

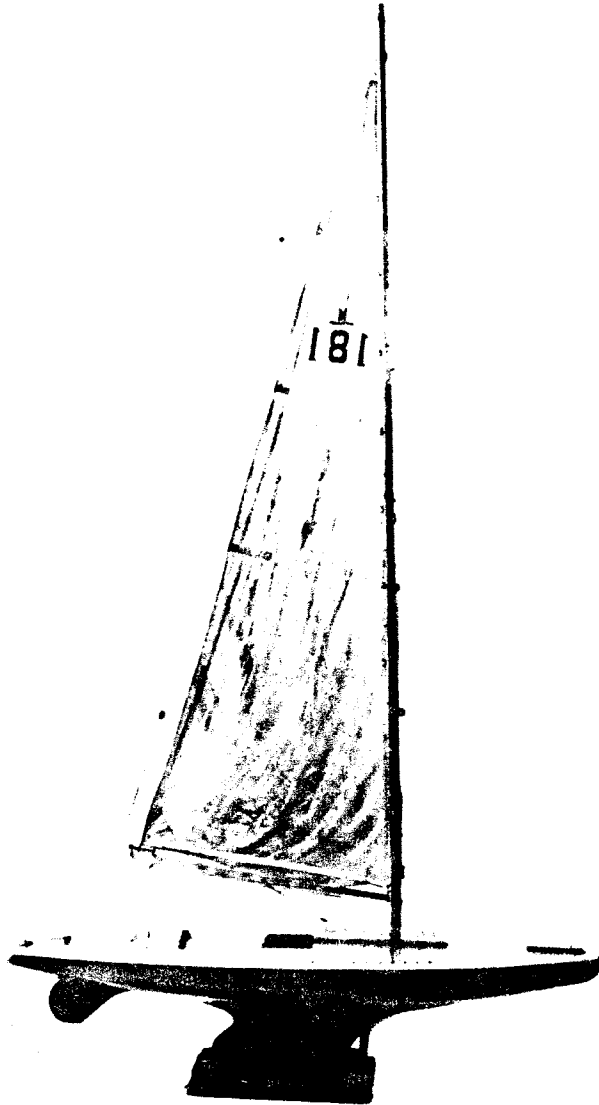
Historical Technology, Inc.

SAUL MOSKOWITZ, President

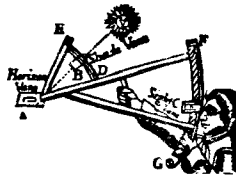
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ITEM 190
JOHAN SELMER-LARSEN'S "BROOM III"
INTERNATIONAL "M" CLASS



Catalog 117
Fall, 1978
Five Dollars

28. William Whiston, AN ACCOUNT OF A SURPRIZING METEOR, SEEN IN THE YEAR, 1708, AND DESCRIBED at Night. CONTAINING,
- I. A Description of this METEOR, from the Author's own Observations.
 - II. Some Historical Accounts of the like METEORS before; with Extracts from such Letters, and Accounts of this, as the Author has receiv'd.
 - III. The Principal Phaenomena of this METEOR.
 - IV. Conjectures for their Solution.
 - V. Reasons why our solutions are so imperfect.
 - VI. Inferences and Observations from the Premises."
- 1st ed, J. Senex & W. Taylor, London, 1716. Modern leather binding 7 3/4" h, 5" w; 78 pgs. Extremely fine condition. Whiston (1667-1752) was a curious sort of person. He considered himself a Newtonian and indeed (or at least according to E. G. R. Taylor) had, at times, some influence over Isaac Newton. Whiston (together with Ditton) played a role in the passage of the Longitude Act of 1714 (see Moskowitz, "Three Studies"). The pair then tried to claim the prize for themselves by a somewhat impractical method, expecting Newton to go along with them, which he did not. The very rare little book here describes what seems to be a fireball resulting from a meteorite entering the atmosphere. The author, however, concluded that what took place was due to "three Sorts of Effluvia from the Earth" normally separated as the "lower Vapours which cause Winds and Storms, and those higher Exhalations which cause Thunder and Lightning" and another midway between which "once sufficiently coagulated" . . . "descend below the Clouds, even to the Earth itself, whence they were originally deriv'd:". Here is a wonderful example of the "modern man" of the 18th century thinking in medieval terms. (postpaid) \$ 185
29. (Thomas Yates), "A CATALOGUE OF ANCIENT ECLIPSES, with their corresponding ones at a distance of 912 years:", author's reprint from the Philosophical Magazine for 1820. Modern cloth binding 10 1/2" h, 8 1/2" w; 20 pgs. and frontis plate of the Cycle of Eclipses for XIX Years. Very fine condition. Capt Smyth's copy with the remark in his own hand on the last page "(The death of Yates occasioned the stoppage of this paper here.)" The paper was never completed and it is not certain if it was ever published except in the form here. Smyth notes on the title page that he received this copy directly from Yates of the British Museum. A work of great scholarship which should be of value to students of the history of astronomical events. (postpaid) \$ 35
30. Francisco de Zach, "TABULAE MOTUUM SOLIS Novae et Correctae ex THEORIA GRAVITATIS et OBSERVATIONIBUS RECENTISSIMIS ERUTAE.", Carolus Guilielmum Ettinger, Gothae, 1792. Modern leather-backed-boards binding 11 1/4" h, 9 1/4" w; pgs. engraved frontis plate of observatory, (1), (2), (1), 172, CCL (the tables), 173-195. Extremely fine overall condition, the pages uncut. The tables in this book are of the motion of the Sun - hence actually of the motion of the Earth about the Sun. The author provides both a theoretical and an observational basis for the work presented and compares his own reduced observations with those of other astronomers of the 18th century. Baron Franz von Zach (1754-1832), German astronomer born at Pesth, served for a time in the Austrian army, then lived in London from 1783-86 as tutor in the house of the Saxon minister, Count Bruhl. In 1786 he was appointed director of a new observatory on the Seeberg at Gotha (finished in 1791) by Duke Ernest II. From 1806, Zach accompanied the Duke's widow on her travels in the south of Europe. His most important scientific publication was the book here. Some believe, however, his principal importance was as editor of 3 scientific journals, 2 published in Gotha, and one in Genoa. Included with this book is a loose title page dated 1791, indicating that the book was intended for publication a year earlier than is generally recognized. (In Latin) (postpaid) \$ 85

LAND SURVEYING

31. Cosimo Bartoli, "DEL MODO DI MISURARE LE DISTANTIE, le superficie, i corpi, le piante, le prouincie, le prospettime, & tutte le altre cose terrene, che possono occurrere a gli huomini, secondo le vere regole d'Euclid & de gli altri piu Iodati scrittori", 2nd ed, Per Francesco Franceschi Sanese, Venice, 1589. Early vellum binding 9" h, 6 3/4" w; 148 leaves including fine woodcut title and portrait. 2 foldout plates, and over 100 woodcut diagrams in text. Fine overall condition with very minor worming in margin. This major Italian book on surveying (1st ed in 1564) is of particular interest because it illustrates the major surveying instruments of the period (the square with pivoted alidade, classical simple quadrant, and astrolabe) with many diagrams showing their use. Editions of this popular work were published into the 17th century. (In Italian) (postpaid) \$ 245
32. William Davis, "A TREATISE ON LAND SURVEYING, BY THE CHAIN, CROSS & OFFSET STAFFS, In Four Parts. Also A Description of the Plan and Map Meters. To which is Added A SUPPLEMENT, containing METHODS BY THE PLANE TABLE & THEODOLITE, and Directions, For Conducting Subterraneous Surveys.", 5th ed, Anne Davis, London, 1813. Original board covers with paper backstrip (rough condition) 9" h, 5 3/4" w; pgs. xix, (1), 393, (1), 9 engraved plates (many foldout), the frontis portrait, and the foldout table. Pages uncut, contents in fine condition. (postpaid) \$ 45
33. Octavio Fabri, "L'VSO DEL LA SQVADRA MOBILE", 1st ed, Francesco Barilleti, Venice, 1598. Early vellum binding 8 3/4" h, 6" w; engraved title, 119 pages numbered by leaves, mostly, with some misnumbering (a problem which seems to have troubled many editions of this book), and 26 (one repeated) exquisite engraved plates by Fabri himself on text pages. Issued before the foldout plate was added. Extremely fine condition. The "Squadra Mobile" was a portable surveying instrument of Fabri's innovation. Level was determined by a plumb line and a pair of pivoted alidades with peep sights were used for sightings. Readout was on combined circular and rectified scales so that either angles or trigonometric functions thereof could be obtained. This is a fine, beautiful book written to illustrate an unique surveying instrument. (In Italian) (postpaid) \$ 235

