Historical Technology, Inc.

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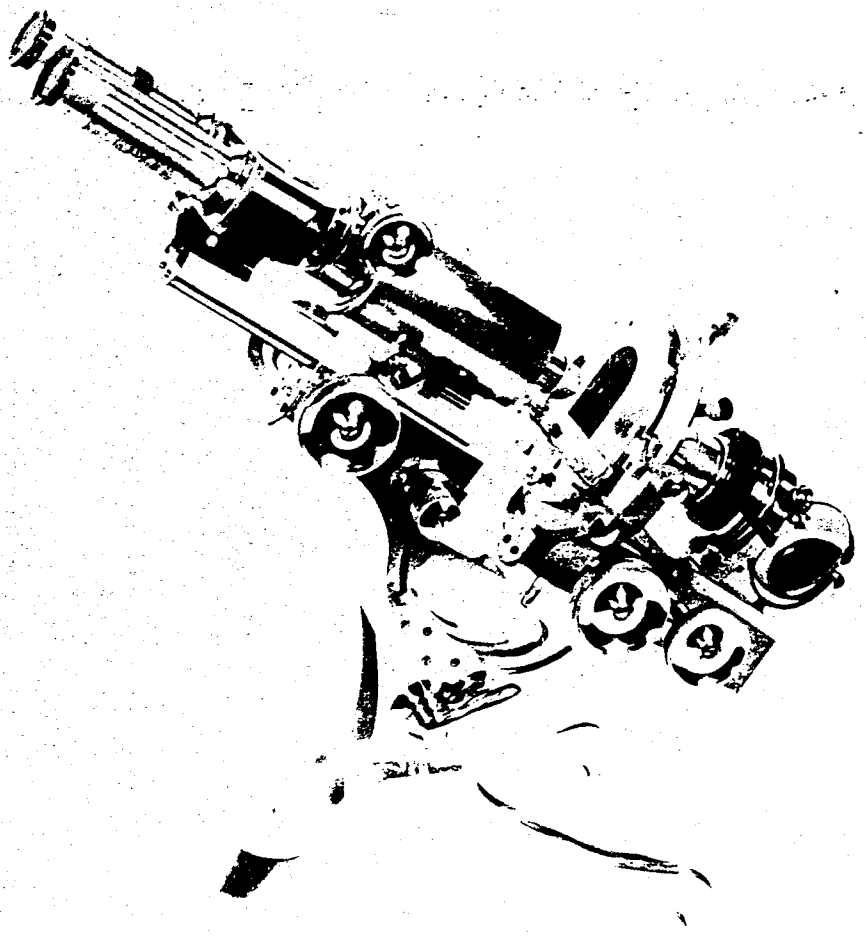
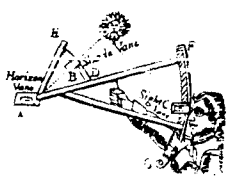


ITEM 92
WALE'S LIMB
MICROSCOPE

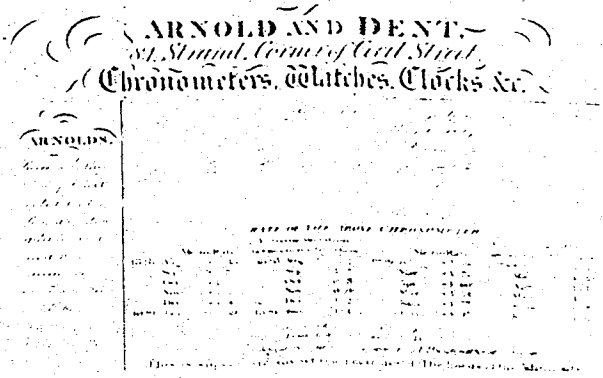


Catalog 125
Fall, 1983
Five Dollars

39. (Anon.), A COMPENDIUM OF MATHEMATICS (including a treatise on the astrolabe), French, early 1600's. Early vellum binding 4" h, 6" w; 358 leaves, a few blank, several on one side only, and several foldouts. There are many hand drawn diagrams within the text as well as some printed figures which have been pasted in, particularly in the astrolabe section. The topics covered include arithmetic, dialling, coats of arms, the astrolabe (based upon Stofler's treatise and illustrated by pasted in diagrams cut out of a late 16th century edition of his book), trigonometry, geography on the sphere, astronomy, the beam balance, military architecture, geometry, astrology (with diagrams of 2 horoscopes, one dated 1587 and the other 1625), fireworks, surveying, and gunnery. Generally fine condition although most of

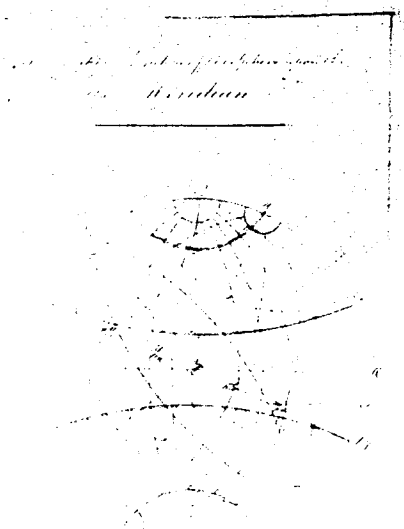
the pages in the last quarter of the book are stained. It appears to us that the entire book is in one hand but spread over a number of years. We are not certain as to whether the pages were bound before or after they were inscribed. Some of the sections are clearly derivative. Others, however, may not be and we believe that a detailed study of this work could be quite fruitful in terms of gaining insight into the mental attitudes of the period. (Mostly in French with some Spanish, Italian, and Latin) (postpaid) $ 435

40. Arnold and Dent, AUTOGRAPH LETTER ON CHRONOMETERS, English, dated October 15, 1833, and addressed to the American Navy. Folded single sheet 9 3/4" h, 7 1/2" w with the engraved heading as shown.



"Sir,

In reply to your inquiry, we shall be happy to supply the American Government, with our best two day Chronometers, compensation balance of the usual construction, and occasionally, with our patent silver and platina Balance to avoid magnetism, and oxidation, with hand to indicate the time elapsed since winding, and in every respect a complete Instrument for the Sum of Fifty Pounds Sterling. Best Eight day Chronometers of the same construction for the Sum of Seventy Pounds Sterling, and sufficient time will be allowed for trial - but we beg it to be understood, that these prices are free from any deduction arising from payment for Duty, Shipping, Insurance, Freight & c: as we cannot at present ascertain what the probable charges would be, but no addition will be made than what we ourselves may have to pay in their conveyance. Should an outer stuffed box be required as is sometime the case, the extra charge for each will be Twenty five Shillings Sterling." (postpaid) $ 135



41. (Ralph Buchanan) (untitled NAUTICAL ASTRONOMY notebook) with the bookplate of the Academy in Southwark run by Gideon Fournier, "Late Assistt. and now Successr. to Mr. William Mountaine, F.R.S.". Original vellum binding 15" h, 9 3/4" w; pgs. 68 on nautical astronomy completed and 31 begun but not finished, 9 on the duties of the officers of the ship Neptune, and 108 blank. One page loose. Two folded sheets of notes on navigation. Binding shows use and wear, pages generally in extremely fine condition with many exquisite diagrams. Taylor 2 indicates that William Mountaine worked 1736-78 so that this notebook probably dates from the last two decades of the 18th century. There is no student's name within the notebook, but the folded notes in a similar, but cruder hand bear Buchanan's name. It appears that he started the course in Fournier's Academy preparing this notebook in a fine copperplate script with carefully drawn, elaborate diagrams. As time went on he fell further and further behind, at first unable to complete problems, later reduced to just their original statement. Finally he gave up, shipped out on the Neptune, and used some of the blank pages of his notebook to scrawl in the duties of a ship's officer. A truly [illegible] document of a segment of a man's life. $ 275

42. Abel Flint, (AUTOGRAPH LETTER), Hartford,Conn., Sept. 30, 1824. Two page letter 9" h x 7 1/4" w addressed to Nathaniel Goodwin of Hartford for his use as a testimonial as to the value of a plotting instrument invented by him. It reads, in part; *"This certifies that I have examined a Mathematical instrument, called a Rectangular Protractor, invented by Nathaniel Goodwin Esqr. a surveyor in Hartford County, Connecticut, the design of which is to protract fields, by the Northings and Southings, Eastings and Westings, as found by the system of Rectangular Surveying. The instrument appears to me to be well calculated to answer the object in view; · · · I therefore recommend it, as an assistant to the practical Surveyor, · · ·"*. There is also a note from Flint to Goodwin with some suggestions of a practical nature in reference to selling the instrument. The letter is in fine condition with 2 small holes at the folds and a larger hole where a wax seal was once attached. (postpaid) $ 120

LAND SURVEYING, GEOLOGY, & MINING

The Famous Hoover Translation

43. Georgius Agricola, "DE RE METALLICA" Translated From The First Latin Edition Of 1556 · · · BY HERBERT CLARK HOOVER · · · AND LOU HENRY HOOVER, The Mining Magazine, London, 1912. Original vellum binding 13 3/4" h, 8 1/2" w; pgs. xxxi, 640, with hundreds of text figures reproduced from the original woodcut illustrations. Generally fine condition except for an ink ownership inscription on the 1st blank page, partially cracking hinges, and some discoloration of the covers. Hoover and his wife, Lou, worked five years on this translation into English of the greatest medieval treatise ever published on mining and the metal working arts. Indeed, because Hoover was a working mining engineer at the time and knew the subject as no pure scholar ever could, this translation is generally recognized as being superior to all others ever attempted. The extensive added footnotes and explanations result in this work being more than a simple translation; it is truly a study of medieval metallurgy, the like of which may never be equaled. The passage of time may yet result in Herbert Hoover's place in history being established by this publication. (postpaid) $ 365

44. Giuseppe Antonio Alberti, "ISTRUZIONI PRATICHE PER L'INGEGNERO CIVILE", Battista Pasquali, Venezia (Venice), 1804. Original 3/4 leather binding 9 1/2" h, 6 3/4" w; pgs. viii, 240, 37 engraved plates, 9 of them of surveying instrumetts. Generally fine condition with some edge wear to binding and minor occasional foxing of contents. This book discusses the design of waterways and water systems, landscaping, large scale structures, buildings, and the associated surveying techniques. There are also extensive descriptions of surveying instruments. Interestingly, these instruments are at least a century behind English technology of the same period. One bears a striking similarity to Fabri's "Squadra Mobile". The water level, consisting of brass piping with glass reservoirs at either end, is another. If we remember that Jesse Ramsden had died 4 years before this book was published, the regressive nature of these designs becomes even more obvious. (In Italian) (postpaid) $ 90

45. 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 result 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. (postpaid) $ 175

46. Charles Davies, "ELEMENTS OF SURVEYING, WITH A DESCRIPTION OF THE INSTRUMENTS AND THE NECESSARY TABLES", 4th Ed, A.S. Barnes & Co., Hartford, 1839. Original leather binding 8 1/4" h, 5" w; pgs. 170, 73, 91, 6 folding plates (4 of surveying instruments). Ex library copy in generally fine condition although some wear to binding, light foxing of contents and moderate spotting of plates. The instruments depicted are the two telescope Ramsden style theodolite, surveyors 4-vane cross, marking protractor, vernier compass, plain table and sight vane alidade, and wye level. Various plotting instruments are described in the text as well. The 1st edition of this work (1830) was prepared for use at West Point. It proved so popular, combining theory and practise, that there were 15 issues between 1830 and 1850. (postpaid) $ 55

* Abel Flint, (AUTOGRAPH LETTER) - See "WORKS IN MANUSCRIPT"

Third American Edition

47. Robert Gibson, "A TREATISE OF Practical Surveying; WHICH IS DEMONSTRATED FROM ITS FIRST PRINCIPLES. WHEREIN EVERY THING THAT IS USEFUL AND CURIOUS IN THAT ART, IS FULLY CONSIDERED AND EXPLAINED. . . . WITH ALTERATIONS AND AMENDMENTS, ADAPTED TO THE USE OF AMERICAN SURVEYORS.", 6th Ed, Joseph Crukshank, Philadelphia, 1792. Modern full leather binding 8 1/4" h, 5 1/4" w; pgs. viii, 288, 64 pg section of tables dated 1794, 12 foldout engraved plates. Generally very good condition except for some staining and foxing, deterioration of the outside edges of the plates (particularly Pl. 7). The 1st American edition (called the 4th) was published in 1785, taken directly from one of the London versions (4th Ed?) of the period. The 1st edition may have been issued in Dublin c. 1750 and Taylor 2 notes a 2nd London edition of 1767. The author may well have been the Dublin surveyor (fl. 1731-61?) who held the post of examiner of applicant surveyors to the Surveyor General of Ireland, and was also a teacher of mathematics (Temple Lane, Essex St., Dublin, 1752 and Anglesey St., 1754). (postpaid) $ 135

48. Robert Gibson, "THE THEORY AND PRACTICE OF SURVEYING: CONTAINING ALL THE INSTRUCTIONS REQUISITE FOR THE SKILFUL PRACTICE OF THIS ART. . . . NEWLY ARRANGED, IMPROVED, AND ENLARGED . . . BY JAMES RYAN,", (7th New York & 15th American Ed), Duyckinck, New York, 1821. Original leather binding with red label 8 1/2" h, 5 1/2" w; pgs. v, (3), 360, 184, 14 foldout plates. Generally very fine condition except for missing upper corner of front fly leaf and extensive moderate foxing. This issue has the major revisions which first appeared in the 1812 5th New York edition. (postpaid) $ 65

The Rare First Edition

49. John Gummere, "A TREATISE ON SURVEYING, CONTAINING THE THEORY AND PRACTICE: TO WHICH IS PREFIXED, A PERSPICUOUS SYSTEM OF PLANE TRIGONOMETRY.", (1st Ed), Kimber & Richardson, Philadelphia, 1814. Original leather binding with red label 8 3/4" h, 5 1/2" w; pgs. v, (5), (9)-202, 152 (tables dated 1814), 8 foldout engraved plates, Generally fine condition with light foxing, a weak front hinge, and wear to edges of the spine. This was possibly the most popular American book on surveying ever published for it continued to be issued for more than a century, Karpinski noting that there was an edition as late as 1917. (postpaid) $ 165

Revised Edition of the Best 17th Century English Work on Surveying

50. 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. Original paneled leather binding, newly rebacked, 11 3/4" h 7 1/2" w; pgs. title in red and black, (10), 100, 166, 155, (1), 14 foldout engraved plates. A crisp copy in very fine overall condition except for the next to the last plate which has been less-than-expertly repaired. Like the earlier editions, this one was issued with no frontis portrait of Leybourn although copies of this edition are known which do have such a plate. There are major sections on the use of instruments of the period. Lib.VIII is a 38 page separate section on Dialling. Lib.IX is on "The Legal Part of Surveying". Leybourn (1626-1716) was a noted teacher 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 third, 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) $ 365

Four Hand Coloured Engraved Plates

51. John Mawe, "FAMILIAR LESSONS ON MINERALOGY AND GEOLOGY: . . . To which is added A PRACTICAL DESCRIPTION OF THE USE OF THE Lapidary's Apparatus,", 6th Ed, by the author, London, 1824. Modern half leather binding 7 1/2" h, 4 3/4" w; pgs. vii, (1), 111, (1), 4 hand colored engraved plates. Very fine overall condition except for some light foxing near the end of the book. The author (1764-1829) published the 1st edition of this work in 1819, and was the author of a number of other small books on the same and related subjects. Yet his best known publication was his 1812 "Travels in the Interior of Brazil" and an unpublished manuscript "On a Gold Mine in South America" has been preserved. Interestingly, it was his own adventures which deserve the most attention. Around 1800, after having spent about 15 years at sea, he made a tour of the mines in England and Scotland collecting minerals for the collection of the King of Spain. This must have worked out well, for in 1804 he started for the Rio de la Plata in South America but by the time he reached Cadiz, war had broken out between England and Spain. He nearly died during the blockade of that town, recovered, set out in 1805 for Montevideo, only to be imprisoned there as an English spy. Again close to death, he was released, interned again, and not set free until the capture of Montevideo by General Beresford in 1806. Somehow he was able to purchase a schooner, after travelling with the British army to Buenos Ayres, and sailed to Brazil so as to study the diamond mines of Minas Geraes. With this background, he returned to London in 1811, openned a mineral shop in the Strand, and established a reputation as a practical mineralogist. (postpaid) $ 95

52. William D. Pence & Milo S. Ketchum, "A MANUAL OF FIELD AND OFFICE METHODS FOR THE USE OF STUDENTS IN SURVEYING", 3rd Ed, Engineering News Publishing Co., New York, 1903. Original soft leather binding 7"h, 4 1/2" w; pgs. (12), 256, foldout plate, text figures and diagrams. Geneaally very good condition with binding edge wear and lacking front endpaper. (postpaid) $ 10

A Major German Treatise, Extensively Illustrated

53. Johann Freidrich Penther, "PRAXIS GEOMETRIAE, Worinnen nicht nur alle bey dem Feld-Messen vorkommende Falle mit staben, dem Astrolabio, der Boussole, und der Mensul, . . . ", 5th Ed, Jeremias Wolff, Augsburg, 1755; bound with Penther's "Zugabe zur PRAXI GEOMETRIAE,", same publisher, 1754. Early leather binding 12 7/8" h, 8 1/4" w; pgs. (5 leaves misbound) engraved frontis plate, title, (8), 97, (5), title, 3-55, 39 foldout engraved plates, many of surveying instruments and maps prepared from field measurements. Fine to very fine overall condition with some wear to the binding. Penther (1693-1749) became Professor of Mathematics at Gottingen in 1736. The 1st edition of the first of these works was published in 1729, updated in 1738, with a 3rd edition in 1749. The second work here seems not to have been published until after the author's death. The overall intent of this book was the application of geometrical concepts to measurement. Practical instrumentation and techniques for land surveying and the remote measurement of structures follow the theoretical development and form a significant part of the complete work. (In gothic letter German) (postpaid) $ 355

A System of Geology Based Upon Scientific Observation

54. John Whitehurst, "AN INQUIRY INTO THE ORIGINAL STATE AND FORMATION OF THE EARTH; DEDUCED FROM FACTS AND THE LAWS OF NATURE", 2nd Ed (considerably enlarged, and illustrated with plates), W. Bent, London, 1786. Modern full leather binding 11 1/2" h, 9" w; pgs. half title, frontis portrait plate, title, (8), 283, 7 engraved plates (some folding). Generally fine condition except for foxing, primarily at the beginning and end; the pages uncut. The author (1713-1788) was an instrument maker, horologist, assayer, and ended his days as an officer at the Mint in London. After moving to London from Derbyshire, his house in Bolt Court, Fleet Street, (according to the DNB) "became the constant resort of men of science of every nation and rank". According to Taylor 2 these included John Smeaton, Joseph Priestley, Benjamin Franklin, Josiah Wedgewood, the Duc de Chaulnes, and Edward Nairne. He was elected a F.R.S. in 1779. The work here (1st edition in 1778, 3rd in 1792) presents an interesting combination of scientific geology (although based upon a time scale which we now know to have been far short of the mark) and an attempt to resolve these results with both the Bible and ancient writings. He appears to be most successful when trying to deduce subsurface structure (for purposes of gainful mining operations) from surface features. John Playfair (noted for his exposition of the Huttonian Theory) seems to have been impressed by this work since it was he who proposed Whitehurst for the Royal Society. (postpaid) $ 210

OPTICAL THEORY & DESIGN

55. Sir David Brewster, "A TREATISE ON OPTICS", New Edition, Longman, Brown, Green, & Longmans, London, n.d. (c. 1840?). Original cloth binding 7" h, 4 1/2" w; pgs. title, v-x, 383, 176 text figures. Fine overall condition. This work was first issued in 1831 as an independent volume of Lardner's Cabinet Cyclopaedia (1829-49); the copy here being a reissue from the same series. The author (1781-1868), Scottish scientist, F.R.S. 1815, was one of the great innovators in 19th century Britain. He was noted for his researches into polarization of light, the diffraction grating, double refraction, absorbtion and reflection of light at metallic surfaces, and the optical properties of many different materials. He invented the Kaleidoscope (1816), formulated the laws of and devised instruments for stereoscopic imaging, and was the author of numerous scientific papers and books. (postpaid) $ 45

56. Edward Edwards, "A PRACTICAL TREATISE OF PERSPECTIVE, On The Principles Of Dr. Brook Taylor.", (1st Ed), Leigh, Sotheby & Son, London, 1803. Original half leather binding, recently rebacked, 11" h, 8 3/4" w; pgs. engraved frontis plate, xii, 316, errata page, 40 full page engraved plates. Fine to very fine overall condition except for heavy foxing of the first few pages and some foxing along the edges of some of the plates. The first part of the book presents the pseudo-optical theory of perspective, followed by application to architectural representation. (Three-fourths of the unusually fine plates are of architectural subjects.) The author (1738-1806) was an artist and teacher recognized during his lifetime. He was elected an associate of the Royal Academy in 1773 having exhibited there from 1771. He was appointed professor of perspective there in 1788. (postpaid) $ 125

57. John A. Hodges, "PHOTOGRAPHIC LENSES: How To Choose, And How To Use.", Percy Lund & Co., etc. Bradford, 1895. Original cloth binding, 7 1/4" h, 5" w; 142 pgs with 36 text figures, 10 pgs of photography ads. Very fine overall condition. A non-mathematical discussion of photographic optics in terms of the current lenses of the period. (postpaid) $ 25

58. George Lindsay Johnson, "PHOTOGRAPHIC OPTICS AND COLOUR PHOTOGRAPHY Including The Camera, Kinematograph, Optical Lantern, And The Theory And Practice of Image Formation", Ward & Co., London, 1909. Original cloth binding 8 5/8" h, 5 3/4" w; pgs. x, (2), 332,(including 28 of camera ads), 14 full page plates (5 in color) and 170 text illustrations. Fine overall condition. This book is on the processes of image formation from the point of view of both optics and emulsion. He deals at some length with achromatism; Fresnel's theories of wave motion, interference and polarization; the theory of lens systems and the equivalent planes of Gauss; and diffraction theory of microscopic objective imaging. All of these are related to actual instrumentation. (postpaid) $ 50

59. William Kitchiner, M.D., "THE ECONOMY OF THE EYES: PRECEPTS FOR THE IMPROVEMENT AND PRESERVATION OF THE SIGHT. PLAIN RULES WHICH WILL ENABLE ALL TO JUDGE EXACTLY WHEN, AND WHAT SPECTACLES ARE BEST CALCULATED FOR THEIR EYES. OBSERVATIONS ON OPERA GLASSES AND THEATRES, AND AN ACCOUNT OF THE PANCRATIC MAGNIFIER, FOR DOUBLE STARS, AND DAY TELESCOPES.", (1st Ed), Hurst, Robinson & Co., London, 1824. Original cloth binding 6 1/2" h, 4 1/4" w; pgs. viii, 246, (2), 2 engraved plates. Generally fine condition with some wear to the binding and partial cracks to the front hinge. The author (1775?-1827) educated at Eton, with an M.D. from Glasgow, and independent income from his father, a coal merchant, was an amateur scientist in the true British sense. His studies of optical instruments, primarily astronomical telescopes, led to an understanding of optical resolution which was not improved upon until the advent of diffraction theory. He identified resolution as a function of aperture (diffraction limit), optical design (transfer functions), and quality of workmanship. He tested and evaluated telescopes by most of the leading 18th and early 19th century opticians. He was the first to identify "empty magnification". His "Practical Observations on Telescopes", first version in 1815, provided the first scientific evaluations of telescopic optics. His studies demonstrated the role of human vision as a limit on optical instrumentation, thus leading to the work here. (postpaid) $ 110

60. Nicolas Louis de La Caille, "LECONS ÉLÉMENTAIRES D'OPTIQUE", Nouvelle Edition (2nd?), Desaint, Paris, 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 included 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) $ 110

