

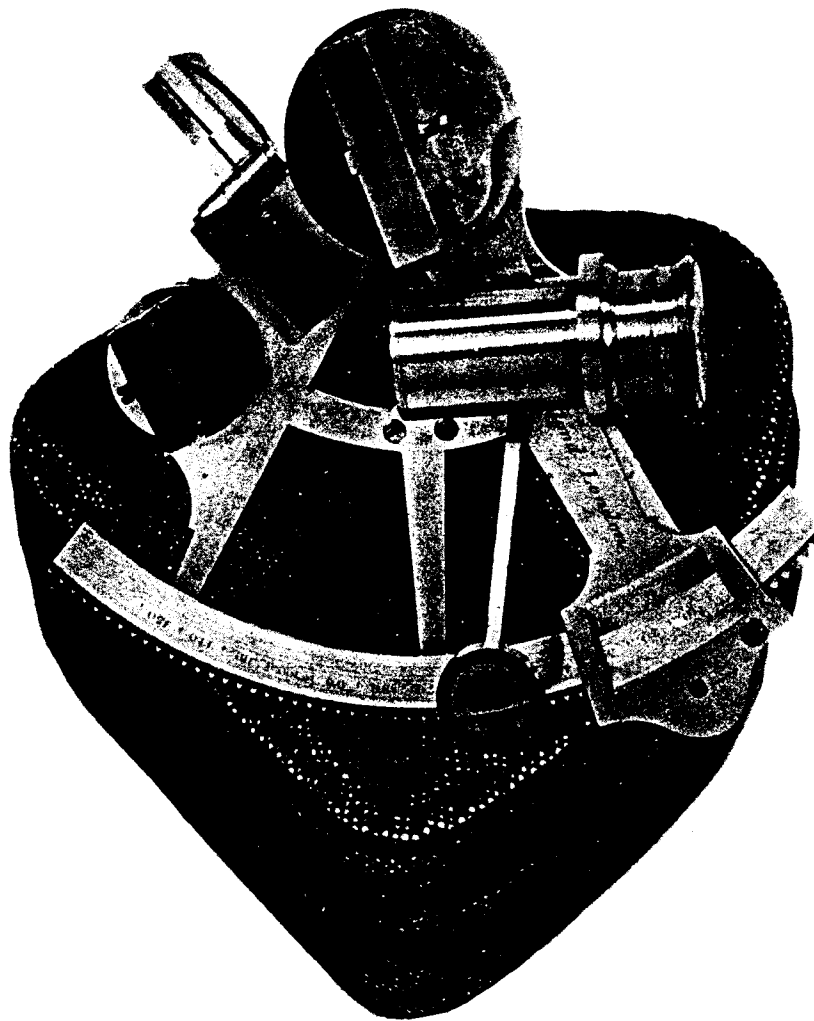
Historical Technology, Inc.

SAUL MOSKOWITZ, President

6 Mugford Street

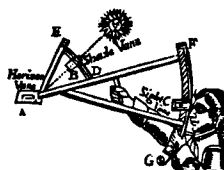
Marblehead, Massachusetts, 01945. U.S.A.

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ITEM 201

A MINIATURE SEXTANT



Catalog 124

Fall, 1982

Five Dollars

TERMS OF SALE

All prices in this catalog are net and payment must accompany your order. If you are unknown to us we ask your patience for the few days delay between receipt of your order and shipment while your check clears. However, if you can supply proper references with your order, shipment will be immediate.

Our bank is the National Grand Bank, Pleasant Street, Marblehead. Trade references can be supplied if requested.

When inquiring about or ordering any item, please give the number of the catalog, the item number, and the key descriptor words (capitalized).

Shipping methods are indicated for all items. Those marked "postpaid" and valued \$ 400 or less will be so mailed to all points in the U. S. Those of greater value than \$ 400 and marked "postpaid" will be so sent only within the continental U. S. Buyers in Alaska and Hawaii are responsible for shipping costs on such items. Buyers in all other countries are responsible for all shipping costs on all items. Only those items which fall within international insurance and weight limitations will be sent by post (example - insurance limits to Canada are \$ 400, to Great Britain - \$ 1,200, to Mexico - \$ 15). All other shipments will be made by air freight - shipping charges collect. No items of value over \$ 15 will be shipped to Mexico. It has been our experience that Mexican Customs officials will arbitrarily reject shipments, even those guaranteed free movement by international treaty. We will not get involved in the bribes apparently necessary in such cases. Please remember to include the cost of insurance in figuring shipping charges. For items shown with an amount for registered mail, add the amount to the price of the item. When a shipping weight is given, the available ways for sending the item are also shown - "UP" for United Parcel Service (in those states where such service is available), "PS" for Parcel Post, and "air freight". See next page to determine availability and charges for United Parcel Service. For Parcel Post, call your local post office and ask for the charges to send a package of the same weight and value to Marblehead. The cost for service in the opposite direction will be the same. (Remember, Parcel Post may be sent to a P. O. Box number but that a street address is required for United Parcel.) If you send more than required, we will return any over-payment. All items marked "air freight" (or for which you choose this method of shipping) will be sent shipping charges collect. We will not ship other items until full payment for shipping has been made. Please be certain to calculate the shipping costs and insurance of each item as a separate unit when ordering more than one item rather than adding the weights of all items together and then determining an overall cost.

As a convenience to our customers, we will accept hold requests by telephone pending your immediate written confirmation with payment. If we do not hear from you within 4 business days, the item(s) will be sold to the next interested person. Further, we will not permit your use of this privilege in the future.

If upon receipt of any numbered item in the catalog, you find it not to conform with your impression of its condition despite our detailed descriptions and photographs, you may return it within 3 days of receipt for a complete refund except for the new reference books at the end of the catalog. However, it must be received by us complete and in the condition sent to you and you are then responsible for all packing, shipping and insurance costs (in both directions). We have gone to great effort to represent each article accurately and correctly so that you will know what you are getting before purchase.

We are set up to handle mail orders only and do not have an open shop. If you are interested in examining one or two items (we have no way to exhibit our entire stock) and if you call several days in advance, we can arrange for you to come and view those items.

Historical Technology, Inc. reserves the right to limit, restrict, or remove from sale, any and all offerings of this and any other catalog issued by us.

We are interested in buying single items and entire collections.

Residents of Massachusetts please add the 5% sales tax to your payment.

All prices in this catalog may be changed without notice after June, 1983.

CATALOG SUBSCRIPTION INFORMATION

We offer an introductory (one time) year's subscription to these catalogs (issued at 6 month intervals, more or less) at the rate of \$ 4 (\$ 8 overseas). Those receiving 3 issues (either by individual order or subscription) and not becoming regular customers will be required to pay our standard (scholar's) subscription rate of \$ 10 (\$ 15 overseas) if they wish to receive further copies.

INSTRUCTIONS FOR SHIPPING BY UNITED PARCEL

USE AND COVERAGE OF UNITED PARCEL SERVICE - Unless requested to ship by Parcel Post, Historical Technology, Inc. will ship all appropriate orders via United Parcel ground service to all states for which such service is available. IT IS NECESSARY THAT A STREET ADDRESS BE GIVEN FOR ALL UNITED PARCEL SHIPMENTS.

GROUND SERVICE - Is now available for all states EXCEPT Hawaii and Alaska.

CALCULATION OF SHIPPING COSTS - Work out cost of shipping and insuring each item separately even when you purchase more than one item at a time.

INSURANCE CHARGES - Shipping rates automatically insure your package for its value up to \$ 100. For values over \$ 100, the rate is \$.25 for each additional \$ 100 or fraction there-of. Insurance charges should be added to shipping charges.

CALCULATION OF GROUND SHIPPING RATES - Both the ZIP CODE - ZONE CHART (below) and the RATE CHART (at right) must be used. FIRST, to determine the UPS zone in which you live, compare the first three digits in your postal zip code with the Zip Code - Zone Chart below and determine your zone number (2 through 8). Then see the Rate Chart, at upper right, and find the shipping charge corresponding to the listed weight for each individual item under the column headed with your zone number.

Example: If your postal zip code begins with 276, look in the Zip Code Prefix column of the Zip Code - Zone Chart until you find 275-279 which will have the number 4 opposite it under the column headed

ZIP CODE - ZONE CHART

ZIP CODE PREFIXES	UPS ZONE	ZIP CODE PREFIXES	UPS ZONE	ZIP CODE PREFIXES	UPS ZONE
010-043	2	280-284	5	624-628	5
044	3	285	4	629-669	6
045	2	286-299	5	670-672	7
046-047	3			673	6
048	2	300-315	5	674-679	7
049	3	316-355	6	680-687	6
050-053	2	356-359	5	688-693	7
054-056	3	360-361	6		
057-067	2	362	5	700-704	6
068-089	3	363-369	6	705-706	7
		370-379	5	707-729	6
100-118	3	380-383	6	730-739	7
119-126	2	384-385	5	740-744	6
127	3	386-397	6	745-748	7
128	2			749	6
129-139	3	400-438	5	750-754	7
140-147	4	439-447	4	755	6
148-149	3	448-499	5	756-784	7
150-174	4			785	8
175-176	3	500-528	6	786-787	7
177-178	4	530-539	5	788	8
179-198	3	540	6	789-796	7
199	4	541-545	5	797-799	8
		546-548	6		
200-218	4	549	5	800-810	7
219	3	550-574	6	811-816	8
220-241	4	575-577	7	820	7
242-243	5	580-582	6	821	8
244-245	4	583-588	7	822	7
246-248	5	590-591	8	823-825	8
249	4	592-593	7	826-828	7
250-253	5	594-599	8	829-898	8
254	4				
255-259	5	600-611	5	900-961	8
260-268	4	612	6	970-986	8
270-274	5	613-619	5	988-994	8
275-279	4	620-623	6		

UPS Zone This tells you that postal zip code numbers beginning 276 are in UPS Zone 4. The rate for your package will be found on the Rate Chart in the column headed Zone 4 opposite the weight of the package.