34. Octavio Fabri, "L'VSO DEL LA SQUADRA MOBILE", 2nd state of 1673 ed, Andrea Gattella, Padova, 1673. Possibly original paper covers 9 1/4" h, 7" w; pgs. (2), 9-100, folding engraved plate of instrument dated 1670, engraved title page, 25 engraved figures on text pages. Generally very fine condition except for a short tear into p. 43 and an 1/4" d hole in figure VIII. Most of the engravings are pictorial and of high artistic quality. It is interesting to compare this edition with the 1st (issued in 1598). (In Italian) (postpaid) \$ 160
35. John Gummere, "A TREATISE ON SURVEYING, CONTAINING THE THEORY AND PRACTICE: To Which Is Prefixed A PERSPICUOUS SYSTEM OF PLANE TRIGONOMETRY." 3rd Ed, Improved, Kimber & Sharpless, and John Richardson, Philadelphia, 1820. Original full leather binding 8 3/4" h, 5 1/2" w; pgs. 206, 152 (mathematical tables with separate title page dated 1818), 8 fold-out engraved plates (no. 4 torn & repaired at fold). Very good to fine overall condition except for some heavy foxing (mostly at front and back of book). This treatise, with 1st ed in 1814, continued in use for over 100 years, Karpinski noting that there was an edition as late as 1917. However, he does not list the 152 page set of tables as a usual part of the bound volume. (postpaid) \$ 55
36. (Gurley catalog) "A MANUAL OF THE PRINCIPAL INSTRUMENTS USED IN American Engineering and Surveying, MANUFACTURED BY W. & L. E. GURLEY", 37th Ed (revised), Troy, N. Y., 1904. Original cloth binding (some surface wear and stains) 6 3/4" h, 4 3/8" w; 446 pgs with many illustrations of surveying and drawing instruments. Fine overall condition. (postpaid) \$ 30

Author's Own Copy in Special Binding

37. Colonel Sir Henry James, Royal Engineers, F. R. S., "COMPARISONS OF THE STANDARDS OF LENGTH OF ENGLAND, FRANCE, BELGIUM, PRUSSIA, RUSSIA, INDIA, AUSTRALIA, MADE AT THE ORDNANCE SURVEY OFFICE, SOUTHAMPTON, BY CAPTAIN A. R. CLARKE, R. E., F. R. S.", Her Majesty's Stationery Office, London, 1866. Original special gold tooled and embossed leather binding 12" h, 10" w; pgs. vii, 287, (1), 10 plates (9 double page, one 8-fold 21 1/2" h x 29 3/4" w), 4 pg. list of books. Very minor foxing, excellent overall condition. At time of publication this was the most comprehensive and scientific study of standards of length as applied to geodesy ever performed. The book contains detailed mathematical analyses as well as descriptions of testing equipment and listings of experimental results. All 10 plates depict instrumentation. Colonel James is also well known for his studies of the Great Pyramid of Egypt. (postpaid) \$ 110
38. William Leybourn, "THE COMPLEAT SURVEYOR: Or, the WHOLE ART of SURVEYING OF LAND, BY A NEW INSTRUMENT lately invented; As also by the Plain Table, Circumferentor, the Theodolite as now improv'd, or by the Chain only. . . . Every Operation both Geometrical & Arithmetical being examine'd, AND AN Appendix Added to the WHOLE, Consisting of Practical Observations in Land Surveying, By SAMUEL CUNN.", 5th ed, Ballard, Ward, & Woodward, London, 1722. Modern full leather binding 11 3/4" h, 7 3/4" w; pgs. frontis portrait of Leybourn, title in red and black, (10), 1-45, (46, 47 not included in numbering), 48-100, 166, 1-65, 63, 63, 68-155, (1), 14 foldout engraved plates. A crisp copy in very fine overall condition. Leybourn (1626-1716) was a noted teacher and writer on astronomy, navigation, mathematics, surveying (he was one of the surveyors of London after the Great Fire of 1666), and dialling. This book was first published in 1653 with editions in 1657, 1674, 1679, and 1722 (this one). There were significant changes from edition to edition; only 5 engraved plates in the 3rd ed, 6 in the 4th, and 14 in this one. Samuel Cunn's Appendix of 51 pages appears here only. This is one of the major works on surveying in the English language. (postpaid) \$ 295

Very Early Edition of a Standard Work

39. John Love, "GEOAESIA; OR, THE ART OF SURVEYING AND Measuring of Land Made EASIE. . . .AS ALSO How to lay our New Lands in America or elsewhere:", 3rd ed with additions, W. Taylor, London, 1720. Original leather binding with early repairs 8" h, 4 3/4" w; pgs. (18), 196, (16), 17-19, (36), 8, with many text woodcut illustrations and diagrams. Fine overall condition with some stains. The 1st edition was published in 1688 just after Love had returned from surveying in America. Taylor 1 lists a (second) edition of 1715 and suggests that Love had died before this date. The popularity of the work is attested to by the number of editions issued throughout the 18th century in England and two at the end of the century in the United States. (postpaid) \$ 180

Two Fine 16th Century Works by the Same Author In One Binding

40. Jean de Merliers, "LA PRACTIQUE DE GEOMETRIE, Gilles Gorbin, Paris, 1575; and "L'VSAGE DV QVARRÉ GEOMETRIQUE", Gilles Gorbin, Paris, 1573. 19th century quarter leather binding 9" h, 6 1/2" w; pgs. I, (6), 33 leaves, (1); II, (2), 26 leaves; a great many text woodcuts including full page ones of surveyors using measuring chains, and laying out fortification and a 2/3 page illustration of the surveying and measuring instrument called the "Quarre Geometrique". The first listed book provides an introduction to basic geometric concepts and then goes on to develop techniques for the computation of areas of various plane figures by reduction into triangles and rectangles. The second book, although of earlier date, is actually a logical sequel to the first (and was so bound). It provides design information on the "Quarre Geometrique", a graduated square with a pivoted alidade in one corner, and examples of its use for measuring land and structures. Dimensions and areas are then calculated by the same methods of the first book. This 400 year old example of applied geometry is in very to extremely fine condition, the 19th century binding showing more aging than the interior. (In French) (postpaid) \$ 265

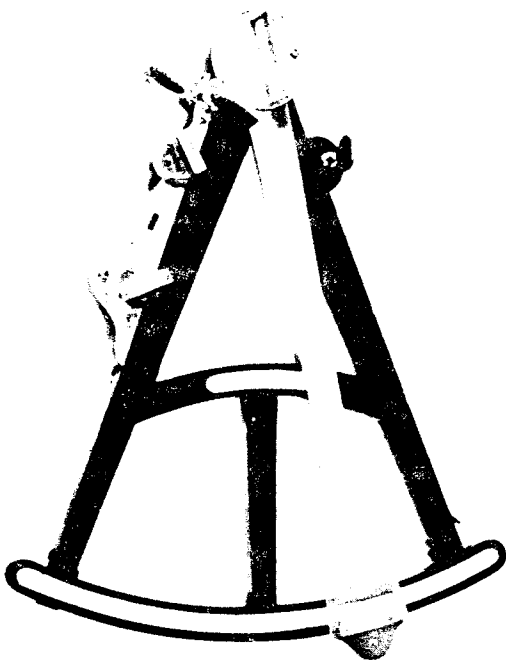
41. (Jacques Ozanam), "METHODE DE LEVER LES PLANS ET LES CARTES DE TERRE ET DE MER, Avec toutes sortes d'Instrumens, & sans Instrumens.", Nouvelle Edition, Charles-Antoine Jambert, Paris, 1750. Early half leather binding 6 1/2" h, 3 3/4" w; pgs. (10), 244, (7), 16 unusually fine fold-out engraved plates, a number of which illustrate various surveying and plotting instruments. Overall very fine condition. This book is derived from the earlier publications of the French mathematician, Ozanam (1640-1717) and in particular from his extensive 5 volume "Cours de Mathématiques". It is a good example of the French approach to surveying during the 1st half of the 18th century. (In French) (postpaid) \$ 95
42. (Jacques Ozanam), "METHOD DE LEVER LAS PLANS ET LES CARTES DE TERRE ET DE MER, Avec toutes sortes d'Instrumens, & sans Instrumens.", Nouvelle Edition, Charles-Antoine Jambert, Paris, 1755. Early leather binding 6 1/2" h, 3 3/4" w; pgs. (10), 244, (6), 16 folding engraved plates, many of instruments. Very fine overall condition except that pgs. 51 & 52 and plate 5 are supplied in facsimile, the originals now missing. There is no difference between this issue and that of 1750 except for the few pages of advertisement at the end. (In French) (postpaid) \$ 45
43. Samuel B. Ward, et al, "The Final Results of the Triangulation of the NEW YORK STATE SURVEY, Together With A Description Of The Methods Employed. Also, The Eleventh Annual Report of the COMMISSIONERS OF THE STATE SURVEY.", Weed, Parsons & Co., Albany, New York, 1887. Original cloth binding 11 3/4" h, 9 1/4" w; 214 pgs, 6 lithographic plates of instruments used, a number of partial and full page maps and diagrams, and the 5 large and very large maps of the triangulation folded into a pocket in the rear cover, Very fine overall condition. An interesting and detailed statement on geodetic surveying in the United States in the last quarter of the 19th century. (postpaid) \$ 55