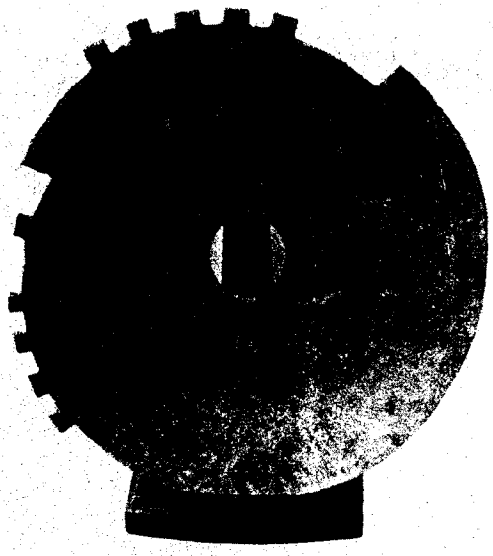
Elegant Continental Edition of the Samuel Clark Translation

61. Isaac Newton, "OPTICES LIBRI TRES: ACCEDUNT EJUSDEM LECTIONES OPTICAE, Et Opuscula omnia ad lucem & Colores pertinentia Sumpta ex Transactionibus Philosophicis.", Joannem Manfre, Patavii (Padua, Italy), 1749. Original paper wrappers 9 3/4" h, 7" w; pgs. half title and title leaves, (14), 110, (4), 166, 93, (2), 42 large engraved folding plates. Contents crisp and clean, plates excellent, overall condition very fine even with wear to the spine and water stains to the first and last few pages. This edition contains more than twice as many plates as any before it. (There were 16 in the 1st English edition in Latin of 1706, 12 plates in the Swiss edition of 1740, and the same number in the 3rd and 4th English editions of 1721 and 1730.) The appendix section contains articles by Isaac Newton on optics originally printed in the Philosophical Transactions, including the one on his reflecting telescope. (In Latin) (postpaid) $ 395

62. James Short, "A Letter . . . concerning a Paper of the late Servington Savery, Efq; relating to his invention of a new Micrometer", and Servington Savery, "A new Way of Meafuring the Difference between the apparent Diameter of the Sun at the Times of the Earth's Perihelion and Aphelion, or when the Sun is nearer to or farther from the Earth, with a Micrometer placed in a Telefcope invented for that Purpofe; tho' the Charge or magnifying Power of the Telefcope is fo great, that the whole sun's Diameter does not appear therein at one View", extracts from the Philosophical Transactions, Vol. 48, London, 1753. Modern wrappers 8 5/8" h, 6 5/8" w; pgs. 165-178, 2 engraved plates. Very fine condition. Savery's invention consists of a double objective, adjustable by a micrometer system, which produces 2 images of the Sun. When these are brought into edge contact the micrometer reading combined with the objective focal length gives the angular subtense of the Sun. (postpaid) $ 40

NEWTONIAN NATURAL PHILOSOPHY

63. James Ferguson, "LECTURES ON SELECT SUBJECTS IN MECHANICS, HYDROSTATICS, HYDRAULICS, PNEUMATICS, AND OPTICS. WITH The USE of the GLOBES, The ART Of DIALING, AND The Calculation of the Mean Times of NEW and FULL MOONS and ECLIPSES", 7th Ed, J.F. and C. Rivington, et. al., London, 1790. Modern full leather binding 8 1/2" h, 5 1/2" w; pgs. (14), 396, (6), 48 (added supplement), 36 engraved folding plates. Very good overall condition with water stains to a number of pages and frayed outside edges to most plates, otherwise a sound copy which is capable of extensive handling. This edition, of what was considered the standard work in the field, is much expanded with respect to the first of 1764 (which had 23 plates). The author (1710-76), self-educated as a boy, was sent to the University of Edinburgh by several leading Scottish intellectuals, including the well known Newtonian scholar Colin Maclaurin, in recognition of his intelligence and ability. He became a prolific and good writer of scientific works, and one of the leading lecturers in natural philosophy. He designed and made many of his own instruments and lecture apparatus. In the 19th century the great Scottish scientist, David Brewster, revised this work still further, adding another quarter century to its usefulness. (postpaid) $ 125



125. LARGE JADE PI - Chinese for the Russian Market, mid 19t c, unsigned. Grey-green jade disc 10 1/4" d, about 1/4 thk, 1 9/16" d central hole. There are 2 sets of star notches along the outer edge. Extremely fine condition

Two other examples of such discs are shown as plates 45 and 46 of Michel's, "Scientific Instruments in art and history". The first, without any star notches, is date by the author c. 1000 B.C. and the 2nd, with notches, from the Brussels' Musées Royaux d'Art et d'Histoire, is dated c. 500 B.C. According to Michel;

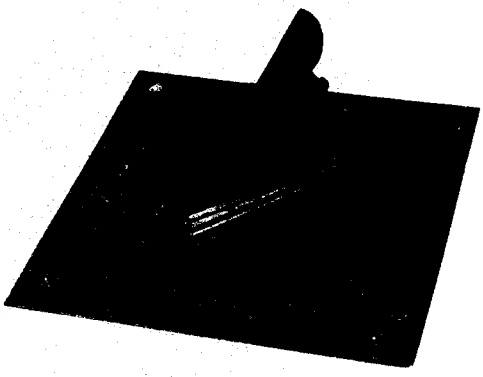
"For a very long time the pi was one of those objects described as "ritual" or "symbolic", without its being realized that, originally, it had a very definite scientific purpose. The astronomical use of the pi, moreover, was probably kept secret by the specialists who used it. . . .

Chinese mystical thought is based on the parallelism between Heaven and Earth. Every social organizatio of the country had its counterpart in Heaven. The Emperor corresponded to the god Shang-Ti whose residence is at the celestial pole. Consequently, Chinese astronomy is directly linked to this pole and the distribution of the circumpolar stars. A determination of the "heavenly pivot" was the starting point for all ceremonial.

At the period of which we are speaking (1st millenium B.C.), *the Pole was far from its present-day position, and there was a series of bright stars which formed a circle around the pole. In order to locate the celestial pole, it was only necessary for the observer to hold a circular template in front of him so that the stars appeared round the rim. The Pole was then at the center of the disc."*

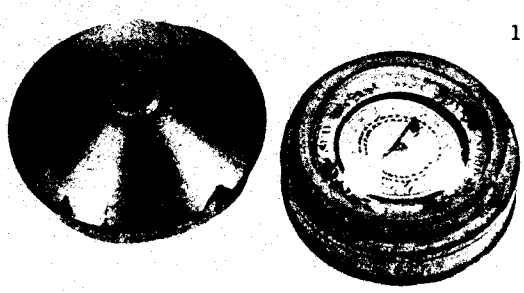
It seems that the Pi first appeared during the Chow period (800-200 B.C.). It is not certain, however that any examples still survive from this period. The Chinese were well known for copying earlier objects (and even dating them accordingly) throughout the centuries. In the middle of the 19th c, when the Russian court became intrigued with early Chinese jade, the Chinese artisans were more than accommodating. All evidence points to the example here having been fabricated at this time. Indeed, we suspect that other examples (despite dating to the contrary) came from this, or relatively almost as recent times.

(8 lbs UP) $ 1,100



126. BRONZE GARDEN DIAL - English, 19th century, signed "LATITUDE/53° 45' ??"/PRITT MAKER". Cast and engraved bronze 9" sq with a 4 3/4" h gnomon. The chapter ring is 8 1/2" d. Red-brown-green patina of weathered bronze with some loss of surface detail. Very fine overall condition. We are unable to locate Pritt. The indicated latitude suggests that he worked somewhere in a band across northern England which includes the cities of Preston, Hull, Halifax, York and Leeds. This is a well-made sundial.

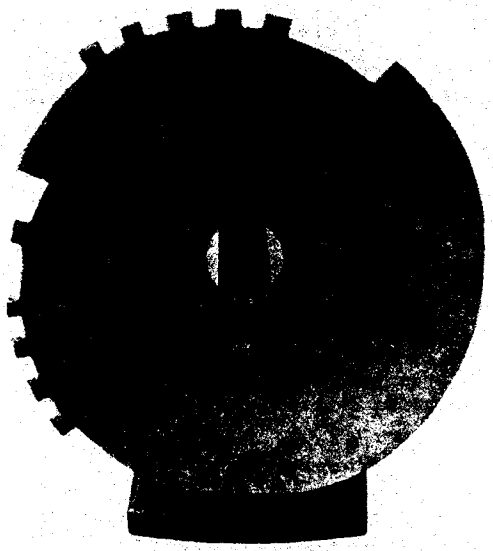
(8 lbs, UP, PS) $ 245



127. FLOATING GNOMON SUNDIAL - German, late 18th c, signed "Stockert". Turned wooden case with push-on cover 2 1/2" d x 1 3/4" h. There is a printed and hand colored compass card within under a highly curved glass crystal with a magnetic needle below and a brass gnomon above. There is a printed and hand colored outer ring with compass directions. The crystal is a modern replacement. Interior condition is very fine and the case is fine except for 3 nicks in the edge of the cover.

Little seems to be known about Stockert and even Zinner is unclear whether "Stockert a Bavaria" is the signature of E. Ch. Stockert, Johann Paul Stockert, or someone else. Fig. 153 of Wynter & Turner is of a paper surfaced wooden diptych dial by "E. Ch." which shows great similarities of workmanship to the example here as well as the "in Bavaria" diptych dial listed as Item 210 in our Catalog 109. Similar unsigned floating gnomon dials are also known

(2 lbs UP) $ 475



125. LARGE JADE PI - Chinese for the Russian Market, mid 19th c, unsigned. Grey-green jade disc 10 1/4" d, about 1/4" thk, 1 9/16" d central hole. There are 2 sets of star notches along the outer edge. Extremely fine condition.

Two other examples of such discs are shown as plates 45 and 46 of Michel's, "Scientific Instruments in art and history". The first, without any star notches, is dated by the author c. 1000 B.C. and the 2nd, with notches, from the Brussels' Musées Royaux d'Art et d'Histoire, is dated c. 500 B.C. According to Michel;

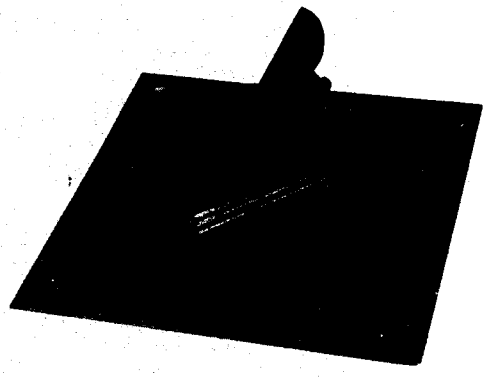
"For a very long time the pi was one of those objects described as "ritual" or "symbolic", without its being realized that, originally, it had a very definite scientific purpose. The astronomical use of the pi, moreover, was probably kept secret by the specialists who used it. . . .

Chinese mystical thought is based on the parallelism between Heaven and Earth. Every social organization of the country had its counterpart in Heaven. The Emperor corresponded to the god Shang-Ti whose residence is at the celestial pole. Consequently, Chinese astronomy is directly linked to this pole and the distribution of the circumpolar stars. A determination of the "heavenly pivot" was the starting point for all ceremonial.

At the period of which we are speaking (1st millenium B.C.), *the Pole was far from its present-day position, and there was a series of bright stars which formed a circle around the pole. In order to locate the celestial pole, it was only necessary for the observer to hold a circular template in front of him so that the stars appeared round the rim. The Pole was then at the center of the disc."*

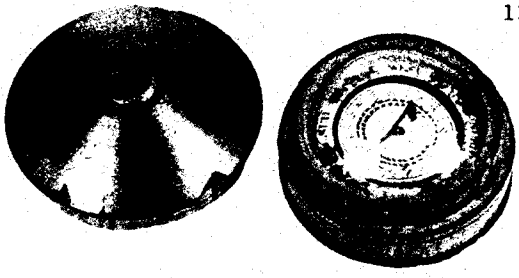
It seems that the Pi first appeared during the Chow period (800-200 B.C.). It is not certain, however that any examples still survive from this period. The Chinese were well known for copying earlier objects (and even dating them accordingly) throughout the centuries. In the middle of the 19th c, when the Russian court became intrigued with early Chinese jade, the Chinese artisans were more than accommodating. All evidence points to the example here having been fabricated at this time. Indeed, we suspect that other examples (despite dating to the contrary) came from this, or relatively almost as recent times.

(8 lbs UP) $ 1,100



126. BRONZE GARDEN DIAL - English, 19th century, signed "LATITUDE/53° 45' ??"/PRITT MAKER". Cast and engraved bronze 9" sq with a 4 3/4" h gnomon. The chapter ring is 8 1/2" d. Red-brown-green patina of weathered bronze with some loss of surface detail. Very fine overall condition. We are unable to locate Pritt. The indicated latitude suggests that he worked somewhere in a band across northern England which includes the cities of Preston, Hull, Halifax, York and Leeds. This is a well-made sundial.

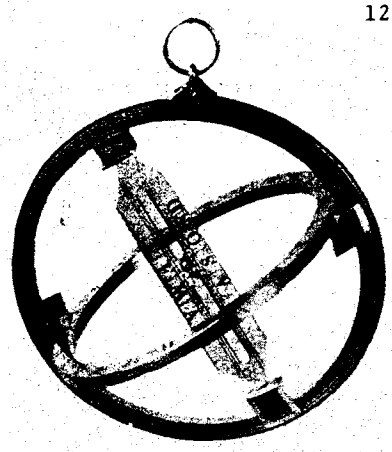
(8 lbs, UP, PS) $ 245



127. FLOATING GNOMON SUNDIAL - German, late 18th c, signed "Stockert". Turned wooden case with push-on cover 2 1/2" d x 1 3/4" h. There is a printed and hand colored compass card within under a highly curved glass crystal with a magnetic needle below and a brass gnomon above. There is a printed and hand colored outer ring with compass directions. The crystal is a modern replacement. Interior condition is very fine and the case is fine except for 3 nicks in the edge of the cover.

Little seems to be known about Stockert and even Zinner is unclear whether "Stockert a Bavaria" is the signature of E. Ch. Stockert, Johann Paul Stockert, or someone else. Fig. 153 of Wynter & Turner is of a paper surfaced wooden diptych dial by "E. Ch." which shows great similarities of workmanship to the example here as well as the "in Bavaria" diptych dial listed as Item 210 in our Catalog 109. Similar unsigned floating gnomon dials are also known

(2 lbs UP) $ 475

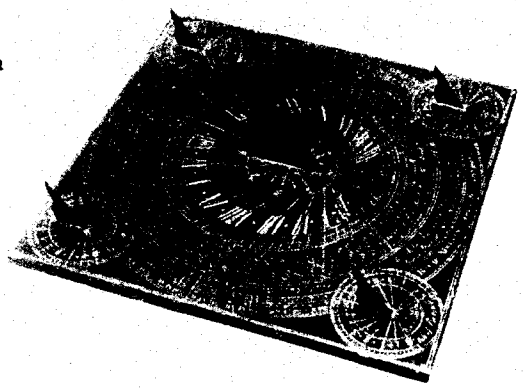


128. UNIVERSAL EQUATORIAL RING DIAL - English, 1st half 18th c, inscribed name illegible. Bright brass, restored lacquer finish, outer ring 4 1/16" d. The (inner) chapter ring is divided in 15 min. increments, the latitude scale on the outer ring is graduated in degrees as is the shadow scale on its reverse. The bridge with its sliding aperture is graduated in degrees on one side and with Julian calendar dates on the other (i.e. the equinoxes occur on March 10 and September 12). A (presentation?) inscription on the underside of the chapter ring has been crudely removed and now is illegible. The suspension ring is a modern replacement, all else original, and condition very fine except as noted.

The universal ring dial could be used on land or sea to obtain local true solar time knowing only latitude and date, but not compass orientation. Since England adopted the Gregorian calendar in 1752, this instrument must predate the event, marked as it is in Julian dates. The quality of workmanship and engraving matches that of the better English instrument makers who worked during the 1st half of the 18th c. However, we can not identify, at this time, the actual maker in question.

(3 lbs UP) $ 1,495

129. ELABORATE MULTI-GNOMON SUNDIAL FOR LATITUDE 51° 31' NORTH - English, mid 19th c, signed "RICH.D.MELVIN. Maker from LONDON". Slate base 14" sq with 4 1/4" h bronze gnomon in the center and four 1 3/4" h bronze gnomons at the four corners. The corner dials are marked for New York, Alexandria, New Zealand, and the Isle of Borneo. They are also marked for the time of day corresponding to Greenwich high noon: e.g. morning in New York, afternoon in Alexandria, etc. Outside of the central chapter ring is a ring containing the names of 70 different places and instructions on how to use this table. When the shadow falls on a name it is then high noon at that place. There are also several quotations, or mottos relating to time. The outermost ring on the east and west side of the dial contains equation of time correction data - so that solar time may be converted to mean clock time. This form of dial seems to have been conceived by Richard Melvin. Even though several examples of his work are known (such as Item 141 of our Catalog 118 and one in the Arthur Frank collection signed "Ricardus Melville Fecit Glasgow 1847", he is not represented in the major museum collections and no listing of him is to be found in the standard references. The example here is well engraved and in fine to very fine condition with relatively little weathering of the slate surface.

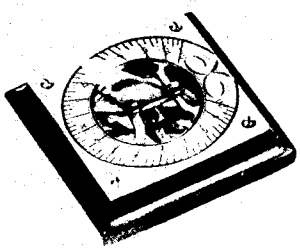


(20 lbs UP) $ 875

130. MAHOGANY CASE POCKET HORIZONTAL DIAL - English, possibly late 18th c, unsigned. Mahogany case 3 7/16" sq x 15/16" thk, silvered chapter ring 3 3/16" d, 1 1/2" h folding bright lacquered brass gnomon is set at about 50°, the southern-most coast of England. A 2 3/8" needle is above the engraved paper compass dial. The silvering is a modern restoration, all else original; fine to very fine overall condition with some browning of the compass dial.

The most typical English pocket sundials were those in mahogany or circular brass cases with folding skeleton gnomon, and horizontal chapter rings coaxial with and located above the necessary compass. They were made from the late 17th century into the early 19th century. The compass dials were almost always engravings on printed paper. The example here is of quality workmanship.

(3 lbs UP) $ 485



131. DAVID BERINGER POCKET DIAL - German, 3rd qtr 18th c, signed "B". Wooden base with fluted edges 2 1/2" sq upon which is mounted the 2" sq bright lacquered brass base plate with its 1 1/4" h folding gnomon of 49 1/2 deg angle. The compass well (1 3/8" needle) has a hand colored engraved compass card with magnetic north marked 20 deg west of true north. Extremely fine overall condition with restored finish.

An identical dial with the same stamped "B" signature is to be found in the Evans collection of the History of Science Museum at Oxford. A slightly larger dial of identical design and workmanship with the engraved signature "David Beringer" is to be found in the Whipple History of Science Museum at Cambridge, thus providing the correlation between the two. Zinner notes that Beringer was working in Dieppe in 1725, then going on to Nurnberg, and lastly, Augsburg. His latest known dial is from the year 1776 but it is believed that he was working as late as 1800. He is best known for his paper faced wooden cube dials and then his paper faced wooden diptych dials. The form here is considerably more rare. The gnomon angle corresponds to the latitude of Nurnberg which would place it during his middle period, hence the given dating.

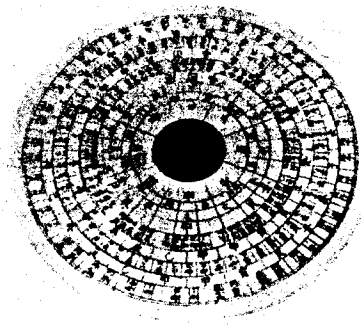
(3 lbs UP) $ 595

132. SIMPLE RING DIAL - English, 2nd half 18th c, signed either "SW" or "MS". Bright brass ring (restored lacquer finish) 1 1/2" dia x 5/16" w, zenith suspension loop with oval connecting link and 9/16" d suspension ring. The interior hour scale is on a shaped brass strip attached to the interior of the ring and there is a rotating central band with a pinhole which is to be aligned against an exterior calendar scale. The suspension ring is a modern replacement, all else original. Very fine overall condition except for slight deformation to the ring.

The measured latitude is 51° although there may be a degree or two of error because of the small size of the ring. (London is about 51 1/2° latitude.) The calendar scale is in two opposing bands so aligned to conform to the Gregorian calendar which was not adopted in England until 1752. On larger rings, the hour scale is usually engraved on the interior surface of the ring. However as the ring size decreases, there is a corresponding decrease in accuracy about noon because of scale compression. The use of the added shaped surface, as in this example, provides mild improvement of this situation. Item 131 of the Billmeir Collection Catalogue (Museum of the History of Science, Oxford) is a slightly larger ring dial (1 3/4" d) signed "W.S." and dated 1765. It and the example here may be the work of the same maker but without side-by-side examination no firm conclusion is possible.

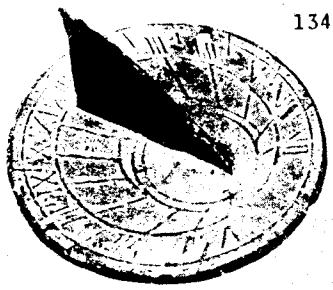
(2 lbs UP) $ 750

133. GEOMANCER'S COMPASS - Chinese, about a century old, signed on the back. Boxwood-like wooden disc 4 5/8" d by 5/8" thk with 3/4" d inset compass. There are 9 concentric rings divided in 8's and 12's and marked with black and red characters. Very fine overall condition.



This dial is not intended to be used as a compass; the north-south alignment is to establish the proper frame of mind. It is for the prediction of events associated with the earth; good and bad omens for daily actions - the setting up of fields, erecting buildings, construction of drainage and water ways, etc. Some words appear to be in a secret language, possibly unknown to all but its maker and user.

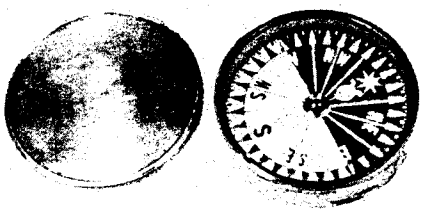
(3 lbs, UP, PS) $ 255



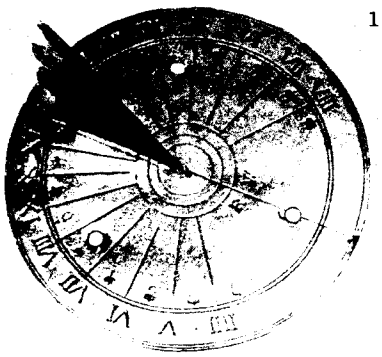
134. EARLY AMERICAN WINDOW DIAL- Late 18th c, unsigned. Cast pewter with 3" d base, 41° gnomon 1 3/8" h. Shows some age crystallization and the top of the gnomon has been blunted, otherwise in very fine condition. The gnomon angle corresponds to a latitude band stretching from New York City across the Connecticut coast to Providence, Rhode Island. Some American pewter specialists believe that there were New England mould-makers who produced moulds only of various latitudes for pewter founders at these latitudes. Thus we find dials almost all in the same style for latitudes from about 39° to 42°, but which very in detail from one another even when of the same latitude.

(3 lbs, UP, PS) $ 225

135. GOOD SINGER'S PATENT COMPASS - English, 3rd qtr 19th c, marked "SINGER'S PATENT" and a convoluted monogram with "TRADE MARK LONDON". Brass case 2 5/8" d with restored lacquer finish on cover top, original (although age darkened) everywhere else. The compass card is 2 3/8" d. Fine overall condition. Singer's invention, patent no. 1496 of 1861, was intended to produce a compass card which was easily read under poor light. The northern half is black with white markings and the southern half, white with black markings.



(2 lbs, UP, PS) $ 155



136. MODEST GARDEN DIAL FROM THE MIDLANDS - English, 18th c, signed "R.W." Weather darkened cast brass base 5 11/16" d with 2 3/4" h gnomon for 53° latitude. Half-hours on the chapter ring are marked by stamped acorns. There are 3 slightly deformed mounting holes and a short age fracture in the edge of the base and another in the edge of the gnomon. Very fine overall condition. The angle of the gnomon corresponds to the latitude of a band across England which includes the city of Lincoln. We have been unable to identify the maker.

