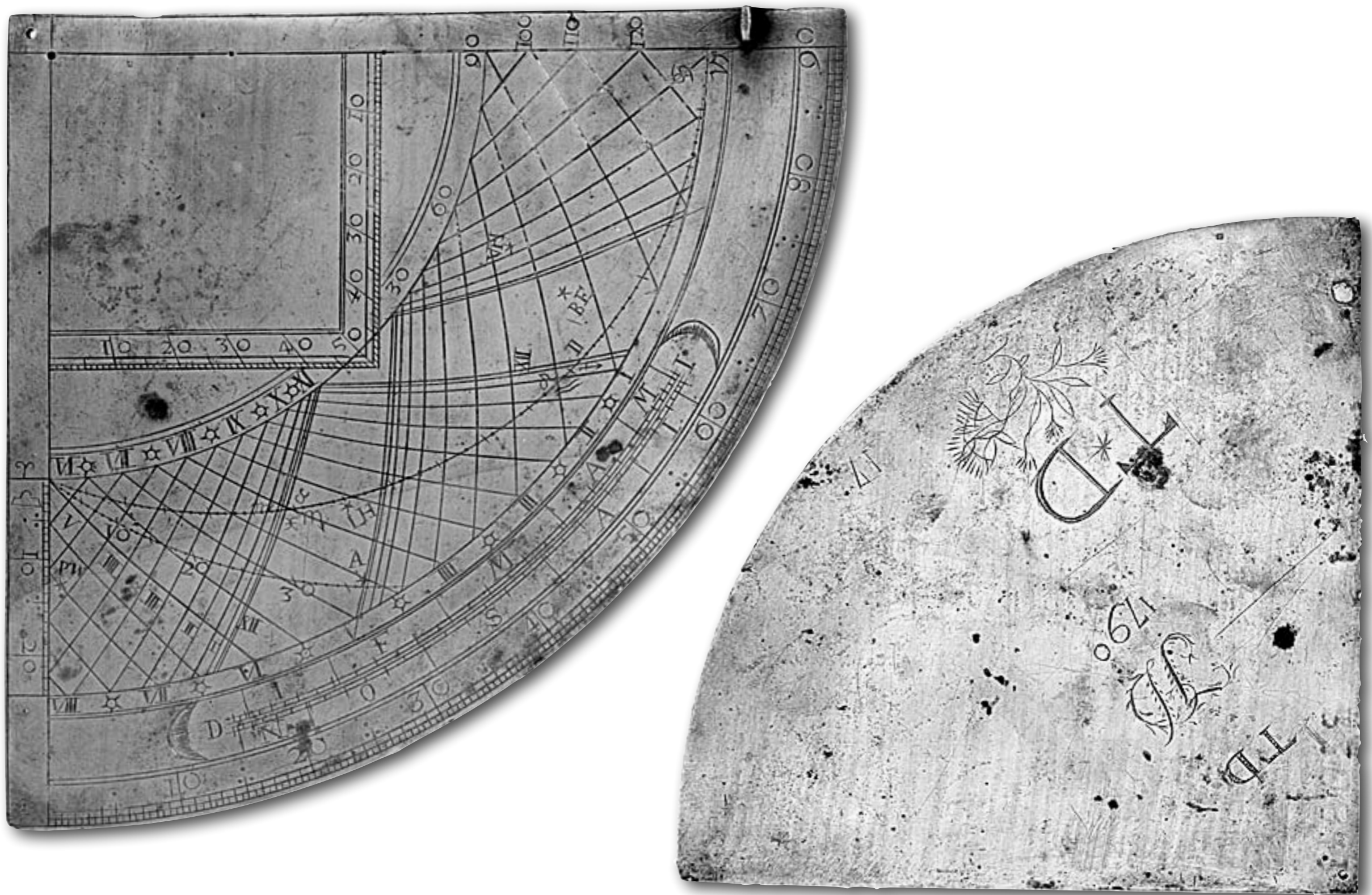
English Brass Gunter Quadrant

by John Checkley, Marked "Living in Everdon / \* Thomas Burton \* 1691\*" c. 1691 - 1730

(Charles Miller Ltd.)



English Boxwood Gunter Quadrant  
 c. 1760  
 (Charles Miller Ltd.)



