

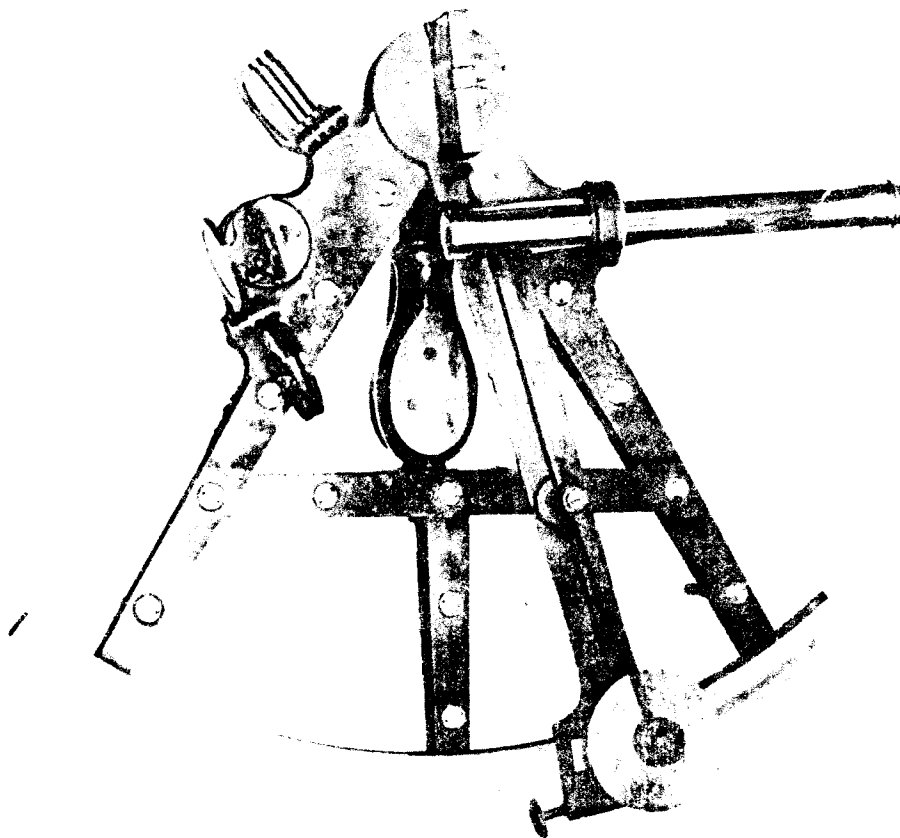
# Historical Technology, Inc.

SAUL MOSKOWITZ, President

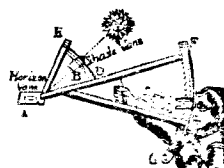
6 Mugford Street

Marblehead, Massachusetts, 01945. U.S.A.

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DOUBLE FRAME SEXTANT  
WITH PLATINUM SCALES  
BY EDWARD TROUGHTON



Catalog 118  
Spring, 1979  
Five Dollars

... CHARRON, "LEÇONS ÉLÉMENTAIRES D'OPTIQUE", Nouvelle Edition (2nd?), Desaint, 1766. Early (original?) full leather binding 8" h, 5" w; pgs. iv, 204, 12 foldout engraved plates. Binding showing some wear and minor hinge cracking but sound, contents very fine. Contains sections on the propagation of light, colors, image formation by lenses and mirrors, human vision, telescopes and microscopes, and perspective. The author (1713-62) was a noted French astronomer; his accomplishments including the position measurement of nearly 10,000 southern stars from Cape Town, a determination of lunar and solar parallax, improvements in the calculation of the distances of the moon, Venus, and Mars, and a number of influential elementary and advanced books in the physical sciences. (In French) (postpaid) \$ 85

Inventor of the 1st Useable Achromatic Microscope Objective?

63. Jean-Gabriel-Augustin Chevallier, "LE CONSERVATEUR de la Vue", (1st Ed), by the author, Paris, 1811. Modern full leather binding 8 3/4" h, 5 1/2" w; pgs. half title with author's authenticating signature, engraved title page, engraved dedication, viii, 165, (3), 8 engraved plates (the one of the solar microscope included twice), xlvi (priced catalog of scientific and optical instruments made and sold by the author), (1). Contents crisp but with some minor foxing and stains, pages uncut. The author (1778-1848) held several major appointments including Optician to the King (of France) and is noted as an innovator in the design of optical instruments. Both his firm and that of the Chevallier's (distant relatives?) seem to have constructed achromatic objectives following the method of Selligieue - the more or less empirical addition of achromatic lens sets to achieve higher powers. Although Vincent and Charles Chevallier are most often credited with the first successful high power combination (c. 1824 or 25), there are those who believe that it was actually Chevallier who succeeded first and that the similarity of spelling has confused the "historians". This book is the l'ingenieur Chevallier's major work on optical theory (a 2nd ed was issued in 1820) but since it predates the achromatic microscope objective it will be of no help in resolving the aforementioned question. (In French) (postpaid) \$ 120
64. David Gregory, "CATOPTRICAE ET DIOPTRICAE SPHAERICAE ELEMENTA.", (1st Ed), Jacob Watson, Edinburgh, 1713. Old but not original full leather binding 6 3/8" h, 4" w; pgs. (3), 104, 3 fold-out engraved plates. Extremely fine condition. This is a book of first order optical theory (spherical, or small angle, approximation). Reflection and refraction of light rays are considered leading to the formation of real and virtual images by curved mirrors and lenses. The author (1661-1708) was Professor of mathematics at the University of Edinburgh 1683-91 becoming Savilian Professor of astronomy at Oxford in 1691, Fellow of the Royal Society in 1692. His best known book "Astronomiae Physicae et Geometricae Elementa" was the first textbook based on gravitational principles in which he tried to remodel astronomy to conform with Newton's physical theory. He also seems to have been the first to suggest the possibility of an achromatic combination of lenses (even though Newton's "Optics", when it was finally published, stated that it could not be done). The book here was approved by Henry Aldrich of Oxford on Apr 18, 1695 but apparently not published until after the author's death. (In Latin) (postpaid) \$ 195
65. J. Trail Taylor, "THE OPTICS OF PHOTOGRAPHY AND PHOTOGRAPHIC LENSES", Whittaker & Co., London, 1892. Original cloth binding (some edge wear) 7" h, 5" w; pgs. viii, 244, 68 text illustrations. Very good to fine overall condition. This is a very well written book discussing the theory and application of photographic optics through the first decade of the dry plate era. Aberrations are considered in detail for each of the basic lenses then in use but without the use of complicated mathematics. Thus this book can be understood by both the general and technically educated reader. Both should learn from it. (postpaid) \$ 25
66. Mitouflet Thomin, "TRAITÉ D'OPTIQUE MECHANIQUE, Dans lequel on donne les règles & les proportions qu'il faut observer pour faire toutes sortes de Lunettes d'approche, Microscopes simples & composés, & autres Ouvrages qui dépendent d' l'Art.", Jean-Baptiste Coignard & Antoine Boudet, Paris, 1749. Old, but not original, leather backed boards binding 7 3/4" h, 5" w; pgs. xii, 372, (3), 4 foldout engraved plates. Fine overall condition except, for what appears to be an acid stain affecting the upper inside margins of pgs. 49-85, 179-204, 267-295, causing some holes but minor loss of text only on pgs. 65-75, 191, 279-283. The author is listed in Daumas and the Nachet catalog and this book is included in the bibliographic list of the latter. The approach followed is non-mathematical, presenting information on practical aspects of optical fabrication of the period and, as is typical of the time, discussing the theory of vision together with means of correcting for poor eyesight. (In French) (postpaid) \$ 80