(4 lbs, UP, PS) $ 195

132. SIMPLE RING DIAL - English, 2nd half 18th c, signed either "SW" or "MS". Bright brass ring (restored lacquer finish) 1 1/2" dia x 5/16" w, zenith suspension loop with oval connecting link and 9/16" d suspension ring. The interior hour scale is on a shaped brass strip attached to the interior of the ring and there is a rotating central band with a pinhole which is to be aligned against an exterior calendar scale. The suspension ring is a modern replacement, all else original. Very fine overall condition except for slight deformation to the ring.

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(2 lbs UP) $ 750

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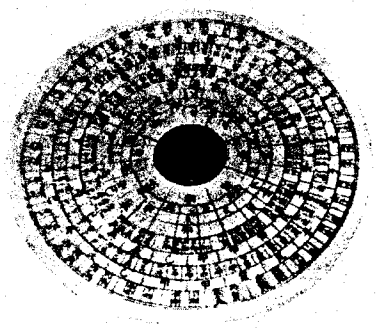

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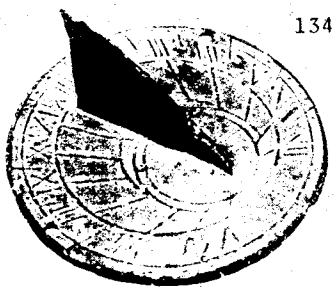
(3 lbs, UP, PS) $ 255



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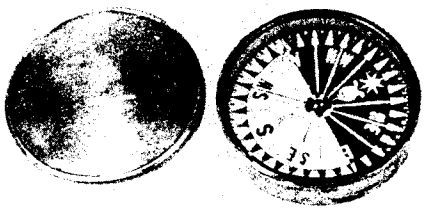
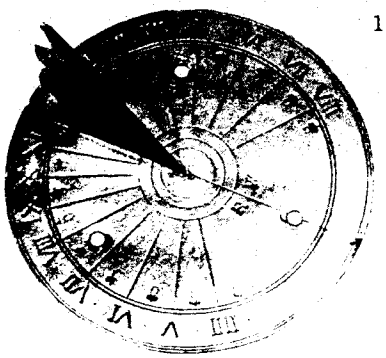
135. GOOD SINGER'S PATENT COMPASS - English, 3rd qtr 19th c, marked "SINGER'S PATENT" and a convoluted monogram with "TRADE MARK LONDON". Brass case 2 5/8" d with restored lacquer finish on cover top, original (although age darkened) everywhere else. The compass card is 2 3/8" d. Fine overall condition. Singer's invention, patent no. 1496 of 1861, was intended to produce a compass card which was easily read under poor light. The northern half is black with white markings and the southern half, white with black markings.



(2 lbs, UP, PS) $ 155

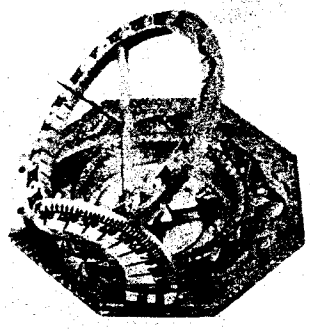


136. MODEST GARDEN DIAL FROM THE MIDLANDS - English, 18th c, signed "R.W." Weather darkened cast brass base 5 11/16" d with 2 3/4" h gnomon for 53° latitude. Half-hours on the chapter ring are marked by stamped acorns. There are 3 slightly deformed mounting holes and a short age fracture in the edge of the base and another in the edge of the gnomon. Very fine overall condition. The angle of the gnomon corresponds to the latitude of a band across England which includes the city of Lincoln. We have been unable to identify the maker.

(4 lbs, UP, PS) $ 195

137. POCKET WALL DIAL - Scandanavian, unsigned, dated 1710. Bright brass, restored lacquer finish, 7-sided base 2 9/16" w x 3 1/10" long, 3/4" h folding gnomon with angle corresponding to about 56 or 57 degrees latitude. Extremely fine condition with the underside of the base showing extensive hammer marks. This dial was intended to be hung on south facing walls and thus has no magnetic compass. The original single hole indicates that no permanent mounting was intended and the folding gnomon is proof that it was made as a portable instrument. The decoration is either Scandanavian or North German. However the latitude is too far north for Germany whereas Copenhagen, Denmark is at latitude 55 1/2° while Goteborg, Sweden is 57 1/2°. A simple, but relatively early and not too common pocket dial.

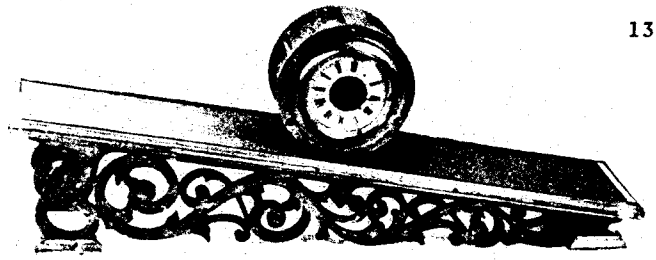
(2 lbs UP) $ 595



138. ELEGANT AUGSBERG DIAL - German, c. 1800, signed "Johan Schrettegger in Augsburg". Bright lacquered and silvered brass, 2" across the flats of the octagonal base. The inset compass has a 1 1/8" d silvered dial and 15/16" needle. The latitude quadrant and 1 3/4" d chapter ring are both silvered. The surface finishes are modern restorations, all else original. Superb condition.

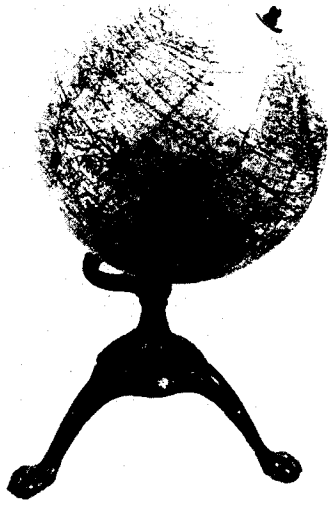
These pocket universal equatorial sundials (made for use between 10° and 90° north latitude) are characteristic of the Augsberg workshops of the 18th and early 19th centuries. Bobinger discusses the work of Johann Nepomuk Schrettegger (1764-1843) on pgs. 206-9, 351-60, has photographs of 11 of his dials, and provides an extensive list of his instruments in known public and private collections. Almost all the museums of Europe and the U.S. with instrument collections seem to have one or more examples of Schrettegger's work.

(3 lbs UP) $ 995



139. ROLLING DRUM CLOCK - French, late 19th c, unsigned. The clock is contained in a brass case 5" dia x 3 3/4" deep. It has an enameled dial 3" dia with a brass center decorated in relief. The outside of the drum has 2 rings with milled edges held in place by equispace steel rods with decorative deep relief cast appliques between. The incline, upon which the clock rolls, is 23" long, 4 5/8" w, and 5 1/8" h at the upper end. Construction is wood with brass trim, the surface has been recently covered with green felt (to eliminate slipping) and a brass safety bar has been added at the lower end to make sure that the clock will not roll off. Very fine overall physical condition for the clock and incline although there are hair line cracks to the dial and typical surface aging of the wood and brass. The clock has a carriage clock type lever escapement platform which is a recent replacement for what we assume was a cylinder escapement platform. A pendulous weight within the clock case acts through appropriate gearing as the driving force as the clock rolls down the incline. The clock mechanism and dial remain upright as the case rotates about in the process of rolling down the incline. It takes just under 2 days to go from top to bottom. Before it reaches the bottom and stop one picks it up and places it back at the top. This is the equivalent of winding a conventional clock. The clock has been adjusted so that not only does it run well, but it also keeps amazingly good time considering that non-constant friction in the rolling affects the going rate.

(14 lbs UP) $ 2,400



140. EIGHT INCH POST-WAR GLOBE - English, just after WWI, signed "Made BY WEBER COSTELLO CO. Chicago Heights ILLINOIS" but also "G.W. BACON & CO. LTD. LONDON/Printed in England". Colored globe, 8" dia on bronzed, cast-iron claw-foot tripod base, 14" h overall. Generally fine condition. The map of Europe is that which resulted from WWI but Russia is not called the U.S.S.R., is shown as several countries and Petrograd has not yet become Leningrad.

(7 lbs, UP, PS) $ 125

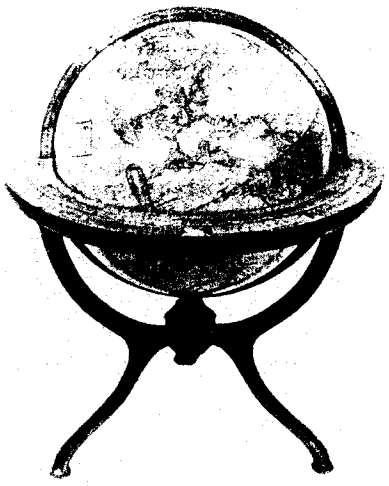
141. EIGHT INCH PRE-WAR GLOBE (not illustrated) - English, just before WWI, signed "The Excelsior Globe/G.W. BACON & Co. Ltd. 127, STRAND, LONDON". Colored globe, 8" dia on bronzed, cast-iron claw-foot tripod base, 14" h overall. Almost fine condition, showing a bit more rubbing and surface darkening than the example above. Identical construction but with the pre-WWI boundaries and, in Russia, St. Petersberg rather than Petrograd.

(7 lbs, UP, PS) $ 115

142. GEARED SUN-EARTH-MOON ORRERY - Middle European, 4th qtr 19th c, the globe signed "J. FELKL & SOHN/Rostok b. Prag.". Cast iron base, 7 1/8" dia, in restored black enamel with gilt highlights finish, 8 3/4" h, supporting main shaft tube of 14 1/2" radius (scroll work below), candle holder (the Sun), 6 1/2" d yearly revolution scale, 3 3/8" d solar rear reflector, and 5" long drive crank. A bright lacquered brass (original finish) hexagonal gear housing is attached to the end of the main shaft tube. Appropriate spur and bevel gearing causes the Earth to rotate about its inclined axis and the Moon to revolve about the Earth in a plane inclined to the Earth's equator. The terrestrial globe is 3 3/8" d. Overall ht is 16 1/4" and length, (not including the Moon) 23 1/2". Fine to very fine display and working condition.

Tooley lists Jan Felkl (1817-87) as a globe maker in Prague (then part of the Austrian Empire) but there is no certainty that his firm made more than the globe for this item. We have been unable to locate a similar example in the more common reference books. However, the various Trippensee designs are similarly ignored, suggesting that age, rather than ingenuity or quality, was the determining consideration. In our opinion the relative complexity of the model here merits its own attention.

(25 lbs UP) $ 1,250

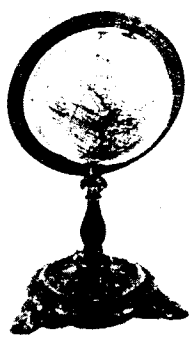


143. "JOSLIN'S Nine and half Inch TERRESTRIAL GLOBE - American, c. 1868, signed "GILMAN JOSLIN, BOSTON". Nicely colored 9 1/2" globe within bright lacquered brass full meridian ring. The cast iron 3-legged stand has a 13" dia wooden equatorial with printed and colored paper surface. 16 1/4" h overall. There are a few surface stains and two small pieces missing from the equatorial ring; however overall condition is still very fine. Dating this globe presented some interesting problems. Wyoming, which became a territory in 1868, is depicted. However the Dominion of Canada, established in 1867, is still called "British America". Could it be that in the 1868 to 70 period, the good Yankees of Boston were still unwilling to recognize Canada as a political entity which was here to stay? A rather elegant globe in any event.

(14 lbs UP) $ 475

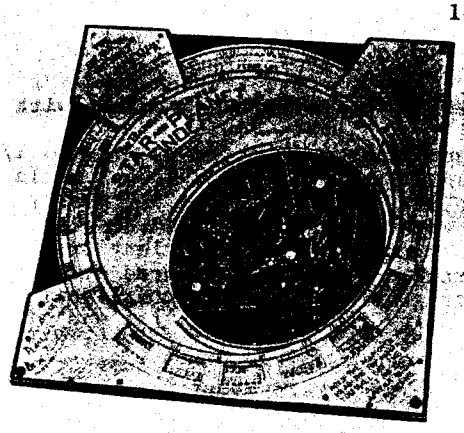
144. TABLE STAND 9 INCH CELESTIAL GLOBE - English, 3rd qtr 19th c, signed "CRUCHLEY'S/LATE CARY'S/NEW/CELESTIAL GLOBE/ · · · LONDON". Colored globe 9" d with finely drawn figurative representations of the constellations, within a wooden 3-legged table cradle stand with a 13" d equatorial ring. Overall ht 14 1/2". The graduated meridian ring is bright lacquered brass. Although there are some rubbed and stained spots, a dark ring due to wear at declination 40 deg south and a few minor age cracks, the globe is in very fine restored condition, the surfaces having been cleaned and refinished. The constellations are beige (light tan) on a green background and the equatorial ring is in colors with a red edging. Tooley notes that George Frederick Cruchley worked from 1823 to 76. He received his training under Arrowsmith and when George and John, sons of the cartographer John Cary, finally withdrew, by 1856 from the firm founded by their uncle, William Cary, he acquired the rights to the globes and maps of the firm. The instrument business continued under the name of Cary to the end of the century. This globe, although issued in the 3rd quarter of the 19th century and appropriately updated, still retains the elegance of John Cary's work of the 18th century.

(18 lbs UP) $ 865



145. SMALL GLOBE ON CAST IRON STAND - American, signed and dated "J. SCHEDLER'S Terrestrial GLOBE 4" Diam. PAT. NOV. 24th 1868. Prize Medal Paris Exp. Entered accord. to LAW. E. STEIGER N.Y.". The printed colored globe is 4" d in a 5" dia gold painted meridian ring mounted on a black cast iron stand; 9 3/8" h overall. Very fine overall condition.

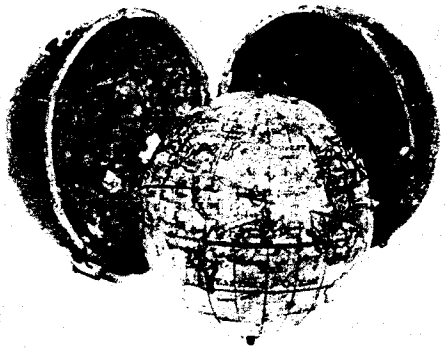
(4 lbs, UP, PS) $ 295



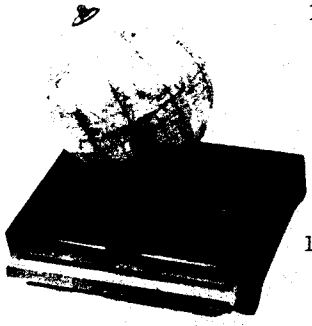
146. THE BARRITT-SERVISS STAR AND PLANET FINDER - American, dated 1906 (9th Ed of original instruction booklet dated 1906 with tables for 1930-37), signed "Leon Barritt,Publisher, New York City". Extremely large (15" sq) and thick cardboard structure with printed top plate with viewing window and other cutouts, 12" dia revolving planisphere disc below. The stars are in white on a black background. There is a red circle, representing the ecliptic, upon which one can locate the moon and the various planets (thumb-tacks with printed discs). The 12 page instruction booklet, 5 3/4" h x 9 1/4" w, is in fine condition except for some underline. The planisphere is also fine except for corrosion of its brass rivets and light circular stains about them. There is also the original cardboard box which is in terrible condition. The label on this box states *"The only combination Sun, Moon, Star and Planet Map"* and they may very well be right.

(5 lbs, UP, PS) $ 130

147. EIGHTEENTH CENTURY POCKET GLOBE - English, signed and dated, "A New GLOBE of the EARTH by N. Lane 1776 Procter fecit". The surface of the 2 3/4" d pocket globe has been printed from engraved plates and then hand colored. Even on as small a scale as this the shapes of the continents are noticeably in error and the Americas are particularly bad. Even if undated the names of places - New Holland, Moguls Empire, Tartary, Mofcovy in Europe, The Ethiopic Ocean, Barbar - would have enabled us to determine its time of origin. The 3" d spherical case is covered in grained black thin leather (or paper) and its interior is lined with engraved gores of the celestial sphere, projected for one looking outward (whereas the usual celestial sphere is God's view looking inward). The figurative constellations are provided in elaborate detail against a hand-colored blue-green background. There are age cracks in the case, some rubbed spots on the globe and the printed surfaces have been revarnished. Overall condition is very fine, noticeably better than most pre 1800 pocket globes found today. Lane appears to be unknown except for his globes. This was his first, and it must have been well received for he issued new editions in 1809 and 1818. According to Tooley he also came out with a pair of miniature globes in 1825.



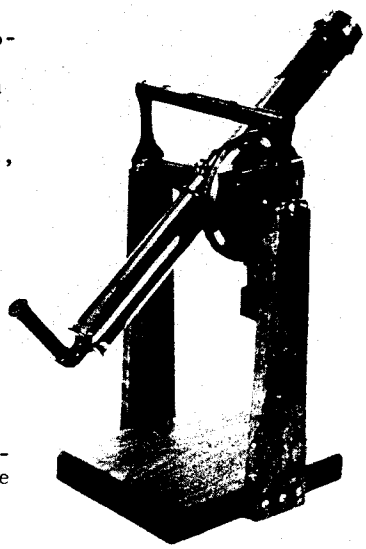
(3 lbs UP) $ 1,195



148. SIX INCH GLOBE WITH ATLAS OF THE WORLD IN BASE - American, the book dated 1932, both signed by "C.S. HAMMOND & COMPANY/NEW YORK BROOKLYN BOSTON". The book with its original red cover 8 1/4" h x 6 1/4" w, and 160 pages, slides into the globe's 9 1/8" x 6 5/8" wooden base. It is in fine condition. The 6" globe, 9 3/4" h overall, is in very good condition - stains along most of the gore lines and reglued equatorial crack, but otherwise clean and brightly colored with but minor wear.

(5 lbs, UP, PS) $ 65

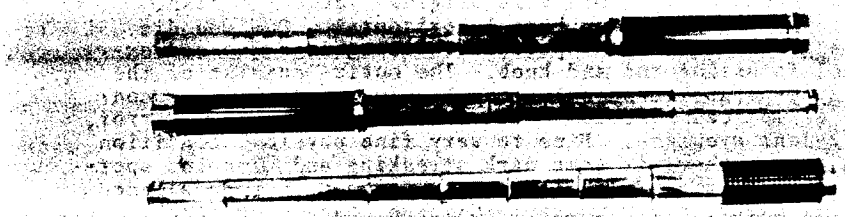
149. PORTABLE TRANSIT TELESCOPE - English, before 1897, signed on the eyepiece "T. COOKE & SONS, YORK" with the serial "No. 864" on the readout circle. Brass in black oxidized finish, telescope 19" long with 1 5/8" d objective and 2 eyepieces. Vertical readout circle 5 1/2" d, silvered, 1 arcminute vernier readout, swingaway magnifier and 4" bubble level. The removeable lateral alignment bubble level is 8 1/2" long on brackets 2 3/4" h. The instrument is shown mounted in a modern walnut display stand 13 1/2" h with a 7 3/4" x 10 3/4" base. Original dovetailed painted pine case 21" long, 10 1/2" w, 6 1/2" h in sound condition. The instrument is in excellent condition.



Thomas Cooke of York (1807-1858) established one of England's major optical firms in 1837. Between 1868 and 1897 it was known as T. Cooke & Sons (the name on this instrument), then T. Cooke Ltd. until 1922 when they merged with another great instrument making firm to become Cooke, Troughton & Simms. An instrument such as this, together with a good chronometer, was the surveyor's primary longitude reference or, conversely, his primary time reference. As usual, the original support structure and the cased portable instrumant have become separated, and so a modern display stand has been provided to show how the instrument would have been used.

(30 lbs UP) $ 845

MULTI-DRAW SPYGLASSES



150. BY RAMSDEN - English, 4th qtr 18th c, signed "Ramsden London". Mahogany barrel 1 3/4" d with lacquered brass fittings, 3 brass draw tubes, eyecap with protective slide, but missing lens cap, 9 1/4" long (min) extending to 29 1/2". Achromatic objective of 1 5/8" clear aperture and 4-element eyepiece yielding good images but not of the sharpness typical of the Dollond instrument below. Fine overall condition except for an age crack in the barrel, loss of original lacquer on parts of the brass fittings and missing lens cap. Original leather case (not illustrated) 2 1/4" d x 10" long with several 19th c inscriptions: *"James Ogilvy, Accountant, Edinburgh, 10th July 1850"* and *"On the Summit of Ben Nevis 19th Septmr. 1861 2:25 PM"*. Jesse Ramsden (1731-1800), brother-in-law of Peter Dollond, perfector of the linear and circular scale dividing engines, and Fellow of the Royal Society (1786) was England's greatest instrument maker of the 18th century, and possibly all time. At times he had a staff of as many as 50 and it is possible that this particular telescope with its objective not of the same optical quality as Item 133 of Catalog 123, (yet appears to be completely original) was let out by one of his less careful workmen.

(3 lbs UP) $ 495

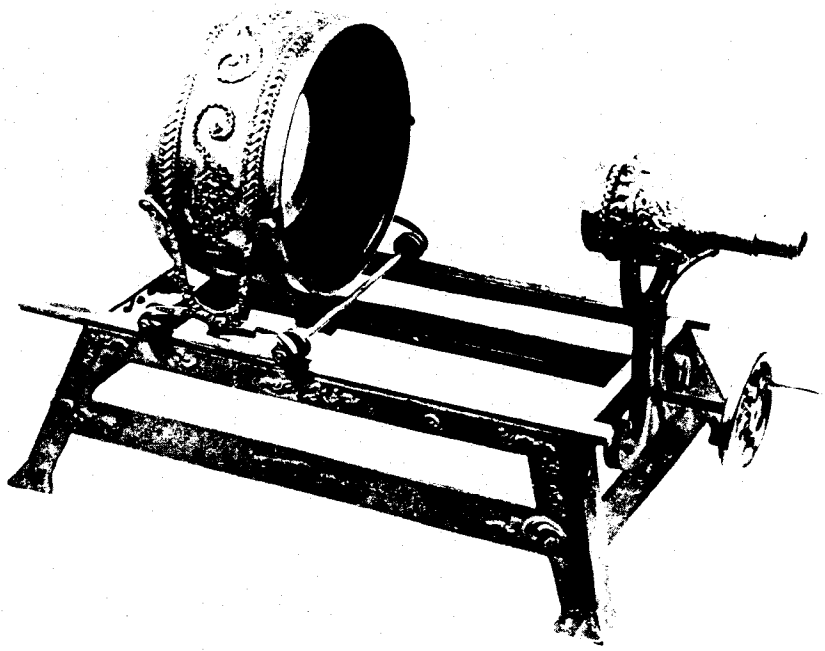
151. BY DOLLOND - English, c. 1800, signed "Dollond London". Dark lacquer finished mahogany barrel 1 3/4" d with bright (original) lacquered brass fittings, lens cap, and triple brass draw tubes, 9 1/2" long (min) extending to 28 5/8". Achromatic doublet objective of 1 5/8" clear aperture and 4 element erecting eyepiece. Generally very fine plus original condition with minor surface nicks to the wooden barrel and partial wear to the finish on the rear barrel ring. Excellent image quality; no visual distortions or aberrations. Peter Dollond (1730-1820), son of John Dollond (1706-61) inventor of the first practical achromatic lens, was the founder of the most important optical firm in late 18th and early to middle 19th century England. Dollond optics were significantly better than those of any other English or Continental firm of the same period. The difference is easily observed by direct visual comparison.

