

Instruments



95. COMPASS AND SUNDIAL

England, possibly London, *1750–1770

Brass, steel, glass, paper

Diam. $1\frac{7}{8}$ " H. (closed) $\frac{9}{16}$ " H.

(open, with gnomon raised) 1"

N-II4

DESCRIPTION: Circular body with straight sides and flat bottom; threaded around outside of top to receive screw lid. Inside, over glass, a circular frame with hours in roman numerals: V, VI, VII, VIII, IX, X, XI, XII, I, II, III, IV, V, VI, VII. Hinged gnomon mounted on curvilinear crosspiece and tab, both of which are part of the frame. Inside bottom, under needle, is a printed paper compass rose imprinted with N, S, O [for east], and W for the cardinal points and NNW, NW, WNW, etc. for points between. It is also graduated into degrees with numerals every ten degrees: 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 80, 70, 60, 50, 40, 30, 20, 10, on each half. Initials "EH" printed near center. Compass rose hand colored red and green. Two pairs of concentric circles and

scratched "XII" on underside of body. Circular lid, threaded to fit body, has a paper insert printed with a compass rose with the cardinal points and NW, SW, etc. between.

PROVENANCE: Col. Jeremiah Kingsbury of Oxford, Mass., carried it during the Revolutionary War. Agnes Kingsbury, Nadeau

COMMENTS: The Rhode Island Historical Society owns a seventeenth-century compass and sundial that on first glance is nearly identical to this one. The major difference is that the RIHS instrument lacks a needle. The paper compass rose itself is balanced on a needle and turns. Clearly, however, the overall form persisted with very little change over time. The initials EH may refer to the late eighteenth-century London instrument maker named Harrison.

REFERENCES: Robert F. Trent, "The Concept of Mannerism," in Fairbanks and Trent, eds., *New England Begins: The Seventeenth Century*, 3: 368–412, no. 407. *Tesseract Early Scientific Instruments*, no. 24, shows a similar compass and sundial made in the late eighteenth century by a maker named Harrison.



96

96. SCALE AND WEIGHTS IN BOX

England, *1740-1770

Steel, brass, bronze, wood, paper

Scale: L. of bar $4\frac{3}{4}$ " Diam. of pan 2" Box: L. 6" w. $3\frac{1}{4}$ "

D. $1\frac{1}{8}$ "

N-116

DESCRIPTION: Scale consists of a horizontal steel bar, each end bent into a hook to hold the lines suspending the circular pans, one on each end. Pivoting in the center is a vertical rod with a short shaft above the pivot point (for grasping) and a longer portion below. Another small shaft fixed to the horizontal bar in front of the vertical rod shows the degree of displacement when the contents of the two pans are of unequal weight. Each of the two circular dished pans is attached by three cords each to the ends of the bar.

The weights consist of (1) three cast bronze nesting weights, probably 4, 2, and 1 troy ounces. The largest one has

on its bottom three concentric rings and is stamped twice "R" incuse. The two smaller weights are double-scored around the outside. (2) four small cast brass weights, all rectangular. They are stamped, in decreasing order of weight, with five, four, three, and two circles, indicating pennyweight, (3) one rectangular weight cut from sheet brass is stamped with six circles, probably indicating six grains (one-half a pennyweight). All weights also bear stamps resembling hallmarks, most of which are illegible, but some appear to be the lion passant used on English silver to indicate sterling quality.

Rectangular wooden box (probably oak) with a flat lid hinged with steel cotter pins. The box is of nailed construction and has one large T-shaped compartment and two small rectangular ones. Paper glued to inside of lid is imprinted:

The Standard / Weight of y^e following Coins

	OZ	DW	GR
5 Moid ^{rs}	1	14	15
$\frac{1}{2}$ d ^{to}	0	17	$7\frac{1}{2}$
a 3 ^t 12 ^d	0	18	12

a 36°	o	9	6
a 18°	o	4	15
a 9°	o	2	7½
A Guinea	o	5	9
½ d ^{to}	o	2	16½
A Moidoire	8	6	22¼
½ d ^{to}	o	2	11
A Pistole	o	4	8
½ d ^{to}	o	2	4

Note that each grain of Gold
is two pence at four pound p'ounce

S-shaped brass hook pivots on top of lid and fits into steel loop fixed in front of box and which projects through the lid when it is closed.

COMMENTS: Boxes of scales and weights were imported in quantity into the colonies from England during the eighteenth century. Prior to the Revolution goldsmith Joseph Richardson in Philadelphia imported and sold such boxes bearing his own imprint. Because of the great variety of coinage circulating in the colonies and the common practice of clipping, it was important for merchants and shopkeepers to know the actual weight of the coins, which could then be translated into monetary value with the help of the printed conversion data.