BE SURE TO ADD INSURANCE CHARGES TO SHIPPING CHARGES

AIR UNITED PARCEL SERVICE - Hawaii, Alaska, and the West Coast are served by Air United Parcel and we can provide the cost of these services upon request. we do not recommend

air shipping within the 48 contiguous states because of the increased cost and the fact that (at a maximum) only 5 days in shipping time will be saved.

AIR FREIGHT - All items marked "Air Freight" in this catalog are so marked because they can not be shipped by United Parcel or Parcel Post due to either weight or insurance considerations. All air freight shipments are sent shipping and insurance charges collect.

OUT OF COUNTRY - Shipments to Canada of value \$ 400 or less can be sent by Parcel Post. All others must go by Air Freight. Small shipments to Great Britain of value less than \$ 1000 can go by Parcel Post, all others by Air Freight. Shipments to the rest of the world are to be by Air Freight with a few exceptions.

RATE CHART FOR GROUND SHIPPING

WEIGHT NOT TO EXCEED	ANY FRACTION OF A POUND OVER THE WEIGHT SHOWN TAKES THE NEXT HIGHER RATE							
	RATE CHART TO GROUND ZONES							
	2	3	4	5	6	7	8	
1 lb.	\$1.25	\$1.28	\$1.32	\$1.36	\$1.42	\$1.48	\$1.55	
2 "	1.34	1.40	1.47	1.55	1.67	1.79	1.93	
3 "	1.43	1.52	1.63	1.75	1.92	2.11	2.32	
4 "	1.52	1.64	1.78	1.94	2.18	2.42	2.70	
5 "	1.61	1.75	1.93	2.14	2.43	2.74	3.09	
6 "	1.70	1.87	2.09	2.33	2.68	3.05	3.47	
7 "	1.79	1.99	2.24	2.53	2.94	3.37	3.86	
8 "	1.88	2.11	2.40	2.72	3.19	3.68	4.24	
9 "	1.97	2.23	2.55	2.92	3.44	4.00	4.63	
10 "	2.05	2.34	2.70	3.11	3.69	4.31	5.01	
11 "	2.14	2.46	2.86	3.31	3.95	4.63	5.40	
12 "	2.23	2.58	3.01	3.50	4.20	4.94	5.78	
13 "	2.32	2.70	3.17	3.70	4.45	5.26	6.17	
14 "	2.41	2.82	3.32	3.89	4.71	5.57	6.55	
15 "	2.50	2.93	3.47	4.09	4.96	5.89	6.94	
16 "	2.59	3.05	3.63	4.28	5.21	6.20	7.32	
17 "	2.68	3.17	3.78	4.48	5.47	6.52	7.71	
18 "	2.77	3.29	3.94	4.67	5.72	6.83	8.09	
19 "	2.86	3.41	4.09	4.87	5.97	7.15	8.48	
20 "	2.94	3.52	4.24	5.06	6.22	7.46	8.86	
21 "	3.03	3.64	4.40	5.26	6.48	7.78	9.25	
22 "	3.12	3.76	4.55	5.45	6.73	8.09	9.63	
23 "	3.21	3.88	4.71	5.65	6.98	8.41	10.02	
24 "	3.30	4.00	4.86	5.84	7.24	8.72	10.40	
25 "	3.39	4.11	5.01	6.04	7.49	9.04	10.79	
26 "	3.48	4.23	5.17	6.23	7.74	9.35	11.17	
27 "	3.57	4.35	5.32	6.43	8.00	9.67	11.56	
28 "	3.66	4.47	5.48	6.62	8.25	9.98	11.94	
29 "	3.75	4.59	5.63	6.82	8.50	10.30	12.33	
30 "	3.83	4.70	5.78	7.01	8.75	10.61	12.71	
31 "	3.92	4.82	5.94	7.21	9.01	10.93	13.10	
32 "	4.01	4.94	6.09	7.40	9.26	11.24	13.48	
33 "	4.10	5.06	6.25	7.60	9.51	11.56	13.87	
34 "	4.19	5.18	6.40	7.79	9.77	11.87	14.25	
35 "	4.28	5.29	6.55	7.99	10.02	12.19	14.64	
36 "	4.37	5.41	6.71	8.18	10.27	12.50	15.02	
37 "	4.46	5.53	6.86	8.38	10.53	12.82	15.41	
38 "	4.55	5.65	7.02	8.57	10.78	13.13	15.79	
39 "	4.64	5.77	7.17	8.77	11.03	13.45	16.18	
40 "	4.72	5.88	7.32	8.96	11.28	13.76	16.56	
41 "	4.81	6.00	7.48	9.16	11.54	14.08	16.95	
42 "	4.90	6.12	7.63	9.35	11.79	14.39	17.33	
43 "	4.99	6.24	7.79	9.55	12.04	14.71	17.72	
44 "	5.08	6.36	7.94	9.74	12.30	15.02	18.10	
45 "	5.17	6.47	8.09	9.94	12.55	15.34	18.49	
46 "	5.26	6.59	8.25	10.13	12.80	15.65	18.87	
47 "	5.35	6.71	8.40	10.33	13.06	15.97	19.26	
48 "	5.44	6.83	8.56	10.52	13.31	16.28	19.64	
49 "	5.53	6.95	8.71	10.72	13.56	16.60	20.03	
50 "	5.61	7.06	8.86	10.91	13.81	16.91	20.41	

LAND SURVEYING, GEOLOGY, & MINING

47. George Adams (Jr.), "GEOMETRICAL AND GEOGRAPHICAL ESSAYS, CONTAINING A DESCRIPTION OF THE MATHEMATICAL INSTRUMENTS USED IN Geometry, Civil and Military Surveying, LEVELLING AND PERSPECTIVE"; 2 Vols, 1st Ed, R. Hindmarsh, London, 1791. Vol. I, old half leather binding, later rebacked, 9" h, 5 1/2" w; pgs. engraved frontis plate, (4), xvi, 500 (the last 15 being a priced catalogue of instruments for sale by the author); Vol. II, early full leather binding 8 1/2" h, 5 1/2" w; 32 folding engraved plates. Ex library copies in generally fine condition (partially cracked but tight hinges for Vol. 2), but not an originally matched pair, although both from 1st editions. This work is the single most important book published on surveying instruments during the entire second half of the 18th century and possibly the 1st quarter of the 19th century as well. It matches in breadth and detail the author's "Astronomical & Geographical Essays", "Lectures on Natural Philosophy", and "Essays on the Microscope". W. & S. Jones later reprinted it several times with editions well into the 19th century. (postpaid) \$ 265

48. Amedée Burat, "GÉOLOGIE APPLIQUÉE - TRAITÉ DU GISEMENT ET DE L'EXPLOITATION DES MINÉRAUX UTILES", 4th Ed, in 2 Vols, L. Langlois, Paris, 1858, 9. Later half leather fine bindings 8 3/4" h, 5 3/4" w; pgs. I. ("GÉOLOGIE PRATIQUE") 550, 29 plates (some double page, 2 of them large folding maps) and 49 text figures; II. ("EXPLOITATION DES MINES") 540, 33 plates (of 34, lacking Pl. XIX, "disposition . . . machines a molettes"), 192 text figures. Extremely fine condition. The 1st edition of the 1st part of this extensive work seems to have been published in 1843. This one includes more material and the whole work appears to have been revised and updated. (In French) (postpaid) \$ 145

Includes the Large Plate of the Instrument - Not Found in the First Edition

49. Octavio Fabri, "L'VSO DEL LA SQVADRA MOBILE", Andrea Gattella, Padova, 1673. Later board covers 8 1/4" h, 5 3/4" w, generally fine condition although trimmed too close on 3 pages just affecting the text. Engraved title page, 8" x 11" fold-out plate of instrument (dated 1670), 24 engraved plates within the text, pgs. (2), 9-100, with 2 different leaves numbered 13-14, the 12 pages of preliminary material in the 1st edition not printed in this edition but page numbering not corrected. A second state version of pgs. 85 and 86 (with the one plate which would have otherwise been missing from this edition) bound between pgs. 14 and 15. Thus the book is complete. The first edition of this work was printed in 1598. The Squadra Mobile was a portable surveying instrument of Fabri's innovation. Level was determined by a plumb line and a pair of pivoted alidades with peep sights were used for sightings. Readout was on combined circular and rectified scales so that either angles or trigonometric functions thereof could be obtained directly. The quality of the engravings (many of them pictorial) is excellent. This is a beautiful as well as interesting book. (In Italian) (postpaid) \$ 250

50. Abel Flint, "A SYSTEM OF GEOMETRY AND TRIGONOMETRY, WITH A TREATISE ON SURVEYING; . . . With Improvements by George Gillet", 6th Ed, Cooke & Co., Hartford, 1830. Modern leather binding 8 1/4" h, 5" w; pgs. iv, (2), 9-112, (4), 10, 62 (tables), 100 (tables), some text diagrams. Very fine overall condition except for some stains. The 1st edition of this work was published in 1804. The latest edition listed in Karpinski is dated 1850. Thus this standard reference and text was issued over a full half century and used for even longer. (postpaid) \$ 40

First New York & Fifth American Edition

51. Robert Gibson, "A TREATISE OF PRACTICAL SURVEYING:", 8th Ed, William A. Davis & Co., New York, 1798. Early stitched leather cover over (worn?) original leather binding 8 3/4" h, 5 1/4" w; 452 pgs and 13 plates (some with early hand coloring). Generally very good condition, lacking end papers, and showing signs of extensive use. 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 mid 18th c 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 a teacher of mathematics (Temple Lane, Essex St. 1752; Anglesey St. 1754). (postpaid) \$ 120

52. John Gummere, "A TREATISE ON SURVEYING, CONTAINING THE THEORY AND PRACTICE:", 3rd Ed, John Richardson & Kimber and Sharpless, Philadelphia, 1820. Original leather binding 8 3/4" h, 5 1/4" w; pgs. vi, (2), 9-206, 152 (tables), 8 folding plates. Very good overall condition with surface wear to otherwise sound binding, some foxing, plates 3 and 4 creased and with some tears and a small corner missing from plate 4. This American treatise (1st edition in 1814) continued to be issued for over 100 years, Karpinski noting that there was an edition as late as 1917. (postpaid) \$ 65