WILLIAM EMERSON, English Eccentric & Mathematician

This prolific author (b. 1701, d. May 20, 1782) may have been the archetype of the 18th century English individualist. He turned down his election as a Fellow of the Royal Society. His cynical comment on this honor (according to Taylor 2) was, "*The little encouragement there is in this nation for promoting these sciences, is the reason that few people go any length this way. If they have gained so much knowledge as to be able to teach a common school to get a living by, they think it sufficient. Few make any further progress, and if they do they get the pleasures and pains of their labor. Or when a man is eminent for his discoveries, perhaps he is dignified by the title of F. R. S. but he has to pay a quarterly cess for the honour of it. This is the way that ingenuity is rewarded in England.*" Rees is more explicit than Taylor. "*Mr. Emerson was singular in his behaviour, dress, and conversation. His manners were rough, coarse, and often very disagreeable. In conversation, he was positive, dogmatical, and impatient of contradiction.*" His books were highly regarded during his lifetime. He and Charles Hutton were the two men chosen by the American, Benjamin West (of Providence, Rhode Island) to illustrate his poem in praise of arithmetic and Robert Heath a distinguished (and eccentric) writer on navigation praised him as well. However, by the time Rees was issued (1800-19 period) his reputation had declined "*He was an able mathematician; but his style as a writer is not adapted to smooth the path of science for beginners. His works, which are very numerous, are now chiefly superseded by other and more popular writers, . . .*" Yet by 1834 (according to Taylor 2) he was still widely known and his books once again highly esteemed. The 11th edition of the Britannica (1910) calls him "*eccentric and indeed clownish, but he possessed remarkable independence of character and intellectual energy.*" and notes "*In mechanics he never advanced a proposition which he had not previously tested in practice, nor published an invention without first proving its effects by a model.*" The following books will allow you to form your own evaluation of his abilities.

44. (W. Emerson), "THE MATHEMATICAL PRINCIPLES OF GEOGRAPHY.", J. Nourse, London, 1770. Modern full leather binding 8" h, 5" w; pgs. viii, ii, 172, 4 engraved folding plates. Very fine overall condition. The subjects covered include, "An Account of the various Properties and Affections of the EARTH and SEA; with a Description of the several Parts thereof. . . . The Use of the Artificial or Terrestrial GLOBE, in solving Problems. . . . The Principles of Spherical and Spheroidal SAILING;". Typical of all Emerson's books known to us, he has not placed his name on the title page, but has signed the preface. (postpaid) \$ 95
45. (W. Emerson), "DIALLING. OR THE Art of drawing DIALS, ON All Sorts of PLANES whatsoever. In THREE PARTS. Sect. I. The fundamental Principles of DIALLING. Sect. II. The Practice of DIALLING, illustrated on all kinds of Planes. Sect. III. Of describing the common Furniture of DIALS; and the Construction of some useful DIALS of other kinds.", no publisher, place, or date (London, 1770?). Modern full leather binding 8" h, 5" w; pgs. iv, 164, 18 folding engraved plates. Very fine overall condition. The approach followed is that of developing all possible cases of dial projection on planar surfaces with some remarks on ring dials and quadrants. There is also a discussion of Babylonian, Italian, and Jewish hour scales. (postpaid) \$ 110
46. (W. Emerson), "MISCELLANIES. OR A MISCELLANEOUS TREATISE; CONTAINING SEVERAL MATHEMATICAL SUBJECTS.", J. Nourse, London, 1776. Modern full leather binding 8 3/4" h, 5 3/4" w; pgs. vii, (1), 504, 10 engraved folding plates. Extremely fine overall condition. This, of all his works, provides the broadest insight into William Emerson's scholarly accomplishments. The subjects covered include Laws of Chance, Annuities, the Moon's Motion (3 body problem), Construction of Arches, Precession of the Equinoxes, determination of the Longitude (navigation), Fortification, Gunnery, Architecture, (the mathematical basis of) Music, and Optics. (postpaid) \$ 125

See also Item 140, William Emerson's Telescope



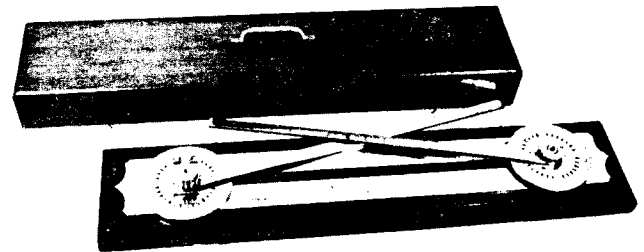
178. LARGE 18TH CENTURY HADLEY QUADRANT - English, c. 1785, signed "S. B. R." on the readout scale. Ebony frame with ivory scale of $13 \frac{3}{4}$ " rad, overall length 16", flat brass index arm with 1 arcmin ivory vernier and locking screw (but prior to the application of a tangent screw) single hole forward and back peep sights, forward and back horizon glasses, interchangeable set of filters. The instrument is complete, except for ivory note plate on rear, and original, except for restored lacquer finish on the bright brass parts and disc of back sight. Very fine overall condition although there is a loss of much of the original mirror silvering, cracks in the ivory, and the brass surfaces show the effect of prior cleaning as well as salt water etching. No case.

This is an elegant old Hadley quadrant made in the earliest days of Spencer Browning & Rust (founded about 1780), a firm which went on to produce more of this type of instrument than any other firm in the world. By 1800 the reinforced index arm and tangent screw for fine adjustment began to appear, the quadrants became smaller, and by 1810-20, the back horizon assembly had disappeared. We believe this to be the earliest quadrant by Spencer Browning & Rust which we have ever seen. It lacks refinement of small details even found on Item 223 of Catalog 113. Screws, frame legs, and horizon glass adjusting levers which should be identical are not. The pivoted end of the index arm (stamped underneath with the single number "3") is built up in a work-costly but not really sound way. Many of these faults were already corrected by 1790.

(9 lbs UP)

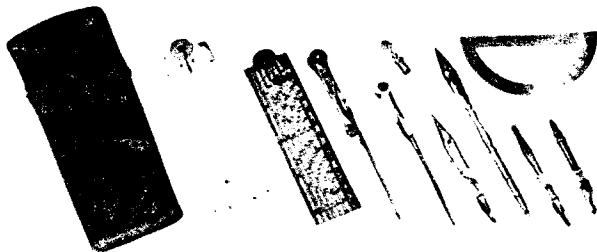
\$ 685

179. THE LOWRY-BOWYER TELEMETER - American, signed, numbered, and dated "THE LOWRY MFG. CO./BOSTON, U.S.A. /Pat. 1887, '92, '96/135". Bright brass construction on a $6" \times 27 \frac{3}{4}"$ long mahogany base over which is placed a $6" \times 27 \frac{3}{4}" \times 2 \frac{3}{4}"$ h cover. The instrument, another form of the classical trigonometer has two $4 \frac{1}{2}"$ compass bearing dials, one fixed at the end of the 26" long graduated slotted brass base plate, the other sliding, and each with graduated pivoted brass arms of $18 \frac{3}{8}"$ radius. Very fine overall condition with a few dark spots. This well made instrument was intended for the analog solution of the plane triangle knowing two angles and the included side, 2 sides and the included angle, or 3 sides. Thus it was useful for problems both of inshore navigation and gunnery.



(20 lbs UP)

\$ 175



180. FISHSKIN CASED SET OF DRAWING INSTRUMENTS - English, late 18th c, unsigned. Case $2 \frac{1}{2}" \times 1 \frac{3}{8}" \times 5 \frac{3}{4}"$ long contains 10 separate items in boxwood, ivory, brass; and steel: $4 \frac{3}{4}"$ scale, $4 \frac{3}{4}"$ sector, $3 \frac{1}{2}"$ half circle protractor, large dividers with separate pen, pencil, and dashing pen legs, small divider, pencil holder (but no pencil), and ruling pen. Very fine overall condition. Sets such as this were often the choice of naval officers and sea captains as we have seen in previous catalogs. As one would suspect,

surviving sets tend to be lacking one or more items, lost through normal use. A complete one, as the example here, is a pleasant surprise.