Brass Gunter Quadrant  
Marked "TD 1790"  
(Smithsonian National Museum of American History)

# Sinical Quadrants



English Wood Sinical Quadrant  
c. 1650  
(National Maritime Museum, Greenwich)



English Wood Sinical Quadrant  
c. 1650  
(National Maritime Museum, Greenwich)

# Mural or Wall Quadrants

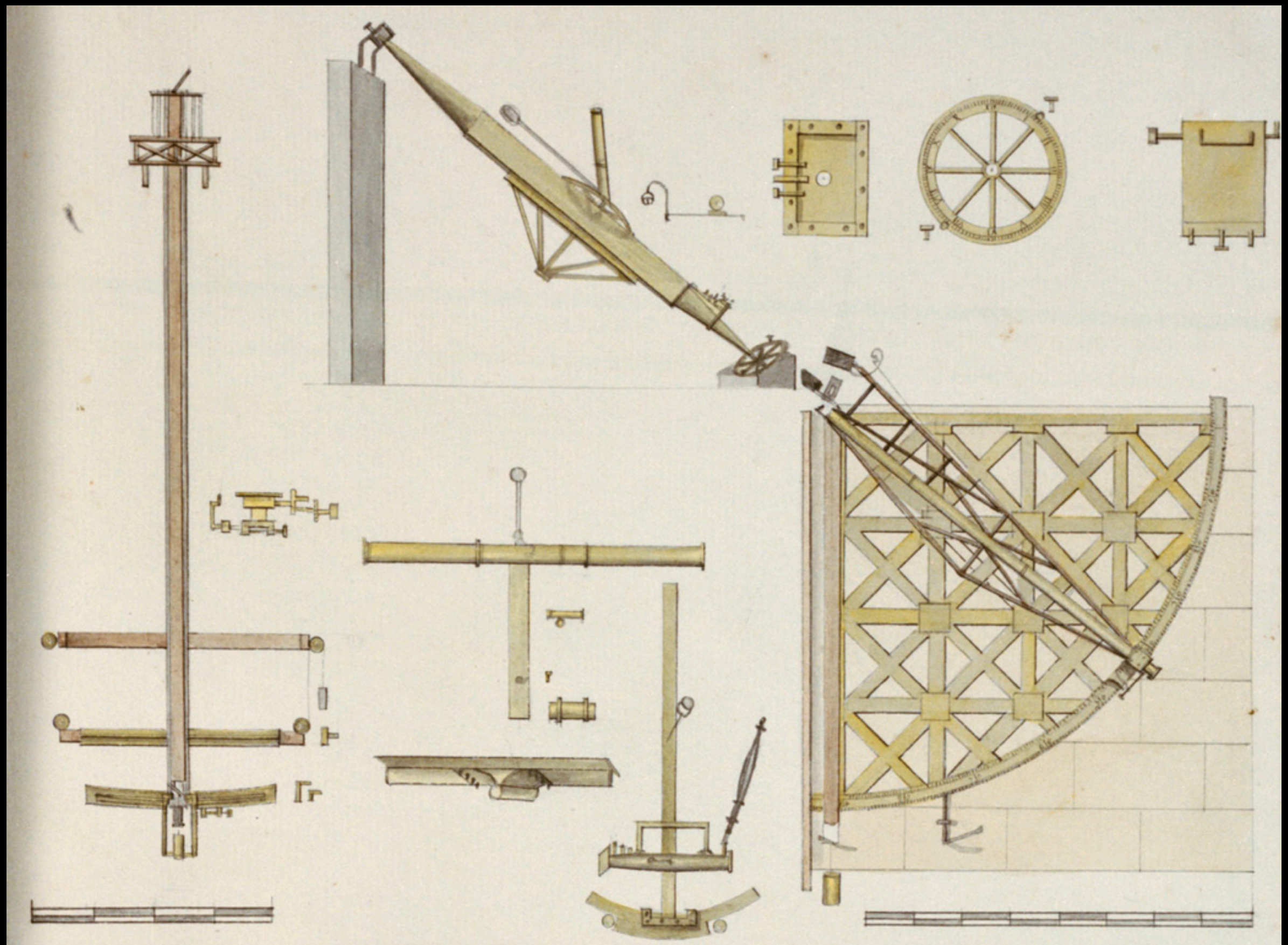