53. John Gummere, "A TREATISE ON SURVEYING, CONTAINING THE THEORY AND PRACTICE: . . . enlarged by the addition of Articles On The Theodolite, Levelling, And Topography", 14th Ed, Kimber & Sharpless, Philadelphia, 1840. Original leather binding 9" h, 5 1/2" w; pgs. vi, (2), 9-266, 152 (tables), 11 engraved folding plates. Generally fine condition although 25 leaves and the plates quite brown (all the other pages having been printed on a different batch of paper are white and bright). A 2nd issue of the 8th edition was printed in 1837 followed in 1838 by the 1st issue of the 14th edition. (All subsequent issues through 1849 were called the 14th edition as well.) The 14th edition was a major revision of the 8th through added sections and plates detailing the design and use of various surveying instruments. (postpaid) \$ 55

Underground Surveying

54. G. M. Halden, "SETTING OUT OF TUBE RAILWAYS", New Impression, E. & F. N. Spon, London, 1914. Original cloth binding 11" h, 8 3/4" w; pgs. (4), 68, 5 large folding maps, 4 full page plates of photographs taken in the tunnels under London, and many text figures. Very fine overall condition. Instruments are described and the practical problems of using them underground while laying out sharp turns, gradients, trackage, and still having to meet other tunneling efforts with a high level of accuracy. The preface to the 1st edition of this work is dated 1907. Troughton & Simms 7-inch, 10-arcsec transit theodolites seem to have been the author's choice for the work described. (postpaid) \$ 50

Second American Edition

55. John Love, "GEODAESIA: OR, THE ART OF SURVEYING AND MEASURING LAND made Easy. . . . AS ALSO To lay out New Lands in AMERICA, or elsewhere: . . . ", The 13th Ed adapted to American surveyors, Samuel Campbell, New York, 1796. Modern leather binding 8" h, 4 1/2" w; pgs. (14), 189, 53 (tables), 8 (appendix on surveying by chain only), many text woodcut diagrams. Contents generally fine with minor stains. The first edition of this work was published in London in 1688 just after Love returned from surveying in America. There were (obviously) at least 13 English editions and 2 published in America. The first published here (in 1793) was based on the 12th London edition. (postpaid) \$ 140

Geodetic Surveying in France

56. L. Puissant, "TRAITÉ DE GÉODÉSIE, OU Exposition des Méthodes Astronomiques et Trigonométriques, appliqués soit à la mesure de la terre, soit à la confection du canevas des cartes et Plans," Courcier, Paris, 1805. Early (original?) leather backed board covers with some edge wear 10 1/4" h, 8 1/4" w; pgs. xxiv, 319, (1), (43) tables, (1), plus the 10 large foldout engraved plates. Fine condition. Eight of the engraved plates depict design details and complete assemblies of a de Borda double telescope repeating circle. Such an instrument was quite capable of the accuracy required for the establishment of a basic geodesic grid, as well as astronomical observation as was shown by Bowditch when he used a less accurate de Borda reflecting circle to establish the orbit of a comet. Only in England was de Borda's instrumentation slighted. This book describes and evaluates (mathematically) the various methods used for taking data and the accurate calculation "relativement à la mesure de la terre". After the first two sections which provide an introduction to the subject, fully 260 pages of the last section (Livre III) provide the details of "Opérations Géodésiques" including a description of, and methods for the use of the de Borda circle. This is an important book on geodetic surveying. (In French) (postpaid) \$ 225
57. L. Puissant, "TRAITÉ DE TOPOGRAPHIE, D'ARPENTAGE ET DE NIVELLEMENT;" Courcier, Paris, 1807. Bound with L. Puissant, "SUPPLÉMENT AU SECOND LIVRE DU TRAITÉ DE TOPOGRAPHIE, Contenant LA THEORIE DES PROJECTIONS DES CARTES;" Courcier, Paris, 1810. Early quarter leather binding, rebaked, 10 1/4" h, 8 1/2" w; pgs. xx, 331, (19), 6 large folding engraved plates; 103, (7), large folding chart, (2), folding engraved plate, 105-143, (1), Binding in fine condition, contents very fine. This comprehensive work on cartography and mapmaking complements the author's "Traité de Géodésie". It provides the mathematical formulations needed to reduce observed data to geographical coordinates. (In French) (postpaid) \$ 130

THE MICROSCOPE

(Books in this section for sale only to purchasers of microscopes.)

58. "THE AMERICAN Journal of Microscopy, AND POPULAR SCIENCE. VOL I (December, 1875, to November, 1876.)", Handicraft Publ. Co., New York, 1876. Original cloth binding 9" h, 6" w; pgs. frontis plate, III, 144, plate of Crouch binocular microscope, (56) (advertisements from the Journal). Cover in very good condition, contents fine. It is interesting that this journal was begun just before the Centennial year, the same year that saw the introduction of the new Zentmayer designs with his patented swinging substage. (postpaid) \$ 28

10 Volume Library

59. Alfred C. Coles, "CRITICAL MICROSCOPY", London, 1921, 110 pgs. - C. A. Ealand, "THE ROMANCE OF THE MICROSCOPE", London, 1921, 328 pgs. - H. W. Emerton, et al, "THE SURFACES OF PAPER AND BOARD and their treatment: an exploratory study with the light microscope", Kenley, England, 1958, 74 pgs. - S. H. Gage, "THE MICROSCOPE", Dark-Field Ed (14th), Ithaca, 1925, 527 pgs. - "MICROSCOPES & MICROSCOPICAL LIFE", London, 1969, 160 pgs. - A. E. Shipley, "HUNTING UNDER THE MICROSCOPE", London, 1928, 184 pgs. - H. G. Smith, "MINERALS AND THE MICROSCOPE", London, 1914, 135 pgs. - J. C. Tobias, "THE STUDENT'S MANUAL OF MICROSCOPIC TECHNIQUE WITH INSTRUCTIONS FOR PHOTOMICROGRAPHY", Boston, 1936, 234 pgs. - A. L. Wells, "THE MICROSCOPE MADE EASY", London, 1957, 256 pgs. - J. H. Wredde, "THE MICROSCOPE Its Theory and Applications", London, 1947, 320 pgs. Nine books in cloth bindings, 1 in paper, various sizes, generally very good condition. (postpaid) \$ 110
60. M. I. Cross & Martin J. Cole, "MODERN MICROSCOPY A Handbook for Beginners and Students", 4th Ed, Bailliere, Tindall and Cox, London, 1912. Original cloth binding 8 1/2" h, 5 3/4" w; pgs. xvii, 325, 6 plates, 87 text figures. Minor wear and fading of binding, contents fine. The 1st edition of this work was published in 1893 and each subsequent edition contained revised and expanded sections. (postpaid) \$ 37

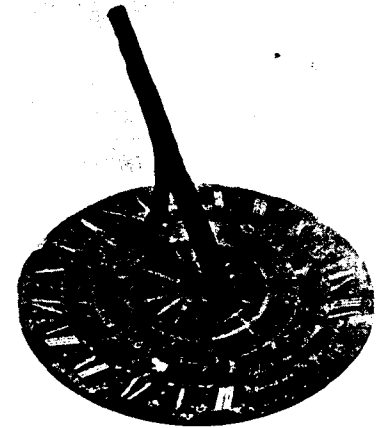


120. WALL DIAL PERFECT FOR THE GOVERNOR OF MASSACHUSETTS - American, late 19th c, unsigned, but engraved "MY TIME IS IN THY HAND" and marked "LATITUDE 42° 21' 28" ". Nicely patinaed engraved brass base 16 1/4" h x 14 1/4" w, with 5 3/8" h cast brass gnomon which measures 42° 20' (within 5') from the horizontal when the dial is mounted on a vertical south-facing wall. Nicely made and very fine display condition. In addition to being an attractive sundial, the truly interesting aspect of this item is that - THE SOUTH WALL OF THE MASSACHUSETTS STATE HOUSE, BEACON HILL, BOSTON, DIRECTLY UNDER THE GOVERNOR'S OFFICE IS AT LATITUDE 42° 21' 28", EXACTLY.

(15 lbs UP) \$ 345

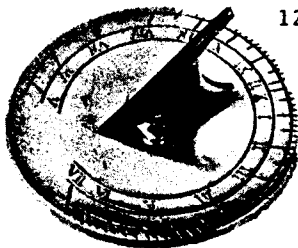
121. VERY LARGE IRISH GARDEN DIAL - Signed and dated "Made by John Cruise, Castle-town Kilpatrick In The Year Of Our Lord 1843" marked "CASTLETOWN Lat 53° 38' " and the gnomon stamped "YEATES/DUBLIN". The base is an engraved slate disc

16 3/4" d with an attached cast bronze gnomon for latitude 55° standing 12" high. The elaborate dial has a compass rose at the center, then a circular equation of time chart, followed by a ring with the positions for high noon at 25 different locations around the world, and then the chapter ring divided in 5 minute intervals on the inside edge and 1 minute intervals on the outside. There is some edge chipping and wear to the slate dial and 2 long cracks which have been glued back together. Yet most of the engraving is clear and sharp and the gnomon without any damage so that overall condition can be rated fine to very fine.



We have been unable to locate John Cruise in any of our records and suspect that he may have purchased a sundial "kit" from the well known firm of instrument makers, Samuel Yeates & Son, who were located at 2 Grafton St., Dublin between 1827 and 1845. It is not known if such a kit consisted of just the gnomon or of a gnomon and blank slate disc. But then why a gnomon for 55 deg latitude? Possibly he bought a damaged earlier sundial around Londonderry in Ulster for its gnomon and started from there.