LAND SURVEYING

Instrument Maker to Mad King George

67. George Adams, "GEOMETRICAL AND GRAPHICAL ESSAYS, Containing A General Description of the Mathematical Instruments Used In Geometry, Civil And Military Surveying, Levelling, And Perspective"; 4th Ed, corrected and enlarged by William Jones, W. & S. Jones, London, 1813 (plates dated 1791-97). Two vols in early non-matching half leather bindings 8 1/2" h, 5 1/4" w; pgs. I. engraved frontis plate of Ramsden's "Great Theodolite", xii, 534, 16 (W. & S. Jones priced catalogue); II. 33 engraved folding plates (14 of them of drawing & surveying instruments). Bindings in generally sound condition although Vol. I has weak hinges and Vol. II was rebacked many years ago, contents fine to very fine except for some foxing of the early pages of Vol. I. This is the younger George Adams' major work on surveying and surveying instruments. The 1st edition of this work was published in 1791. Upon the author's death in 1795, the rights to his books were purchased by the instrument makers, W. & S. Jones, who then revised them to conform with the instruments which they had for sale. (postpaid) \$ 165

68. O. W. Childs, "MAP AND PROFILE of the ROUTE FOR THE CONSTRUCTION OF A SHIP CANAL from the ATLANTIC TO THE PACIFIC OCEANS, Across The Isthmus In The State Of NICARAGUA, CENTRAL AMERICA, Surveyed For THE AMERICAN ATLANTIC AND PACIFIC SHIP CANAL COMPANY.", Wm. C. Bryant, New York, 1852. Original printed boards 9 5/8" h x 6 3/4" w with replaced cloth back-strip containing extremely large folding map 34" x 108" (9 ft) w. Generally fine condition although the covers are stained and there are a few small tears at some folds of the map. The construction of a canal across Central America was proposed as early as 1550 by the Portuguese navigator Antonio Galvao with possible routes in Tehuantepec, Nicaragua, Panama and Darien. Various schemes, surveys, etc were initiated in 1698, 1771, 1779, 1808, 1825, and 1830, but it was not until the discovery of gold in California in 1848 that there was much serious thought directed towards the problem. A railroad at Panama and a canal at Nicaragua were both projected. Instrumental surveys for the former in 1849, and for the latter in 1850 and 51, were made by American engineers. The work done in Nicaragua, the results of which is the map offered here, was the first accurate survey in the region. No actual construction was begun, however. It was recognized that locks would be required for a canal in Nicaragua while it was believed (quite wrongly as de Lesseps failure showed) that a sea level route could be built across Panama. A study of the overall history of the Panama Canal will show the close relationship between the route depicted here and the actions of the United States in finally going into Panama. In answer to the original question - probably - you have to be quite an optimist to believe that either the present, or last few administrations in Washington have any idea on how to run the United States for the good of the United States. (postpaid) \$ 16.5

First Edition of a Major American Work

69. Charles Davies, "ELEMENTS OF SURVEYING WITH THE NECESSARY TABLES", 1st Ed, J. & H. Harper, New York, 1830. Modern full leather binding 9" h, 5 1/2" w; 147 pgs text, 62 & 91 pgs tables, 8 large foldout copperplate engravings (the 9th of leveling operations missing), 4 of instruments: the theodolite, plane table and alidade, surveyor's cross and compass, marking protractor. Fine overall condition except for occasional light foxing and a repair to one plate fold. This book was initially intended for use at West Point, but became so generally popular that many editions were printed. Karpinski lists 15 issues between 1830 and 1850. (postpaid) \$ 65

The Transit Telescope

70. R. Etzold, "Zeitbestimmung mittels des PASSAGE-INSTRUMENTES", Wilhelm Diebener, Leipzig, 1901. Original cloth binding 9 1/2" h, 6 1/4" w; pgs. ii, 95, (1), 37 text figures, a number of the of instruments sold by Gustav Heyde of Dresden. Design, theory, and use of transit telescopes for high accuracy geodetic work. (In German) (postpaid) \$

Mine Surveying

71. Thomas Fenwick, "A TREATISE ON SUBTERRANEAN SURVEYING, AND THE VARIATION OF THE Magnetic Needle.", 2nd Ed, Baldwin, Cradock, & Joy, London, 1822. Original board covers (replaced cloth backstrip) 9" h, 5 3/4" w; 227 pgs and 8 large folding engraved plates. Fine to very fine overall condition, pages uncut. This book is based upon the author's own work in the coal mines in the Newcastle region, the 1st ed published in 1804. He also wrote on Practical Mechanics (1822). This book should be of particular interest in America because of the detailed consideration of magnetic variation and its effect on surveying accuracy and on related surveying measurements of the past to the present. (postpaid) \$ 65

72. Abel Flint, "A SYSTEM OF GEOMETRY AND TRIGONOMETRY, TOGETHER WITH A TREATISE ON SURVEYING; . . . LIKEWISE, RECTANGULAR SURVEYING; . . . with important additions BY GEORGE GILLET.", 5th Ed, Oliver D. Cooke, Hartford, 1825. Original leather binding 8 1/2" h, 5" w; pgs. 137 (tables), a number of text figures. Fine overall condition with some light foxing and binding with some edge wear and partial hinge cracks. This popular American work first published in 1804) was published for over half a century. (postpaid) \$ 78

73. Abel Flint, "A SYSTEM OF GEOMETRY AND TRIGONOMETRY, WITH A TREATISE ON SURVEYING; . . . ALSO, THE PRINCIPLES OF RECTANGULAR SURVEYING. . . . A NEW EDITION, ENLARGED, . . . BY GEORGE GILLET. . . . ALSO, A CONCISE TREATISE ON LOGARITHMS, BY F. A. P. BARNARD.", 7th Ed, Cooke & Co., Hartford, 1833. Original leather binding 8 1/4" h, 5" w; pgs. (6), 9-134, 10, 62 (tables), 100 (tables), a number of text figures. Covers sound but with several worm holes and chipping at bottom of spine, contents fine except for some foxing and complete except for blank front flyleaf. The changes and improvements from edition to edition of this work correspond to the increasing sophistication of American surveyors. (postpaid) \$ 74

First New York Edition

74. Robert Gibson, "A TREATISE OF PRACTICAL SURVEYING;", 8th Ed, (1st New York and 5th American), William A. Davis & Co., New York, 1798. Modern leather binding 8 1/2" h, 5 1/4" w; 482 pgs. and 13 plates. Minor foxing and staining of end pages, fine overall condition. Taylor notes a 2nd edition of 1767 implying it was London published. The evidence suggests that Gibson was Irish and several of his editions of this work are known to have been published in Dublin. The 1st American edition (called the 4th) was published in 1785 and by 1839 there had been 22 editions in this country. (postpaid) \$ 165