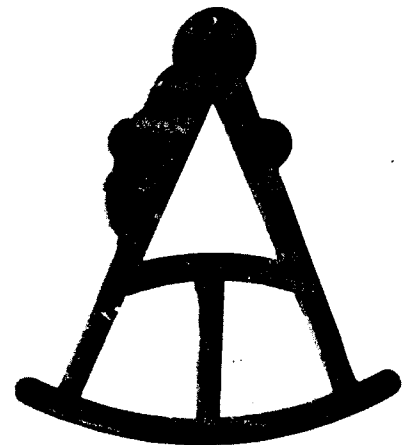
(4 lbs, UP, PS)

\$ 275

181. EXTREMELY RARE UNFINISHED QUADRANT FRAME - English or American, 2nd qtr 19th c, unsigned. Ebony frame $11 \frac{1}{8}" \times 9 \frac{7}{8}"$ made for what would have been a $9 \frac{5}{8}"$ scale readout. The limb has been inlet for ivory readout scale and a slot has been prepared on the back for the ivory note plate. There are no other holes, however, for any of the brass fittings; the slot for the name plate is missing too. Very fine overall condition although some pieces of wood have chipped off.

This is one of the most important finds yet made in the history of the technology of fabrication of nautical instruments. Very little is really known concerning the construction of ebony frame quadrants; what work could be performed by a person of one skill, what by another. Unfinished instruments are virtually unknown. If an instrument maker died or went out of business with unfinished work, it was either taken over by someone else or destroyed. An item such as this was of no use in its present state and there would have been absolutely no reason to so preserve it. Yet here it is. We have not been able to find anything like it in museums.

(6 lbs UP) \$ 545



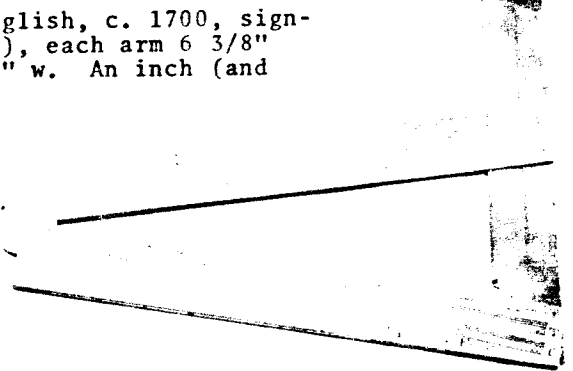
210. ORIGINAL VERSION OF FULLER'S SPIRAL SLIDE RULE - English, c. 1880, signed "FULLERS SPIRAL SLIDE RULE" and "STANLEY, Maker, LONDON" but prior to the assignment of serial numbers and date of manufacture. The original instruction booklet is dated 1878. Constructed of mahogany, brass, cardboard and varnished paper, 3 3/8" d x 16 1/2" long (incl handle). Original painted tin-plated stowage case 3 3/4" d x 16 5/8" long. The calculator is in very fine condition except for loss of about 3/8" of the scale at the edge of the rotating cylinder; the case is fine except for loss of paint in a number of spots. The 20 page original instruction book is complete

and sound but somewhat worn along the edges.

In this instrument, which was designed by George Fuller and patented in 1878, the logarithmic line is arranged spirally on the surface of a cylinder in 50 turns resulting in a working length of 41 ft 8 in. The line is numbered once from 100 to 1,000, the subdivisions so arranged that all numbers of 4 figures have either a mark upon the scale or are midway between 2 marks, so that results accurate to 4 figures are easily obtained. The surface of the inner scale in this original version has printed tables of decimal equivalents, natural sines, etc. Later, an advanced model was introduced which had trigonometric scales rather than tables.

(8 lbs, UP, PS) \$ 195

211. FINE BRASS SECTOR BY THE MAKER OF LORD ORRERY'S ORRERY - English, c. 1700, signed "J Rowley Fecit". Bright brass (restored lacquer finish), each arm 6 3/8" long x 1 1/16" w, the fold-in rigidity bar 4 1/2" long x 3/4" w. An inch (and tenths) scale is engraved on the outside edge and 3 sector scales on each side of each arm (designated s, S, L and t, T. C). In addition a logarithmic scale of numbers is so engraved on one side to be used with the sector open and, correspondingly sine and tangent scales on the other. Very fine overall condition.



Taylor 2 lists John Rowley (fl. 1698-1728) and states that he probably retired from active business in 1715, but was Master of Mechanics to George I. She also gives what she calls Edmund Stone's version of the invention and naming of the model of the Solar System, called the Orrery. *"Graham had been the first to construct one, but John Rowley on seeing it, had made a much improved type. It was the latter that was shown to Sir Richard Steel, who, knowing nothing of Graham's, had named it an Orrery, in honour of the Earl of Cork and Orrery."* Thomas Wright was Rowley's successor. Rowley's Orrery is shown in Plate XIX of Stone's Bion and described by him on pgs 189-191. It is now on exhibit in the Science Museum, London, after having been purchased at auction for about \$ 65,000 from the present Lord Orrery. Actually, it had been on loan exhibit in the same location for many years before, but the museum would not buy it until forced into the position of risking losing it. Taylor 1 provides further information, noting that Rowley was recognized for his accurately engraved scales and other instruments and that he became one of the most prominent men in his profession during the reign of Queen Anne. About 1710 he made a sextant for the new observatory at Trinity College, Cambridge, the Orrery in 1712, and an even more elaborate version for the East India Company in 1714. She states *"The high quality of his work ensured the survival of nearly two score examples, to be found in the London and Oxford Science Museums, in the National Maritime Museum, in the Orrery Collection at Christ Church, Oxford, in the Whipple Museum at Cambridge, in Pembroke College, Cambridge, and in private hands. This sector is another confirmation of his justly earned reputation."*

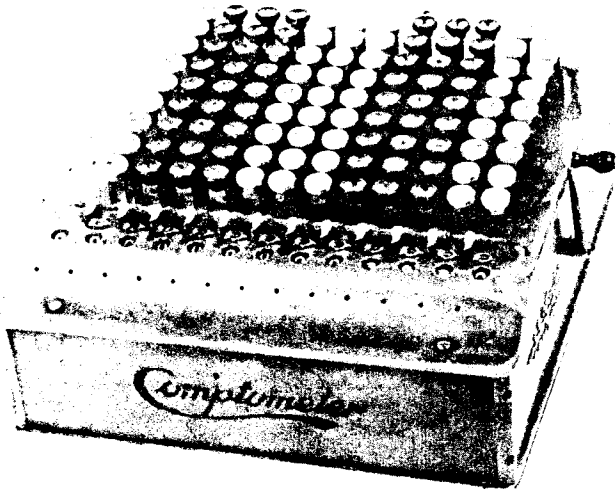
(4 lbs UP) \$ 830

212. TWO-FOOT BRASS GUNTER'S RULE - English, between 1800-19, signed "M. Berge London". Bright lacquered brass, 2 ft long, 1 5/8" w, 1/10" thk. The engraved scales consist of those normally found on a navigator's Gunter rule with added ones designated "Guns" and "Shot" suggesting that this rule was made for use within the Royal Navy. Thus in addition to the standard diagonal scale and 24 inch scale, there are 20 other scales on both sides of the rule. Fine overall condition noting that there is some salt water surface etching, a nick in the beveled edge, and that the lacquer finish is a modern restoration. Upon the death of Jesse Ramsden in 1800, Matthew Berge, the maker of this rule, continued the work of the firm, producing instruments upon Ramsden's designs, and matching quality, until his own death in 1819. A navigator's full 2-foot Gunter rule in brass seems exceedingly rare; no other example is known to us although short ones, intended for inclusion in a cased set of instruments, do exist.

(5 lbs UP) \$ 695

213. THE MK VI ARTILLERY SLIDE RULE - English, c. WW I, no maker's name but stamped "E. J. WOOLLAMS-SWEENEY/1918". Aluminum slide rule with German silver cursor and ends, 18 1/2" long x 1 3/8" w in original leather case 19" long. Scales on one side designated YARDS and MINUTES IN APX ANGLE OR BATTERY RANGE IN YARDS and on the other also YARDS and what appears to be a sine scale labeled S. Fine overall condition of slide rule and case. In Catalog 111 we had an identical instrument which was signed "Aston & Mander Ltd" and dated 1915.