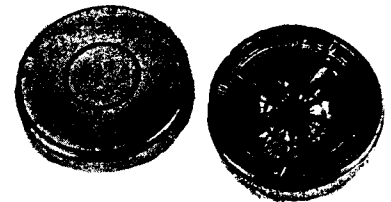
(25 lbs UP) \$ 345



122. SMALL BRASS HORIZONTAL SUNDIAL - Possibly Canadian or American, 19th c, unsigned. The dial base is cast and turned brass 3 1/4" d, with a cast brass gnomon riveted in place. The lacquer finish has been restored. The measured gnomon angle of 46-47 deg could correspond to an origin in either northern Maine or any one of the mid and far western states which lie on the latitude 49 border between the U. S. and Canada. Of course, this latitude band also passes through parts of Ontario and Quebec as well as the middle of France. The example here, and the one other seen by us, both surfaced in this country, leading us to the possible North American attribution.

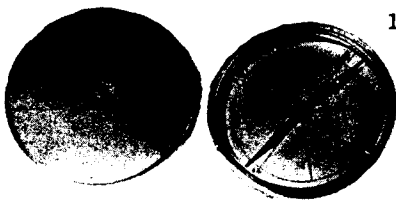
(3 lbs, UP, PS) \$ 150

123. EARLY POCKET DIAL BY NOTED MAKER - English, signed and dated (on the engraved paper compass dial under the needle center) "E. C. fecit 1701". Screw-top brass case (with restored lacquer finish) 1 11/16" d, 11/16" h folding gnomon, original needle, and engraved compass rose pasted inside cover. Generally fine to very fine condition except for stains to the compass dial, minor case surface scratches, and the number XXIIII scratched into the case bottom and cover.



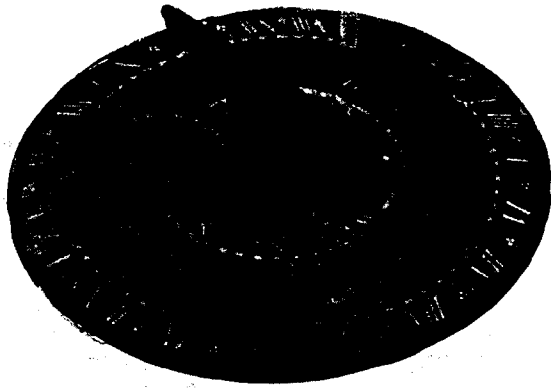
Edmund Culpeper, the maker of this sundial, worked between (about) 1686 and 1738. He is best known for his 3-legged microscope, a design which remained in use for a full century. However he made a variety of instruments and a number of sundials by him are known and represented in the major museum collections. The National Maritime Museum, Greenwich has 4 universal equatorial ring dials and an inclining dial by him. These are all signed in full, but it is not surprising that a smaller, less significant instrument such as the one here would only be signed with initials and those in a place hidden from casual notice. Indeed, there may be several examples of compass dials by Culpeper in the museum collections which have not been identified as such for this very reason.

(2 lbs UP) \$ 695



124. FINE POCKET COMPASS - English, 18th c, unsigned. Brass case and cover, with restored lacquer finish, 2 3/8" d by 1/2" h (covered), silvered dial with 8 compass points, and 2 1/8" needle. Quality workmanship and in very fine overall condition.

(2 lbs, UP, PS) \$ 135



125. HORIZONTAL SUNDIAL BY "THE MASTER DIVIDER" - English, c. 1750, signed "J. Bird London" and marked for "Lat 52° 10'." Cast and engraved bronze dial 11 7/8" dia with 6 1/4" h gnomon. There is a compass rose in the center of the dial and a chapter ring with minute graduations along the edge. The dial is in extremely fine condition (with mottled green-brown patina), except for some scratches and rubbing, about 4" long on the western side of the base plate.

Taylor 2 calls John Bird (1709-76), "a master of scale division". He was a cloth weaver by trade when he moved from Durham to London to enter the instrument makers profession. He worked for Jonathan Sisson and, with further instruction from George Graham, was able to set up his own business by 1745. The refitting of the Royal Observatory, which was initiated in 1748, led to contracts to Bird for: an 8 foot radius mural quadrant finished in 1750; a transit instrument, about 1750; a 40 inch move-

able quadrant; redivision of Graham's mural quadrant in 1753. The quality of his work led to contracts with many English and continental observatories including St. Petersburg, Cadiz, Paris, Tobias Mayer's in Gottingen, Radcliffe Observatory at Oxford (1771) and Harvard University. He was commissioned by the Board of Longitude to publish the short books "Method of Dividing Astronomical Instruments", 1767, and "Method of Constructing Mural Quadrants", 1768. He was paid the great sum (at that time) of £ 500 for these publications and for "taking an apprentice for seven years, and instructing him in his art and method of making Astronomical Instruments". He was one of the experts called upon to pass on John Harrison's chronometer and also on the accuracy of Ramsden's dividing engine (and found both more than adequate). It is possible that this dial dates from early days of his career since all evidence points to his having more important instrument commissions than he could possibly complete once his reputation had been established.

(18 lbs UP)

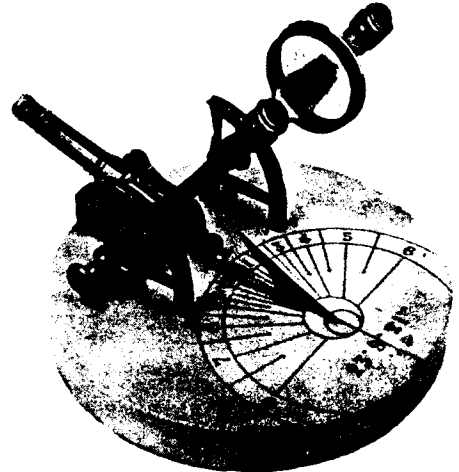
\$ 1,520

126. NOON GUN SUNDIAL FOR CUBA - French, 2nd half 19th c, unsigned but marked for latitude 23° 9' 21". On the bottom of the base there is a well worn ink presentation inscription, "Maj. (?) Engineer Corp U. S. Army Marianao, Havana Cuba Nov. 5, 1906 From Eugenio Herp Marianao". The white marble base is 9 1/2" d x 1 1/4" h, the cast brass cannon 6 3/8" long, the burning glass 2" d and its support arms 7 1/2" long. The low angle gnomon is 1 1/4" h. The brass fittings are in their original lacquer finish, now somewhat rubbed and darkened in places. Overall condition is fine to very fine.

We have had other examples of this type of dial, in earlier catalogs. Plate 34 of Rohr's, "Sundials" shows one at the Museum in Liege. Two more are listed, one illustrated, in Horsky & Skopova, "ASTRONOMY/GNOMONICS". Almost all known signed examples are of French origin and we believe that this one is too. Quite clearly it was made specifically for someone in the area of Havana, Cuba but we have not worked out the story behind the inscription.

(20 lbs UP)

\$ 1,445



127. FINE MAHOGANY CASED POCKET COMPASS - English, 18th c, unsigned. Lidded mahogany body 4 5/8" sq x 1" h with 3 3/4" d compass well. Engraved paper dial face, silvered outer ring graduated by degrees, and 3 1/8" compass needle. The cover glass retaining ring is lathe turned. Very fine overall condition although there are some edge chips in what appears to be the original cover glass.

(3 lbs, UP, PS) \$ 245



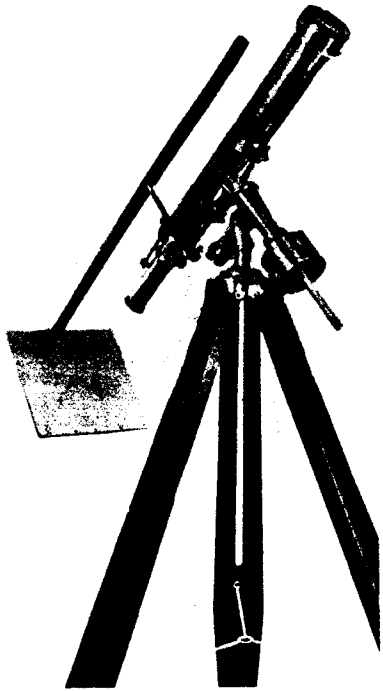
128. FINE LITTLE TABLE STAND GLOBE - American, 1848-53, signed "SIX INCH AMERICAN TERRESTRIAL GLOBE Comprising The LATEST POLITICAL DIVISIONS, DISCOVERIES, & c. MERRIAM MOORE & CO. TROY, N. Y.". Six inch globe with hand colored engraved gores with in 7" d bright lacquered brass meridian ring. The stand has an 8 5/8" d wooden equatorial ring with a colored engraved zodiacal scale and supported

by a cast iron tripod; 8 3/4" h overall. The globe is in fine display condition noting that the engraved paper surfaces have been cleaned and revarnished, all else original, and there are some minor rubbed and stained spots on the globe mostly in the South Pacific and about the South Pole. Dating is relatively easy since the globe depicts the 49th parallel division between Canada and the U. S. (1846), the Mexican Cession of 1848 but not the Gadsden Purchase of 1853. As would be expected, those globes which became outdated shortly after they were made tend to be somewhat rare.

(10 lbs, UP, PS)

\$ 365





129. ASTRONOMICAL REFRACTOR WITH EQUATORIAL MOUNT ON FLOOR TRIPOD - American, late 19th c, unsigned. Achromatic air-spaced objective of 2 5/8" clear aperture, 2 ft focus (hence a relatively large f9.1) mounted in the bright brass (restored lacquer finish) tube 19" long with draw tube and unusual screw focussing extension of another 11". Telescope attached by strapping to brass and steel equatorial mount. A removable solar projection screen seems to have been added by the (original?) owner of the instrument. The 56" long mahogany tripod legs have fluted edges and a carved decorative rosette. The brass safety chain is a modern addition. An erecting eyepiece is included in addition to 3 astronomical eyepieces (2 of which appear to be original), all 1 1/4" standard dia. The equatorial mount is fixed at about 42 degrees (Boston latitude). Original brass lens cap. The telescope is in extremely fine mechanical condition. Optical images are good.