(3 lbs UP) $ 345

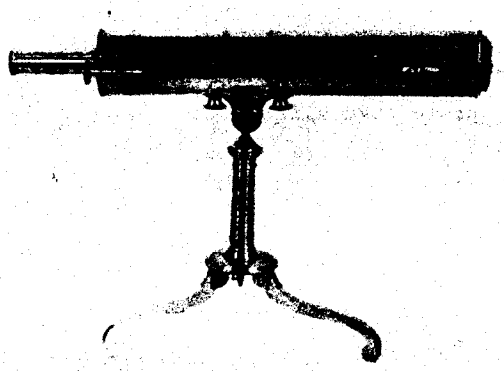
152. BY DANCER - English, mid 19th c, signed "J.B. Dancer, Manchester". Nickel-brass construction with baleen covered barrel 1 7/8" d, 8 draw tubes, 5 5/8" long (min) extending to 28 7/8": Achromatic objective of 1 5/8" aperture and 4 element eyepiece yield erect, clear, and sharp images with no noticeable color; visually equal to the Dollond above. Very fine overall condition although objective lens cap is lacking. See the microscope section for biographical data on John Benjamin Dancer, the inventor of the micro-photograph.

(4 lbs UP) $ 325

153. MASSIVE SIDE-SHOW VERSION OF WORLD'S FIRST TELESCOPE - American, 19th c, unsigned. Cast iron base 29 1/4" long x 18" w x 8" h upon which there are brass rails 28 3/4" long and a steel lead screw with a 5 3/4" d brass hand wheel at the eyepiece end. The simple objective of 7" clear aperture and 24" FL (giving an horrendous 3.4 f ratio) is in cast (and highly decorated) brass mounting 12" dia x 6 5/8" long which rides on 4 wheels along the brass rails, driven by the central lead screw. The two element eyepiece (thus yielding inverted images) is in a highly Victorian cast brass mounting 4 1/2" d x 8 1/2" long which is attached to the base by a cast iron yoke. The whole thing is 22" high and in pretty good shape. If you wanted to, you could polish the brass and clean up (and repaint?) the iron to make it look almost new. It produces absolutely awful images (but what else would you expect from the optical design?). As far as we have been able to gather from hear-say, dim recollections, or what have you, the telescope once graced a 19th century museum of oddities, and what have you's, a là P.T. Barnum, where it was represented as a model of the world's first telescope. Galileo would turn over in his grave. Yet, if you have a comprehensive collection of real telescopes, it can not be complete without this unique (probably the only one in captivity) example.



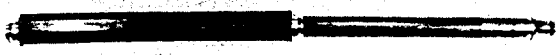
(air freight) $ 1,100



154. FINE GREGORIAN REFLECTING TELESCOPE - English, 4th qtr 18th c, unsigned. Bright brass in original lacquer finish, 12 1/4" h with 18" long barrel horizontal. Outside dia 2 3/4". Complete with aperture reducing lens cap and external focussing rod and knob. The optics consist of the 2 5/8" d parabolic speculum metal primary mirror, the concave elliptical speculum metal concentric secondary mirror, and 2-lens eyepiece. Fine to very fine physical condition even though there is some dark streaking and pinpoint spotting of the original finish. The optics have been aligned to give clear, sharp images. Original hard pine case 5 1/2" w x 4 1/4" h x 18 7/8" long is in very good condition.

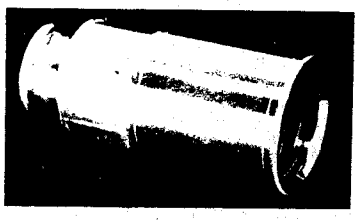
King, "History of the Telescope" notes that the Scotsman, James Gregory (1638-75) proposed his 2-mirror design in his 1663 "Optica Promota", but was unable to find opticians capable of producing the aspheric surfaces. A telescope, properly constructed, is free from spherical aberration at the center of the field and has no chromatic aberration except that introduced by the eyepiece. Robert Hooke seems to have made the first good Gregorian telescope about 1674. Although the Cassegrainian was invented in 1672, because of Sir Isaac Newton's criticism of the design and the virtual impossibility of figuring the convex hyperbolic secondary until almost 200 years later, the Gregorian remained the standard design for a compact reflector with folded light path until well into the 19th century. Interestingly, another Scotsman, James Short (1710-68) brought this design to perfection.

(18 lbs UP) $ 1,875



155. OCTAGONAL BARREL SPYGLASS - English, 18th c, unsigned. Octagonal mahogany barrel, 1 3/8" across flats, with lacquered brass fittings, single brass draw tube, protective objective lens and eyepiece slides, 13 1/2" long (min) extending to 23". Optics consist of simple (non-achromatic) objective of 1/2" aperture and 3 element erecting eyepiece, giving amazingly sharp images for such a design. Generally very good to fine overall condition noting that the lacquer finishes and 3 small screws are modern restorations, some age cracks on the barrels, and 2 interior lenses in the eyepiece and their retaining rings are also modern restorations. This is an excellent example of optical design predating the Dollond's introduction of the achromatic objective and improved eyepiece.

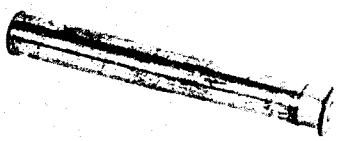
(3 lbs UP) $ 295



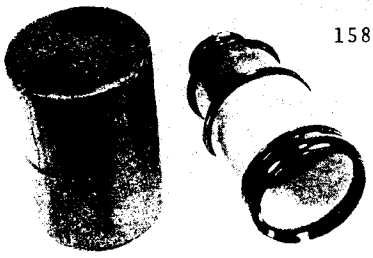
156. PROSPECT GLASS IN SHEFFIELD SILVER PLATE - English, between 1789 and 1794, signed "GILBERT & WRIGHT/LONDON". Brass construction with a veneer of Sheffield silver plate (rolled silver-copper sandwich), 1 5/16" d x 2 1/8" long (min) extending by single draw to 3". Simple objective of 1" clear aperture and Galilean (negative) eyelens give 2x's magnification. Extremely fine overall condition. John Gilbert (Jr.), son of John Gilbert of Tower Hill, joined in several different partnerships late in life. His partners, at one time or another, included Gilkerson, Wright, Hooke, and his own son, William. The partnership with George Wright was established in 1789, becoming Gilbert, Wright, Hooke in 1794.

(2 lbs, UP, PS) $ 225

157. JUST IN TIME FOR THE NEXT ECLIPSE - English solar eclipse telescope, 19th c, unsigned. Brass tube 3/4" d x 5" long (unextended) with single draw eyepiece. Clear aperture 1/2" d with Galilean eyepiece giving ing approx 2x power. Very dark filter glass mounted in eyepiece to reduce the intensity of the sun's rays. Generally fine condition with some spotting of original lacquer finish. An interesting little item, probably made just prior to a solar eclipse, a century or more ago.

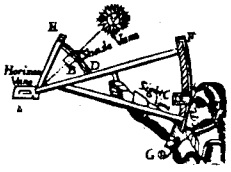


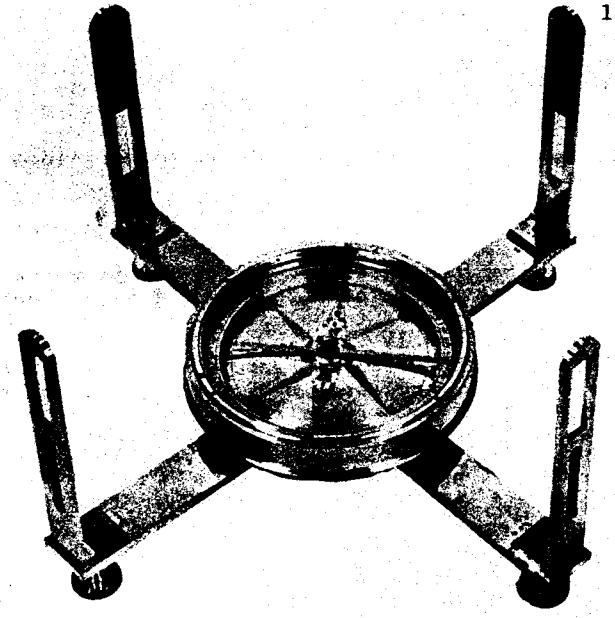
(2 lbs, UP, PS) $ 75



158. CASED PROSPECT GLASS - English, 1st half 19th c, unsigned. Single draw telescope with natural wood barrel, brass draw tube, blackened ivory lens mounts, 2 5/8" max dia by 2 5/16" long (min) extending to 3 1/4". The 1 1/4" d simple objective lens and Galilean eyelens yield 2 1/2 x's magnification. The original red leather case is 1 3/4" d x 2 1/2" long. The case is in fine condition with slight rubbing, the telescope is very fine except for an edge crack in the eyelens.

(2 lbs, UP, PS) $ 170



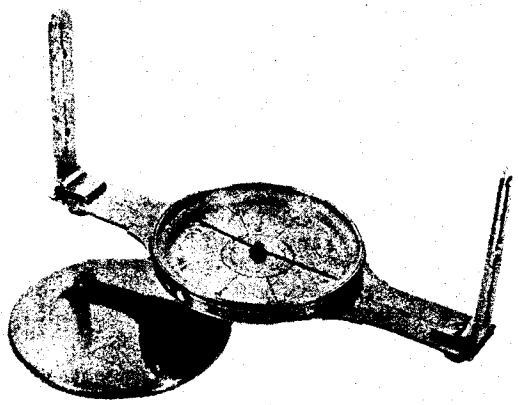


159. LARGE SURVEYOR'S CROSS WITH CENTRAL COMPASS - English, before 1800, signed "Ramsden London". Bright brass, restored lacquer finish, fixed orthogonal rods 12" long x 1 1/16" w with four 4 7/8" h screw-on sight vanes. A silver-faced compass in a 5 1/4" d housing and with a 3 7/8" needle is located in the center but can be rotated with respect to the arms of the cross. Staff mounting socket on the bottom with its locking screw. Very fine overall condition although with no case.

The simple surveyor's cross is believed to date back to the ancient Egyptian Grema, a pair of rods at right angles suspended in the center with 4 lines with weights suspended from their ends. A brass circle with 4 fixed sight vanes is described in Chap. II of Book IV of Stone's translation of Bion where it is treated as the most basic of all sighting instruments. Leybourn, in the 17th century editions of his "Compleat Surveyor" seems to ignore it completely, describing only those instruments he considered newly improved. The Holland circle of the 17th century is a surveyor's cross with added central compass, circular scale and rotating alidade. Conceptually, the instrument here predates it and yet we have been unable to locate examples which also predate it. Could it be that this English design is actually a regression? See Item 267 of Catalog 115 for a miniature form of this instrument made about 1825.

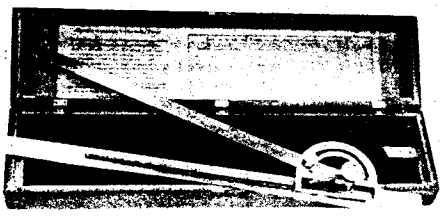
(10 lbs UP) $ 2,180

160. SURVEYOR'S COMPASS BY WILLIAM J. YOUNG'S TEACHER IN THE ART - American, signed "T. Whitney Maker Philada." with serial "No. 321" on the base outside the compass housing and marked "1817 B" on an underside interior surface, which we assume to be the date. Bright brass, restored lacquer finish, the silvered dial compass within a 6" d housing on a 14" long baseplate. There is the original compass cover but no ball and socket joint and no case. The 6" h screw-on sight vanes are instrument-maker-made old replacements. Generally fine overall condition.



Thomas Whitney (?-1823) was apprenticed to Samuel Browning (of Spencer, Browning & Rust, London) in 1782. They were all members (strangely) of the Grocers' Company which had a significant number of significant instrument makers including the George Adamses and the Troughtons. He obtained his freedom in 1790and shortly emigrated to Philadelphia, first advertising himself as an instrument maker in 1798. By 1820, according to his advertisement of that year reprinted on p. 167 of Smart, he specialized in surveying compasses and had made 500 by then. William J. Young, the inventor of the American Surveyor's Transit, apprenticed to Whitney in 1813. It may very well be that Young worked on part or all of the imstrument here since his 7 year term was not concluded until 1820 when he started his own firm with the construction of a dividing engine.

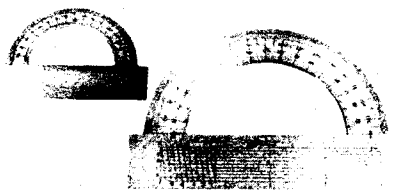
(9 lbs UP) $ 745



161. BOTH'S SECTION LINER AND SCALE DIVIDER - American, "PAT., NOV. 20. 1888 A.C. BOTH C.E./PORTLAND ME." and made by "KEUFFEL & ESSER CO. NEW-YORK". Bronze frame with German-silver 2 15/16" d protractor, 12 1/2" long pivoted arm and 14 7/8" long x 3/4" w base bar (fitted with 9 3/8" long rack). Original stained pine case 15 1/2" long, 3 1/2" w, 2 1/4" h. Original instruction sheet in poor condition, all else generally fine. The instrument was intended for fast, accurate section lining in intervals of 1/24" (protractor set at 90°) and all small intervals as reduced by the sine of the set angle. Scale division follows similarly.

(4 lbs, UP, PS) $ 115

162. PAIR OF 180 DEGREE PROTRACTORS - American, 19th c, the larger signed "PAUL ROESSLER'S SON/NEW HAVEN - CT.". The larger one is 4 1/2" d on a 5 1/8" long base with a 4" long diagonal scale (reading to 1/100"), made of brass with restored silvered surface. The other is also brass, with restored lacquer finish, 2 9/16" d on 3" long base. Both in very fine condition. Our references do not list the signed maker.

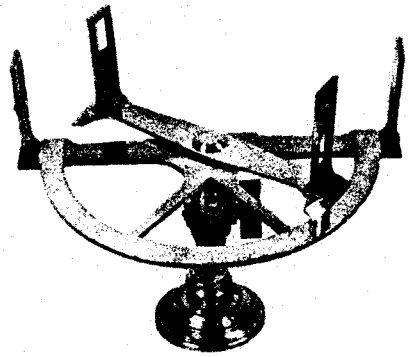


(1 lb, UP, PS) $ 65

163. RARE EARLY FORM OF THE "BOSTON" LEVELING ROD - American, mid 19th c, or earlier, unsigned. Dovetailed walnut rods, 1 1/4" x 1 3/8" in combined cross-section and 66" h with brass plates on both ends. There are brass clamps near either end of the graduated rod as well as small fixed rectangular targets, 2 3/8" x 3 7/8". There are scales (1/100's of a foot) engraved directly in the wood on either side of this rod with hand-stamped numbers every 10th of the foot. The rear rod has a brass vernier plate on either side. Generally fine overall condition.

The Gurley catalog of 1869 describes the "Boston or Yankee Rod", *"The target being fixed, when any height is taken above six feet, the rod is changed end for end, and the divisions read by the other vernier; the height to which the rod can be extended, being a little over eleven feet.* (Actually about 10 ft for the example here which does not have to be changed end for end because of the 2 targets.) *"This kind of rod is very convenient from its great lightness, but the parts are made too frail to endure the rough usage of this country, and, therefore, American engineers have generally given the preference to another, made heavier and more substantial."* They then go on to push the "New York" rod which they happen to be selling. In our opinion the rod here predates this Gurley catalog. Indeed, it appears to us that the scale division lines are hand engraved and that, taken with the hand stamped numbers, suggest a 1st half of the 19th century date of fabrication.

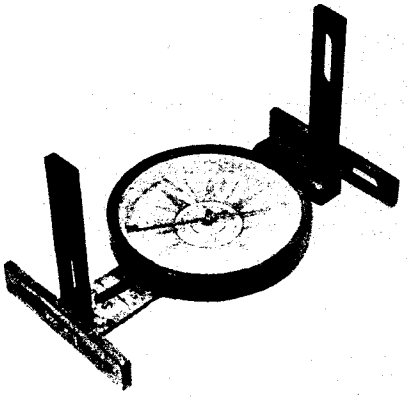
(25 lbs UP) $ 195



164. ELEGANT GRAPHOMETRE - French, 1st half 19th c, unsigned. Bright lacquered brass, 7 3/8" major dia with fixed vanes 2 1/4" h, pivoted alidade 5 5/8" long also with 2 1/4" h vanes; 6 1/2" overall ht including ball and socket joint for staff mounting. The semi-circular scale is read out by opposing verniers to 2 arcmins. Overall condition is excellent with 80% original, 20% restored finishes. Original painted hand dovetailed wooden case, 4 1/2" deep x 4 3/4" h x 8 1/4" w, is in only fair condition with several major age cracks. The display base in the photograph is not included.

The graphometre, although popular on the Continent, and in France particularly, was little used in the English speaking world. Most were made with relatively small compasses which would serve for coarse alignment, at best. The example here was designed without this feature and was clearly intended for relative bearing measurements only.

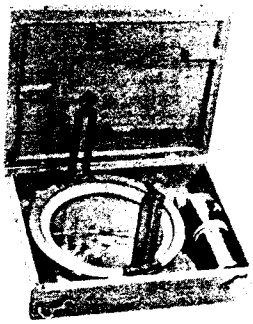
(6 lbs UP) $ 735



165. WOODEN COMPASS OF UNIQUE DESIGN - American, mid 19th c, signed "G. L. WHITEHOUSE, FARMINGTON, N.H.". Wooden construction (various fruitwoods?), 11" long, 6" dia compass housing with printed paper dial and 4 7/8" needle, vertical sight vanes 5 5/16" h each, and horizontal sight vanes, 5 1/4" w each. The bubble vials are in wooden housings and the needle lifter is made of brass wire. The original glass face plate has a diametrical crack; otherwise condition is very fine. No case.

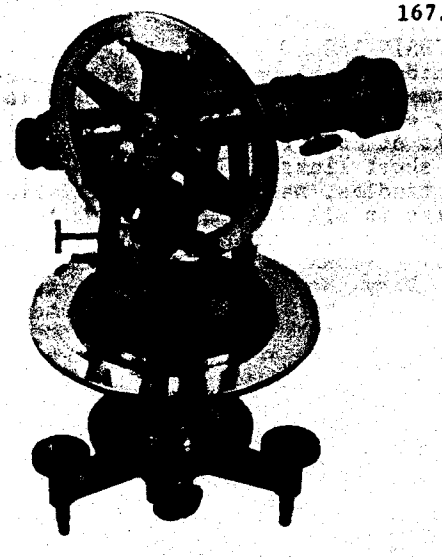
Another example of this design is shown on pg. 259 of Smart. The one there is of somewhat poorer workmanship and in our opinion dates from shortly before his death, while the example here appears to date from his most productive period. According to Smart, George Leighton Whitehouse was born in Middleton, N.H. in 1797 and died in 1887. *"From 1839 to 1871 he was engaged in surveys for railroads and canals in New Hampshire and Massachusetts. He was a member of the New Hampshire legislature in 1830 and again in 1856-57. His varied activities included judge of the court of common pleas from 1841 to 1855. He was a land surveyor for 60 years."* To date, we know of no description of the design aspects of this instrument.

(7 lbs UP) $ 895



166. CASED POCKET COMPASS - French, for the American market, late 19th c, unsigned. Bright lacquered brass 4 3/4" d, 3 1/2" h brown oxidized folding sight vanes, the 4 1/8" d compass dial with its face in the same oxidized finish, a silvered graduated ring around its edge and a 3 3/8" long needle. The original staff mounting bracket is 3 1/4" h in original bright lacquered brass. The original mahogany case, 5 1/2" x 7" x 1 3/4" h, is in very good condition with several age cracks. The compass is fine except for some uneven fading of the oxidized surfaces. This is a larger version of Item 225 of Catalog 122.

(4 lbs, UP, PS) $ 185

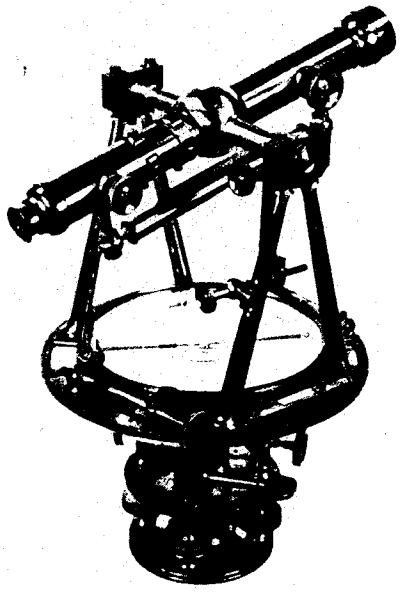


167. RELIC OF FERDINAND de LESSEPS' GREAT FAILURE - French theodolite, c. 1880, signed "Mon. Richer Guyard & Canary succrs a Paris" and marked "Cie du Canal de Panama". Brass construction, some parts in lacquered finish, others black oxidized, with inlet silver scales, standing 11 1/4" h incl 3-screw leveling base. The azimuth plate is 6" d, its 5" d scale graduated to 400 metric degrees is read out by opposing verniers to 2/100 of a degree. The vertical circle of 4 3/8" d is similarly graduated but has only a single vernier. The rack and pinion focussing telescope is 8 1/4" long (min). There are tangent screw slow motions on concentric azimuth axes and the elevation axis. Scale diffusers and magnifiers, and part of the upper azimuth motion clamp assembly are missing. The surface finishes have deteriorated due to exposure in the jungles of Panama, yet overall the instrument is still in reasonable display condition considering its background. (We do not suggest any restoration.) No case or tripod.

Ferdinand de Lesseps (1805-1895) was the moving force which produced the water-level Suez Canal. Its completion in 1869, and its subsequent success as a commercial enterprise, renewed the interest in crossing Central America by a similar canal. A canal through Nicaragua would have required locks. However, at an International Congress held in Paris in May, 1879, it was decided that a sea level canal could be built through Panama. The Cie du Canal de Panama, de Lesseps as president, was organized in December, 1880 and 6 million shares at 500 francs each were sold. The next two years were devoted to Surveys and the preliminaries of the layout of the canal. That these plans included an enormous cut to be made at Culebra and did not include any method of controlling the eratic and sometimes tremendous flows of the Chagres river did not seem to bother enough people. The jungles with their yellow-fever-carrying mosquitos were not a consideration either. Work under de Lesseps sea-level plan continued until the latter part of 1887, the management being characterized by a degree of extravagance and corruption rarely if ever equaled in the history of the world up to that time. It was evident by then that the original canal could not be completed at sea level with the resources of time and money available. A redesign with locks, was worked on for the next two years until the company went bankrupt. A new canal company was organized in 1894, de Lesseps now in disgrace, and additional sums, over a billion francs, were raised to complete the work. By the year 1900 about 5 million cubic yards had been excavated and the end was not in sight. The jungles consumed men, equipment, and money as fast as it was sent to Panama. By the time Major Goethals and the U.S. Army Corps of Engineers came on the scene in 1907 almost nothing survived from the French efforts. The instrument here is of the greatest rarity.

(15 lbs UP) $ 1,495

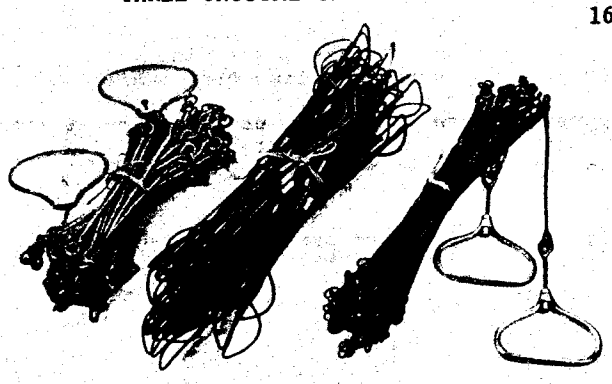
168. THE MOST ELEGANT AMERICAN TRANSIT EVER MADE - Late 19th c, signed "G.W. Wilson, MAKER, Concord, N.H.". Bright brass, original gold lacquer finish (now showing darkening on upper surfaces), standing 13 1/2" h (incl 4-screw leveling) base when 11" long rack focussing telescope horizontal. Azimuth table 8 1/2" d with 6 1/4" d silvered dial compass and its 5 1/2" needle, 3 1/8" long bubble vials, and tangent screw for fine motion. Silvered 7" d azimuth scale is read out by opposing 1 arcmin verniers. There is a clamp and tangent screw on the elevation axis. A 5 5/8" level bubble vial is mounted to the telescope. The standards (telescope axis supports) instead of being cast in one V-shaped piece, consist each of 7 individually machined and lathe turned parts. Other subassemblies also consist of a number of machined parts rather than overall castings. Overall condition is very fine with surfaces as noted. There is also the original 58" h mahogany tripod with brass head (which has been cleaned and refinished) which is in very good condition. The original mahogany case, 9 3/4" x 12" x 15" h, is sound but in poor exterior condition.