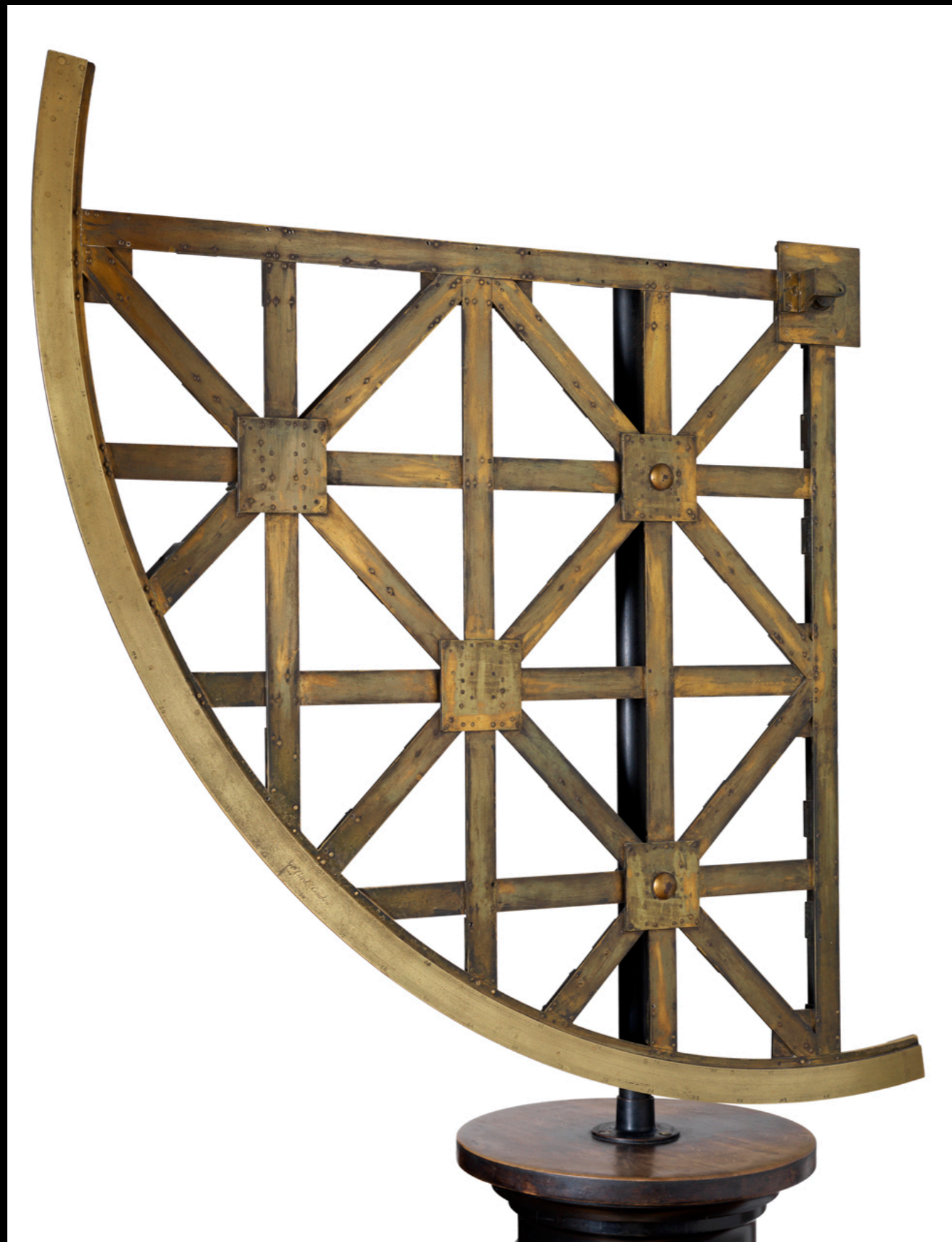
Illustration of Telescopic Instruments and a Large Mural Quadrant  
by John Charnock Late 18th Century  
(National Maritime Museum, Greenwich)



Unfinished Remnant of an English 5 Foot Mural or Wall Quadrant  
by Abraham Sharp c. 1710  
(National Maritime Museum, Greenwich)