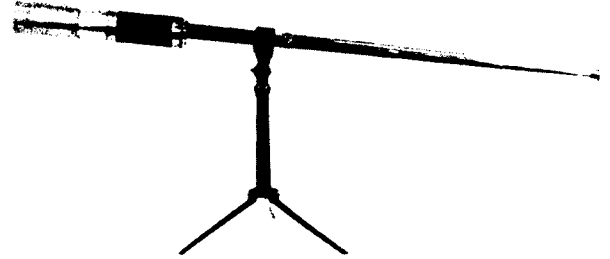
Construction details suggest that both the equatorial mount and telescope are of professional origin but not created as an entity. The mount was probably intended for a wide range of use. The solar projection screen and its mounting appear to be the work of an accomplished amateur. The telescope was owned by a Boston area physician who died a number of years ago at great age and it is possible that he was the original purchaser. We have not been able to determine the actual maker of the instrument.

(2 UP packages, 40 lbs each, air freight)

\$ 1,475

130. HIGH QUALITY TABLE TRIPOD SPYGLASS - French, 2nd qtr 19th c, signed "Maison de l'Ingr. Chevallier, Optn. Place du Pont Neuf, 15, Paris". The 4-draw telescope has a 2 1/8" d short mahogany barrel with bright lacquered brass fittings, extending sunshield, lens cap; 38" max extension. The achromatic objective has a clear aperture of 1 7/8" yielding clear sharp images of about 30 x's magnification. The original black oxidized brass folding clamp-on tripod is 14" h. Fine overall condition with some dark spotting of the original finish. No case although, in our opinion, there was one originally.

Jean Gabriel Auguste Chevallier (1778-1848) is believed to have been related to the better known instrument makers, Vincent and Charles Chevalier. Although not as innovative as the latter, those of his instruments known to us show him to have been a skilled worker. He exhibited his instruments and books at the Paris exposition of 1827, and produced achromatic microscopes on Selligie's design.



(10 lbs UP)

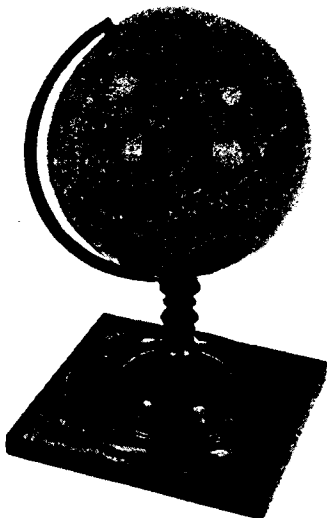
\$ 595

131. TEN INCH CELESTIAL GLOBE WITH FIGURES OF THE CONSTELLATIONS - English, signed and dated, "Newton Son & Berry's New & Improved CELESTIAL GLOBE . . . 1839". Overall ht 15 1/2" including 9 1/2" sq mahogany base with turned column supporting globe in a bright lacquered brass semi-circular meridian ring. The globe surface is made up of hand colored engraved gores. There are some rubbed spots, repaired cracks about the north pole and light crackling over much of the surface. However the globe has been cleaned and revarnished to produce an extremely attractive display piece and should be considered to be in fine restored condition.

The globe maker, John Newton, known to have worked from about 1810-68, may have been either the junior partner, or descendent of the junior partner of the late 18th c firm of globe makers, Palmer & Newton. According to Taylor 2, "His business later became Newton and Son, and J. and W. Newton. In 1838 it was Newton, Son and Berry. 'Newton' globes were listed by Keith as among the four leading makers in London, when he wrote." After his death, according to King, the firm became Newton & Co. at 3 Fleet Street. By this time it was selling a great variety of scientific instruments as well as globes.

(15 lbs UP)

\$ 895

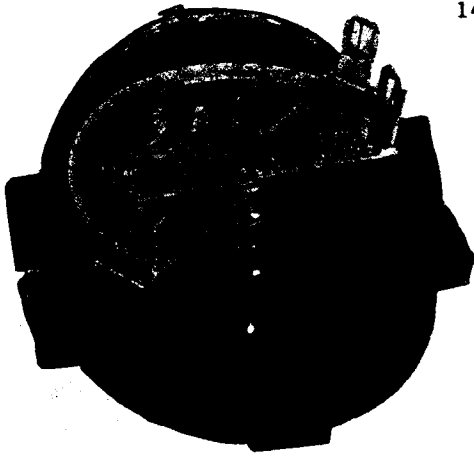


132. JEWELLED 4-DRAW PROSPECT GLASS - English, 1st half 19th c, unsigned. Gilt brass fittings with 1 1/2" d body tube covered with 2 rings of mother of pearl and 3 of colored glass jewels. The 1 1/16" clear aperture air-spaced achromatic objective and negative eye lens yield 3 x's magnification. Very fine overall condition, lacking only 6 of the jewels.

(3 lbs, UP, PS)

\$ 175





142. CASED, SMALL ELEGANT GRAPHOMETRE - French, c. 1700, signed "Butterfield AParis". Bright lacquered brass, 6 1/2" across the major diameter, the semi-circular readout scale of 2 15/16" r, and the pivoting alidade, 5 1/8" long. The sight vanes are 1 5/16" h, the silvered face compass, 1 3/4" o d, and the staff-mounting ball and socket joint is 2 3/4" h; 4 3/4" overall ht. The original, leather covered, shaped case, 7 1/2" w x 4" deep x 3 1/2" h, is in extremely fine restored condition having been recovered and relined. The instrument is in excellent restored condition with the surfaces having been properly refinished and the vanes restrung, all parts are original.

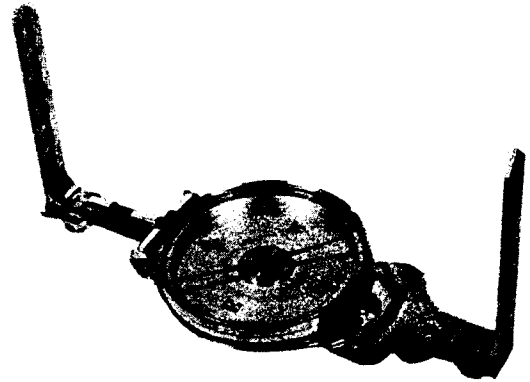
Michael Butterfield and Nicholas Bion were the two most important instrument makers in France in the period about 1700. Daumas writes, "Biographical details on Butterfield are somewhat contradictory, and only the date of his death, 28 May 1724, is authenticated. Moreri says that he was eighty-nine years old, in which case he would have been born in 1635. He was undoubtedly of English nationality, . . . some biographers say that he came to Paris in 1715, others that he arrived

in 1685. In fact, he must have been there even earlier, to judge from a prospectus he published in 1677 (plate 51)." He is best known for his bird gnomon pocket sundials. Next, in terms of survival, are sets of drawing instruments and components of such sets. Again, according to Daumas, "Apart from sundials and astronomical rings, relatively few of Butterfield's instruments survive today. Surviving instruments include graphometers, and a brass quadrant on an iron pedestal, . . . , a level with two telescopes for sighting, several squares and graduated rules and sectors, proportional compasses, etc." A slightly larger graphometre by Butterfield with more elaborate interior design is listed as Item 129 in the Nacet collection. Item 128 in the same collection is larger yet. A few other examples of Butterfield graphometres are to be found in the collections of the major museums, but the total number is nowhere close to that of his sundials.

(\$ 12 registered mail, 8 lbs UP)

\$ 2,195

143. MID-WESTERN SURVEYOR'S VERNIER COMPASS - American, 4th decade, 19th c, signed "HENRY WARE, MAKER, CINCINNATI, O.". Bright brass, restored lacquer finish, 5 7/8" d silvered face compass with 5" needle on 14 1/2" long base plate. The orthogonal bubble levels are 2 1/2" and 2 3/4" long and the screw-on sight vanes, 7 1/8" h. A pinion drive is used to set in the magnetic variation and a silvered dial surveying leg counter is viewed through a small opening near the variation vernier. The original hand dovetailed mahogany case, 7" x 15" x 4 3/4" h, has fittings for a ball and socket joint, but none is present. It is in very good condition except for chipped off wood at either end of the case. The compass is very fine.

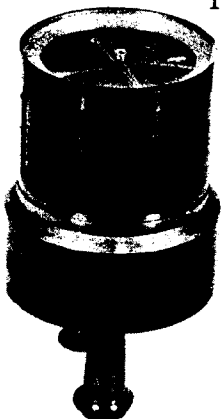


Smart lists Henry Ware (1810-1885) born in Montpelier, Vermont as first appearing in the Cincinnati directory for 1839-40 at the corner of 5th and Sycamore. During 1855 and 56 there was a partnership of Ware & Hireman located on E. 4th St., by 1858 Ware is listed by himself again still on E 4th St. A trade label within the case gives his address as the North East corner of Main and Fifth Sts. which would have to date from 1854 or earlier. There are unique design features of the instrument here which lead us to believe that it was made by Ware. Thus he was one of this nation's earliest instrument makers west of the Allegheny Mountains.

(18 lbs UP)

\$ 765

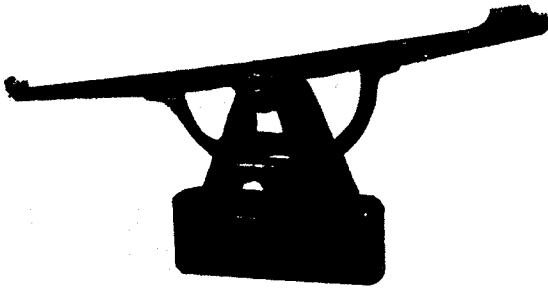
144. IMPROVED SURVEYOR'S CROSS FOR THE RUSSIAN MARKET - Possibly French, late 19th c, unsigned. All brass in blue-black oxidized finish with bright lacquered brass fittings, silvered compass and readout scales, black finish to center region of the 3 1/2" d compass, 8" h and lower sighting cylinder 4"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



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

(8 lbs, UP, PS)

\$ 295



145. WOODEN ELEVATION THEODOLITE - American, 1st half 19th c, unsigned. Constructed of darkened oak, the 17 1/4" long alidade pivoted in elevation is fitted with target rifle-type sights of the period - pewter peep sight at rear, hooded beaded post at the front. The Ramsden type semi-circular readout scale of 7" d is graduated to degrees and numbered every 10 degs. The 5" h "A" trunnions are mounted on a 7" long x 2" w x 2 1/4" h base which has a tapered hole for staff mounting. Very fine overall condition.