75. George Grigby, "MEMOIR, CONTAINING A DESCRIPTION OF THE CONSTRUCTION AND USE OF Some Instruments DESIGNED TO ASCERTAIN THE HEIGHTS AND DISTANCES OF INACCESSIBLE OBJECTS, WITHOUT THE NECESSITY OF REFERENCE TO LOGARITHMIC TABLES", J. Hatchard, London, 1807. Modern cloth binding 10 1/2" h, 8 1/2" w; large folding engraved frontis plate of the instruments, 45 pgs. with 27 text figures, 2 pg. book catalog. Fine to very fine overall condition except for stains to front and back pages and some yellowing. A slip has been bound in stating, "A specimen of each of the instruments, herein described, is left at the Publisher's, Mr. HATCHARD'S, No. 190, Piccadilly, for inspection; where also the instruments may be purchased, as soon as a sufficient number are completed." The primary instrument consists of linked rules and sight vanes which provides a mechanical analog solution to the problem. We suspect that "a sufficient number" of instruments were never completed since we have been unable to locate any surviving examples. Taylor 2 states of this booklet, "This tract is advertised in Maynard's catalogue, but has not been seen". It may be that the copy here is unique - it certainly represents an interesting approach to instrument design. (postpaid) \$ 125

Second American Edition

76. John Love, "GEODAESIA: OR, THE ART OF SURVEYING AND MEASURING LAND made Easy. . . . AS ALSO To lay out New Lands in AMERICA, or elsewhere: . . .", The 13th Ed adapted to American surveyors, Samuel Campbell, New York, 1796. Modern leather binding 8" h, 4 1/2" w; pgs. (14), 189, 53 (tables), 8 (appendix on surveying by chain only), many text woodcut diagrams. Contents generally fine with minor stains. The first edition of this work was published in London in 1688 just after Love returned from surveying in America. There were (obviously) at least 13 English editions and 2 published in America. The first published here (in 1793) was based on the 12th London edition. (postpaid) \$ 125
77. L. Puissant, "TRAITÉ DE GÉODÉSIE, OU Exposition des Méthodes Astronomiques et Trigonométriques, appliqués soit à la mesure de la terre, soit à la confection du canevas des cartes et Plans," Courcier, Paris, 1805. Early (original?) leather backed board covers with some edge wear 10 1/4" h, 8 1/4" w; pgs. xxiv, 319, (1), (43) tables, (1), plus the 10 large foldout engraved plates. Fine condition. Eight of the engraved plates depict design details and complete assemblies of a de Borda double telescope repeating circle. Such an instrument was quite capable of the accuracy required for the establishment of a basic geodesic grid, as well as astronomical observation as was shown by Bowditch when he used a less accurate de Borda reflecting circle to establish the orbit of a comet. Only in England was de Borda's instrumentation slighted. This book describes and evaluates (mathematically) the various methods used for taking data and the accurate calculation "relativement à la mesure de la terre". After the first two sections which provide an introduction to the subject, fully 260 pages of the last section (Livre III) provide the details of "Opérations Géodésiques" including a description of, and methods for the use of the de Borda circle. This is an important book on geodetic surveying. (In French) (postpaid) \$ 170
78. L. Puissant, "TRAITE DE TOPOGRAPHIE, D'ARPENTAGE ET DE NIVELLEMENT;" Courcier, Paris, 1807. Bound with L. Puissant, "SUPPLÉMENT AU SECOND LIVRE DU TRAITÉ DE TOPOGRAPHIE, Contenant LA THEORIE DES PROJECTIONS DES CARTES;" Courcier, Paris, 1810. Early quarter leather binding, rebaked, 10 1/4" h, 8 1/2" w; pgs. xx, 331, (19), 6 large folding engraved plates; 103, (7), large folding chart, (2), folding engraved plate, 105-143, (1). Binding in fine condition, contents very fine. This comprehensive work on cartography and mapmaking complements the author's "Traité de Géodesie". It provides the mathematical formulations needed to reduce observed data to geographical coordinates. (In French) (postpaid) \$ 100
79. Colonel William Roy, "Experiments and Observations made in Britain, in order to obtain a Rule for measuring Heights with the Barometer.", extract from Vol. 67, Philosophical Transactions of the Royal Society, London, 1777. Modern full leather binding 9" h, 6 3/4" w; pgs. 653-787 (the last 7 leaves actually large folding tables), 4 large folding engraved plates (2 of Ramsden's portable barometer, 1 of correction scales for altitude determination and 1 a map showing the triangulations between the reference stations). Very fine overall condition except that 1 original plate is lacking and provided in facsimile, and 2 columns of Table IV and 1 column of the table on p. 787 were trimmed off at some time in the past and are now also provided in facsimile. Colonel, later Major-general, Roy (1726-90), director of the Royal Engineers from 1783, is best known for the first accurate triangulation across the English Channel using Jesse Ramsden's Grand Theodolite. Ramsden designed and provided the mountain barometer used by Roy on this earlier program. Indeed, Ramsden's instrument was such an improvement that, according to Middleton, "This construction was copied or reinvented with changes in detail by J. B. Haas and Friedrich Korner. Gehler wrongly ascribes the tripod construction to Nicolas Fortin, who indeed made use of it." One of the important results of Roy's work was the development of improved compensation equations and an accurate relation between pressure and altitude. (postpaid) \$ 55
80. Frederick W. Simms, "A TREATISE ON THE PRINCIPLES AND PRACTICE OF LEVELLING. Showing Its Application To Purposes Of RAILWAY ENGINEERING AND THE CONSTRUCTION OF ROADS, . . . Mr. Law's Practical Examples For Setting Out Railway Curves and Mr. Troutwine's Field Practice Of Laying Out Circular Curves.", 5th Ed, Lockwood & Co., London, 1866. Original cloth binding 9" h, 5 3/4" w; pgs. vii, 215, 16 (book catalog), 6 engraved plates (5 of which are folding), several text figures. Fine overall condition except for a weak front hinge and minor edge wear to the binding. The author, a noted English civil engineer and surveyor (although probably not related to Troughton and Simms), wrote "A Treatise on the Principal Mathematical Instruments", 1834, and the 1st edition of this work in 1835. Taylor 2 notes that he was employed on surveying, levelling, and astronomical work, at first by the Ordnance Survey, and then at the Royal Observatory. (postpaid) \$ 46



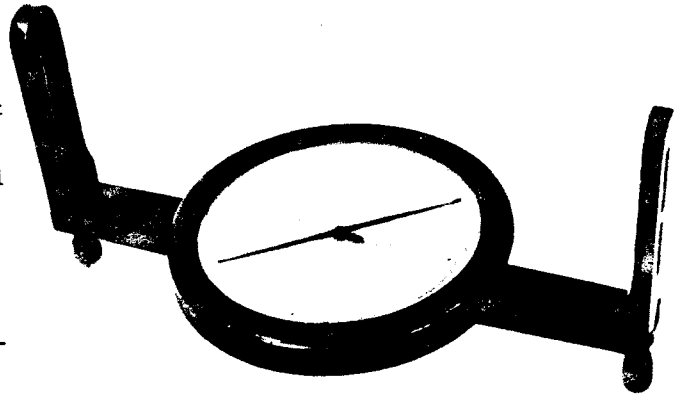
150. SURVEYOR'S BEAM LEVEL - English, possibly mid 19th c, signed "J. CAIL NEWCASTLE ON TYNE". Solid mahogany beam 1 1/2" w x 1 1/4" h x 15 3/4" long with bright lacquered brass top plate and short (1 1/2" h) folding sight vanes. A spring assembly (also in brass) provides the leveling adjustment for this tripod or staff mounting instrument. A 4" long bubble vial is mounted under the brass top

plate (with appropriate openings for viewing). Original hand dovetailed pine case 3 1/8" w x 2 1/2" h x 16 3/4" long. The case is in surprisingly fine condition and the level is very fine with minor darkening and rubbing of the original lacquer finish.

Goodison lists John Cail at various addresses in Newcastle beginning in 1825, forming a partnership with S. A. Cail, 1851-53, and then by himself again, 1855-8. We know that the firm became "& Son" at some point but not the date of transition. This form of surveying instrument is rarely to be found on this side of the Atlantic.