George W. Wilson (1831-1910), born in Bradford, Vermont, was one of the country's last true mathematical practitioners. During his own life-time, the production techniques of the large manufacturers made his own hand-produced instruments non-competitive in a growing market. Originally listed in the Concord Directories (1864-1901) as "optician", "optical instruments", "optical and mathematical machinist", he eventually became "sewing machine repairs". We have had but only one other example of his work, a similar but not quite identical transit dated 1886 (Item 118, Catalog 103). In terms of elegance of design (American or English or French or anything) this is the best we have ever seen.

(2 UP packages, 40 lbs and 14 lbs) $ 1,450

THREE UNUSUAL CHAINS*



169. RARE 2 POLE IRON CHAIN TAGGED AT HALF POLE INTERVALS - American, mid 19th c, unsigned. Brass handles and 3 marker tags (2 old replacements), 48 full length iron links, each connected by pair of small links, 2 half links at center, one an anti-twist joint, and 2 very short links at the ends which, when added to the handles, make two more half links, thus giving 50 links in all. In this way 12 1/2 link lengths, or half poles, are easily marked and identified. The iron links vary in thickness from 0.134" to 0.143". Very good to fine overall condition except for surface etching and pitting and some light rust spots, mostly at the small loops. This is the first such chain we have encountered.

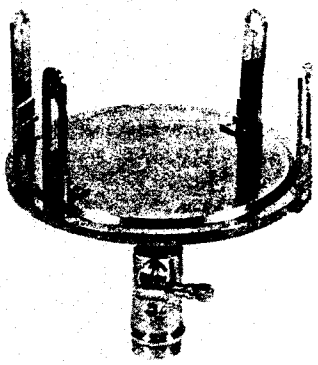
(8 lbs, UP, PS) $ 185

170. D-LOOP REPLACEMENT 50 LINK ENGINEER'S CHAIN - American, 2nd half 19th c, possibly c, 1900, unmarked. Galvanized steel links, each 12" long, without interlink rings, without handles or tags. (Probably intended to be used with snap-on handles.) Each link is formed from 1 piece of steel wire doubled over with "D" loops at either end and wrapped and soldered at the midpoint. Generally very good condition with light touches of rust in a few links. The wire is a relatively uniform 0.097" dia suggesting a relatively late 19th century origin.

(7 lbs, UP, PS) $ 65

171. UNBELIEVABLE 3 POLE ENGINEER'S CHAIN (AND MADE THAT WAY) - American, c. 1875, one brass handle signed "WM. E. STIEREN/PITTSBURGH, PA." and the other "50 FT STEEL No. 12", but it really is 49 1/2 ft. There are 47 one foot intervals consisting of one long steel link and 2 small rings, every one brazed closed, a shorter link at one end which, with the handle, make up another foot, a much shorter link at the other end, to combine with the other handle to yield 1/2 ft, and two 6" links 16 ft from one end with a brass tag at their midpoint. Another brass tag is located 2/3rds down the chain. Thus the chain is divided into 16 1/2 ft, or one pole intervals. According to Smart,William E. Stieren was born in Prussia in 1835, came to Pittsburgh in 1863 where he was listed as an optician and mathematical instrument maker, and died in 1887. Our research shows that all the components of this chain were made by Gurley matching their No. 12 steel chain and that one handle was marked by them. The signed handle, however, is not their marking. We have not been able to determine whether Gurley made the as found chain by special order or Stieren modified a production model.

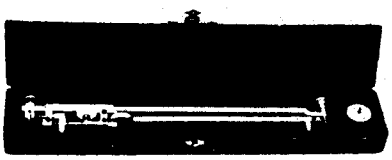
(7 lbs, UP, PS) $ 265



172. MINIATURE 4-VANE CIRCUMFERENTOR - English, c. 1800, possibly late 18th c, signed "Bleuler, London". Bright brass, restored lacquer finish, the base plate 5 3/4" d, overall ht 6 1/2" incl the ball and socket joint for staff mounting. The outer (fixed) folding vanes are 2 1/2" h and the inner (rotating) folding vanes are 2 3/8" h. The azimuth scale on the base plate is graduated to degrees and there are opposing index lines (no verniers) on the beveled 5 5/16" d rotating top plate. Except for a thumb screw missing from the lower end of the ball and socket joint and some etching of the under surface of the base plate, overall condition is extremely fine. No case.

Taylor 2 lists John Bleuler (1757-1829) as apprenticed to Henry Shuttleworth in 1771 and worked with him until 1791, when he succeeded to the business of Thomas Whitford. Although not much more about him is listed in the references, two of his trade cards are illustrated (Plates 11 & 12) in the Science Museum's catalogue "Scientific Trade Cards". His known instruments display a high level of workmanship, one such example being the large ring dial sold as Item 108 in the Linton Collection sale, Paris, 1980. However, relatively few museums list even one of his instruments in their catalogs - none at the National Maritime, none in the Whipple Museum surveying instrument collection, none in the Van Marum collection in Holland, only one ebony quadrant at the Peabody Museum, Salem - leading us to conclude that any surviving work by him must be relatively rare.

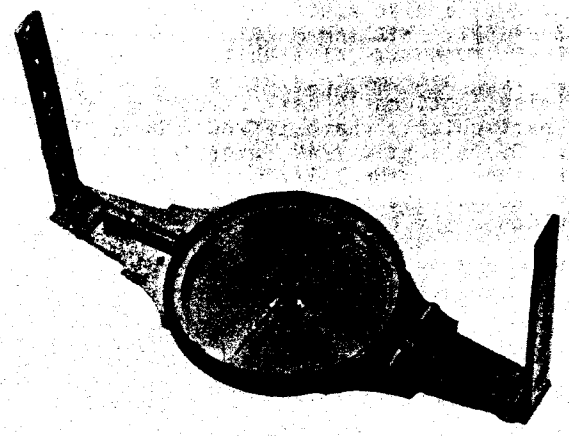
(6 lbs UP) $ 1,395



173. AMSLER VARIABLE RATIO POLAR PLANIMETER - Swiss, c. 1900, signed "J. Amsler" and also "Keuffel & Esser Co. New York". German silver and steel, major arm 10" long, in fitted black cloth-covered case 12" x 2 1/4" x 1 3/4" h. Case is in only fair condition showing age and wear. The instrument is in fine display condition, operating, but with no guarantee of proper or accurate performance. It was used to obtain the area of an irregular plane figure by tracing around its perimeter. This model is adjustable for different mapping scales. It was invented by Prof. Jacob Amsler about 1856 and over 12,000 examples had been made by 1884 according to the (London) Science Museum's publication, "Calculating Machines and Instruments".

(4 lbs, UP, PS) $ 95

* Surveying Chains for sale only to purchasers of other surveying equipment.



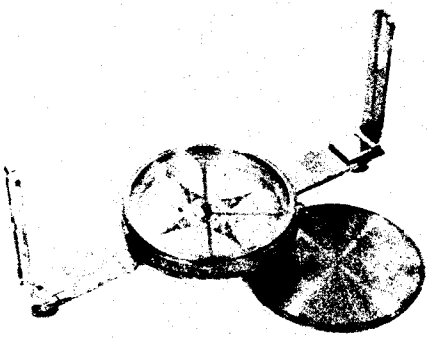
174. LARGE PLAIN COMPASS - American, c. 1875, signed "W. & L.E. Gurley, Troy, N.Y.". Bright brass, original lacquer finish, 15 3/4" long base plate with 6 7/8" d compass housing, silvered dial and 5 3/4" needle. The 7 1/2" h screw-on sight vanes result in a 10" overall ht. The bubble vials are 2 3/4" long each. No ball and socket joint and no case. Otherwise complete and in generally fine condition with some irregular darkening of the finish, mostly to one side of the compass housing. Still a rather attractive display piece.

Gurley compasses are difficult to date since they are un-numbered and did not change in design over many years. Identical illustrations of various instruments are to be found in their 1862 and 1902 catalogs. Indeed their cases (in this instance, missing) tend to give a better clue to date than the actual instrument. In any event, this is a typical representative of the American Surveyor's Compass of the 2nd half of the 19th century.

(13 lbs UP) $ 595

175. FIELD DRAWING BOARD ON TRIPOD - American, c. 1900, the tripod signed "KEUFFEL & ESSER Co. N.Y." and marked U.S. LAND OFFICE". Drawing board 18" x 24" mounted on 48" high tripod, Very good overall condition showing wear from use in the field. In our opinion this outfit was put together by the U.S. Land Office for their own use.

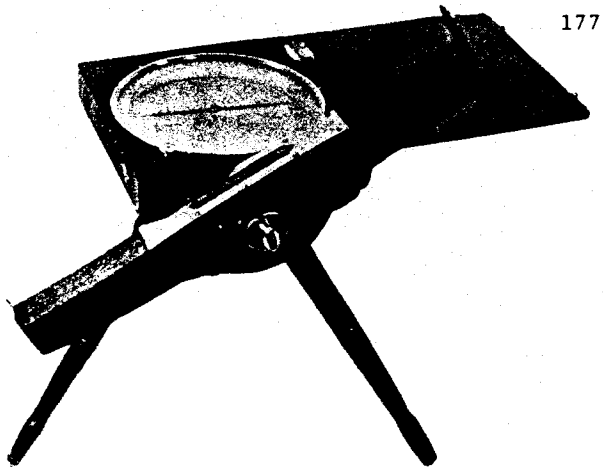
(2 packages, 10 pounds each, UP) $ 75



176. ENGLISH SURVEYOR'S COMPASS - early 19th c, signed "Spencer & Co. LONDON". Bright brass, original lacquer finish, silvered compass dial within 5" d housing which is mounted on a 12" long base. The screw-on sight vanes are 4 3/4" h each. The brass compass cover is present but the ball and socket joint is now lacking. Original hand-dovetailed stained pine case, 6" deep x 2 7/8" h x 12 1/4" w, is in fair condition with a 2 1/4" long chip out of one end and typical surface wear. The compass is very fine.

Spencer & Co. was the name used by Spencer, Browning & Rust for their higher quality instruments, particularly those in brass. Item 207 of our Catalog 120 was made under this name after they had moved to 111, Minories (1840 according to Brewington). A slightly larger compass of the same design was listed by us as Item 117 of Catalog 113.

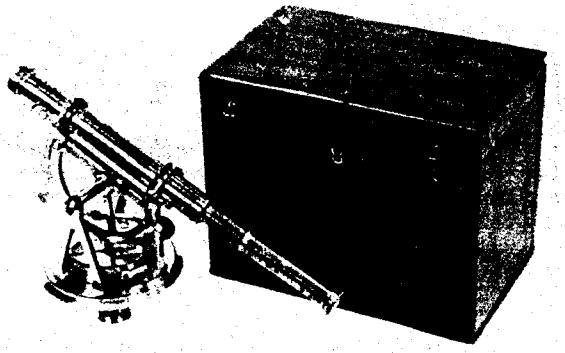
(10 lbs UP) $ 725



177. MILITARY SURVEYOR'S COMPASS WITH ATTACHED SHORT TRIPOD - Possibly American, 18th c, unsigned. Mahogany construction with bright lacquered brass fittings, 6 1/8" d silvered compass face. The basic compass body is 7 1/2" w x 7" deep x 1 1/2" thk with a hinged cover which hooks in place. A 14 3/4" long alidade pivoted in elevation is attached to a wooden bracket below the compass body. It has brass sight vanes (one now broken off short) and a bubble vial beneath a 6 1/2" long x 1 1/8" w brass cover plate. A 5" d turned mahogany tripod head is permanently affixed to the bottom of the compass body. The turned tripod legs extend 10 1/2". It is in very fine restored display condition.

Age shrinkage had caused the original cover glass to crack (now replaced) and 2 very large cracks to develop in the compass body. The compass was removed, the cracks glued together, the now oval compass well turned on a lathe and the compass refitted. The brass fittings were cleaned and relacquered. The dial silvering is original. The thumb screw for the compass needle lifter is present but not the arm which would have extended to the compass center. There are several other age cracks and the wooden surfaces have been worn from field use. This specialized form of surveying compass is described in George Adams "Geometrical Essays" and illustrated by Fig. 3 of Plate XV of the same work.

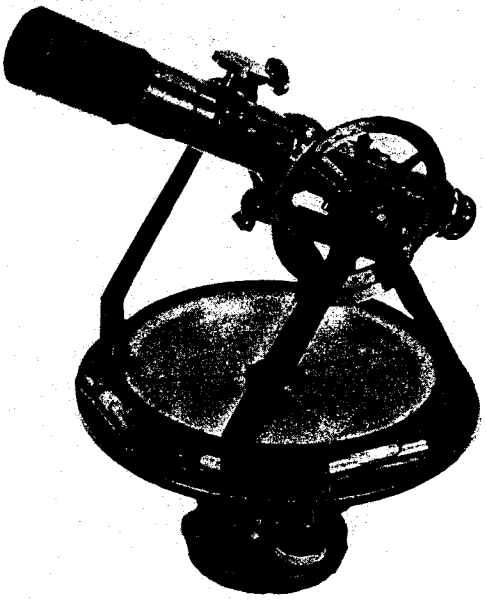
(12 lbs UP) $ 1,325



178. MINIATURE THEODOLITE - English, c. 1815, signed "Harris & Co. 50 Holborn LONDON" and a trade label within the case also states "BY HIS MAHESTY'S ROYAL LETTERS PATENT. WILLIAM HARRIS & Co. Manufacturers of Optical, Mathematical & Philosophical INSTRUMENTS". The instrument is brass with original lacquer finish, noticeable dark streaking on the telescope, particularly where it would be held for assembly. Overall ht 6 1/4", with 10 3/4" long telescope horizontal, the 2 1/2" d silvered dial compass (2" needle) is mounted on the 4 1/8" d base plate which has a beveled silver scale reading out by vernier to 3 arcmin. Azimuth motion by gear drive. The 3 3/4" d vertical circle with edge rack (pinion driven) has an inlet silver scale again reading by (partly damaged) vernier to 3 arcmins. The telescope with its 2 3/4" bubble vial reverses in the wyes and disassembles for stowage. The original hand-dovetailed mahogany case, 8 1/4" w x 5" deep x 6 5/8" h is in very good condition with several age cracks and missing 1 internal fitting. The instrument is fine except as noted and is missing its lens cap.

The maker of this instrument worked from 1799-1848, at 47 High Holborn until 1812, then at 50, becoming "& Co." in 1814. He made instruments to the designs of David Brewster and in 1811 was granted patent no. 3453 for "telescopes and other optical instruments for measuring angles". Several of his trade cards are listed but not illustrated in the Science Museum publication on same. This little theodolite and other instruments by his firm which are known to us all exhibit high quality workmanship.

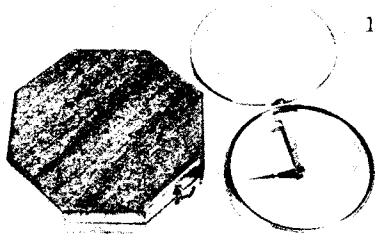
(10 lbs UP) $ 1,995



179. UNCOMMON VERNIER TRANSIT COMPASS WITH TRIPOD - American, early 20th c, signed "THE L. BECKMANN CO. TOLEDO, OHIO" with serial no. 6283. Brass construction in original black oxidized finish and bright lacquered brass fittings, standing 11" h (8 3/4" long telescope, with 4" bubble, in level position), 8" d base plate, 6 1/2" d silver-faced compass with internal vernier for the magnetic variation and 5 1/2" needle, and crossed bubble vials. Telescope with rack focussing objective and screw focussing eyepiece on elevation axis fitted with slow motion tangent screw and 3 1/2" d silvered vertical circle reading out by vernier to 5 arcmin. Four screw leveling base with tangent screw azimuth slow motion. Complete equipment includes sun shade, lens cap, plumb-bob, hand magnifier and adjustment tools. Original mahogany case 9 1/2" sq x 13 1/4" h in almost fine condition. The transit compass is very fine as is original tripod with 4 ft oak legs.

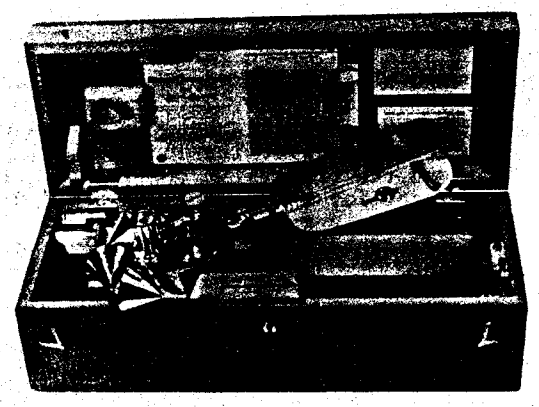
Ludwig Beckmann was born in Doberon, Mecklenburg, Germany in 1845 and died in Toledo in 1914. He came to the U.S. in 1870 and started making surveying instruments in 1874. He built his own dividing engines (3 in all). After his death the business was continued by his son Louis, Jr., until 1945 when all manufacturing was discontinued. The transit compass is an unusual instrument in that, functionally, it is no more than a vernier surveyor's compass. There is no azimuth readout except with respect to the needle. Thus it is an instrument unable to produce readouts with an accuracy anywhere near that to which the telescope can be aligned. The cost of manufacture of the base plate and superstructure is no less than that of a full transit with an azimuth circle and considerably more than that of a sight vane compass. In 1902 Gurley charged $ 40 for a large vernier compass, $ 101 for the equivalent transit compass and $ 145 for a surveyor's transit with azimuth scale. Very few transit compasses must have been sold by any of the instrument companies because they made no economical sense. As a consequence, even though they were marginally cheaper than a full transit, they are now far more rare.

(2 UP packages, 30 lbs & 10 lbs) $ 895



180. OCTAGONALLY CASED DIPPING NEEDLE - American, 2nd half 19th c, unsigned. Bright lacquered brass case 3 3/4" d x 3/4" thk with glass windows and 4" d folding loop handle. The needle is 2 3/4" long and reads out on a silvered interior scale graduated on both sides. The original octagonal case is 4 7/8" across flats x 1 1/8" thk and is in fine condition. The instrument is very fine with original finish. These were intended for tracing veins of iron ore which would cause variations in the inclination of the local magnetic field.

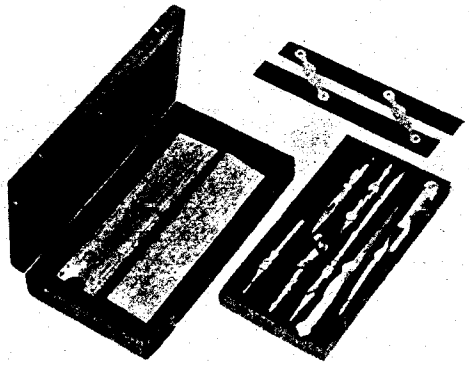
(3 lbs, UP, PS) $ 175



181. ELECTRIC CURRENT METER OUTFIT 623 - American, 1919, signed "W. & L.E. GURLEY/TROY, N.Y./19901". Nickel plated brass, 15" long overall with 7" long vanes and set of 6 revolving conical cups in 5" d configuration. The 19" long x 7 1/4" deep x 6" h, original pine case also contains an extra commutator box, oil can, tools and 11" long mounting rod. It appears to be missing the 10 lb weight from the case and is lacking the unfitted parts: telephone sounder (ear phone), dry battery, and 20 ft cable. Formerly the property of the American Geographical Society of New York. Case is in very good, the instrument in very fine condition. Gurley's 1921 price list gives the cost of the complete outfit (then) at $ 110 and the Manual describes its use on pgs. 278-80.

(14 lbs, UP, PS) $ 175

182. EXCEPTIONAL SET OF DRAWING INSTRUMENTS - English, early 19th c, signed "DOLLOND LONDON". Mahogany case, 7 1/4" w, 4" deep, 1 1/2" h, with lift-out tray of 7 instruments (possibly missing a pencil file) in brass and steel: large compass with interchangeable divider, pencil, and pen legs, large dividers, ruling pen with needle point in brass handle, small pencil compass, and small pen compass. Compartments beneath the tray contain 6" ebony parallel rule, ivory scale, and ivory sector. The case is almost fine, the instruments very fine noting the following repairs and replacements: the tang for the pencil arm, the case hooks, and the divider arm for the large compass. All else is original. In our opinion this set was retailed rather than made by Dollond, but obviously choosen of the same quality as their optical instruments.



(5 lbs, UP, PS) $ 285

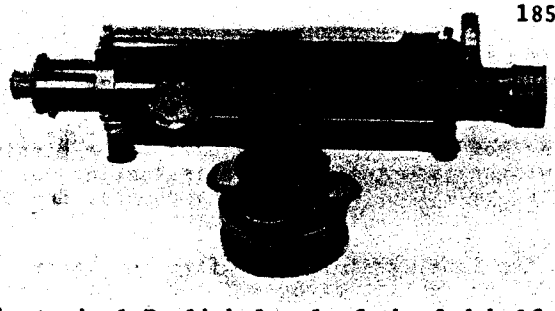
183. LARGE WOODEN ELEVATION THEODOLITE ON TRIPOD - American, 1st half 19th c, possibly quite early, unsigned. Wooden semi-circular ring, 18" d, with 1" h V-notch and peep sights, 3 1/2" bubble vial (no liquid), suspended in 9 7/8" h standards, which in turn are located on a double base plate, 8 7/8" long x 4" w which can be leveled in the elevation plane. The leveling screws are wood and most joints are pinned with wooden pegs. There is also a wooden tangent screw assembly on the elevation axis (one connecting link is a modern replacement). An engraved copper elevation circle is attached to the outer edge of the elevation ring and is, rather roughly, graduated to degrees (do not show in photograph). The wooden tripod with 56" legs and brass thumb nuts is later than the instrument, although still 19th c, but only now supplied for display purposes. Extremely fine overall condition considering natural aging and shrinkage of original materials.

It is suspected that this may be a patent model dating from the beginning of the 19th c rather than an instrument intended for actual use. The lack of fine graduations on the readout scale point in this direction although the craftsmanship involved is at least equal to that of other wooden instruments known to have been made for practical use. The elimination of an azimuth scale, however, limits the applications of such an item and again suggests an invention conceived more from a point of uniqueness than in response to an existing need. The basic design seems to have evolved from the Ramsden pattern of theodolite. A very impressive and probably unique American instrument.

(2 UP Packages, 10 lbs each) $ 1,150

184. CONTINENTAL SIGHT-VANE LEVEL - French, late 19th c, unsigned. Brass in green-black oxidized, black enamel (sight vanes and upper staff mount) and bright lacquered (lower staff mount) finishes, 6 3/4" h overall, 9 3/4" long with 4 5/8" bubble vial and 2 7/8" h vanes. There are bright brass peep-hole covers which rotate into position over the 9/16" dia sighting apertures. Original mahogany case with machine cut corners, 11" w x 5 3/4" deep x 3" h in very good condition. The instrument is very fine. It is interesting to compare this with corresponding English designs intended for similar purposes.

(8 lbs, UP, PS) $ 245

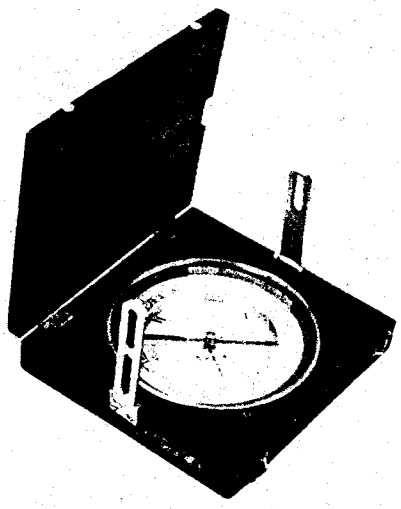


185. FINE ENGLISH DUMPY LEVEL - 2nd half 19th c, signed "TROUGHTON & SIMMS/LONDON", serial no. 23188 crudely stamped in case but none on instrument. Brass construction in original brown-black oxidized finish with some fittings in bright lacquered brass, 14 3/4" long (min), 7 1/4" h including 4-screw leveling base, rack and pinion focussing eyepiece assembly. The longitudinal bubble is 8 1/2" long and the transverse one 2 1/2". Instrument complete except for objective lens cap. Original hand-dovetailed mahogany case 5 1/2" w, 5 1/4" h, 20" long in fine condition except for several age cracks. The level is very fine.