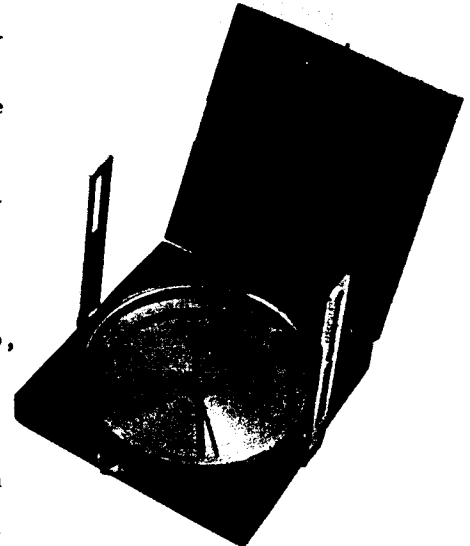
than to be used for precise measurement. The quality of workmanship appears to be that of an accomplished pattern or cabinet maker. The design, however, is not what one would expect from an accomplished instrument maker. Thus we believe that it is one of a group of concepts which were submitted to the patent office but never produced on a commercial basis.

In our opinion this is a unique item made as a patent model. The scale division is somewhat irregular suggesting that it was intended to represent a scale rather

(8 lbs UP)

\$ 795

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

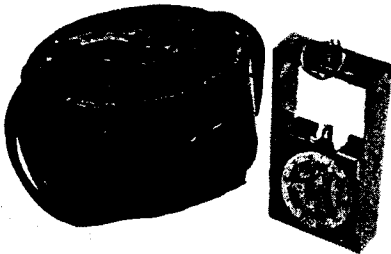


The second Benjamin Cole (1695-1755) was a noted maker and several exceptional signed instruments by him still survive. In 1748 he succeeded to the business of the famous orrery maker, Thomas Wright, located at "The Orrery", 136 Fleet Street. His son (the 3rd Benjamin Cole, 1735-1813) apprenticed to him in 1739 and was his partner by 1751. Instruments signed "B. Cole & Son" are known and Goodison places them in the period 1751-66, although one would think that 1755 would be a more logical end date. John Troughton acquired the firm in 1782. In our opinion, "Cole, Fleet, St." is the signature of the 3rd Benjamin Cole and would have been used between 1755 and 82. Thus we have here one of the longest continuous firms of instrument makers in the history of the world, stretching from the late 17th century well into the 20th; beginning with John Rowley (about 1698), Thomas Wright, Benjamin Cole (2nd), Cole & Son, Benjamin Cole (3rd), John, then John and Joseph, then John and Edward, then Edward Troughton, Troughton and Simms (1826), Cooke, Troughton, & Simms (1922), finally to become part of Vickers.

(5 lbs UP)

\$ 755

147. WAGON WHEEL ODOMETER - American, 19th c, unsigned. Brass construction, 2 1/4" w x 4 3/8" h frame in bright lacquered finish, readout dials silvered, pivoting readout block black oxidized. The 1 3/4" d readout dials are both driven by the same worm gear but because they differ in tooth count by 1, they provide a differential readout, 100 turns of the worm moving the inner dial 1 division with respect to the outer. The original leather covered case is also present, a necessity for actual use of the instrument since it provides the clearance needed by the swinging readout block. The case is 5" d x 2 5/8" thk and has the straps used to close it up and attach it to the wagon wheel. It is in sound condition although the surfaces are quite weathered. The odometer is in fine condition with restored surface finishes.



(6 lbs, UP, PS)

\$ 125

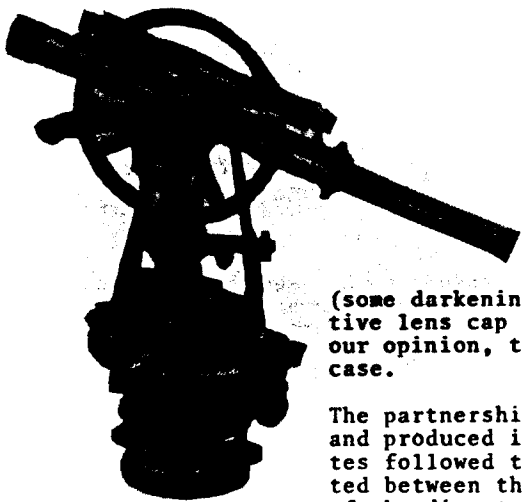
148. GOOD QUALITY LITTLE DUMPY LEVEL - English, c. 1830, signed "Davis Derby". Bright brass, original lacquer finish, telescope 13 3/4" long (min), extending another 1 5/8" by rack & pinion focussing of the objective. The top mounted bubble level is 5 1/8" long, the base 6" long and overall ht, incl staff socket, is 4". The instrument is complete, including the objective lens cap, although there are no crosshairs. The original mahogany case, 11 1/2" long x 5" deep x 3" h, is in fine condition. The level is extremely fine, almost mint.



Taylor 2 lists John Davis of 14 Iron Gate, Derby as a mathematical instrument maker who worked in the period c. 1830. She notes that most likely he was also the author of a booklet "Companion to the Microscope" which was printed at Driffield, near Derby. The Webster index locates several other instruments signed as the one here.

(9 lbs, UP, PS)

\$ 335



149. SEMI-TRANSITING A-FRAME THEODOLITE - English, mid 19th c, signed "TROUGHTON & SIMMS LONDON". Black oxidized brass with bright lacquered brass fittings standing 13" h including 4 screw leveling base, with 13 3/4" long telescope, horizontal. A 6" bubble level is mounted on the rack and pinion focussing telescope while the 2 base plate bubble levels are 2 3/4" long. The silvered face compass is 3 3/8" od, the beveled 5 1/4" d silver horizontal scale reads out by 1 arcmin verniers as does the 5 1/2" d vertical circle. There are tangent screw slow motions on both scales, a pair of magnifiers on the vertical circle and one on the horizontal circle. The telescope reverses in its trunnions and transits over the objective end. The theodolite is in very fine display condition with original finish throughout (some darkening of the lacquered fittings) and 2 small screws and the objective lens cap missing. Several deformed parts have been straightened but, in our opinion, the instrument is no longer useable for precise measurement. No case.

The partnership of Edward Troughton and William Simms was established in 1826 and produced instruments under this name until 1922. Their earlier theodolites followed the Ramsden pattern with the semi-circular vertical circle located between the trunnions and the telescope reverseable in "Y's" on either end of the diameter of this circle. In our opinion the design here was an adaptation of William J. Young's American Transit of 1831.

(18 lbs UP) \$ 1,350

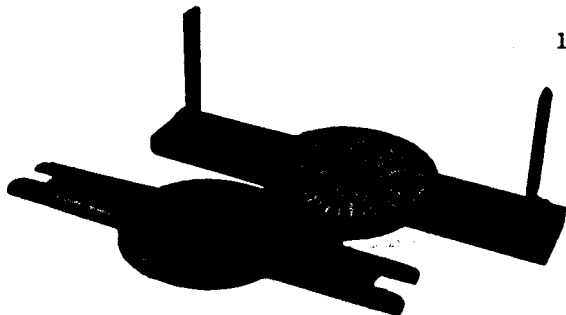
150. RARE COMPLETE SET OF VOLUMETRIC MEASURES - American, early 20th c, each and every piece signed "W. & L. E. GURLEY, TROY, N.Y.". Original wooden case, 8 3/4" x 11" x 6 1/2" h holds the one gill, half pint, pint, and quart lacquered brass flasks, and glass graduate. The separate half gallon and gallon brass flasks are 8" and 10" high respectively. The case and its contents are in fine to very fine condition with the original finish on the flasks, clean and bright. The two largest flasks, however, seem to have been unprotected and so have lost much of their finish and show some scratches and dents.

About the turn of the century Gurley appears to have tried to diversify their surveying instrument operation by setting up a Standard Weights and Measures department, or division. The portable balance, listed as Item 135 of our Catalog 119, was another example of this effort. However it must have met with but limited success and items such as these are now quite rare.



(25 lbs UP)

\$ 435



151. PARTICULARLY FINE WOODEN SURVEYOR'S COMPASS - American, mid half 19th c, signed "H. S. PEARSON/PORTLAND". Walnut base 14 7/8" long, 6" d compass housing with 5 1/2" needle and engraved paper compass dial, and 5 1/8" h original fruitwood sight vanes. The compass was found with an early (original?) rough pine protective cover. The compass is in very to extremely fine original condition although some of the orange putty which holds the compass glass in place has chipped off.

According to Smart, "Henry Sleeper Pearson, son of David and Elizabeth Sleeper Pearson was born at Newburyport, Mass. 23 May 1789. He died at Portland 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." Although he worked in the 19th rather than the 18th century, still only a few of his wooden instruments have survived and those most often in incomplete or damaged condition.

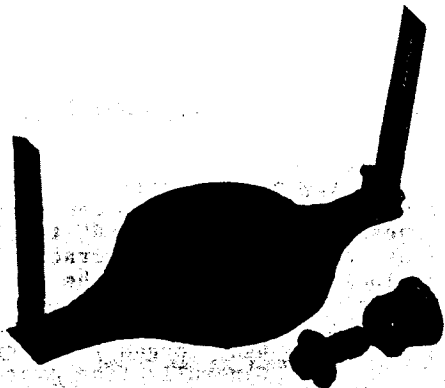
(8 lbs, UP) \$ 895

152. POCKET SURVEYOR'S COMPASS - American, mid 20th c, signed "KEUFFEL & ESSER CO./MADE IN U.S.A.". Black painted aluminum body 4 3/4" d with silvered readout scale, 4" needle, circular bubble level set into the black compass face, and 3 1/2" h folding black oxidized brass sight vanes. Original bright lacquered brass 3 1/2" long ball and socket joint for staff or tripod mounting. Original soft leather field case with shoulder strap. Case and compass in fine overall condition. The date, 1953, has been marked inside the case together with the name of its Berlin, N.H. one-time owner.