(4 lbs, UP, PS) \$ 70



214. IMPROVED "COMPTOMETER" - American, last patent date Nov 2 1920, made by "Felt & Tarrant Mfg. Co. CHICAGO". Overall size 11" w, 15" deep, 5 5/8" h (to top of keys). Twelve columns of 9 keys with green or white plastic buttons, with 13 register windows below, crank to right for resetting register. Original metal dust cover 12 1/2" x 15 1/2" x 6" h. Physical appearance of calculator and cover is fine to very fine. The Comptometer operates to a certain extent but we are not certain that it is completely functional.

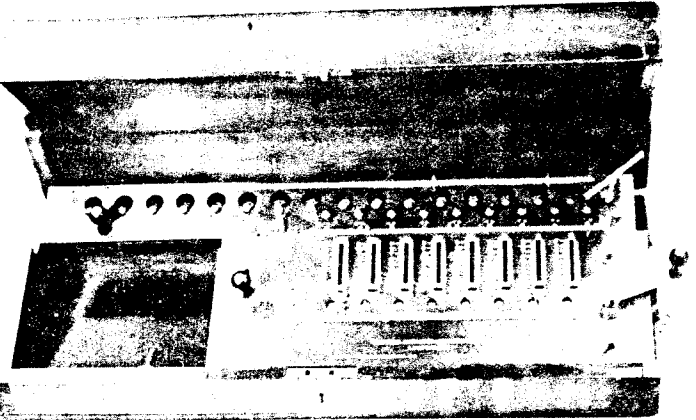
The Comptometer was invented in 1887 by Mr. Dorr E. Felt of Chicago and claims to be the first successful key driven adding and calculating machine. In calculating, the results are obtained by simply depressing the keys, without any auxiliary movements, and as they may be depressed simultaneously in every column, high speed operation is possible. In multiplication and division, stepping is performed by moving the hands one place to the right or left, keeping the fingers in the same relative position. The carrying of tens is accomplished by power generated

by the action of the keys and stored in a helical spring, from which it is automatically released at the proper instant to perform the carry. In front of the keys is a row of small levers, each of which when pressed backwards, prevents the carrying of tens between the numeral wheels which it separates. These are used in subtraction. The improved model here has built in safeguards against improper operation. If a key is not given its full downward stroke, the keys in all the other columns are immediately locked, and the numeral wheel in the column where the error is made shows a figure in the answer register out of alignment. Upon correction of the error and pressing the red release button, normal operation may be continued.

(40 lbs UP) \$ 195

215. IMPROVED FORM OF "THOMAS de COLMAR" ARITHMOMETER - English, signed and dated "LAYTONS IMPROVED ARITHMOMETER/LONDON, 1910". Elaborate mechanism with bright lacquered brass face plates contained in mahogany case 9" x 23 1/2" x 7 1/2" h. Input register of 8 figures, accumulating register of 16 figures, lever set of "ADD-MULT" or "SUB-DIV", zeroing crank for stepping carriage, zeroing lever for input register, and power crank. Very fine display and operating condition.

This type of calculating machine was designed and introduced in 1820 by Chevalier Charles Xavier Thomas de Colmar. Its construction was subsequently improved by Payen of Paris, who manufactured it in large numbers. S. Tate made the first English versions in 1883 and patented improvements in 1884 and 1903. C & E Layton then took over his patents and added their own improvements in 1909 which included mounting the face plates, which were horizontal in earlier models, so as to be inclined in the direction of the operator. The basis for the mechanism consists of a series of Leibniz stepped wheels (cylinder having on its outer surface nine teeth of increasing length) coupled to the input register. These are driven from the main crank then driving small pinions each rotated by the number of teeth on the Leibniz wheels for which they have been positioned. The motion is transferred to the hinged plate carriage which must be advanced one place for each significant figure.



(45 lbs UP) \$ 575

216. FOLDING SQUARE - French, mid 18th c, signed "Menant A Paris". Brass folding square 6 3/4" on a side and each arm 3/4" w. Scale along one edge in French inches ("pied de Roy") and on the other in German inches ("pied du Rhin"). Fine to very fine condition with restored lacquer finish. Daumas notes that some instruments by Menant have the inscription "au Butterfield" added after the signature in a manner similar to that employed by Clerget. It is believed that this item was once part of a cased set of mathematical instruments.

(3 lbs, UP, PS) \$ 170

217. Brass sector - French, 18th c, unsigned. Brass pivoted sector 6 3/8" long x 1 1/16" w (closed) x .11" thk. A total of 10 scales on both sides (parties egales, les Polygones, les Metaux, and Cordes). Very fine overall condition with restored lacquer finish. This computational device is intended for basic operations only since it does not have trigonometrical or navigational scales.

(3 lbs, UP, PS) \$ 165

Land Surveying

240. HIGH QUALITY LARGE BRASS PANTOGRAPH - English, 3rd qtr 19th c, signed "J. Archbutt & Sons, 201 Westminster Bdg. Rd. London S. No. 2601". Bright brass with original lacquer finish (showing a little darkening and wear on the arms with sliding pointer holders), outer arms 33" long each and shorter ones 15" and 17". Six ivory wheeled casters. Brass cased pivot wt 3 1/2" d. Proportionality scales are engraved on the B and D arms. Original fitted dovetailed mahogany case 34 1/2" long, 5 3/4" w (max)

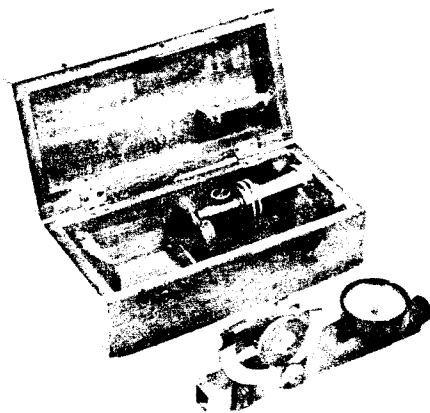
3 3/4" h. Case in very good, instrument in very fine condition.

Taylor 2 lists John Archbutt & Son (fl 1795) at 20 Westminster Bridge Street, London. Other information shows the firm in business through the late 19th c. The inclusion of a postal zone in the signed address dates this instrument past 1858 even though its design is identical to known examples from the late 18th c. This is the type of instrument used to transfer details from maps and plans of one scale to those of another. Its size would suggest its use in a main drafting room.

(20 lbs UP) \$ 285

241. CASED ABNEY LEVEL No. 5711 - American, early 20th c, signed "KEUFEL & ESSER C./NEW YORK". Brass construction in black oxidized finish with silvered scales and bright lacquered screws and fittings, 5" long, 1 3/8" d compass, 1 1/8" rad scale graduated between ± 60 deg with vernier readout to 10 arcmins and gradient scale. 1 3/8" bubble which can be viewed through sighting tube. Jacob staff mount 2 1/2" h also included in original 2 7/8" x 5 5/8" x 2 1/4" h mahogany case. Case in fine, instrument in very fine condition although compass needle lifter now lacking. After WWI, K + E came out with a slightly simplified form of this instrument with the clamping screw located at the center of the scale.

(4 lbs, UP, PS) \$ 95



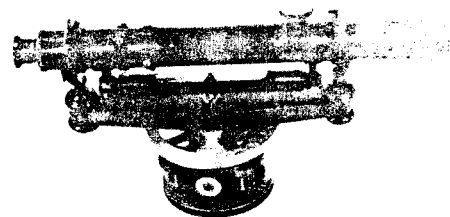
242. VERNIER COMPASS OF RARE CONSTRUCTION - American, 3rd qtr 19th c, unsigned. Bright brass, base 13 1/2" long with screw-on vanes 6 3/4" h, circular bubble level (fluid now lacking), and readout scale for vernier. Compass 6" d with silvered face and edge scale divided by 1/2 degrees, 5" needle, press-on cover. Generally fine condition although with wear from use, solder repairs to the compass cover, and the knob for the needle lifter is a modern restoration.

Although unsigned, it is our opinion that this is an early example of the work of Arnold & Co. of Chicago (founded 1863). It is similar in design to the signed Arnold instrument listed as Item 114 in our Catalog 103. There are a number of features which suggest that it could be one of the earlier works of a firm far removed from the industrialized north-east. The vanes are built of pieces

of brass plate riveted together, the central portion of the dial is scribed rather than engraved as are the vernier scales, and the knobs of the vane and vernier rotation locking screws appear to have been turned on a primitive lathe.

(10 lbs UP) \$ 325

243. ARCHITECT'S Y LEVEL - American, early 20th c (1912), signed "KEUFEL & ESSER CO./NEW YORK/25593". Brass in black oxidized finish, telescope 11" long with 1" extension of objective by rack and pinion focussing. 5" bubble level, 3" d silvered azimuth circle divided to degrees with vernier readout to 5 minutes. Triangular brass plate for plane table use. Original field case 12 1/4" x 5 1/4" x 8 1/2" h. Case in fair, level in fine condition with minor wear to oxidized finish.