This typical English level of the 2nd half of the 19th century has several refinements in the design of its adjustments not found on the instruments of other makers (such as Items 215 of Catalog 122 and Item 248 of Catalog 117). It is the work of 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 since he had no family and his brothers had died years earlier. In 1822 they merged to become Cooke, Troughton & Simms.

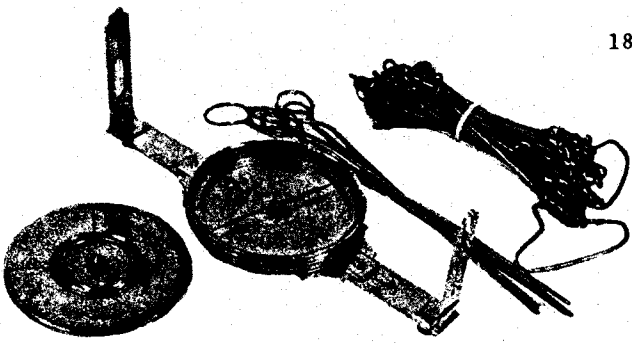
(18 lbs UP) $ 445

186. SURVEYOR'S FOLDING COMPASS - English, 3rd qtr 18th c, signed "Whitehurst & Son/DERBY". Mahogany body and hinged cover 7 5/8" w x 7 1/4" deep x 1 5/8" thk (closed), 5 1/8" d silver faced compass with 3 3/4" needle inserted from bottom, and bright lacquered brass 3 5/8" h folding sight vanes. The outer scale has the very unusual division into 32 numbered intervals, each subdivided in four. Fine overall condition noting that dial silvering is original, the lacquer finish on the vanes and case hooks is modern, and there is a very old repair (by brass straps) of a very old crack in the wooden case.



A similar compass with the same strange graduation, signed and dated "Jn Whitehurst Derby 1757", is to be found at the National Maritime Museum. Taylor 2 notes that John Whitehurst of Derby (1713-85), at Bolt Court, Fleet St. London after 1775, and F.R.S. 1779, "was a watchmaker, instrument maker and assayer, and ended his days as an officer at the Mint." Interestingly, he is best known for his geological theories and we have listed as Item 54 in this catalog, his well known book, "An Inquiry Into The Original State And Formation Of The Earth; Deduced From Facts And The Laws Of Nature". The geologist John Playfair (noted for his exposition of the Huttonian Theory) seems to have been impressed by this work since it was he who proposed Whitehurst for the Royal Society. Whitehurst was also involved in designing and using experimental equipment so as to obtain "an invariable measure of length".

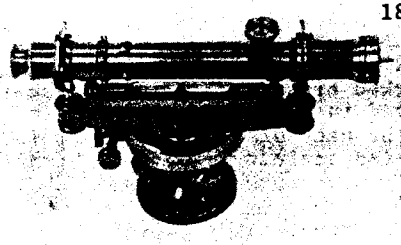
(7 lbs UP) $ 495



187. AMERICAN SURVEYOR'S OUTFIT - Surveyor's compass, Irish, 18th c, signed "Thos. Cave * Dublin Fecit"; 50 link 2 pole chain, probably American, c. 1800, unmarked; set of 6 marker pins, probably American, 19th c, The compass is bright brass, restored lacquer finish, silvered compass dial within 5 1/2" d housing which is attached to a 13 1/2" long base. The screw-on vanes are 4 5/8" h each. The brass compass cover is graduated 90°-0°-90° so that the compass may be used for elevation sightings. Overall condition is very fine although one vane broken off at its base (some time ago) and repaired by soldering on a brass plate over the break, there is no ball and socket joint, one screw for the mounting socket is missing and one vane thumb screw is a later replacement. The 50 link (33 ft) chain is made of iron wire which varies in thickness from 0.116" to 0.149" and is up to 0.020" out-of-round. It has wire handles and 1 (of 4) brass tags. It is in fine condition. The 6 pins appear to be made of much more uniform wire (only a few thousandths variation) leading us to believe that they are much later origin. The compass, chain, and pins were found in a stained oak case 6 1/2" deep, 6 3/4" h, 14 3/4" w which, clearly, was made for the outfit and, in our opinion, dates from when it was first assembled in America.

In Great Britain this form of compass was usually intended for mine surveying. The cover with its elevation scale would have little application to general land surveying and is a feature not found on American made surveying compasses. Taylor 2 lists Thomas Cave of Dublin as a mathematical instrument maker of c. 1780 and notes that his "name is on extant compass, and on another mathematical instrument at Cambridge" which the Webster index indicates is now at the Whipple History of Science Museum (together with a Butterfield type sundial). We have no history on the use of this outfit in America.

(16 lbs UP) $ 995



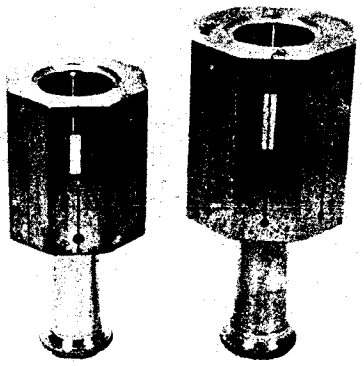
188. BUILDER'S WYE LEVEL WITH AZIMUTH SCALE - American, early 20th c, signed "KINKEAD MFG. CO./BOSTON, MASS./28262" but possibly made by Keuffel & Esser. Brass construction in green-black oxidized finish with bright lacquered brass fittings, 6 1/2" h (including 4-screw leveling base), 11" long (min) telescope with drawtube for focussing of the eyepiece and rack and pinion focussing of the objective. The original lens cap has an unusual projecting point. The level bubble is 5" long. The 3 3/4" d azimuth scale is read out by vernier to 5 arcmins. There is a slip-on sunshade and screw-on legs for a triangular table plate (which is now missing). A plumb-bob is also missing. Original pine case, 13" w x 5" deep x 8 1/2" h, is in poor condition. The instrument is in extremely fine original condition.

Smart lists the firm in business from 1907-21 and notes that they "were not makers of surveying instruments" but they did sell them or at least levels such as this one since several are known. If the instrument was actually made by K & E, as we suspect, then the serial number (if their's) gives a 1913 date of manufacture.

(14 lbs, UP, PS) $ 285

189. SMALL OCTAGONAL SURVEYOR'S CROSS - French, late 19th c, unsigned. Bright brass with original lacquer finish, now somewhat darkened and worn on the upper part, 4 3/8" h overall and 1 7/8" across the flats of the 2 1/4" h sighting head. The staff mounting post screws off for stowage, is reversed and screwed back through the hole in the top of the sighting head. Original stained pine case 2 1/2" h, 2 3/4" deep, 3 1/4" w in good condition. The instrument is very good, as noted. This design is derived from the classical 4-vane surveyor's cross with its shape providing additional slits at 45 deg intervals.

(3 lbs, UP, PS) $ 85



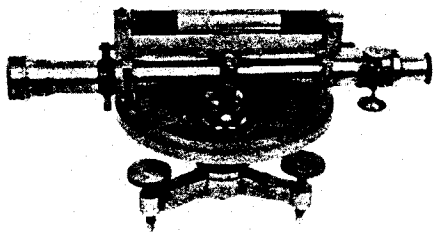
190. LARGER OCTAGONAL SURVEYOR'S CROSS - French, late 19th c, unsigned. Bright brass with original lacquer finish, now lightly spotted, 5 1/8" h overall and 2 1/4" across the flats of the 2 3/4" h sighting head. The staff mounting post screws off and reverses for stowage. Original walnut case 2 3/4" h, 3" deep, 3 3/4" w in very good condition with some worm holes. The instrument is fine as noted.

(4 lbs, UP, PS) $ 115

191. CYLINDRICAL SURVEYOR'S CROSS - French, for the English market, 2nd half 19th c, unsigned but the inside of the case is marked "R. FIELD/NEW ST/BIRMM". Bright lacquered brass 5 7/8" h overall, the 2 3/4" d cylindrical upper part is 3 1/2" h. The upper part of the cylinder, with orthogonal sight slits, rotates (by means of the top knob) with respect to the fixed lower cylinder with its single line-of-sight. There is a silvered scale about the middle reading out by vernier to 4 arcmins. The staff mounting post screws off and reverses for stowage. Original walnut case 3 3/8" h, 3 1/4" deep, 4 3/8" w in fine condition. The instrument is in very fine original condition. The original version of this instrument was developed by William Jones of W. &.S. Jones about 1800. It was read out, however, on a beveled scale at the base of the cylinder and had a compass in the upper end of the cylinder.

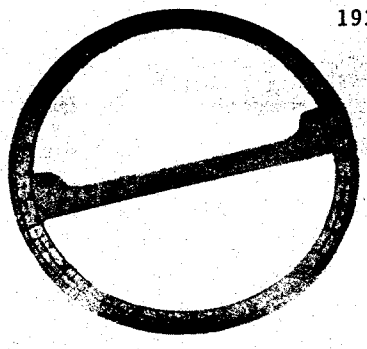
(5 lbs, UP, PS) $ 185

192. CONTINENTAL LEVEL - French, 4th qtr 19th c, unsigned. Original bright lacquered brass, a few fittings and the interior of the azimuth bearing plate in black and the bubble level tube center in nickel plate, 7" h including the 3-screw leveling base and the 13" long rack focusing telescope. The azimuth bearing circle (ungraduated) is 6 3/4" d, and the reversible bubble level 5 3/4" long in a 6 3/4" long mounting bracket. The telescope may also be removed and inverted (for purposes of alignment?). Fine overall condition with one small screw missing. No case.



This instrument is unlike any English or American design. Instead of a central axis to which is attached either the telescope (dumpy level) or telescope bracket (wye level), the fundamental reference is the circular azimuth bearing ring. We suspect that the bubble level is first used to level this surface, the crosshairs of the telescope then adjusted with respect to this surface in each of four positions determined by the 2 fixed square blocks which are part of the telescope housing. The bubble level is then fitted to the top of the telescope but we are uncertain as to whether it is then used in this position or just placed there for stowage.

(12 lbs, UP, PS) $ 325



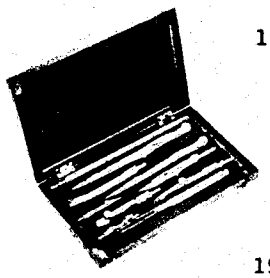
193. FULL CIRCLE PROTRACTOR - American, c. 1800, possibly 18th c, unsigned. Bright brass, restored lacquer finish, 10" d, divided by degrees and numbered every 10 degrees. There is considerable variation in the thickness of the hand beaten and worked brass. The numbered scale shows signs of having been re-engraved in places to correct for errors of initial division. Further, the back of the protractor is also engraved with an inaccurately graduated scale. Very fine overall condition in terms of the original.

This is the work of someone without a proper dividing machine, possibly using an existing protractor as reference. It is also obvious that brass was in great shortage and quite valuable at the time it was made. Otherwise it would not have been turned over for another try after the errors on the first side. The second side was also in error and had to have some of the engravings worked out and redone. These factors point to its fabrication either during the colonial period or only shortly after the Revolution.

(4 lbs, UP, PS) $ 195

194. TELESCOPIC PLANE TABLE ALIDADE - French, 2nd half 19th c, unsigned. Blue-black oxidized brass with bright lacquered brass fittings, the rule 15 7/8" long x 2 1/8" w and engraved with a diagonal scale marked for 1:2500 scale mapping. The 8" long telescope with rack and pinion focussing eyepiece pivots in elevation and can be readout by arcmin vernier on an inlet silver scale of 2 1/4" radius. Overall ht 5 1/4" with telescope horizontal. No case. Extremely fine condition.

(8 lbs, UP, PS) $ 275

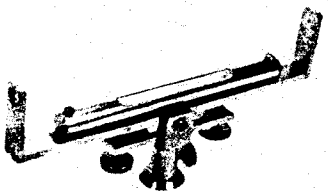


195. SMALL SET OF DRAWING INSTRUMENTS - English, late 19th c, unsigned. Rosewood veneered case 7" x 4 1/4" x 7/9" thk containing 9 instruments in brass, steel and ivory: large compass with interchangeable divider, extension, pencil, and pen legs, large dividers, small compass with interchangeable divider, pencil, and pen legs, and ruling pen. There is also a 5" wooden rule and an adjustment tool. Instruments in very good overall condition, the brass parts with dark spotting. The case fine with 2 small chips.

(3 lbs, UP, PS) $ 65

196. U.S.ARMY PRISMATIC COMPASS - American, signed "KEUFFEL & ESSER Co. NEW YORK" and marked "ENG. DEPT. U.S.A." and the case also dated "1917". Brass construction in flat black enamel finish, 3" d, 2 3/4" h folding sight vane, green compass card within, the graduations viowed through the folding right angle prism. Original leather case 4 1/2" x 4" x 1 1/8" thk in good condition. The compass is very fine even though the original finish is not overly attractive. For an earlier English version of this design see Item 164 in Catalog 124.

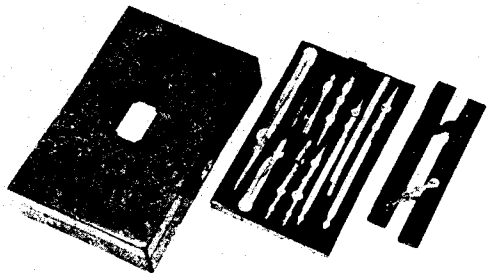
(3 lbs, UP, PS) $ 125



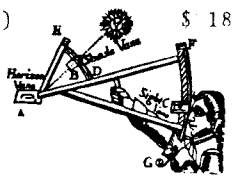
197. MILITARY ENGINEER'S SIGHT-VANE LEVEL - English, 1st half 19th c, unsigned. Bright lacquered brass 4 1/4" h overall, 9" long with 6 5/8" bubble vial and 2 1/8" h vanes. Original hand dovetailed stained pine case, 10" w, 5" deen, 1 7/8" h, in fair condition. The level, in its original finish, is extremely fine. Level adjustment is by a pair of screws rather than the single screw and leaf spring of Item 170 of our Catalog 123. At times one may find examples of this general design with military markings such as Item 154 of our Catalog 121.

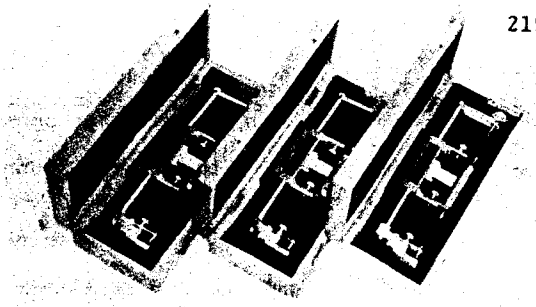
(7 lbs, UP, PS) $ 255

198. NICELY CASED SET OF DRAWING INSTRUMENTS - English, 2nd half 19th c, unsigned. Burl walnut case, 8" w, 8 1/8" deep, 2" h, with lift-out tray of 9 instruments in brass, steel and ivory: large compass with interchangeable extension, divider, pencil, and pen legs, large dividers, small pencil compass, small pen compass, 2 ruling pens. A pencil file may be missing. Under the tray there is a 6" ebony parallel rule and 6" ivory scale (the latter not shown). Fine to very fine overall condition of case and instruments.



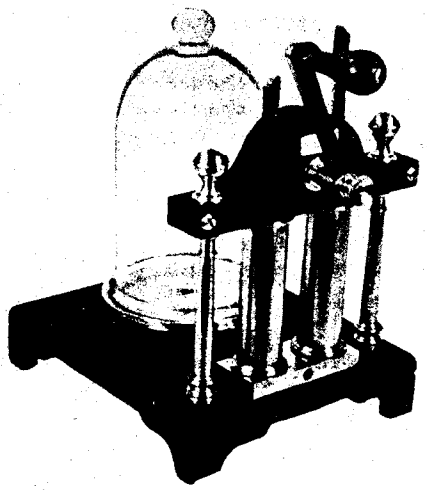
(5 lbs, UP, PS) $ 185





219. THREE CASED GALVANOMETER MOVEMENTS - English, inked in date "2-4-04" on one case, unsigned. The original pine cases, 10 1/2" w x 4" deep x 1 3/4" h, each hold 8 7/8" long assemblies, constructed mostly of bright lacquered brass. The galvanometer coils are 2 1/8" long x 3/4" wide. The assemblies are marked "TESTING 1.", "MIRROR SPEAKING", and "PRACTICE SLIDE". The last is missing a safety bracket, otherwise all 3 are seemingly in extremely fine condition. The cases are very good.

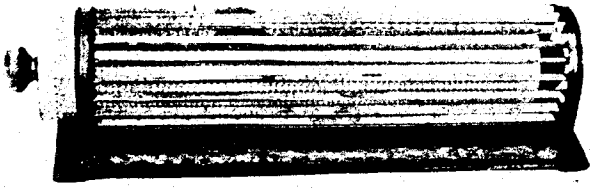
(10 lbs, UP, PS) $ 185



220. FINE DOUBLE PISTON VACUUM PUMP - English, 1st half 19th c, unsigned. Mahogany base 9 1/2" w x 11 1/2" deep, mahogany crosspiece 9" w, bright lacquered brass turned columns and vacuum cylinders, 6" h, single ended brass crank arm 5 1/4" long, and 6" d brass bell jar platform (with 10 1/4" h x 5 3/4" d later glass bell jar). Overall ht 15". Spherical brass finials attach the wooden crosspiece to the brass columns. There is a blank ivory name plate. Very fine overall display condition noting that two base feet are old replacements, the lacquer finish is a modern restoration, and the deterioration of interior valves and the loss of the front base valve mean that the pump will no longer produce a vacuum.

This form of vacuum pump dates from the late 18th century although urn shape finials seems to have predated the use of globes. Item 196 of our Catalog 112 shows a globe finial pump by Cary while Item 76 of Special Catalog 1 is an 1838 American variation on this design. By mid-century the double ended handle replaced the crank both in England and on the Continent (see Item 248 of Catalog 116). Such apparatus was an important component in a laboratory for the physical or chemical sciences.

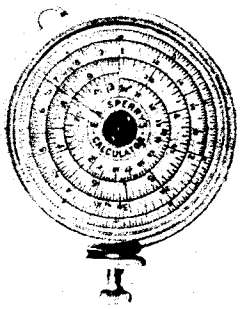
(28 lbs UP) $ 975



221. THACHER's CALCULATING INSTRUMENT MODEL No. 4012 - American, c. 1912, marked on the central cylinder "Patented by Edwin Thatcher, C.E. Nov. 1st 1881" and "Made by Keuffel & Esser Co., New York.", the base marked with the serial no. "3191". Mahogany base 5 1/2" w x 21 1/2" long, the fixed grid of scale rods 4 3/4" d, overall ht 5 1/2"; made of wood, brass, and varnished cardboard. The inner rotating and sliding cylinder is 4" d x 19" long, plus end knobs. Generally fair to good condition, the instruction sheet on the base is somewhat worn and the grid rods partially stained/foxed, some with edge wear. No case.

The scales for this instrument have a total length 80 times as great as the standard 10" slide rule and a corresponding increase in accuracy. It is certainly the most impressive of all the "super" slide rules and clearly the most accurate. The plate for printing the scales was divided by the English firm W.F. Stanley under contract to K & E and, we suspect, the earliest models sold under the K & E name were made by Stanley as well.

(12 lbs, UP, PS) $ 340

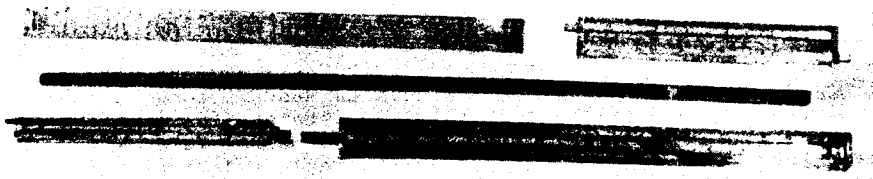


222. POCKET WATCH FORM "E.A. SPERRY'S CALCULATOR" - American, signed "KEUFFEL & ESSER Co. N.Y./PAT. OCT. 25, 04." and serial no. "369". Nickel case 2 1/8" dia, pair of concentric knobs, one for rotating black index hand and the other for rotating the entire scale with respect to a fix red index line. There are multiple circular logarithmic scales marked on silvered dials on either side. The K & E catalog notes, *"Sperry's Pocket Calculator represents a new departure in pocket calculators, as by its construction the length of the logarithmic scale is increased from about 6 1/2 in. (in other calculators) to an actual length of about 12 1/2 inches which, however, owing to the arrangement of the scales, allows of reading results nearly as close on the CD scales of a 20-in. straight slide rule."* No example of this slide rule is to be found in the Science Museum, London, collection catalog.

(2 lbs, UP, PS) $ 115

223. BRASS COMPUTING 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 based upon ratios of proportional triangles since it does not have trigonometrical or navigational scales.

(3 lbs, UP, PS) $ 255



224. NAVIGATOR'S GUNTER RULE - English, early 19th c, unsigned. Light boxwood, 1 3/4" w x 24" long, with 16 computational scales, a 10" diagonal scale, a 24" tenths-inch rule on one side, and brass insets at zeroes and points of great usage. Very fine condition with minor warping and edge chipping - really nice for display purposes. The use of this form of computational device (consisting of a set of linear and logarithmic number and functional scales for navigation) was described in Mackay, Bowditch, Moore, etc. Computations were performed by working back and forth on the scales with a pair of dividers (in lieu of the slide and cursor of the modern slide rule). It was derived from the earliest form of computational device using logarithmic scales as invented by Edmund Gunter between 1610-20.

(5 lbs, UP, PS) $ 185

225. DOUBLE-SLIDE SLIDE RULE - English, early 19th c, signed "W & J. BURROW MAKERS 62 & 63 GREAT TOWER ST. LONDON". Boxwood with brass end bands, 2" w x 12 1/2" long, with 16 scales on the 2 faces and 3 along one edge. There are brass marker inserts at 5 reference points. Fine overall condition. An interesting device used in the distillery and brewing industry, and by the tax collectors for the same, to calculate the alcoholic content of beverages and the volumes of complete and partially filled casks, either standing up or lying down (the casks, not the calculator). Although we have not been able to identify the signed maker, the design follows standard format such as used by Loftus (Cat 123, Item 192), Bate (Cat 116, Item 252), Dring & Fage, and others.

(3 lbs, UP, PS) $ 140

226. WANTAGE OR GAUGING ROD - American, middle half 19th c, signed "H.S. Pearson, Maker, Portland". Tapered fruitwood rod approx 3/4" sq x 36 1/4" long. All four sides are extensively marked with scales and tables as follows: scale of inches from 12 to 47 subdivided in tenths, logarithmic scale from 5 to 200, 6 tables (3 to each of 2 remaining sides) with 3 columns each headed Inches, Quarters, and Gallons. Fine overall condition except for some marks and ink stains and a slight warp. Such rods were used by merchants, sea captains, and revenue agents to compute the volume of wine, etc in full and partially full kegs. Smart provides the following: *"Henry Sleeper Pearson, son of David and Elizabeth Pearson was born at Newburyport, Massachusetts 23 May 1789. He died at Portland (Maine) 30 August 1878. He is listed in the Portland directories from 1823, which was the first one issued, to 1875, as a mathematical instrument and watch maker. In 1877 he is listed as a watch and nautical instrument maker with William Senter & Company of Portland."*

(7 lbs, UP, PS) $ 195

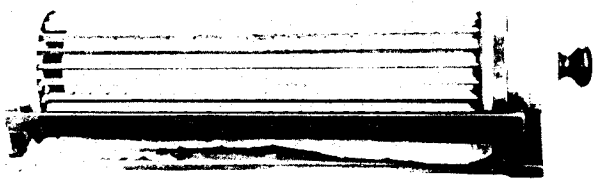
227. FOUR-SIDED, FOUR-SLIDE, EXCISE RULE - English, early 19hh c, unsigned. Boxwood rule, 1" sq x 12" long with 4 scales and 1 slide on each side, one of which has 3 more scales on its inner surface and the other 3, various tables of constants. Generally fine condition. This form of slide rule was used (particularly by Customs and Excise officers) to compute the volume of the contents of barrels (standing or on their sides), and then the duty or tax to be paid depending upon whether they were measuring ale, wine, malt, cider, or spirits.