REFERENCES: Fales, *Joseph Richardson and Family*, p. 68 and figs. 30, 31. McCusker, *Money and Exchange in Europe and America, 1600–1775: A Handbook*, passim.

EXHIBITION: "A Case for Boxes," Museum of Art, Rhode Island School of Design, Providence, R.I., 1980.

97. BAROMETER AND THERMOMETER

Mann and Stevens, Coventry, England, 1828–1835
Mahogany, satinwood, ebony inlays over an unknown
wood; brass, steel, glass

H. 39¼" W. 10⅛" D. 2" Diam. of dial 8½"

N-442

DESCRIPTION (CASE): Banjo-shaped neoclassical period case. Circular barometer dial in lower portion; thermometer



in neck. Lower section has a smaller circular pendant; upper section resembles a tall-case clock with an angular broken pediment. Lower portion of waist swells at sides. Mahogany veneer overall outlined with ebony and satinwood string inlay; circular shell inlay in pediment; oval shell inlays in swelled portion of waist; shell inlays rendered in various shades. Urn-shaped brass finial on plinth in center of pediment. Back of case has a hinged door running the length of the case.

DESCRIPTION: (WORKS): Wheel-type mercury barometer with U-shaped glass tube inside case; float in one end of tube connected by silk cord to weight in a third tube; cord loops over brass wheel (pulley) centered on shaft that turns arrow on dial. Silvered brass dial engraved with pressure levels: "28, 29, 30, 31", and graduated into tenths between numbered 1-9; each tenth is divided into one-tenth increments. Engraved weather indicators circle dial starting at 28: "STORMY", "MUCH-RAIN", "Change", "FAIR", "SET-FAIR", "VERY-DRY" in upper and lower-case gothic letters and large and small roman capitals; compass rose in center. Engraved in lower center: "Mann & Stephens / Coventry". Dial covered by circular brass frame with clear glass. Ivory knob below for setting arrow. Mercury thermometer in sealed glass tube; mounted on silvered brass plate engraved with numbers 0, 1, 10 . . . 120 on left side and "Freez/ing", "Temp/rate", "Sun/Heat", "Blood/Heat" on right. Mounted under glass within a molded wood frame with an arched top.

COMMENTS: There were many makers of barometers in England, but some barometers were made or retailed by clockmakers. The firm of Mann and Stevens (sic), Coventry, was one such firm that did business between 1828 and 1835. This is an extremely fine barometer with a beautifully inlaid case.

REFERENCES: Loomes, *Watchmakers and Clockmakers of the World*, p. 153. A similar barometer, lacking only the elaborate inlay, was made by Alexander Lowe of Holborn, London, ca. 1810; it was advertised by Neville Antiques, Cushing, Maine, in *Maine Antiques Digest* July 7, 1995.



98A

98A-C. SURVEYOR'S INSTRUMENTS

A. Surveyor's Compass and Box

Peregrine White, Woodstock, Connecticut,

1774-1800

Brass, steel; pine

Compass: L. 13 $\frac{1}{4}$ " W. 5 $\frac{7}{8}$ " H. 2 $\frac{7}{8}$ "

Box: L. 13 $\frac{3}{4}$ " W. 6 $\frac{5}{8}$ " H. 4 $\frac{3}{8}$ "

N-452.I

DESCRIPTION: Circular brass case with friction-fit lid. Silvered brass dial engraved with compass rose, fleur-de-lys, and, in center, "Peregrine White / Woodstock"; raised ring around dial calibrated 0, 10, 20, 30, 40, 40, 30, 20, 10 in each quadrant and marked off in 1 and 5 degree increments. Attached to underside of case are opposing flat arms with hinged brass sight vanes (one narrow slot, one wide slot with sighting wire in center); arms adjustable. In center of underside, a mounting device and adjustable thumbscrew for tripod. Instrument housed in original white-pine box of conforming shape; cover formerly attached by leather hinges, now broken.



98A-C

B. Protractor / Rule and Dividers in Box

*American, 1760-1785

Brass, steel; pine

Protractor/rule: L. 10" H. 3 $\frac{3}{4}$ "

Dividers: L. (closed) 4"

N-452.2

DESCRIPTION: Combination rule and protractor made as one flat piece of brass. Protractor calibrated 10, 20, 30, 40, 40,

30, 20, 10 in each of two quadrants. Rule has three sets of calibrations: 40: 0-10, 1-10, 1-10, 1-8; 30: 0-10, 4, 2-10, 1-8; 20: 0-10, 1-8. Reverse: columns and rows marked off with calibrations below: 10, 20, 30, 40, 50, 60, 70; vertical on left side 1, 2, 5, 5, 7, 7, 9, 10 upside down; calibrated below: 1-9, 1, 10; vertical on left side: 1, 3, 5, 7, 9, 10; upper edge of rule beveled. Dividers have brass upper arms and pivot; steel lower portion (triangular in section); tenon from lower portion penetrates upper portion. Both instruments are in original white pine box conforming to shape of protractor / rule; recesses of conforming shape inside each half for instruments; leather hinges; traces of red paint on outside.