(7 lbs, UP, PS) \$ 135

151. EXCEPTIONALLY LARGE WOODEN SURVEYOR'S COMPASS - American, c. 1800, unsigned. Deeply varnished pine construction, 11" d compass with 8" needle and hand drawn (in ink) compass face and readout scale, 20" long base, 7 1/2" h screw-on sight vanes with wooden attachment screws, and fitted with original primitive needle lifter. Original 8-sided wooden storage case 21 1/4" x 12" x 3 1/2" h. Case in fine condition except for some paint drips on its cover, compass is very fine with age crack in outside rim of compass.



Bedini writes, "An interesting fact concerning the instruments produced by 18th-century craftsmen is the relatively high incidence of instruments constructed of wood instead of brass or other metals. . . . Most common of these mathematical instruments is the surveying compass, possibly the instrument most needed and produced in America. . . . a substantial number of these were being produced simultaneously by skilled craftsmen who at the same time were making similar instruments in brass. . . . Finally, from a study of the surviving examples of wooden surveying compasses comes the interesting and perhaps significant fact that all known makers were from New England." The unusually large example here was found a number of years ago in Wiscasset, Maine and there is no reason to doubt that it was in use in that region. The original hand drawn compass card and details of construction lead us to believe that, contrary to Bedini's implications, this instrument was not the product of a regular instrument maker (we have found others for which we hold the same opinion) but rather by a local craftsman working to fill a specific need or request. It may well be that he never made another like it.

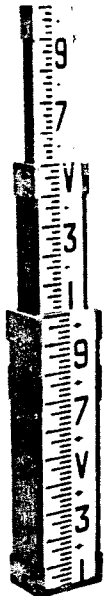
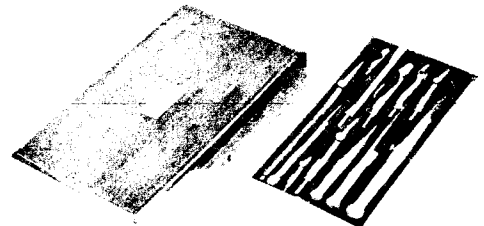
(15 lbs UP) \$ 675

152. POCKET (WELL, ALMOST) LEVELING ROD - English, c. 1900?, signed "MICHELL, COX & Co./ WINDSOR HOUSE, /VICTORIA STREET./LONDON S.W.1.". Mahogany with white painted face and lacquered bright brass fittings, 2 1/4" x 3 1/4" x 15 1/8" h (min) extending in 3 sections to 24". Graduated in large divisions to tenths of feet and then into 50th's. Fine overall condition although the original lacquer finish has extensive pinpoint spotting. We can understand the use of a short rod in city areas where construction already exists, but only the English would have gone to the trouble of making a 2 ft rod with the complexity of 3 sections which telescope, one within the other, so as to reduce the overall length by 9 inches.

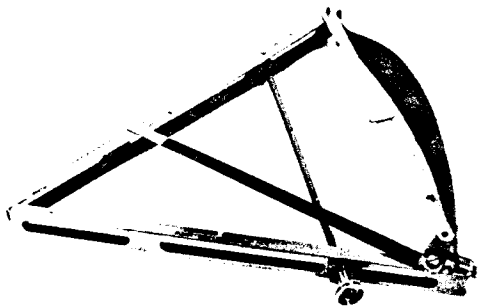
(8 lbs, UP, PS) \$ 125

153. ROSEWOOD VENEERED CASE OF DRAWING INSTRUMENTS - Probably English, last 3rd 19th c, unsigned. Case 8 1/8" x 4 3/4" x 1 3/4" h with lift-out tray of 13 separate brass & steel drawing instruments, and 2 small protractors in the bottom (not shown). Fine to very fine overall condition, missing the removeable divider leg for the medium size compass and 2 small locking screws - otherwise complete.

(4 lbs, UP, PS) \$ 60



154. A SMALL, LARGE RADIUS INSTRUMENT - English, c. 1900, signed "CLARKSON'S PATENT. ELLIOTT BROS. LONDON. No. 139.". Steel and bright lacquered brass, the "A" frame arms 14 5/8" long each, the shaped spring steel curvature plate 12" long, and the linkage connected readout arm is 12" long. The non-linear readout scale is calibrated in 1" increments from 9" to 30". Original orange stained pine case 3 1/4" w x 2" h x 15 1/4" long in very good to fine condition. The instrument is excellent, just about mint condition - it may never have been used. The curved shape of the steel plate appears to have been so calculated that when it is deflected by edge forces (in contrast to the center pressure version, Item 245 of our Catalog 117) it takes a circular shape. The fundamental principle is the same as that of the large, large radius instrument of Catalog 117, but the mechanization is completely different. Another very clever gadget.

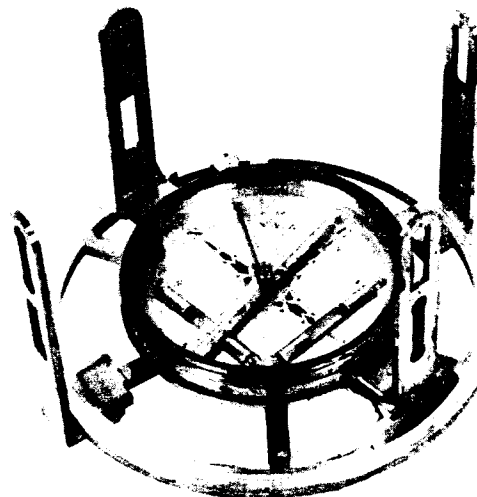


(6 lbs, UP, PS)

\$ 115

155. SUPERB CIRCUMFERENTOR - English, early 19th c, signed "Bradford Maker. 136/Minories London". Brass, original lacquer finish, silvered compass dial and outer scale of 7 3/4" d, the compass of 5" d, 4" needle, with crossed bubble levels inserted in its face. Inner and outer sight vanes 4" and 4 3/4" h respectively, instrument 5 3/4" h overall. Original dovetailed mahogany case 8 1/2" sq by 3 1/2" h contains original 6" d 360 deg brass protractor as well as circumferentor but appears to be lacking ball and socket joint. Case in very good, instrument in extremely fine condition with outer ring resilvered.

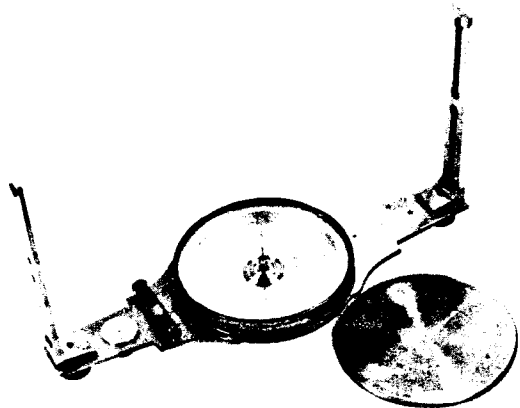
This instrument appears to be the work of the brothers Isaac and John Bradford. Taylor 2 places them at 87 Bell Dock, Wapping 1795-1800, 69 Bell Dock, Wapping 1805-15, and finally at 136 Minories, London 1817-22, the address above. The 4-vane circumferentor is a relatively rare instrument, obviously quite costly to make because of its complexity and the need to achieve accurate alignment of both pairs of vanes. Indeed, it was a design hold-over from earlier times, apparently made and bought more for its impressive appearance than a practical need. The graphometre in France and 2-vane compass instruments in England were significantly less complex and could perform the same measurements.