(6 lbs, UP, PS)

\$ 70



153. FOLDING SIGHT VANE SURVEYOR'S COMPASS - English, 2nd half 19th c, signed "T. B. Winter Newcastle" no. "201". Bright brass, original lacquer finish, 5 3/4" d compass housing on 12" long base, folding vanes 6" h, overall ht 10 1/4" when mounted on original ball and socket joint. The silvered compass dial is graduated by degrees along its edge; 4 3/4" needle. Original hand dovetailed mahogany case, 7 1/8" x 13 1/8" x 2 1/8" h, in very good condition with some age cracks and missing 1 hook. The compass is very fine with slight darkening to the lacquer finish except on the ball and socket joint which has lost most of its original finish.

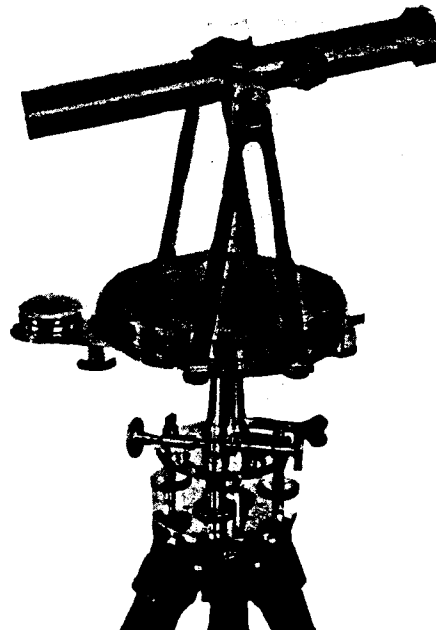
The trade card within the cover (with illustrations of late 19th c theodolite and sextant) places Winter at 21, Grey St. The Science Museum, London, collection of Trade Cards has one for Winter (no. 451) with an address of 55, Grey St, corner of High Bridge, but without a dating. Our other references

do not list him so we have been unable to determine the date in his career which would correspond to serial no. 201.

(10 lbs UP)

\$ 675

154. SECOND MODEL OF THE ORIGINAL AMERICAN TRANSIT - Between 1832-40, possibly 1837, signed "W. J. Young Maker, Philadelphia. Patent". Bright lacquered brass, 11 1/4" h from tripod head, with the 9 3/8" long rack & pinion focussing telescope level. The 5 7/8" d compass housing contains a silvered outer ring graduated to half degrees, a silvered single interior vernier reading to 1 arcmin, and a 5" needle. Under the base plate are the knobs for the needle lifter, azimuth clamping screw, and azimuth drive pinion. The 4-screw leveling base is part of the tripod head, the transit detaching for storage in its original 8 1/4" x 11 1/4" x 10 1/4" h hand dovetailed mahogany case. The mahogany tripod legs are 54" long and in fine condition, as is the case. The surface finishes of the transit and leveling base have been restored, 9 small screws and 3 larger ones (of the total 66) have been replaced, one very small screw is missing, the original black finish of the compass face has faded back to brass, there are some surface nicks, primarily to the outside face of the right-hand standard, and a short crack at the edge of the compass glass. Yet all things considered, overall condition is still very to extremely fine.



This instrument should be compared with that illustrated on p. 175 of Smart and with Item 182 of our Catalog 116. The one in Smart is generally recognized as the 1st model of the original transit. It has a tangent screw for azimuth fine motion, a low power inverting telescope with focussing knob on top, a single vernier reading to 3 arcmin, dual extensions on the transit base plate, one for the circular bubble level and the other for a tally counter, and telescope axis centering screws on one standard. The one here has a low power erect image telescope with knob to the side, only a single extension of the base plate (for the bubble level), and has eliminated the need for the centering screws. 1831 is now accepted for the date of Young's original transit. The word "Patent" on the dial refers to the black dial finish which we have been informed dates from 1832. We have also been informed that the form of the signature found here was changed to "Wm. J. Young" in 1840 and that about 1850 serial numbers were added starting with (about) no. 3000. Item 182 of Catalog 116 has an elevation readout and slow motion tangent screw as well as a telescope bubble level. These, we believe, are questions of added detail and not an indication of earlier or later dating. Most important for the instrument here is that the name and date "J. Folwell 1837" are to be found scratched both on the underside of the 1 1/2" d circular bubble level and on one of the interior parts of the needle lifter assembly. We believe this to be the name of one of Young's workmen (rather than a later repairer) and this indicates the date of completion. While the example here has its original tripod, and hence is complete with its leveling base, the example in Catalog 116 consisted only of the cased upper portion. This instrument is important in the history of the American surveying instrument industry.

(2 UP packages, 25 lbs each, both insured for the total price)

\$ 1,850



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

(10 lbs UP, PS)

\$ 225

(Surveying chains for sale only to purchasers of other surveying equipment)



156. HAND FORGED 40 LINK 2 POLE CHAIN - American, probably early 19th c, unsigned. Iron chain with forged handles one of which seems to have a brazed repair, a small approx circular ring located between each pair of long links, and a copper marker tag every ten links. Micro-meter measurements show that each long link can vary as much as .015" in thickness, ranging from .150" to .178", link to link. Some links have longitudinal cracks and no two small rings nor loops at the ends of the long links are identical. Even though there has been extensive rust pitting (the chain has been cleaned and oiled just recently) the indicated variations seem too great to have been due to this one cause. In our eyes the chain has been hand forged from irregularly drawn iron wire, a technology typical of the early days of our country. Generally fine overall condition except as already noted. This is only the 2nd 40 link, 2 pole chain known to us, the other having been Item 158 of Catalog 123.

(7 lbs, UP, PS) \$ 195

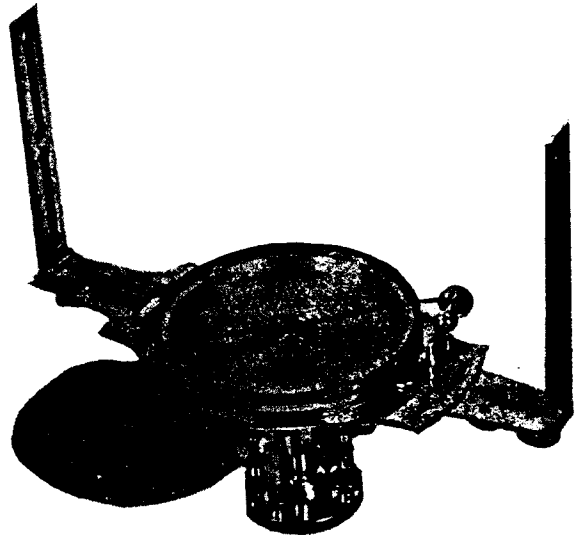
157. STEEL 50 LINK 2 POLE CHAIN - American, late 19th c, unsigned. Steel chain with triangular wire handles, 2 circular rings between each pair of long links, anti-twist joint in the center, and (most unusual) brass marker tags every five links. The chain wire does not vary by more than .001" from its nominal .105" d suggesting the late dating. Some dark spots but generally fine overall condition. The form of this chain is typical of that found in use in New England. However, we have never had one with markers every 5 links (every 10 is the usual).

(5 lbs, UP, PS) \$ 170

158. IRON HANDLE 50 LINK 2 POLE CHAIN - American, 2nd half 19th c, unsigned. Light weight iron links (some approx .105" thk, others .125" with several thousandths variation in each case) with (initially) 2 circular rings between each link. Apparently because of chain stretching some of these rings have been removed. Only one forged iron handle is present, the other having been lost and replaced by a wire loop. Also, only 2 (of the original 4) brass marker tags are still present. Generally very good to fine condition except as already indicated.

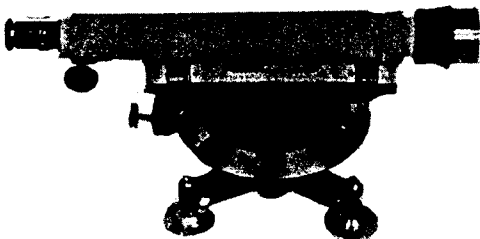
(5 lbs, UP, PS) \$ 90

159. IMPRESSIVE LARGE VERNIER COMPASS - American, c. 1900, possibly slightly earlier, signed "W. & L.E. Gurley, Troy, N.Y.". Bright lacquered brass with silvered compass, vernier, counter, and vane edge scales, standing 13" h including the original 4-screw leveling base. The compass base plate is 15 1/2" long, the compass housing 6 7/8" d (6" needle), and the screw-on sight vanes, 7 7/8" h. There is a chaining leg counter and a protective cover for the compass glass. The original machine dovetailed case is 16 1/2" long, 9 1/2" w, and 5 1/4" h, and is fitted for the 4-screw base, a tripod coupling (present but not illustrated) and a plumb-bob (now missing). It is in sound condition but with well worn surfaces. The compass is in extremely fine display condition, the surface finishes having been restored. The brass compass cover has several dents (having served its purpose along the way) and the end caps on the upper ends of the leveling screw holes are lacking.



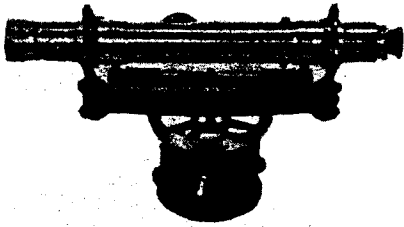
Illustrations of the same compass may be found in both the 1873 and 1902 Gurley catalogs. The form of the present leveling base, however, is not shown in the earlier catalog while it does bear some resemblance to those in the latter. This, combined with the type of case joints lead us to the indicated dating. Gurley tended to leave their basic designs unchanged for long periods of time. Thus their instruments of the period here are as elegant as those of 40 years earlier and, in our opinion, the most elegant of all those made by the major American firms.