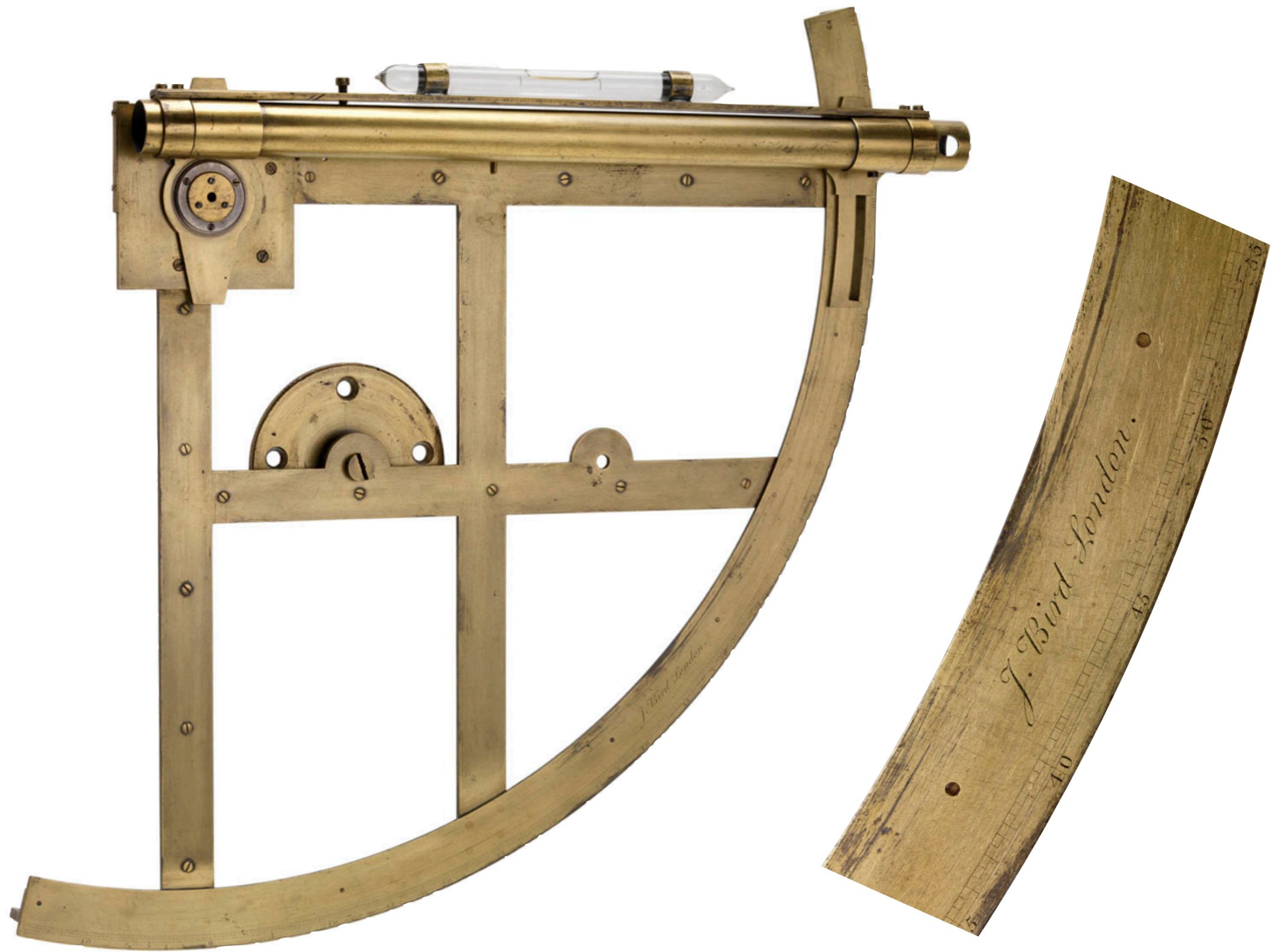


English Brass Bradley Mural or Wall Quadrant  
by John Bird 1750  
(National Maritime Museum, Greenwich)



English Movable Brass Mural or Wall Quadrant  
by John Bird c. 1750  
(National Maritime Museum, Greenwich)

# Quadrants



English Brass Quadrant  
by John Bird c. 1760  
(National Maritime Museum, Greenwich)

# Acknowledgements

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Thank you!

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