(12 lbs UP)

\$ 1,295

156. LARGE INSIDE VERNIER SURVEYOR'S COMPASS - American, 4th qtr 19th c, signed "W. & L. E Gurley, Troy, N. Y./Jas. W Queen & Co. Agents Phila.". Bright lacquered brass with 15" long base, 7 7/8" screw-on sight vanes, 6" dia compass and brass cover for the compass. There is a chaining leg out-keeper (or counter) and 1 of the 2 original 2 3/4" long level bubbles. The compass dial is silvered with an edge scale graduated in half degrees and a magnetic variation scale which can be set to a minute of arc by means of a vernier scale. Relative rotation is through an external rack and pinion drive. The compass needle is 5" long. Fine to very fine overall condition, original lacquer finish (with minor rubbing mostly on the compass cover), but the out-keeper scale and the elevation scales on the edge of one vane have been resilvered. No case and no ball & socket joint.



The model prior to this used an outside vernier as may be noted in the Gurley catalogs of the 3rd qtr of the 19th c. The Philadelphia firm of Queen & Co. used the form of their name engraved on this instrument between 1860-93. Smart notes that Queen was one of the major distributors of Gurley equipment between 1860 and 1900.

(12 lbs UP)

\$ 335

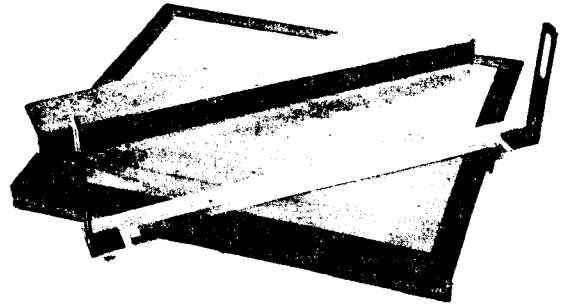
157. ROLLING PARALLEL RULE - English, c. 1875, signed "STANLEY 3 GT TURNSTILE HOLBORN LONDON". Ebony rule 10" long x 2 1/8" w with graduated ivory scale along each edge and a brass roller assembly. Fine condition. No case.

(3 lbs, UP, PS)

\$ 75



158. PLANE TABLE AND PLANE TABLE ALIDADE - English, late 19th c, the table unmarked but alidade signed "Cary, London". The mahogany table, with fitting for tripod mounting, 17" w x 15" deep has a graduated ebony off-edging which may be used for clamping the drawing paper in place. There is also a fitting for a slide-on box compass, but none is present. The bright lacquered brass alidade is 18" long and has 5 1/4" h black oxidized folding sight vanes. It fits in its own 19" x 2 3/4" x 1 1/4" h mahogany stowage case. Table, alidade, and case are in very to extremely fine original condition. Everything then fits into a 15" x 19" leather fitted canvas carrying case which has the initials "H.A.T." and the date "1926". We know that Henry Porter had changed the firm's name "Cary" to his own by 1905 or 06 so that the 1926 date could not apply to it; possibly it is when Mr. H.A.T. acquired the set. Although we do find the alidades from time to time, to find one with a plane table is a bit special.



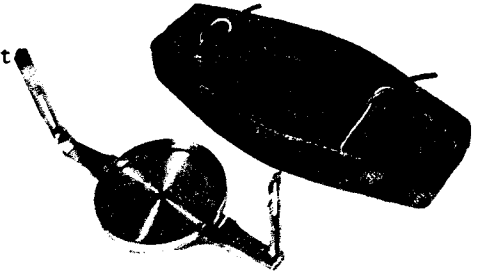
(18 lbs, UP, PS)

\$ 210

159. CYLINDRICAL CROSS ON JACOB'S STAFF - English, early 19th c, unsigned. Brass cylinder 2 3/4" d, 2 1/2" h, with sight slits cut every 90 deg, screwed on to brass end of 5 ft long Jacob's staff. Overall fine condition. The Jacob's staff was the original, and, for a long time, the most common way of supporting a surveying instrument. However, its very simplicity, and the fact that many may have just been simple poles pointed at one end, has led to very few being kept and now any instrument-maker-produced examples are virtually unknown. The design of the instrument here predates William Jones' improved version of c. 1800 which provided azimuth readout through rotation of the cylinder with the 90 deg slits with respect to a fixed base. This model was intended for the direct layout of rectangular subdivisions within a larger surveyed plot.

(14 lbs UP) \$ 245

160. SMALL FOLDING-VANE SURVEYING COMPASS IN HAND CARVED CASE - Probably American, early 19th c, unsigned. Bright lacquered brass with 4" d silvered face compass on 8 3/4" long base with 4 1/4" h folding sight vanes, 3 1/2" compass needle. The compass body is made of sheet brass apparently riveted together, rather than formed from a machined casting. The field carrying case was hand carved from a pine block for the bottom and an oak block for the top and is held together with leather thongs (modern replacements). It measures 4 5/8" w, 10 3/4" long, 1 7/8" h, and is in fine condition. The compass is very fine although one vane appears to have been deformed, or broken, and repaired. The case is typically American. Placement of East to the right on the compass dial was characteristic of the work of early American nautical instrument makers. West to the right (to give correct direct compass direction readouts) was characteristic of the work of those makers who specialized in surveying instruments.



(7 lbs UP)

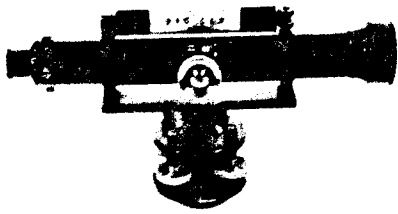
\$ 325

161. WELL CASED SET OF DRAWING INSTRUMENTS - English, c. 1875, pieces signed variously "Harling", "Reynolds", and "Stanley" but all of the design associated with Stanley of Gt. Turnstyle, London. Hand dovetailed mahogany case 14 3/4" long, 7 3/4" w, 4" h, containing lift-out tray complete with 18 separate pieces in German-silver, steel, and ivory. Various other items are to be found in the space below including plastic triangles, protractor, lettering guides, line spacing pairs of points, box wood rule, ivory rule, etc, some of which may be original to the set while others clearly are not. The name plate on the case is engraved "Edwd. M. Munro". Very fine overall condition although there are 3 long age cracks in the lid.



(10 lbs, UP, PS)

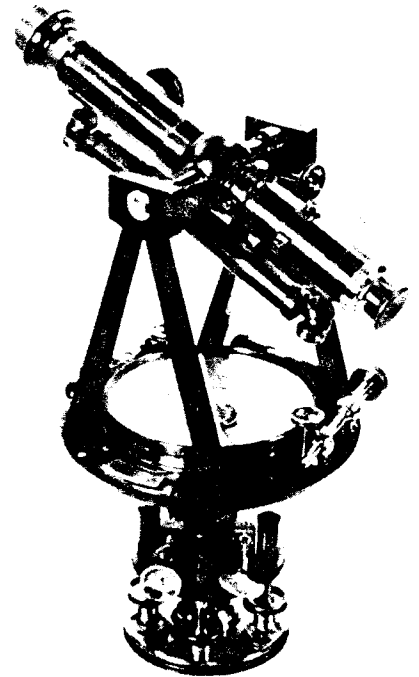
\$ 225



162. WELL MADE BUILDER'S LEVEL - English, c. 1900, unsigned, of a design made by Stanley and possibly others. Brass in black lacquered finish 10" long by 5 1/4" h including 4-screw leveling base. Rack and pinion objective lens focussing. 4" level bubble adjusts with respect to the telescope, the telescope mount is rigid. Original mahogany case 11" x 6 1/2" x 3 1/4" h. Case in very good (crack in cover) and level in almost fine condition. There are post WWII repair labels in the cover of the case but design considerations (i.e. 4-screw base) date the instrument to the turn of the century.