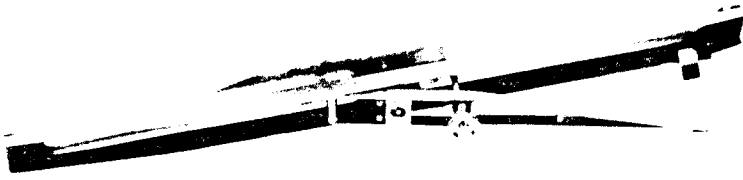


These small levels were also known as "Builders Y Levels" and were intended for use in the construction of buildings rather than land surveying. The example here was designated model no. 5110 and appears to have been a standard K + E instrument from the late 19th century onward.

(15 lbs UP, PS) \$ 160

244. STUDENT'S SMALL DRAWING SET - unsigned, but marked in pencil on the bottom "Wm. S. Rand Bryantsville Mass 1898". Wooden case 5 7/8" x 2 5/8" x 7/8" thk, containing brass and steel compass with interchangeable pencil, pen, and divider legs, brass pencil holder and adjusting tool. Believed to be lacking a simple 5" wooden rule. Fine to very fine overall condition.

(2 lbs, UP, PS) \$ 35



27 1/2" x 2 3/4" h. Case in very good to fine, instrument in excellent, about mint condition. The triangular shape of the steel plate means that its stiffness decreases from the middle outwards so that when it is deformed by pressure at the center, it takes a circular shape. This deformation is magnified by means of the long lever arm and readout on the non-linear calibration scale. A clever gadget to say the least.

(12 lbs, UP, PS) \$ 98

246. YANKEE SURVEYOR'S OUTFIT - American, the theodolite marked "YANKEE No 484/FROST & ADAMS Co./BOSTON, MASS./PAT. DEC. 17-12". The brass theodolite in black lacquer and bright lacquered brass finish is 7 1/2" h incl its 4-screw leveling base, has a rack focussing telescope 9 3/4" long with a 3 3/4" bubble level, vertical readout to 1 deg on a 1 1/2" rad sector scale of 70 deg length, horizontal readout by vernier to 5 arcmin on silvered scale of 3 1/2" d. Original mahogany case 14" x 6" x 9" h contains a sunshade, plumb bob, and post mounting screw as well. Original wooden tripod with 57" legs. Original leveling staff with 3 3/4" target is 66 1/2" long and extends for readings to 10 feet. Theodolite in very fine condition, all wooden pieces sound and in generally very good to fine appearance. Smart noted that on June 1, 1931 the Makepeace Co, of Boston bought out the Frost & Adams Co., an old established Boston firm which was founded in 1835 and incorporated in 1895. This relatively simple outfit was probably adequate for much building contractor's and farm improvement work.

(2 UP packages, 20 & 15 lbs) \$ 270

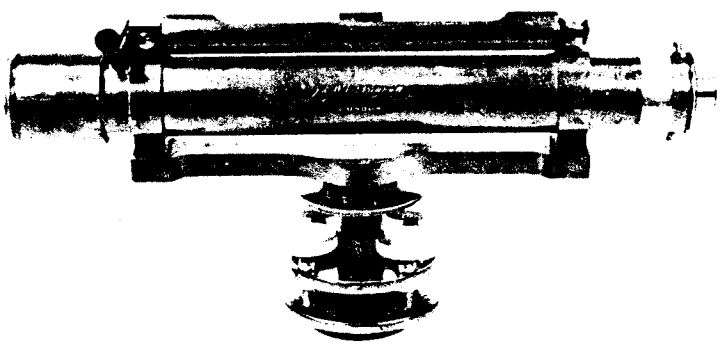


247. CASED DRAWING INSTRUMENTS - English, 2nd half 19th c, unsigned. Brass and steel instruments, ruling pen with ivory handle; 13 separate items in lift-out tray. Small boxwood rule in space below. Rosewood veneered case 4 3/4" x 8 1/8" x 1 7/8" h. Case and instruments in fine condition except that the large compass is missing its pivot locking nut and the brass has become a bit dull

with age (a problem which seems to hit all of us).

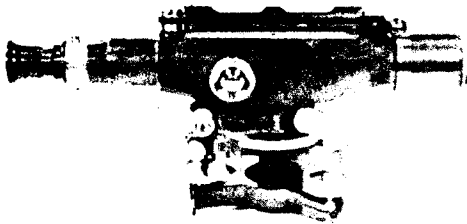
(4 lbs, UP, PS) \$ 80

248. MASSIVE DUMPY LEVEL - English, probably 3rd qtr 19th c, numbered and signed, "No. 1040/J. & W. E. Archbutt, /201, Westminster Bridge Road, /LONDON". Black oxidized brass with bright lacquered screws and other fittings, 15" long with 2 1/2" of rack and pinion eye-piece extension, the barrel 1 7/8" d, 8 3/4" long longitudinal bubble and 2 3/4" transverse bubble, 7 1/2" overall ht incl 4 screw leveling base. Original dovetailed mahogany case 5 1/4" sq x 21" long. Case in very good, level in very fine condition. This is a massive impressive instrument.



Taylor 2 lists John Archbutt & Son (fl 1795) at 20 Westminster Bridge Street, London and it is known that they were still at this address in 1865. A recent book of questionable accuracy places the firm of William Edwards Archbutt at 201 Westminster Bridge Road in 1894. We have not been able to determine the dates of the firm's name changes (i.e. from "& Son" to "& Sons", to J. & W. E., and then to "W. E."). If these were known as well as the dates of change of address, it would then be possible to bracket the date of fabrication rather closely.

(27 lbs UP) \$ 265



249. ENGLISH LEVEL FITTED FOR TACHEOMETRICAL READING - Early 19th c. marked "PATENT/STANLEY, HOLBORN, LONDON/27052/BRITISH MADE". Cast and machined brass in green-black oxidized finish with some fittings in bright lacquered brass, 11 1/2" long by 6" including the 3 screw leveling base. Cross bubble levels 2 1/4" and 4 3/4", azimuth readout circle 3 3/4" d divided to degrees. Rack and pinion eyepiece focussing. Original mahogany case 13 1/4" x 6" x 7 3/4" h. Case in almost fine and level in near mint condition.

According to the label inside the cover, "The Telescope of this instrument is fitted for tacheometrical [stadimetric] reading, and the points are set 1:100. In taking readings of a distant staff by means of the subtense points or lines in the diaphragm, read every 1/100 foot (or metre) on the staff as being equal to one foot (or metre) of distance from the centre of the instrument, . . .". The maker is the same Stanley located at Gt. Turnstile, Holborn during the 19th century.

(18 lbs, UP, PS)

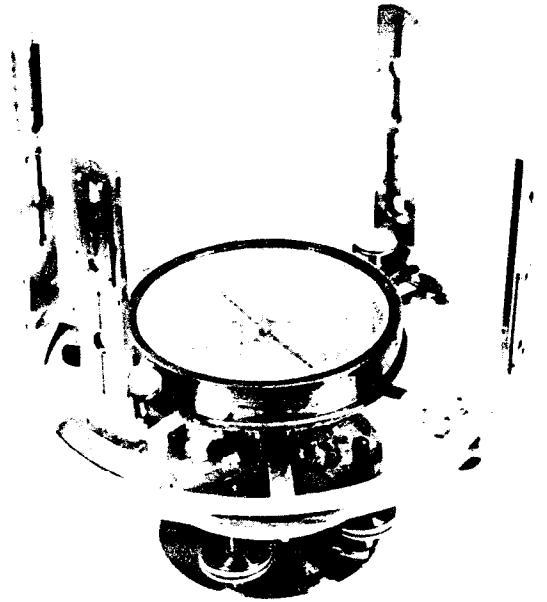
\$ 195

250. PARTICULARLY ELEGANT CIRCUMFERENTOR - English, 1st qtr 19th c, signed "Gilkerson & Compy. Tower Hill LONDON". Bright lacquered brass with readout circle 8" d, 4 1/2" d compass silvered dial, inset bubble levels and 3 1/2" needle; overall ht 8 3/4" incl original 4-screw leveling base. Four screw-on sight vanes, the outer (fixed) ones 5 1/4" h, the inner (moveable) ones 4 1/2" h. Readout by vernier to 3 arcminutes. Very fine overall condition noting that most of the lacquer finish is original (remainder, a modern restoration) and one thumb screw is a modern restoration. The matching color of the leveling base and instrument are proof that they were made together, highly unusual for this type of instrument which is normally found with a ball joint mount. No case.