(3 lbs, UP, PS) $ 145

228. VERY RARE NAVIGATOR'S SLIDING GUNTER - English, c. 1840, signed "Blachford & Imray". Darkened boxwood, 1 7/8" w x 24" long, with a total of 22 scales (both sides); brass insets at the zeroes of several scales. Very good condition noting some stains and a break in the slide which has been repaired by brass wire and glue. There is also minor chipping at one end. This slide rule represents an improvement over the fixed Gunter rule but was little used (and hence quite rare) because of the extreme conservatism of the typical ship's officer. Robert Blachford, son-in-law of John Hamilton Moore, established his Navigation Warehouse about 1804 where charts, textbooks, and instruments were sold and the latter corrected and repaired. There was also a navigation school. He was joined by James Imray in 1836, the firm remaining as named above until 1842. Later Laurie, Norie, and Wilson joined in revised partnerships.

(5 lbs, UP, PS) $ 420

229. THACHER's CALCULATING INSTRUMENT MODEL No. 4013 - American, c. 1922, marked on the central cylinder "Patented by Edwin Thatcher, C.E. Nov. 1st 1881" and "Made by Keuffel & Esser Co., New York.", the base marked with the serial no. "5568". Mahogany base 6 1/4" w x 23 3/4" long, the fixed grid of scale rods 4 7/8" d, overall ht 5 3/4"; made of wood, brass, and varnished cardboard. The inner rotating and sliding cylinder is 4" d x 19" long, plus end knobs. The longitudinal bar is present but the magnifier assembly is missing. Original instruction book dated 1920 in very good condition. Original mahogany case, 24 3/4" w x 7 1/8" deep x 6 3/4" h, in fine condition with minor age cracks. The calculator is almost fine noting general browning of scale surfaces and major loss to the instruction sheet on the base.



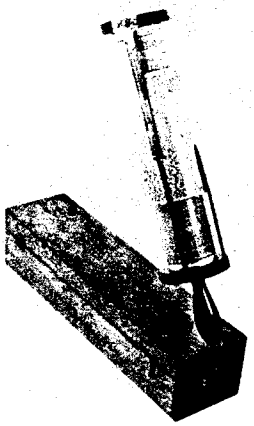
See Item 241, Catalog 120 for an example of the model 4013 with its complete magnifier assembly. The model 4012, the ordinary version, without a magnifier, is the far more common of the two because of its initial lower price.

(28 lbs UP) $ 575

230. "OTIS KING'S PATENT CALCULATOR" - English, 2nd qtr 20th c, made by Carbic Ltd. of London. Nickel plated brass and steel construction, 1 1/4" d x 6" long closed extending to 10 1/4". The Science Museum, London, catalogue of its calculator collection states (for Item 166), *"In this pocket form of cylindrical slide rule, which is a modification of the Fuller type of calculator, the length of the logarithmic line is 66 in. . . . The instrument consists of two tubes, the smaller of which (the 'cylinder') is free to rotate and slide relatively to the larger (the 'holder'). A spiral logarithmic scale, . . . is mounted on each of these tubes, while a third tube, provided with two arrow points, one at each end, is mounted on the holder, forming a tubular cursor, which may be set to any mark on the spiral scale."* The original model (patented in 1922) had white figures on a black ground, the one here is reversed. Condition is excellent. The original instruction book and cardboard box are also present.

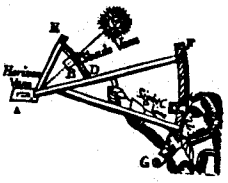
(3 lbs, UP, PS) $ 95

231. CASE MOUNTING FULLER CALCULATOR - English, signed "STANLEY, Maker, LONDON" with the serial no. and date, "3198/12" (for 1912). Constructed of brass, mahogany, and varnished cardboard, 3 1/2" d x 17" long, 20" h overall when mounted on its 4 3/8" w x 17 7/8" long x 4" h original mahogany case. Case in almost fine, calculator in very fine condition. Original instruction book dated 1907 in very good condition.



This instrument, which was designed by George Fuller and patented in 1878, has a logarithmic line arranged spirally on the surface of the cylinder in 50 turns resulting in a working length of 41 ft, 8 inches, thus giving an approximation accuracy of 1 part in 10,000. Compare this with the usual 10" slide rule! Two forms of the calculator were made, a hand held model, and this one which mounts on a bracket which attaches to the side of the case. In terms of scales, this is the No. 1 model which contains various tables and data on the inner cylinder (the Nos. 2 and 3 models have scales on the inner cylinder). In 1907 it cost £3 but by 1921, the price had gone up to £9 15s. This and the Thacher were the most popular of the "super" slide rules.

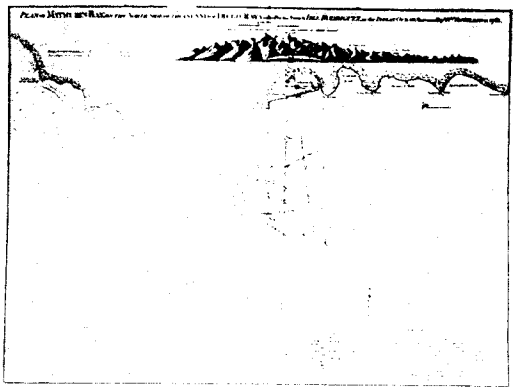
(10 lbs, UP, PS) $ 265



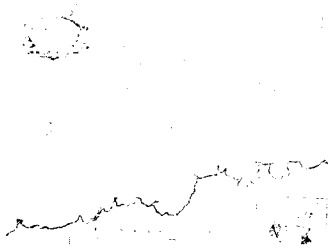
232. "A CHART OF THE ENTRANCE OF THE RED SEA Between THE COAST OF ARABIA Ascertained by the Observations of LIEUTT: GEORGE LEWIS in 1762; and THE OPPOSITE COAST OF AFRICA with THE ISLE OF SOCOTRA" - English chart printed by Robert Sayer, April 20th, 1787, London. Centerfold engraved chart, with modern hand coloring following the original practice, 13" h x 24 3/4" w on paper 25 1/4" h x 36 1/4" w. Extremely fine condition. In addition to the main chart there are 4 detailed inserts: Road of Moka, Straits of Babelmandel, Harbor of Keshin, and the Watering Place on Socotra.

(postpaid in the U.S. only) $ 195

233. "PLAN OF MATHURIN BAY, ON THE NORTH SIDE OF THE ISLAND OF DIEGO RAYS, called by the French, ISLE RODRIGUEZ, in the INDIAN OCEAN; Surveyed by WM. NICHOLSON IN 1761". - English lish, signed and dated "London, Printed for ROBERT SAYER, Map & Chart-feller; No. 53 Fleet Street, as the Act directs 20 April 1787". Centerfold engraved chart with printed area 19 1/2" h x 25 1/4" w on paper 25 1/2" h x 37 1/4" w. Extremely fine condition. The text at the bottom of the chart provides additional reference information, tide data, and sailing directions for entering and leaving the harbor.

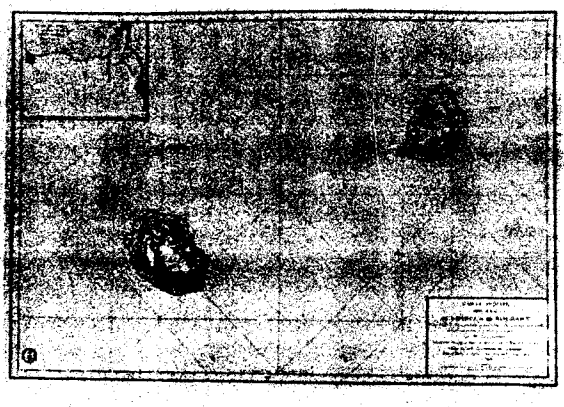


(postpaid in the U.S. only) $ 105



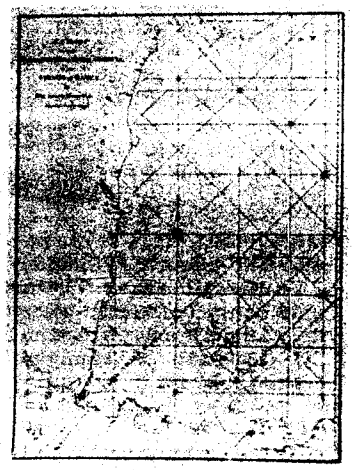
234. CHART - "The Sea Coast of BARBARY From Cape de Tenes to Cape Rosa" - English, 18th century printing by Mount and Page of 1677 chart signed "James Bennett Sculp". Printed area 16" h, 20 1/4" w, original hand coloring of water area. Very fine condition (usual centerfold). This chart was originally issued in Part III, Mediterranean Sea, of John Seller's "English Pilot", London, 1677. Ownership of the plates then passed to Thornton & Mount (by 1698), then to Mount & Page (this issue), then to Mount & Davidson (about 1800). James Bennett was one of the engravers working for John Seller.

(postpaid in the U.S. only) $ 110



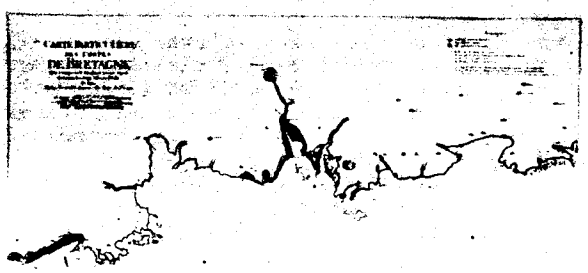
235. COLORED CHART OF ISLANDS OF THE SOUTH INDIAN OCEAN - "CARTE REDUITE DES ÎLES DE FRANCE et DE BOURBON . . . par Mr. Lislet Géoffrey . . . en 1798. Nouvelle edition . . . 1802." French Dépôt de la Marine edition with the paper so water marked. Printed area 22 1/2" h x 34" w on paper 25 3/4" h x 38 3/4" w with usual centerfold. Very fine condition with recent hand coloring to match that found on original colored editions. Jean Baptiste Lislet-Géoffrey (1755-1836), hydrographical engineer, Captain of the Corps of Military Draughtsmen, worked for the Dépôt and specialized in eastern Africa and the Indian Ocean.

(postpaid in the U.S. only) $ 190



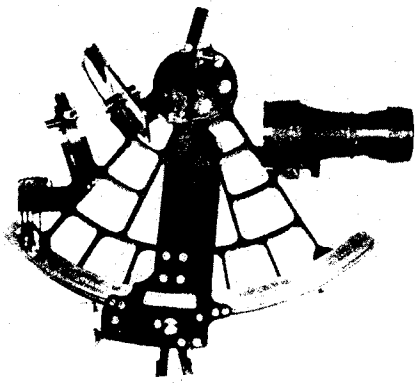
236. "A CHART to Sail from THE STRAITS OF SUNDA or BATAVIA to the STRAITS of BANCA, By Mr. d'Après de Mannevillette." - signed and dated in London by Robert Sayer, 20 April 1787. Printed area 26 1/2" h x 19 1/2" w on paper 37 1/4" h x 25 3/8" w. Centerfold, extremlly fine condition except for a crease in the paper.

(postpaid in the U.S. only) $ 90



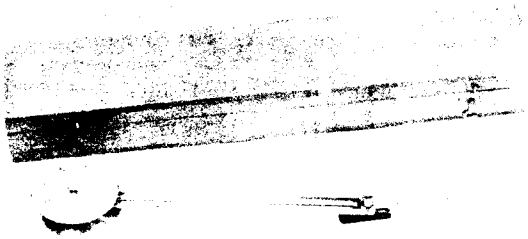
237. CHART OF THE COAST OF FRANCE IN ORIGINAL HAND COLORING - "CARTE PARTICULIERE DES COSTES DE BRETAGNE . . . Faite Par Ordre Exprez Du Roy de France" - Dutch or French, c. 1700, unsigned. Printed area 23 1/4" h x 31 1/2" w on centerfold paper 24 3/4" h x 36 3/4" w. Elaborate engraved coastal detail, original hand coloring of the coastal regions, very fine overall condition except for some offsetting of the coloring across the center fold and a few spots where the acid in the colored inks has burned through the paper (these now repaired by rebacking so that no defect shows on the front). Our research leads us to believe that this may be the work of Pierre Mortier of Amsterdam taken from his "De Franshe Neptunus" issued from 1693-1700. It matches the style and engraving of Item 148 of our Catalog 115, a signed chart of the Pacific Ocean. However, the last line in the title also suggests that it may be an early sheet from the series of the French Admiralty charts issued from 1693 to 1740, an example of which was listed as Item 163 of Catalog 122. Either way, early charts with original hand coloring - more costly than the plain black and whites when first issued - are relatively rare.

(postpaid in the U.S. only) $ 285



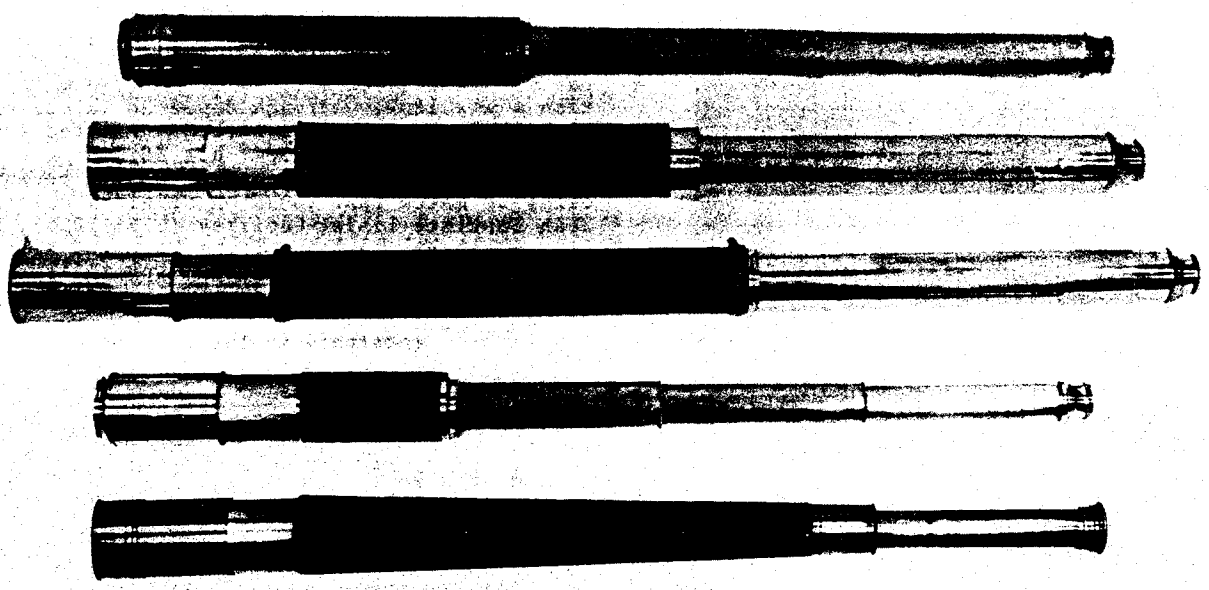
238. MICROMETER SEXTANT - German, original certificate dated 1956, signed "C. PLATH HAMBURG 35967 Germany". Black enamel brass frame of 6 1/4" limb radius, fitted with 2 1/4" d horizon glass, 4 power x 40 mm telescope, sets of 3 horizon glass and 4 index mirror filters. Micrometer drum graduated to 1 arcmin and can be read by eye to 1/4 of this or 15 arcsecs. The sextant appears to be in very fine condition but has not been calibrated or aligned. Original mahogany case 12" sq x 6 3/4" h in fine condition.

(20 lbs UP) $ 550



239. "THE COLE COURSE PROTRACTOR" - American, marked as stated, with "PAT. OCT. 1907" and "M.C. Co. SOLE MAKERS". Metal compass rose 3 1/4" d to which is pivoted a brass arm 11 1/2" long, on the end of which is pivoted a clear plastic arm, 17 1/4" long, now yellowed with age. This arm is connected through bevel gears and a shaft with 2 pointers, 180° apart, along the edge of the compass rose. Original mahogany case 21 3/4" long x 4 3/8" w x 2 1/2" h. Instrument and case in fine condition. There is a "Care of the instrument" label within the case signed by the "MARINE COMPASS CO. Bryantville, Mass.". An identical instrument is listed as Item 286 in Brewington.

(8 lbs, UP, PS) $ 165



240. **TWO-DRAW SPYGLASS - English, 2nd qtr 19th c, unsigned. Mahogany barrel 2 3/8" d with bright lacquered brass fittings, lens cap with protective slide, 2 draw tubes, eyepiece slide, 15 7/8" long (closed) extending to 35 1/2". Generally very fine condition although there is dark streaking to the original finish on the brass parts and 3 small screws are not original. Nice sharp images. Although unsigned, a well made spyglass.**

(5 lbs, UP, PS) $ 285

241. YANKEE SAILOR'S SPYGLASS - English, signed "Spencer, Browning & Co, London, Day or Night", the extending sunshield is also engraved "Wm. W. Kendrick, Boston, March 16, 1858". Leather covered brass barrel 2 1/2" d, lacquered bright brass fittings and single draw tube, eyepiece slide, lens cap, 20 1/4" long (closed) extending to 38 1/4". Generally very fine restored (finish and leather covering) condition with minor dents to the draw tube. Image quality is quite good although there is some field curvature. The maker was the mid 19th century continuation of Spencer, Browning & Rust, a firm which was established in the late 18th century. We have been unable to trace the named owner although he may have been related to the Revolutionary War naval hero John Kendrick of Cape Cod.

(6 lbs UP) $ 425

242. NAUTICAL SPYGLASS - English, 2nd half 19th c, unsigned. (Original) leather covered barrel 2 1/4" d with bright lacquered brass fittings, extending sun shield, single draw tube, sliding shutters to eyepiece and objective, 23 1/2" long closed, extending to 45 1/2". Very fine overall condition with restored finishes, some wear to the leather. Optical quality is very fine as well.

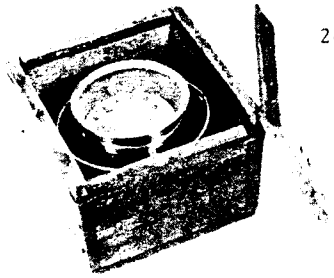
(6 lbs, UP, PS) $ 345

243. THREE-DRAW SPYGLASS - English, 2nd half 19th c, signed "W.F. Archer, 43, Lord Street, LIVERPOOL". Leather covered barrel 2 3/8" d, bright lacquered brass fittings, extending sunshield with objective slide, 3 draw tubes, eyepiece slide, 11" long (closed) extending to 34". Excellent original condition throughout. Clear sharp images. This is a well made telescope in almost new condition.

(5 lbs, UP, PS) $ 365

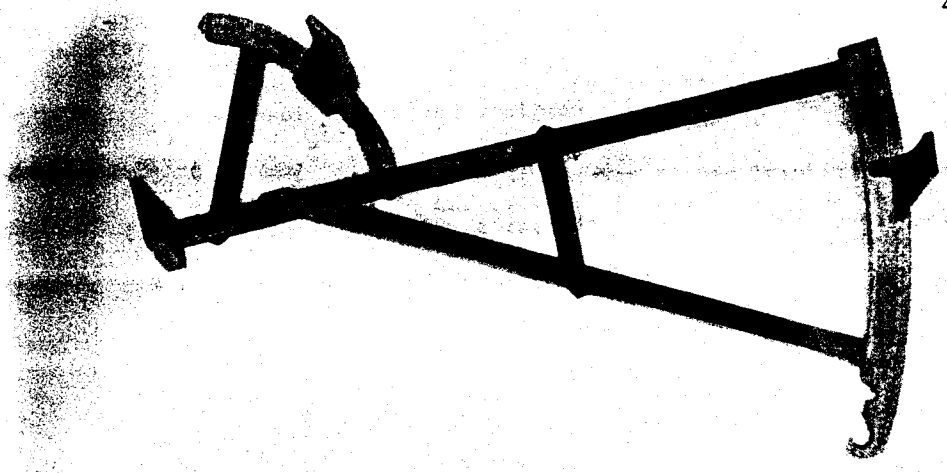
244. MILITARY TYPE SPYGLASS - English, c.1900, signed "NEGRETTI & ZAMBRA/LONDON". Tapered leather covered barrel, 2 1/2" largest dia, black oxidized brass fittings, extending sunshade, lens cap, single draw, 24 1/2" long (closed) extending to 33 3/4". Very fine condition except lacking eyepiece shutter. Clear sharp wide angle images. Although there are no military markings, similar telescopes have been seen so marked and intended for signaling operations. The firm of Henry Negretti (1818-79) and Joseph W. Zambra (1822-88) was established in 1850, and, as far as we are aware, is still in business as makers and sellers of many types of scientific instruments.

(7 lbs, UP, PS) $ 255



245. LITTLE DRY-CARD DORY COMPASS - American or English, 19th c, signed but the compass card is too stained by salt water burning to make out by whom. Paper-faced mica compass card 2 1/2" d in 3" d spun brass bowl within 4" d brass gimbal ring. Original hard pine box with sliding cover 5" sq x 3 3/4" h. The box has seen hard usage and has been repaired several times but is still sound. The brass parts have been cleaned and relacquered so that now overall condition is very fine except for the compass card.

(6 lbs, UP, PS) $ 95



246. DAVIS QUADRANT - Probably English, 2nd qtr 18th c, signed "Iohn Cranevelt Middelbur". Rosewood limbs, boxwood arcs, the name plate, boxwood inlet into the longitudinal bar, and newly made boxwood vanes; 25" overall length. The solar altitude (so called 60° arc) has a radius of 7 1/2", is graduated by degrees and numbered from 0 to 65 in 5 deg intervals, the last, 65, being on the rosewood bar. It is also numbered and graduated along the edge in 5 deg intervals. The long radius (so called 30° arc) has a radius of 22 3/4" and is 25 deg long. It has a scale at the edge numbered in degrees and graduated in 5 arcmin intervals. There is a 10's diagonal scale which subdivides 10 arcmin intervals to 1 arcmin. The hook at the bottom is well formed and undamaged, and has an elaborate pattern of stamped roses, fleur-de-lis, and 8-pointed asterisks. The 3 vanes are modern reproductions made to demonstrate the use of the instrument but not intended to be used for accurate sightings. The instrument is in very fine overall condition.

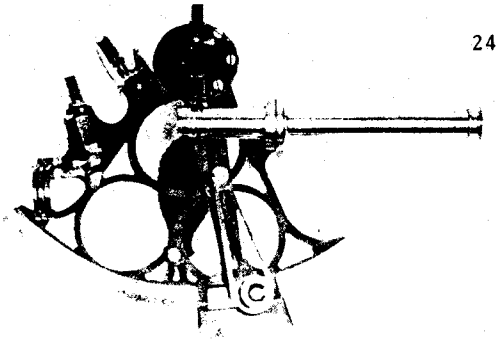
The signed name has not been found on any other instrument nor in any records or lists of known instrument makers. In fact "Middelbur" runs off the name plate leaving no room for the final "g", suggesting that this is an owner's name applied by the actual instrument maker (and not too carefully at that). Middelburg is the ancient capital of the province of Zeeland, Holland, in the middle of the island of Walcheren. It was a prosperous center of commerce until the end of the 18th century. During this period there was extensive trade with the East and West Indies, England, and Flanders. In our opinion the instrument could have been purchased in England by a Dutch mariner from Middelburg. Although we have not been able to identify the particular set of decorative markings, the rest of the instrument is quite similar to signed English work of the 2nd qtr of the 18th century. The one by Benj. Macy dated 1719, listed as Item 12 in Brewington is very close as is the 1713 example, also by Macy listed as Item 126 in our catalog 109.