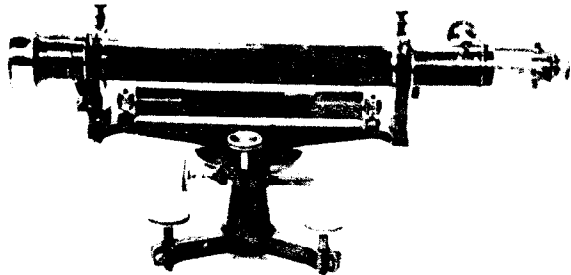
(10 lbs, UP, PS) \$ 140

163. THE 4" NEEDLE SINGLE VERNIER SURVEYOR'S TRANSIT - American, 1870-80, signed "W. & L. E. Gurley, N. Y./F. W. Lincoln Jr. & Co. Agents, Boston, Mass.". Brass in original black oxidized finish with various fittings in bright lacquered brass, 12 1/2" h (telescope horizontal), telescope 10" long with 6 1/4" bubble and rack and pinion objective focussing, 6 3/4" d base plate with 4 3/4" d silvered face compass, silvered readout scale with single arcmin vernier. The 4-screw leveling base separates from the basic instrument. The compass dial is adjustable, by vernier, for the magnetic variation. Fine to very fine overall condition with some fading and rubbing of the oxidized surfaces, some of the bright brass parts have been cleaned and relacquered and the telescope is of Gurley origin but fitted from another instrument. No case.



The Gurley catalog of 1869 illustrates this instrument with a price of \$ 156. In their 1880 catalog it has been reduced to \$ 128, a sign of hard times. Quoting from the earlier catalog, "In this instrument, as just described, the surveyor will recognize advantages not possessed by any other instrument with which we are acquainted. Combining the capabilities of a needle instrument, with a fine telescope, and the accuracy of a divided limb and verniers, and having also the means for turning off the variation of the needle; it is for a mixed practise of accurate surveying and engineering; such indeed as is required by most city engineers, the best instrument ever constructed." The firm of Frederick Walker Lincoln, Jr. (1817-1898), grandson of Paul Revere and Mayor of Boston from 1857-64, founded in 1839 became "F & Co." in 1858 and retained this name until 1883 when Lincoln retired.

(20 lbs UP) \$ 495

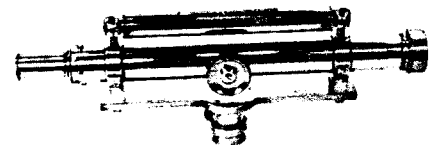


164. SPANISH EGAULT'S LEVEL - probably 4th qtr 19th c, signed "VDA de AMADO LAGUNA ING./No. 1440/ZARAGOZA". Brass instrument with purple-black oxidized finish on most surfaces, bright lacquered screws and adjustment knobs, 18 1/2" long (max extension) 7 1/2" h including 3-screw leveling base. Objective lens 1 1/2" d, rack and pinion focus of eyepiece, 6 3/4" bubble level, tangent screw on azimuth rotation. Telescope reverses in wyes. Original dovetailed mahogany case 17" x 9 1/2" x 7 1/2" h. Case in generally sound condition although it has seen field use, instrument in fine to very fine condition with minor fading/rubbing of oxidized finish

This instrument of French design is an unusual combination of wye and Dumpy levels. The bubble level is attached to the frame (can be adjusted) while the telescope by itself can be reversed in the wyes, one of which is screw adjustable. The 3-screw base permits its use on a plane table, also with a screw for tripod mounting. This form of instrument is virtually unknown in our country.

(25 lbs UP) \$ 295

165. FINE LITTLE DUMPY LEVEL - English, 1st qtr 19th c, signed "John King Maker Clare Street Bristol No. 603" and in the same script, the name of the owner "J. Stone Summer Hill Academy". Bright brass with restored lacquer finish, telescope 10 1/2" long (min) extending by draw eyepiece and rack focussing objective to 12 1/2", 5 3/4" level bubble, 7 1/4" long base, 4" ht overall. Extremely fine (restored) condition. No case.



Goodison lists J. King in Bristol in 1822 and in partnership with a son (J. King & Son) by 1830. Later in the 1st half of the 19th c there were other maker(s?) in Bristol with the name King (see p. 21 of Catalog 117), all of whom may have been members of the same family. A surveyor by the name of John Stone is known to have worked between 1778 and 1813 in the vicinity of Upton-on-Severn which is not too far from Bristol.

(5 lbs, UP, PS) \$ 235





166. BRITISH RIFLEMAN'S PENDULOUS MIRROR CLINOMETER - English, signed and dated "J. HICKS MAKER 8 HATTON GARDEN LONDON/WATKIN MIRROR CLINOMETER REG 14 MAR 1881" and also engraved with the owner's name "F. IRBY, RIFLE BRIGADE". Black oxidized brass 2 3/4" d x 5/8" thk with name plate in bright lacquered brass on same side of case as semi-circular glass window for scale illumination. Peephole in side and white faced scale attached to inside edge. The pendulous mirror acts the same way as does the index mirror on a sextant and the user sights at an elevated or depressed target and sees the readout scale in the split field. Original leather case 3 1/4" d (with shoulder strap) also marked "F. IRBY, RIFLE BRIGADE". Case in very good, clinometer in excellent condition.

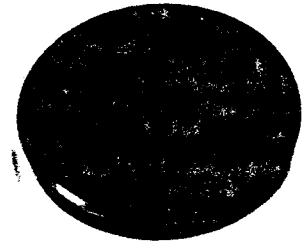
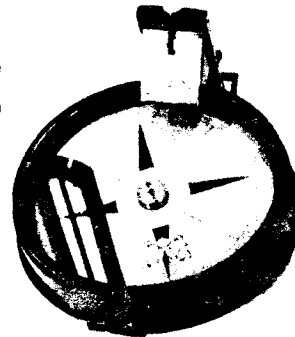
(3 lbs, UP, PS)

\$ 95

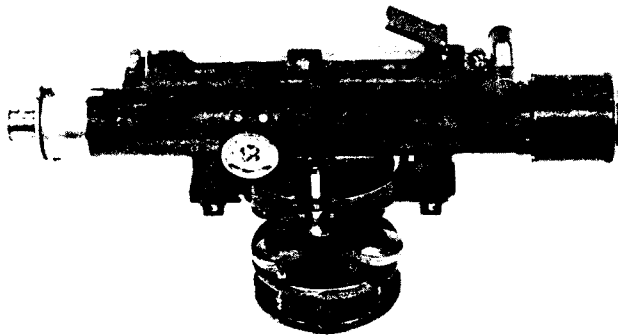
167. BRITISH RIFLEMAN'S PRISMATIC COMPASS - English, unsigned, but of identical workmanship and finish as the clinometer, and found together. Black oxidized brass, with a few fittings in bright lacquered brass, 3" d x 1" thk (cover on), with folding sight vane 2 1/2" h, 2 3/8" d floating dry compass card, and prismatic sight for simultaneous direct and right angle viewing. Thus the observer can read out the compass direction as he sights on a distant object. Original leather case with shoulder strap. Case in very good, compass in excellent condition.