The 4-vane circumferentor is a relatively rare instrument, probably because it was quite costly, being somewhat over-designed; it was possible to use the far less expensive surveyor's compass with bearing readout for the same type of work. Thus it seems to be a design hold-over from earlier times, and made more for its impressive appearance than for a practical need. Taylor 2 lists the signed maker 1809-27; "8 Postern Row, Tower Hill, London; The Navigation Warehouse, 148 Leadenhall Street, London. The firm of Gilkerson shared the Navigation Warehouse with Gilbert and Co., formerly Gilbert and Wright." Goodison lists him as John Gilbert's partner from 1792-1811.

(16 lbs UP)

\$ 1,250



251. 18th CENTURY WOODEN SURVEYOR'S COMPASS - American, probably 3rd qtr 18th c, signed "Wm H(AR)T FEET/PORTSMOUTH" on one arm. Walnut frame 11 3/8" long, central compass 5 3/8" d with 4 7/8" d engraved compass card (east to the right) and 4 1/2" needle. Marble sight vanes 4 1/2" h for overall ht of 6 1/4". Pine cover plate of early 19th c origin. Generally very fine condition for a wooden instrument of this date, the major imperfection being two holes drilled in the arms (one through the letters "AR" of the signature) for pegs of the later cover plate. No case or tripod.

Little is known about William Hart (1734-1811) of Portsmouth, New Hampshire except that he was one of the town's earliest, if not first, mathematical instrument makers and is buried in the old North Cemetery.

Smart lists two other instruments by him, a wooden semi-circumferentor dated 1753 and an undated brass and wood surveyor's compass. A Davis quadrant by him predating the Revolution is also known.

(6 lbs UP)

\$ 545

252. LEATHER CASED DRAWING INSTRUMENTS - Danish, late 19th c (?), signed "CORN. KNUDSEN. KJOBENHAVN". Black leather case 4" x 9" x 1" thk containing 12 pieces in brass, steel, and ivory including a 6 1/2" long brass diagonal scale rule, the divisions of which are neither in English nor Metric units. The set is complete except for the little case for pencil leads and extra points. The case is sound although showing wear, the instruments in very fine condition.

(5 lbs, UP, PS)

\$ 95

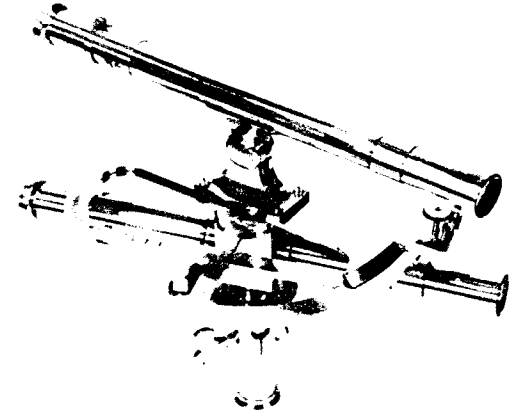


253. FINE COMPACT LEVEL - English, c. 1850, signed Troughton & Simms, London". Bright brass, original lacquer finish excellent on repaired sunshade where it has been restored, 6 1/2" h overall including 4-screw leveling base. Telescope is 11 1/2" long (closed) with 1 5/8" d objective, 6 1/2" longitudinal bubble, 2 3/8" transverse bubble, and rack and pinion focussing of eyepiece. The longitudinal bubble vial and the objective lens are modern replacements. Original dovetailed mahogany case 15 1/2" long, 5" w, 4 3/4" h. The case is in very good, the level in very fine condition with some rubbing of the lacquer finish on the base. This is a good example of a typical English design produced by one of the "great" firms of instrument making. Troughton & Simms was established in 1826 when Edward Troughton (1753-1836) took William Simms (1793-1860) in as a partner so that the firm could continue (which it did, well into the 20th century), since he had no family and his brothers had died years earlier. This is important when we note that Jesse Ramsden and Edward Troughton were (and are) considered by many as the two greatest of English instrument makers.

(15 lbs, UP, PS)

\$ 260

254. TWO TELESCOPE GRAPHOMETRE BY THE FIRST MAKER OF DIVIDED PRECISION INSTRUMENTS IN ALL OF FRANCE - 4th qtr 18th c, signed "Lenoir à Paris" with the added initials "L. T." and numbered "459" on the underside. Bright brass (restored lacquer finish), 9" h with 10 3/4" long telescopes, 8" d graduated semi-circle with opposing verniers reading to 1 arcmin, tangent screw fine motions on lower (fixed) telescope and on upper (rotating) telescope relative to the scale and lower telescope assembly. Ball joint for staff mounting. Separate 3 1/4" bubble level for initial set-up. Original caboose shaped oak case 7 1/2" x 12 1/4" x 8" h. Case in very good (old age cracks), instrument in extremely fine condition.



Étienne Lenoir (1744-1832) has established such a fine reputation as instrument maker that from 1772 onwards he was sufficiently well known for de Borda to entrust him with the construction of his reflecting circle, and in 1784 he developed from it his own repeating circle. He developed his own circular dividing engine sometime about 1780-83. This machine has disappeared, and only an incomplete description of it survives. Some details had never been revealed, Lenoir taking these secrets to the grave. It was a machine of great accuracy, however, according to Daumas. He says that an examination of a circle divided on it revealed an error of less than 15 seconds for an arc of 60 degrees. In 1787 Lenoir was appointed certified engineer to the king, one of the original members of this body. He supplied instruments for many of the major geodetic operations. After 1800, he constructed several high-precision astronomical instruments, and had been involved in making standards of length including the "standard metre". Plates 107 and 108 of Daumas illustrate one of his de Borda reflecting circles and a double telescope repeating circle constructed by Bellet in 1805 upon a design of Lenoir. He must have made but few instruments compared with his English contemporaries. We do not know if the "459" is an actual serial number, and even if it is, at what point did he start his sequence. His workshop of 7 people (large by French standards) did not even come close to Ramsden's of 50. The Nachet and Van Marum collections did not include a single one of his instruments. The National Maritime Museum, Greenwich, has a Langlois graphometre rebuilt by Lenoir, but no original instruments. The Peabody Museum, Salem has none. The one offered here is not only significant in the history of precision instruments, but exceedingly rare as well.

(16 lbs UP)

\$ 2,225

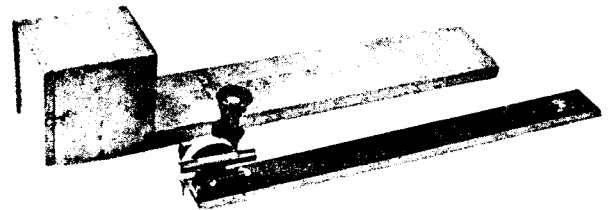


255. CASED BEAM COMPASS - European, c. 1900, unsigned. Wooden (possibly Birch) case 4 3/4" w, 13 1/8" long, 1 3/8" thk, the domed top with German-silver name plate engraved "F. Matthews". The German-silver beam compass consists of 3 pieces which screw together into a 35 1/4" beam, and the two adjustable fittings which take the various marking and scribing points. Two of the original 4 (or 5) of these are present. Very fine overall condition.

(6 lbs, UP, PS)

\$ 65

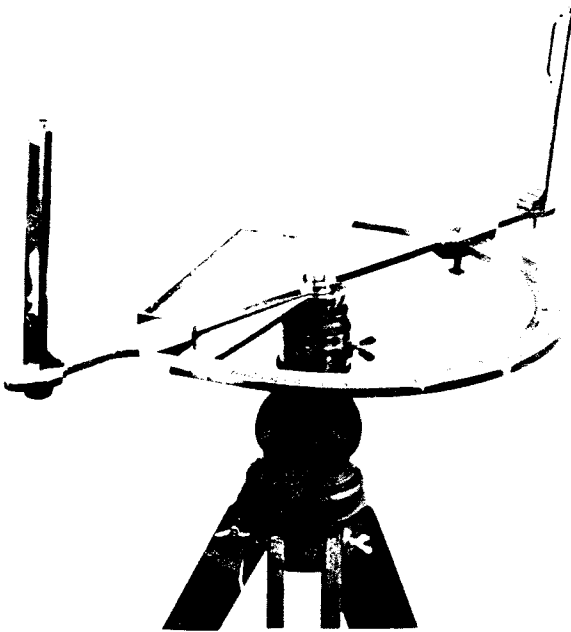
256. TELESCOPIC PLANE TABLE ALIDADE - Japanese, 20th c, signed "EK" within a star, "No. 2512" and "J. E. S.". Black lacquered brass rule 17 5/8" long, 1 7/8" w, fitted with 4x right angle telescope 3 5/8" h, 2 7/8" adj bubble level, and small circular bubble level. The telescope has an elaborate reticle. Original shaped wooden case 19 1/2" long, 3 1/2" w, 4 1/4" h, with belt loop for field use. Case in very good, alidade in fine plus condition. There is an elaborate inscription in Japanese on the case. The instrument may not be in calibration.