(Sent prepaid by Registered Mail in the U.S.; air freight, charges collect, elsewhere) $ 5,600

247. MARKING PROTRACTOR - English, mid 19th c, signed "TROUGHTON & SIMMS/ LONDON". Bright brass with original lacquer finish, inlet silver scales and opposing 1 arcmin verniers, 6 1/4" overall dia of full circle protractor; the pivoted marking arms are 4 3/16" long each. A clamping tangent screw provides fine motion control. The original mahogany case, 7 1/4" x 7 3/4" x 1 5/8" h is in almost fine condition, the instrument is very fine.

This instrument was particularly useful at sea because it could be used to set a very accurate bearing or course line and then mark the chart with a pin hole even during periods of rough seas. The partnership of Edward Troughton and William Simms was established in 1826 and produced instruments under this name until 1922. Case construction and design details place this instrument mid 19th c.

(5 lbs UP) $ 485



248. VERNIER SEXTANT - English, possibly late 19th c, signed "A. Johannsen & Co. 149, Minories, London". Black oxidized brass frame in the 3-ring design with bright brass fittings and telescopes, inlet silver scale and vernier reading out to 10 arcsecs at a radius of 6 1/8". There are 4 index mirror and 3 horizon glass shades (or filters), a swing-away magnifier, an extra wide horizon glass, and 2 telescopes (a shade tube is missing). The instrument appears to have been instrument maker overhauled and is in very fine condition. The original hand dovetailed mahogany case, 9 1/2" x 10" x 4 3/4" h, is in fine condition. As far as we have been able to determine the signed firm began in London as Asmus Johannsen, 1863-69, a dealer and repairer of clocks, watches, and chronometers. We suspect that they remained retailers to the nautical trade and that the instrument here was actually made by one of the primary firms such as Hughes or Heath.

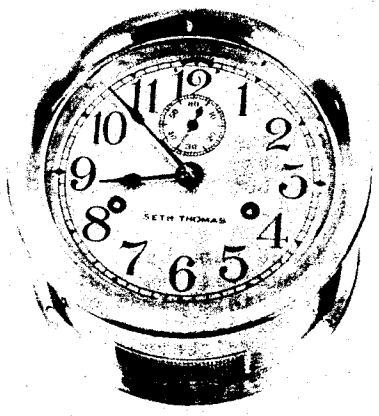
(13 lbs UP) $ 685

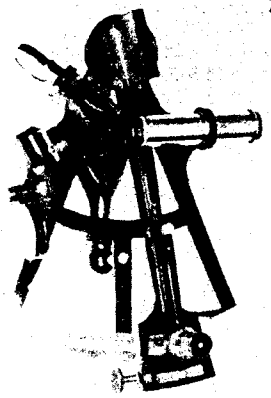
249. SILVER-BOUND SHAGREEN POCKET CASE OF DRAWING INSTRUMENTS - English, early 19th c, unsigned. Green shagreen covered case (some uneven fading and/or yellowing) with silver banding, hardware, and name plate on top, 3" w x 1" thk x 7" h, containing a complete set of instruments in brass, steel, ebony and bone. The 9 items consist of bone 6" scale, ebony and brass 6" parallel rule, large dividers, pencil and pen legs for same, small dividers, ruling pen, adjustment tool, and pencil holder. Fine overall condition with typical signs of age. The small dividers, although found with the set does not appear original, but all the other components do. In all, a rather attractive set; the sort to be carried by a ship's navigator.

(3 lbs UP) $ 445

250. INSIDE BELL SHIP'S CLOCK - American, early 20th c, signed "SETH THOMAS/MADE IN U.S.A.". Bright lacquered brass case 7" dia x 4" h with 5 7/8" dia silvered dial, blued steel hands. The strike adjustment lever is under the hinged bezel. The clock runs about 2 days on a winding but it is suggested that it be rewound once a day for best performance. It strikes the 8 bell watch sequence which repeats every 4 hours. Extremely fine restored condition.

(8 lbs UP) $ 485

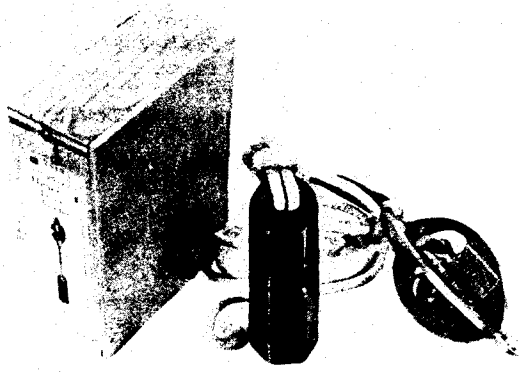




251. BRASS FRAME OCTANT - English, mid 19th c, signed "C.J. Simpson London". Black lacquered brass with telescopes and some fittings in bright lacquered brass; reinforced index arm with tangent screw slow motion and swing-away scale magnifier, sets of 3 horizon glass and 3 index mirror filters, pair of interchangeable shade tube and telescope, and mahogany handle. Inlet silver scale of 7 5/8" rad read out by 1/2 arcmin vernier. Generally fine condition although there is minor wear (at edges) to the black finish and the index arm locking thumb screw is missing. Original mahogany case 10 3/4" x 9 5/8" x 4 3/4" h is in good condition with an age crack and corner chip. An instrument maker(s) named Simpson is listed in Goodison but with almost no information. These brass frame octants appear to have been high quality substitutes for the common ebony frame quadrant, offering long term stability which is completely impossible from ivory scales set into wood.

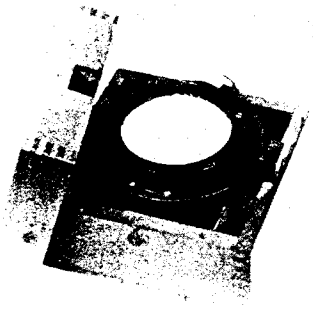
(14 lbs UP) $ 645

252. "WALKER'S HARPOON II DEPTH FINDER" - English, 1st half 20th c, signed "Thos. Walker & Son, Ltd. 58 Oxford St. Birmingham" with serial no. "AB 7419". Bright lacquered brass readout unit 6 3/4" long with 2" d 4-bladed rotor, appropriate gearing, 0 - 30 fathoms white enameled dial in red lacquered housing, attached by rope to 6" h, 4 1/2 lb sounding lead. Original wood and plywood stowage box, 2 3/4" x 5 3/4" x 7 3/4" h with original labels, printed instructions, tag. The entire unit is in mint, original condition, never having been used.



Thomas Walker was born in London in 1805, his mother being the sister of Edward Massey the inventor of the first successful mechanical logs and sounders. About 1850 he began making logs and sounders under the Massey patents. In 1861 his son Thomas Ferdinand patented the first "Harpoon Log". An early version of the sounder here is listed as Item 301 in Brewington (dated mid 19th c) and shown in Plate XLIX.

(13 lbs UP) $ 475



253. NICELY CASED FLOATED COMPASS - American, c. 1900, signed "E.S. RITCHIE & SONS BOSTON 69045", the dial marked "Sold by T.S. & J.D. NEGUS NEW YORK". Original mahogany case 6 3/4" sq x 4 3/8" h containing 4 1/4" d compass, with 3" d floating card, suspended in 5 1/4" d gimbal. Construction is black enameled brass. Fine overall condition except that the flotation liquid has leaked out. Edward S. Ritchie (1814-95) invented the world's first practical liquid compass about 1860. The firm became "& Sons" in 1867.

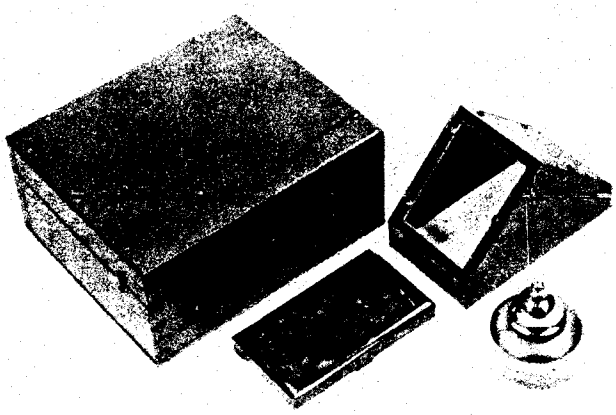
(9 lbs, UP, PS) $ 110

254. Mr. DUFFY's HADLEY QUADRANT - English, c. 1800, signed "G:PERRETT Maker LONDON/P.M. DUFFY". Ebony frame with bright lacquered brass fittings including flat index arm with below surface tangent screw, forward and back peep sights and horizon glasses, thumb washer and lever adjustment on the horizon glasses and an interchangeable set of 3 filters. The ivory scale of 11 5/8" radius is read out by vernier to 1 arcmin. Ivory note plate on back but pencil holder is missing. Very fine overall condition with restored surface sinishes, a modern replacement of one leg and some yellowing of the ivory. Original painted pine stepped keystone case 13 1/2" x 14 3/4" deep x 3 3/4" h in fair to good condition.

We have unable to identify the signed maker. However within the case is the later trade card of "HENRY FRODSHAM SUCCESSOR TO PARKINSON AND FROSHAM Chronometer Maker . . . No. 38. Castle Street, Liverpool". Full Hadley quadrants with back horizon fittings have now become somewhat rare.

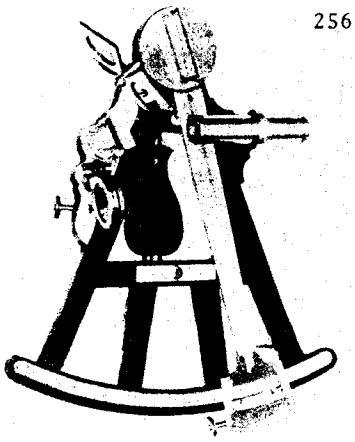
(13 lbs UP) $ 1,075

255. MERCURY POOL ARTIFICIAL HORIZON - English, possibly 3rd qtr 19th c, signed "Negretti & Zambra London". Hand dovetailed polished mahogany case, 8" x 9 1/4" x 4 1/2"h, contains the 5 3/4" x 3 1/4" cast iron tray for the mercury, the black oxidized brass windscreen, 6 1/2" x 3 3/4" x 4 1/2" h, with 2 3/4" x 3 3/4" optical windows mounted at right angles to each other, and the 2 3/4" d x 3 1/2" h iron bottle for stowage of the mercury (containing mercury). Fine to very fine overall condition except for an age crack in the lid of the case.



The firm of Henry Negretti (1818-79) and Joseph Zambra (1822-88) was established in 1850 and at one time offered over 2,000 items in their catalogue. We believe that many of these were made by various instrument firms to their specifications and then sold under their own name. They still seem to be in business, but on a much reduced scale.

(18 lbs, UP, PS) $ 315

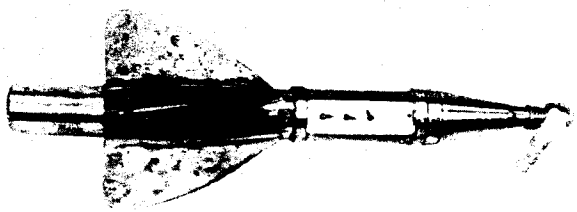


256. Mr. NUGENT WELLS' QUADRANT - English, 2nd qtr 19th c, signed "Crichton London Made for Nugent Wells Newport". Ebony frame with bright lacquered brass fittings including reinforced index arm with below surface tangent screw slow motion, sets of 3 horizon glass and 4 index mirror filters, tangent screw adjustment on the horizon glass, and a matched pair of 3 1/4" long interchangeable shade tube and telescope. The ivory scale of 9 3/4" radius reads out by vernier to 1/2 arcmin. The housing for the horizon glass is an old replacement, one leg and several small screws are modern replacements, and the lacquer finish is a modern restoration. Overall display condition is very fine even though there are cracks in three of the filters and some discoloring of the ivory scales. The 12 1/4" w x 13" deep x 5" h original mahogany keystone case is in very good condition with several age cracks.

Taylor 2 lists both a John Crichton (fl. 1820-32) and a Joseph Crichton (fl. 1838-51). It is not possible to determine which of the two was maker of this instrument. It is of above average quality and complexity including being fitted with a sextant type handle and interchangeable telescopes.

(12 lbs UP) $ 895

257. "HAND NANTUCKET HARPOON LOG" - American, c. 1900, signed "JOHN E. HAND & SONS CO./PHILA. - BALTO.". Bright brass, original lacquer finish, 18 1/4" long, 4-blade propeller, white enamel triple readout dial plate 1" w x 3 1/2" long. A cylindrical cover can be rotated over the dial. Generally fine to very fine overall condition although there is some darkening and spotting of the original finish. No case.



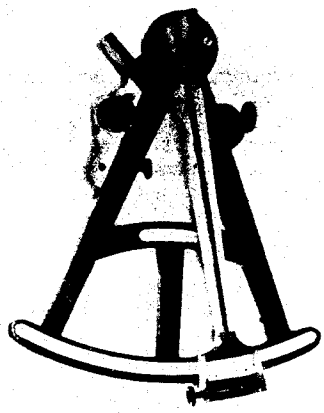
This appears to us to be a very close copy of Thomas Walker's A.2 Harpoon Log which was invented in 1866 (see Item 194 of catalog 124). Hand also sold a John Bliss type taffrail log (see Item 198 of Catalog 124). Thus we are uncertain as to whether Hand's firm actually made these instruments once the original patents had expired or purchased them, in part, to offer under their own name.

(9 lbs, UP, PS) $ 375

258. TWO-DAY MARINE CHRONOMETER - English, c. 1855, signed "John Campbell. LATE NORRIS & CAMPBELL/Liverpool No. 927". Brass-bound mahogany case 7" sq x 7 1/2" h containing gimballed 2 day spring detent marine chronometer with 4" d silvered dial. The dial has gold hour and minute hands and blued steel second and up-down hands. The movement has a conventional Earnshaw type spring detent, blued steel helical hair spring and fusee driven power train. The case is in very fine condition with an age crack in the cover. The chronometer has been cleaned, oiled, adjusted and over a 14 day trial period, it had a mean rate of 0 seconds/day with fluctuations of ± 3 1/2 seconds. These last appear to have been due to temperature changes suggesting that at the test temperature range the chronometer's balance wheel had its least corrected middle temperature errors. The rachet winding key is a modern replacement.

Vol 2 of Baillie (Loomes) lists Norris & Campbell as chronometer makers from 1848-55, Francis Norris having worked as early as 1834. The way the dial is engraved suggests that this chronometer may actually have been made while the partnership existed and then later John Campbell engraved his name above that of the partnership and added the word "LATE" between the names.

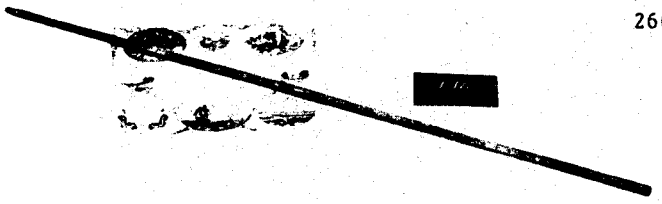
(25 lbs UP) $ 1,675



259. EBONY FRAME QUADRANT - English, c. 1835, signed "HUGHES * LONDON". There are also the later trade labels of Mrs. Janet Taylor & Co., London and I. Bianchetti, Marseille within the cover. Ebony frame with brass reinforced index arm, above surface slow motion tangent screw, sight vane (missing pivoted cover), and set of 3 index mirror filters. The ivory scale of 9 3/4" radius reads out by vernier to 1 arcmin. Original ivory note plate on back. The brass is in a combination of bright lacquered and black oxidized finishes which, in our opinion, although not original, is the work of a 19th century instrument maker. There is tangent screw adjustment of the horizon glass. Fine plus overall condition. Original mahogany keystone case, 11 3/4" w x 12 3/4" deep x 3 1/2" h in good condition, missing its lock and with several age cracks.

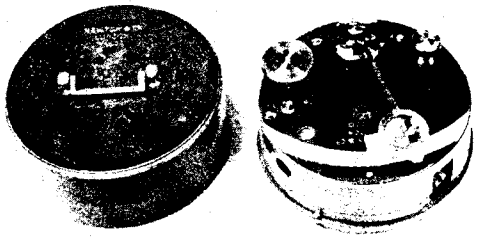
Brewington notes that a Joseph Hughes was in business in Limehouse in the early 19th century who was succeeded by his son, also Joseph, who moved to Ratcliffe Cross in 1835 and then to the Minories. He had a younger brother, Henry, also a nautical instrument maker, who was at Commercial Road in 1835, moving to 120 Fenchurch St. in 1840. This firm later became "H. Hughes & Son, Ltd.". It is not clear as to which of the three made this instrument.

(10 lbs UP) $ 795



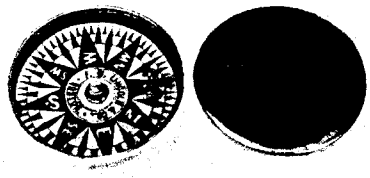
260. YANKEE SEA CAPTAIN'S WINE GAUGING ROD - American, early 19th c, signed "T. Coffin maker Newburyport" and with the owner's name "G.P. Stone". Tight grained oak rod 1/2" x 5/8" x 48" long with a brass tip at the bottom end. Marked on the 4 sides with linear and logarithmic scales and computational tables. This rod was used to determine the depth of wine in a keg and then calculate the actual volume present. Very fine overall condition. In addition there is the certificate of membership of Captain Gyles P. Stone in the Marine Society of Newburyport in New England numbered 170 and dated November 24, 1831. (Unfortunately the certificate is in relatively poor condition with a number of tears.) Included, as well, is Stone's 2 3/4" x 6" engraved brass nameplate. A wooden surveyor's compass by Coffin was listed by us as Item 143 of Catalog 120. Although there were Newburyport clock makers named Coffin and another Coffin wrote a history of Newbury, Newburyport and West Newberry (1845) we have not yet been able to find out about the instrument maker here.

(15 lbs UP) $ 365



261. BOX SEXTANT - English, c. WWI, signed "NEWTON & Co. LONDON. No. 620" and with the Admiralty arrow. A date appears to have been scratched out. Brass construction in original black oxidized finish, 2 3/4" d x 1 1/2" h cylindrical case, the bayonet joint cover attaching as a handle on the other side of the sextant body. There is an inlet silver scale of 1 3/4" radius, rack and pinion driven index arm with 1 arcmin vernier, swing-away magnifier, 2 pop-out filters and a filter which slides in behind the peep hole. (This model was made without a sighting telescope.) Original 3 1/4" dia leather case in fine condition. The sextant is fine too, although it shows minor external wear.

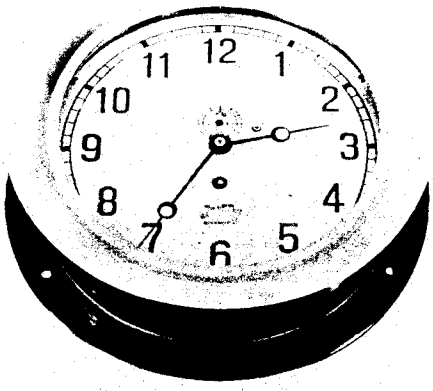
(3 lbs, UP, PS) $ 350



262. BRASS CASED POCKET LIFE BOAT COMPASS - American, 3rd qtr 19th c, signed "F.W. LINCOLN & CO., BOSTON". Bright brass case with restored lacquer finish, 3" dia x 1 1/8" h. The printed compass card is 2 3/4" dia. Generally fine condition although there is some darkening of the compass card and some light surface scratches due to rough cleaning at some time in the past. Frederick Walker Lincoln (1817-1898), great-grandson of Paul Revere and Mayor of Boston (1857-64), apprenticed to Gedney King, going into business for himself in 1839. In 1858 the firm became "& Co." when C.C. Hutchinson became the junior partner. In 1883, Hutchinson became sole owner and changed the firm's name to his own.

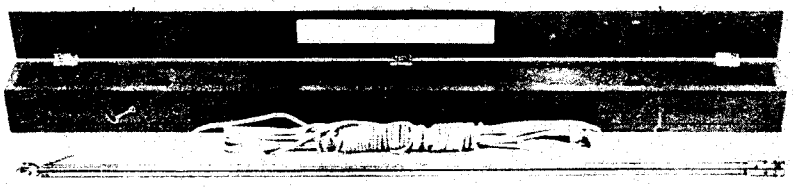
(3 lbs, UP, PS) $ 145

263. LARGE ENGINE ROOM CLOCK - American, probably c. WWII, marked "The Ashton Valve Co." and signed "CHELSEA, 2098", the movement with the serial no. 199807. Black enamel iron case with 10 3/4" d mounting flange, nickel plated brass hinge and bezel 10 1/4" d, 3 1/2" h overall. The 8 1/2" d silvered clock dial has a small seconds hand just above the center, a rate adjustment hand to the right and the single winding hole below. This is a non-striking timepiece which is intended to be wound once a week. Very fine overall and running condition. Key not original.



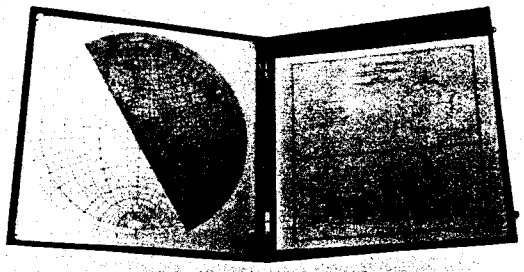
The Chelsea Clock Co. of Chelsea, Massachusetts began business in 1897 apparently as a take-over of the Boston Clock Co. (although the sign on their building, as I remember, states founded in 1906). No matter, they produced and are still producing the finest marine clocks made in America. A cleaning date of 1947 has been scratched into the back of the clock which together with the serial number leads to the assigned dating.

(28 lbs UP) $ 360



264. "WILLIAMS' PATENT SOUNDING ROD" - American, 1918 patent date, label in cover signed "JOHN E. HAND & SONS CO. . . . HADDONFIELD, N.J., U.S.A.". Bright brass tube in original lacquer finish 46" long x 3/4" d with internal, 9/16" wide, graduated steel rod which can extend 42". A coiled rope is attached to the upper end of the brass tube. Original mahogany case 3 1/2" sq x 4 ft long in fine condition. The sounder is very fine. The label within the case cover states, *"To be used in sounding ships holds and tanks principally in heavy weather. No directions for use required. Chalk the rod and read off in Chart room."*

(22 lbs UP) $ 175

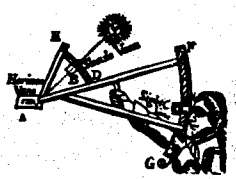


265. "THE McGEGAN STAR IDENTIFIER" - English, early 20th c, made by "THE LONDON NAME PLATE MANUFACTURING Co.". Mahogany box 15" sq x 7/8" thk which opens to show a card on the left side with a printed projection of a spherical grid upon which rotates a celluloid semi-circle with the same projection. The right hand side has a printed instruction sheet titled "STAR IDENTIFIER AND DIAGRAM FOR THE GRAPHICAL SOLUTION OF PROBLEMS IN NAUTICAL ASTRONOMY BY J.E. McGEGAN of the Hydrographic Department, Admiralty". There is a loosely inserted star table which is not illustrated. The National Maritime Museum, Greenwich, has one of these identifiers in its collection dated 1918. This is an interesting example of a fast, approximate way of solving problems in celestial navigation. Very good external, fine internal condition.

(8 lbs, UP, PS) $ 165

266. NAVIGATOR'S PARALLEL RULE - English, c. 1900, signed "CAPT. FIELD'S IMPROVED". Boxwood rules, 1 1/2" w x 21 1/4" long, connected by three 5 3/8" long brass cross-links. Fine overall condition except for edge and corner wear from usage and some warping. Such rules are used to advance position lines across a navigation chart.

(4 lbs, UP, PS) $ 55



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