(3 lbs, UP, PS)

\$ 135



(Preference will be given to purchaser of both instruments.)



168. HIGH QUALITY DUMPY LEVEL WITH COMPASS - English, mid or 3rd qtr 19th c, signed "Troughton & Simms, London". All brass in green-black oxidized finish, 8" overall ht including 4-screw leveling base and removeable inclined mirror for rear viewing of leveling bubble, telescope 11" long extending by rack and pinion eyepiece focussing to 13", 3 3/4" d compass mounted below telescope. Main leveling bubble 6 1/2" long and cross bubble 2 1/4" long. Original dovetailed mahogany case 5" w, 4 3/4" h, 16 1/2" long. Level in almost fine condition with minor fading and wear of oxidized finish, rotating dust cover on lens hood a later replacement, case is sound with very good surfaces.

This instrument appears to follow Troughton's "Improved Level" in design sequence. It is functionally identical but has design changes which made it easier to manufacture and, even more importantly, easier to adjust in the field. Troughton & Simms was established in 1826 when William Simms was taken in as a partner so that the firm could continue, Edward Troughton having no family and his brothers having died years earlier.

(16 lbs UP)

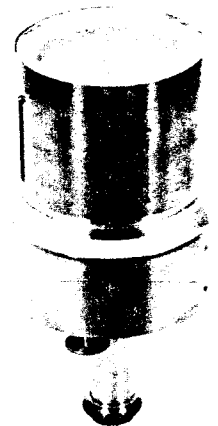
\$ 295

169. IMPROVED SURVEYOR'S CROSS FOR THE RUSSIAN MARKET - English or French, late 19th c, unsigned. All brass in blue-black oxidized finish with bright lacquered brass fittings, silvered compass and readout scales, black finish to center region of the 3 1/2" d compass, 8" h and lower sighting cylinder 4" d. Sighting slits 90 deg apart on upper rotating cylinder and 180 deg on lower fixed cylinder. Azimuth readout by vernier to 2 arcmin. Original walnut case 4 3/4" sq x 8 3/4". Case in very good, instrument in almost mint condition.

The original version of this instrument was developed by William Jones of W. & S. Jones about 1800. It too had a beveled readout scale which was soon replaced by one directly on the cylindrical body, reducing the cost of fabrication. This is the only late 19th c example of this form of instrument we have had which returns to the beveled scale. The Cyrillic lettering on the compass dial suggests that it was intended for use in Russia.

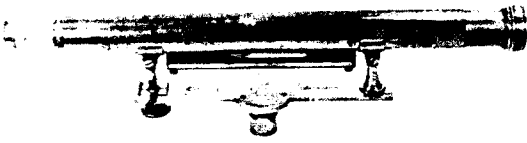
(8 lbs, UP, PS)

\$ 225



IS THE ITEM YOU WANT STILL AVAILABLE?

It may be. Why not call or write and find out? An interest in instruments is very much an individualistic pursuit. Often an item is almost uniquely suited to but one person.



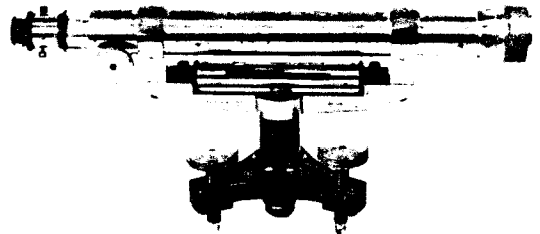
170. EARLY 19TH CENTURY LEVEL - English, signed "Cary LONDON". Bright lacquered brass with telescope 13 3/8" long (min) extending by draw tube focussing to 15 3/4", 5 7/8" longitudinal bubble on 8 1/8" base with screw adjustment at rear, 4 3/8" high. Original hand dovetailed mahogany case 14" long, 5 1/4" w, 2 3/4" h. Case in fine, level in fine to very fine condition with some darkening and

minor rubbing of original lacquer finish.

William Cary (1759-1825) received his early training in the workshop of Jesse Ramsden (as did several of the other fine London instrument makers such as Thomas Jones, Matthew Berge, and John Stancliff). Unlike them, he left Ramsden's firm before Ramsden's death in 1800, setting up his own firm at 272 Strand in 1786. His nephews George and John Cary (sons of the famous cartographer, John Cary) were taken into the business and became its owners upon William's death. The firm continued until the end of the 19th century when it was acquired by Henry Porter, the name being changed to Cary, Porter Ltd sometime between 1894 and 1904. The signed name on instruments, however, was simply "Cary" throughout the entire period so that dating must be based on design considerations as it was done here. The level of workmanship appears to have been uniformly high throughout the century.

(7 lbs UP) \$ 335

171. CONTINENTAL DUMPY LEVEL - German, 2nd half 19th c, signed "F. W. Breithaupt & Sohn Cassel", and serial no. "2076". Bright lacquered brass with black oxidized 3 screw leveling base, 6 1/8" h, eyepiece focussing telescope 11 3/4" long, 4" bubble level, and 1 1/8" d aperture objective. Rather unusual original leather covered, shaped wooden case 15" x 6" x 9" h. Case exterior tooled and decorated with large headed brass tacks and in very good surface condition, very fine structurally. The level is very fine with minor rubbing and pinpoint spotting of some of the original lacquer finish.



The Webster Index notes that Frederick William Breithaupt (1780-1855) succeeded his father Johan Christian (1736-1799) in the family instrument making business. We have been unable to determine when Frederick William's son entered the business. Design considerations and the relatively high serial number suggest that firm's name remained unchanged after his (F. W.'s) death. This instrument, which was intended for use on a plane surface rather than a tripod, could date from c. 1870-1880.

(16 lbs, UP, PS) \$ 225



172. EXTREMELY RARE UNFINISHED VERNIER COMPASS - American, early 19th c, signed "Samuel Phelps/GRAFTON, VT.". Brass construction (now with a lacquered finish for preservation purposes) the compass 5 3/4" d and the base 15" long. The relatively straight forward dial has been engraved and the engravings black filled and the outside angular scale (1/2 deg divisions) appears to be well divided, but neither scale has been silvered. Compass glass in place but no central pin or compass needle. There are screwholes on the bottom for a plate which would have held the compass and base

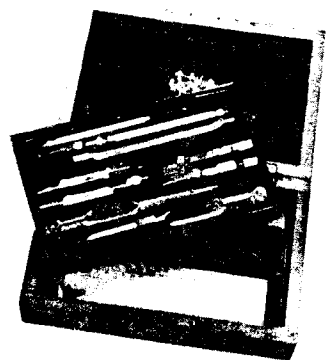
together but no plate. There has been some corrosion pitting but now the instrument has been acid cleaned and is in exceptional display condition.

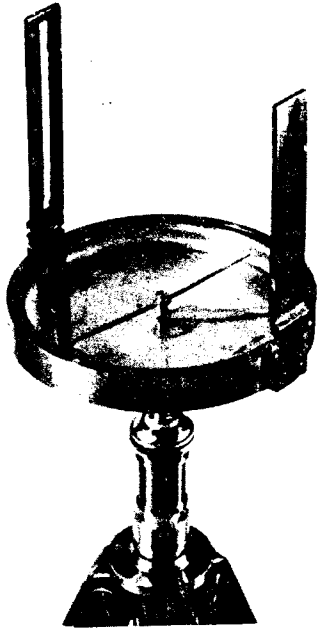
We have been unable to find any reference to the maker of this instrument. Could it be that he died young, before he was able to establish himself and even before he could complete this instrument? The base plate is a casting which has been faced on both sides in a lathe and the center hole for the compass has been finished. However, the edges are still rough (as cast) and although the center line has been scribed, there are no holes for the sight vanes or bubble levels and the fixed vernier scale has not been engraved. The bottom plate of the compass is in a similar state. It has rough filed, but unfinished edges and the moveable vernier scale has not been engraved. Thus we can get an idea of just how such an instrument was made and the order of the machining involved. This is a major find in American instrument technology providing us with knowledge impossible to derive from finished work. It is the only such incomplete surveyor's compass known to us.