(8 lbs, UP, PS)

\$ 95

257. VERY LARGE CASED BRASS SEMICIRCUMFERENTOR ON TRIPOD - American, 18th or early 19th c, unsigned. Bright lacquered brass, the pivoted arm 25" long with 7 3/8" screw-on sight vanes and ivory indicator plate, the divided semicircle 15 3/4" d, and the box compass 2 3/8" w x 9" long with 8" needle. The center post extends 4" below the bottom of the semicircle. The scale is divided to degrees. The darkened pine tripod has 49" long legs below a 7" h head with brass clamping ring. The strangely contoured stowage case (not pictured) is 26 3/4" long, 13" w, 2 3/4" h and stands on 3 turned legs 2 1/2" h each. A turned wooden fitting for the instrument post on the bottom of the case is badly damaged. The instrument is in extremely fine display condition with the lacquer finish a modern restoration and some of the screws early but not original. The tripod is in very fine condition and although found with the instrument and in our opinion used with it at some point in time, is of later origin. A ball and socket joint which would have properly mounted the instrument on the tripod was not found and in our opinion should be considered missing. The case which clearly was made for the instrument is, in our opinion, by the maker of the tripod, and hence not original either, although of 19th c origin. It is in very fine condition except as noted.

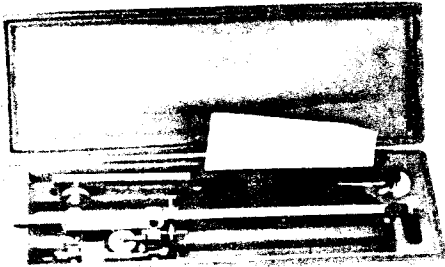


The American semi-circumferentor should not be confused with the classical European graphometre which had a pair of fixed vanes along the diameter of the semicircle as well as the pair on the pivoted arm and when made with a compass had one with 360 degree readout rather than one of box form. The usual semi-circumferentor (see Figs. 32, 34, and 59 of Bedini) is quite a bit smaller than the one here and made with a wooden body upon which the scale was marked and within which was set the box compass. The form of the one here is virtually unknown, and in our opinion, the instrument is unique. The details of construction suggest that it was made by someone without proper metal working tools (not even a lathe) and that it was the first such made as well. The scale is crudely engraved, the degree divisions are not uniform and the zero line at one end seems to have been put in incorrectly and a correct line then marked over it. The numerals are from stamps made for use on wood. The screws seem to be either hand-cut or part formed in crude dies and part hand-cut. Thus the instrument appears to date from the 18th c (its case and tripod from the 19th c) but it may also be a product of 18th c technology employed in the early 19th c.

(2 UP packages, 30 lbs & 20 lbs) \$ 1,395

258. 100 LINK SURVEYOR'S CHAIN - English, 2nd half 19th c, signed "CHESTERMAN/SHEFFIELD". Steel link chain with brass handles and markers, 66 feet long. Fine overall condition.

(15 lbs, UP, PS) \$ 115

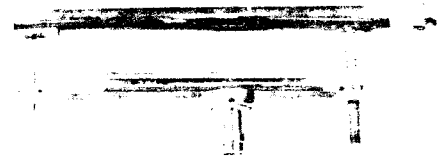


259. IMPROVED FORM OF AMSLER ADJUSTABLE RATIO POLAR PLANIMETER - Probably Swiss, c. 1900, signed "KOLESCH & Co. N.Y.". constructed of bright and black enameled German silver. steel and bright lacquered brass, fitting in original black fabricoid case 3 1/2" x 10 1/2" x 1 7/8" h. Very fine overall condition. The original form of this instrument for measuring the area of a plane figure by tracing its perimeter was invented by Prof. Jacob Amsler about 1856. Smart lists Kolesch & Co., 1885-

1947, founded by Heinrich Adolph Kolesch (1855-1903) born in Ulm, Germany, and continued by his son Percy Adolph who died in 1931.

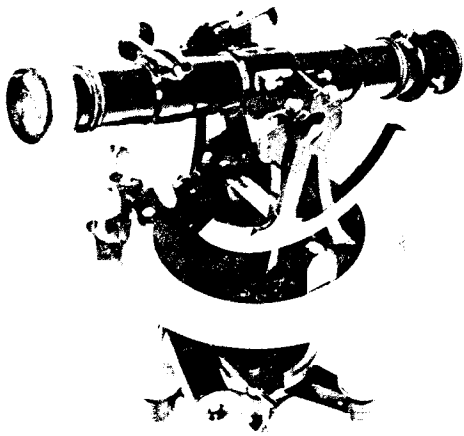
(4 lbs, UP, PS) \$ 95

260. SCOTTISH CLINOMETER - between 1860-82, signed "GARDNER & Co./53 BUCHANAN ST./GLASGOW./REGISTERED/No. 2602 DEC 28TH. 1850", and marked no. "207". Bright brass with some original lacquer finish, 12 1/2" long, 6" h, 6 1/4" bubble level and silvered Rise-Fall scale 3/4" w x 4" h. Telescope tube is 1 1/8" d with draw tube eyepiece focus. Original dovetailed pine case 13" long, 6 1/2" w, 2 3/4" h with trade label inside cover of Gardner & Co. located at 53, Buchanan Street. Case in very good, instrument in very fine condition.



Although the trade label states "Established A.D. 1765", John Gardner's name first appears in the Glasgow Directory as a mathematical instrument maker in 1787. Gardner & Co. was at 44 Glassford St. 1837-38, 21 Buchanan St. 1839-59, 53 Buchanan St. 1860-82, and at 53 St. Vincent St. in 1883.

(9 lbs, UP, PS) \$ 265



261. A VERY SMALL THEODOLITE - French, 4th qtr 19th c, unsigned, with the trade label of "Mon. RICHER/GUYARD & CANARY Aîné Succrs./15 Rue de la Cérissaie, près la Bastille, PARIS" within the lid of the case. Brass construction with silvered scales, much in original black lacquered finish, various screws and knobs in bright lacquered brass, standing 7 1/4" h on 3 leg leveling base. Horizontal scale 4" d with dual vernier readouts to 100 parts of 1 metric degree (400 to the full circle) and tangent screw fine motion. Vertical sector scale with vernier reading to 50 parts of 1 metric degree. The telescope is 8" long and without bubble level although there is a single traverse one located on the azimuth table between trunnions. The 4 5/8" long tube below the azimuth table contains an optical readout north orienting compass needle. Original wooden case with machine cut joints 9 1/2" x 7" x 7 3/4" h in fine condition. The theodolite is very fine plus although no attempt has been made to determine how well it now works. The basic design of this instrument is quite similar to that of the Morin surveyor's transit offered by us in Catalog 115 but we do not have sufficient information to identify the actual maker.

(18 lbs UP)

\$ 425

262. CASED PRESENTATION ROLLING PARALLEL RULE - English, 4th qtr 19th c, signed "W. H. HARLING. 47 FINSBURY PAVEMENT. LONDON". Black oxidized brass rule 12 1/4" long x 2 8/9" w in original mahogany case 3" x 13" x 1 1/2" h. Case in fine, rule in extremely fine condition. Pasted to the inside cover is the presentation certificate, "Bradford Tech. College PRIZE Awarded to Fred Inman at the Annual Examination, 1983. BY ORDER OF THE LORDS OF THE COMMITTEE OF HER MAJESTY'S MOST HONOURABLE PRIVY COUNCIL ON EDUCATION".

(6 lbs, UP, PS)

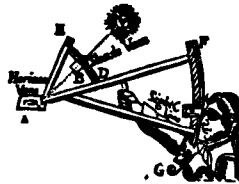
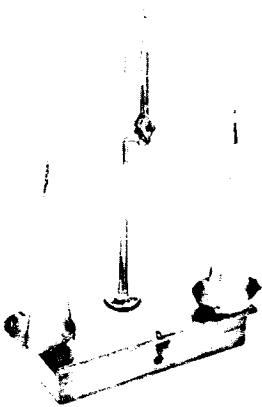
\$ 75



263. SMALL CASED PORTABLE BALANCE - Probably English, c. 1900, unsigned. Oak stowage case 3 3/8" x 7 1/2" x 1 1/2" h also serves as the base for the balance, the rear brass column screwing into a socket at the back of the lid. Overall ht assembled is 12 1/4". The 2 1/4" d brass pans are suspended from the 6" long steel balance beam. No lifting action. Fine to very fine overall condition.

(4 lbs, UP, PS)

\$ 75



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