C. Tripod for Surveyor's Compass

*American, *1760–1785

Cherry, brass, steel

L. (legs extended and closed) 54¼"

N-452.3

DESCRIPTION: Cherry universal joint, roughly ball shaped, with three cutaway sections to permit insertion of bolts through three slots to receive legs; legs pivot on bolts. Below joint, legs are circular in section; at lower end of first section of each leg is a brass sleeve threaded inside to receive leg extensions; each lower leg extension terminates in a brass ferule with a steel point. Attached to top of joint is a hollow brass shaft with a ring turning; inside top is a brass ball joint with an emerging solid brass shaft that fits into the bottom of the compass.

PROVENANCE: Belonged to General Artemas Ward. Was used to lay out many of the land boundaries of Worcester, Mass. and the town of Ward, Mass. (now Auburn, Mass.).

COMMENTS: Peregrine White (1747–1834) worked primarily as a clockmaker in Woodstock, Conn. He served his apprenticeship in Boston and worked there until he was accused of forgery, whereupon he moved permanently to Woodstock. In 1774 he and William Morris opened a shop in North Woodstock. White is named for and is a descendant of Peregrine White, born on the *Mayflower* shortly after its arrival in New England and the first Pilgrim to be born in the New World.

REFERENCES: Bedini, *Early American Scientific Instruments and Their Makers*, fig. 23, and p. 47, for an identical surveyor's compass owned by the National Museum of American History and biographical information on Peregrine White. See also Smart, *The Makers of Surveying Instruments in America Since 1700*, p. 165, who mentions two brass surveyor's compasses owned by Old Sturbridge Village that are engraved P. White. See also Winthrop, *The History of Woodstock, Connecticut*, pp. 134, 203, 239, 318, 608.

EXHIBITION: "A Case for Boxes," Museum of Art, Rhode Island School of Design, Providence, R.I., 1980.



99

99. PERSPECTIVE GLASS OR ZOGRASCOPE

Probably United States, 1770–1800

Maple, glass

H. 22½" W. 10" D. 13½" (but variable)

N-719

DESCRIPTION: Circular base with concentric turnings; vasiform turned shaft with thumbscrew in upper section. Rectangular wood mount for magnifying circular lens set between two blocked-and-turned pillars and atop a blocked-and-turned arm; arm, in turn, is supported by a vasiform shaft with an extension that fits into cavity in main shaft. (Thumbscrew in shaft holds it in place.) A framed rectangular mirror swings (from its upper corners) between short posts attached to the back of the upper blocks of the columns.

COMMENTS: Zograscope first appeared in London newspaper advertisements of the 1760s. One George Adams, "Mathematical Instrument-Maker To His Majesty, At Tycho Brahe's Head, in Fleet-Street, London" included in his list of instruments "ZOGRASCOPEs for Viewing Perspective Prints." The advertisement has been clipped from the newspaper and is therefore undated, but is thought to date from the 1760s. The Adamses, father and son, also published books and catalogues with references to Zograscope. Other trade cards and advertisements of the time refer to an "optical diagonal machine" which is, apparently, the more common name given to this instrument, for the term "Optical Diagonal Machine for Perspective Prints" was advertised by one Edward Nairne around 1760. An "optical machine" made by Nairne that closely resembles the one shown here is in the Science Museum, London.

An instrument known as the "optique" appeared in Paris early in the eighteenth century and may well be the predecessor of the London-made zograscope. Zograscope re-

mained popular in England for at least a century. One was exhibited at London's Great Exhibition of 1851. They were undoubtedly imported into the United States before and after the Revolution and may well have been made here as well.

Perspective prints were produced in large numbers. They were usually views of cities or buildings, and the captions or titles were printed in mirror image so that they would read right when reflected in the zograscope's mirror.

The function of zograscope, or optical machines, has been misunderstood in some quarters. They are said erroneously to have been used to enhance and focus the light of a candle or some other lighting source. English antiquarians have even dubbed them shaving mirrors.

REFERENCES: J. A. Chaldecott, "The Zograscope or Optical Diagonal Machine," *Annals of Science* 9 (Dec. 1953), pp. 315-22.