(10 lbs UP) \$ 495

173. GOOD SET OF DRAWING INSTRUMENTS - English, 4th qtr 19th c, signed "STANLEY GT. TURNSTILE HOLBORN LONDON". Mahogany case with machine cut corners 7 3/4" x 5 1/4" x 1 3/4" h. Lift-out tray complete with 11 pieces in brass, steel, and ivory. The bottom of the case contains an ivory rule and an ebony parallel rule with brass links, both signed by Stanley. Fine to very fine overall condition.

(4 lbs, UP, PS) \$ 120

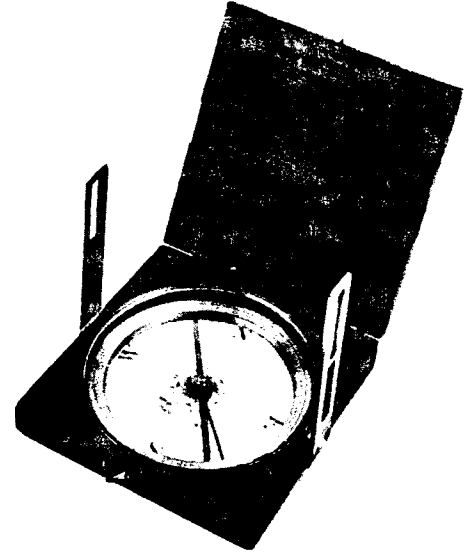




174. SURVEYOR'S POCKET VERNIER COMPASS WITH TRIPOD - American, 4th qtr 19th c, signed "W. & L. E. Gurley, Troy, N. Y.". All brass, still retaining original lacquer finish, compass 5 3/4" d, 4 1/2" needle, folding sight vanes 4 1/2" h. Silvered dial, with inset bubble levels 1 1/4" long, and outer ring (divided by half degrees). Outside edge of compass cylinder engraved with scale and 1 arcmin vernier for setting in the magnetic variation. Universal ball joint. All original except for tripod coupling which is a modern replacement. Original mahogany case 8" w, 2" h, 6 1/2" deep. Original tripod with mahogany legs 38" long. All in very fine condition. This is an example of the fine instruments produced by probably America's best known maker of surveying instruments.

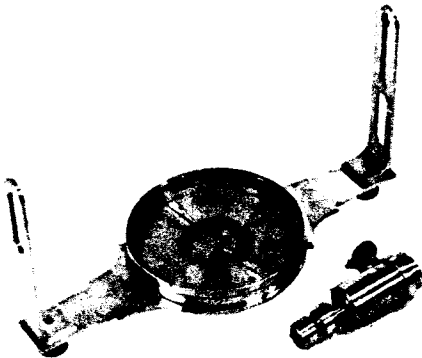
(15 lbs UP) \$ 270

175. EARLY SURVEYOR'S FOLDING COMPASS - English, c. 1760-70, signed "COLE Maker Fleet Street LONDON". Mahogany body and hinged cover 5 3/4" sq x 1 1/8" thk (closed), 5" d inlet compass with silvered dial and 4" compass needle and bright lacquered brass 4 1/4" h folding sight vanes. Very fine overall condition, the finish on the sight vanes has been restored, otherwise the instrument is complete and original.



The second Benjamin Cole (1695-1755) was a noted maker and several exceptional signed instruments by him still survive. In 1748 he succeeded to the business of the famous orrery maker, Thomas Wright, located at "The Orrery", 136 Fleet Street. His son (the 3rd Benjamin Cole, 1755-1813) apprenticed to him in 1739 and was his partner by 1751. Instruments signed "B. Cole & Son" are known and Goodison places them in the period 1751-66, although one would think that 1755 would be a more logical end date. John Troughton acquired the firm in 1782. Thus we have here one of the longest existing continuous firms of instrument makers in the history of the world, stretching from the late 17th century well into the 20th: beginning with John Rowley (about 1698), Thomas Wright, Benjamin Cole (2nd), Cole & Son, Benjamin Cole (3rd), John, then John and Joseph, then John and Edward, and then Edward Troughton, Troughton & Simms (1826), Cooke, Troughton, & Simms (1922), finally to become part of Vickers.

(5 lbs UP) \$ 595

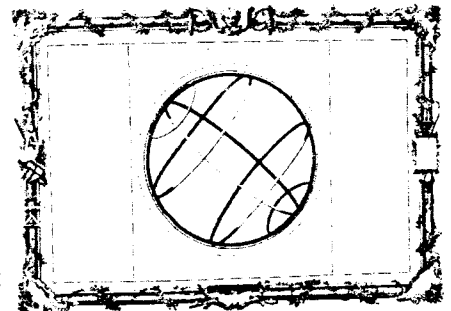


176. SURVEYOR'S COMPASS FROM NEW YORK CITY - American, between 1820-34, signed "R. Patten, N. York" with his very elaborate trade card inside the cover of the case giving a 180 Water St. address. Bright brass with restored lacquer finish, 4 9/16" d compass (with decoratively engraved and silvered face) on 10 3/4" long frame with screw-on 5 1/8" h sight vanes, for an overall ht of 6 3/4" (not including the original ball and socket joint). The hand dovetailed mahogany case is 5 3/4" x 11 1/4" x 2 3/4" h and is in fine condition except for some screw holes in the sides where a carrying strap was once added. The compass is in extremely fine restored condition and complete except for a post locking screw on the bottom bracket. The needle lifter screw appears to be of later origin. Interestingly, faint machining marks are found on the brass surfaces.

Richard Patten (1792-1865) first appeared in 1813 in the NYC Directory at 350 Water St.; in 1815 at 184 Water St.; from 1820 to 1834 at 180 Water St.; then at various addresses through 1840. In 1841 he moved to Washington, D. C., then to Baltimore in 1849. In 1860 he returned to Washington. Patten is best remembered for having teamed up with Isaac Greenwood in 1822 to try to drive Blunt out of business by charging him with plagiarism. This backfired, Blunt brought suit for libel, won, and was awarded \$ 750. In 1828 Blunt again brought suit against Patten and again won.

(12 lbs UP) \$ 435

177. ENGRAVED AND COLORED CHART - "COLURES, TROPIONES, CERCLES POLAIRES, ET LEURS USAGES.", French, signed and dated, "à Paris Chez l'Auteur Rue St. Jacques, dans la Mon. Neuve de l'Université, Et Chez Desnos Ingr. Géographe pour les Glôbes et Sphères, même Rue à l'Enseign du Glôbe. 1761" and "Définé et Gravé par Martinet". Plate mark 21 3/4" w x 15 1/4" h on paper 25 1/4" w x 18 3/4" h, usual centerfold. The central colored diagram illustrates the major circles of the sphere with explanatory text on either side. The elaborately engraved border includes a number of scientific instruments, mostly from the fields of surveying and drawing. Very fine overall condition, repaired tear and minor stains in outside margin. The coloring is old and we believe that it may be original.



(postpaid in the U.S. only)

\$ 65