(28 lbs UP) \$ 895



160. CONTINENTAL LEVEL - German, 1st half 20th c, signed "ERTEL-WERKE A. G. MUNCHEN/32209". Brass construction in white and black enamel, nickel plated, and bright lacquered finishes, 11" long x 6 1/8" h including the 3-screw leveling base. The longitudinal bubble is 4" long, and the azimuth table 4 3/4" d with its beveled scale which reads out by single vernier to 1 arcmin. Generally very fine condition except missing tangent drive thumb screw, a few worn spots on the telescope, and lacking cross hairs. This form of dumpy level could be used on a tripod or plane table.

(10 lbs, UP, PS) \$ 175



161. BUILDER'S "Y" LEVEL - American, early 20th c, signed "EUGENE DIETZGEN CO./CHICAGO-NEW YORK/5545". Brass construction in black oxidized finish, some parts black enamel, and fittings and knobs in original bright lacquer. Rack and pinion focussing telescope is 11 1/2" long with 5 1/8" long bubble level fitting into "Y's" 7" apart on 8" base. There is a 4" d silvered azimuth scale reading out by vernier to 5 arcmins. 7" h overall including 4-screw leveling base. The original 13" x 5 1/4" x 8 1/8" h mahogany case also contains (not illustrated) a plumb-bob and a triangular foot for plane table application. The case is in very good condition, the level very fine and original although it is missing its lens cap.

Eugene Dietzgen was born in Uckerroth, Germany in 1862 and died in Chicago in 1929. He came to the U.S. in 1880 and, in 1885, formed the partnership of Cuhring & Dietzgen. The firm became Eugene Dietzgen & Co. in 1891 and then Eugene Dietzgen Co. in 1893 and is still in business under this name. The instrument here is an example of one of their designs intended for use in the construction and building trades. Although not as early as some of the instruments in this catalog, its unusually fine original condition makes it appropriate for any high quality collection.

(16 lbs UP)

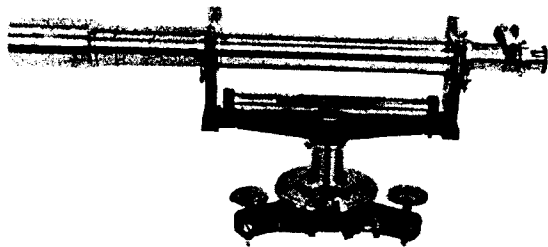
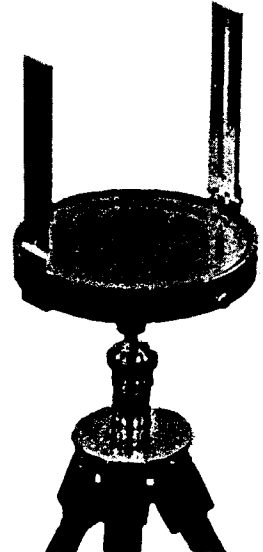
\$ 365

162. SURVEYOR'S VERNIER POCKET COMPASS ON TRIPOD - American, last 3rd 19th c, signed "W. & L. E. GURLEY, Troy, N.Y.". Bright lacquered brass 5 5/8" d silvered compass face inset with 1 1/4" bubble levels, 4 5/8" h folding sight vanes, magnetic variation scale and vernier engraved on the outer edge of the compass body. Ball and socket joint for staff or tripod mounting. Original tripod with 47" mahogany legs. No case. Fine overall condition except that the needle tends to stick; original lacquer finish on compass body, restored finish elsewhere, some pinpoint spotting.

Dating of this instrument presents some problems. The design of the tripod head predates that shown in Gurley's catalog of 1873 and is typical of that found in their 1869 catalog. However the largest pocket compass listed in either of these catalogs has but a 3 1/2" needle. Their 1902 catalog does list a 4 1/2" needle model but states quite specifically that it has half slit vanes rather than those of the type found on the example here and the illustrations show the later form of tripod. Could this instrument have been available in the 1860's, but not catalogued with a different tripod and vanes until the 1890's? We do not know.

(15 lbs UP)

\$ 345



163. A FINE FRENCH LEVEL - c. 1900, signed "H. Morin 11, rue Dulong Paris". Brass construction in nickel plated and black lacquered finishes, 18 3/8" long (including sunshield) and 8" h. The rack and pinion eyepiece focusing telescope rotates and reverses in the Y's but the 7 1/2" long bubble level is mounted to the frame, as is the case for dumpy levels. There is a spring loaded tangent screw for azimuth slow motion. The 3-screw leveling base permits plane table use as well with an appropriately designed tripod. Original walnut case 17 5/8" long, 9 3/4" w, 7 3/4" h, in fine condition except for age crack in top. The level is extremely fine, but needs new crosshairs.

The design is known as an Egault level, a cross between the wye and the dumpy and thus requiring a unique alignment procedure. We know that examples were made during the 1st half of the 19th c (see Item 169, Catalog 112), but have been unable to trace the history of its development.

(28 lbs UP)

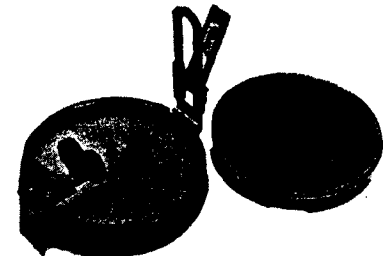
\$ 450

164. PRISMATIC SIGHTING COMPASS WITH SOLAR MIRROR - English, possibly 3rd qtr 19th c, signed "T & H. Doublet, 4 City Road, London". Black oxidized brass with some bright lacquered brass fittings, 4" d overall, 3" h folding forward sight vane with 1 3/4" long mounting for adjustable solar mirror, and prismatic rear sight with 2 swing-away solar filters. Original push-on cover. Green compass card, 3 3/8" d, with mirror reversed numbers so that they are correct when viewed through the prism. Fine overall condition with some rubbed spots. There is a screw socket on the bottom for staff mounting.

There are late 19th c surveying instruments by Doublet known with a street address different from the above and a "E.C." postal zone. The London postal zones were introduced in the 1850's and although they were not used by everyone at first, it is reasonable to believe that they were by the 1860's, certainly by 1875.

(4 lbs, UP, PS)

\$ 145





165. A MODERN "POLARA" TRANSIT - American, made Mar. 20, 1957, signed "C. L. BERGER & SONS, INC. BOSTON MASS" with serial no. "P 101 889". Constructed in black enameled brass and aluminum, standing 14" h including the 4-screw leveling base. The internal focussing telescope is 10 1/2" long with a 3 1/2" bubble below. The 5" elevation circle is read out by a single vernier to 1 arcmin and the 5 1/2" azimuth circle by opposing verniers to 1 arcmin. There are tangent screw slow motion drives on all axes. This model was made without a compass. The original wooden case, 13 1/4" w x 9" deep x 16 3/4" h, is in sound condition. The crosshairs of the telescope are intact, all the transit's mechanical parts are working, and there is no sign of physical damage. It is in fine overall (visual) condition. We have not checked alignment or accuracy and so can provide no guarantee in this respect although we suspect that it is a working instrument.

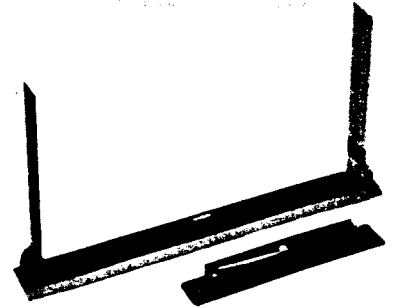
(38 lbs UP) \$ 365

vane is nickel plated. The alidade has folding vanes. The compass has a 4" needle and its base is 6" long x 1" w. Original leather case is 2 3/8" sq x 11 1/2" long. Case and instruments in very fine condition.

166. MILITARY ENGINEER'S PLANE TABLE ALIDADE AND TROUGH COMPASS - American, 20th c, marked "U.S." but otherwise unsigned. Brass construction, primarily in black lacquer finish. The forward sight is 11 1/8" long, 1 1/2" w with 6" half from 0° through 90° to 0°. Original cloth covered case, 4 1/4" sq x 1 1/4" thk, in sound condition but with external wear. The instrument is in extremely fine original condition. These were intended for tracing veins of iron ore which would disturb the local magnetic field.

(7 lbs, UP, PS)

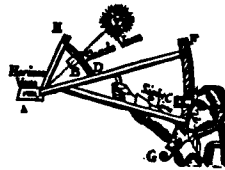
\$ 45



167. MINER'S DIPPING NEEDLE - French (and so marked), c. 1900, unsigned. Bright lacquered brass case 3 3/8" d with 3 3/4" d folding loop handle. The 2 1/2" compass needle reads off on a silvered scale graduated on its lower half from 0° through 90° to 0°. Original cloth covered case, 4 1/4" sq x 1 1/4" thk, in sound condition but with external wear. The instrument is in extremely fine original condition. These were intended for tracing veins of iron ore which would disturb the local magnetic field.

(3 lbs, UP, PS)

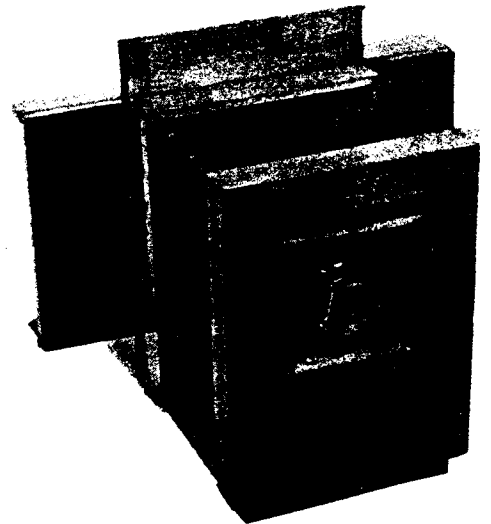
\$ 125



168. REPEATING BACK, RIGID TAIL-BOARD CAMERA - American, late 19th c, unsigned. Mahogany construction, max dimensions 14 3/4" w x 13" h x 15 3/8" deep with an 8" w x 10 1/4" h front panel including a recessed lens board fitted with a short focus lens in a "QUTA" air cylinder shutter. The moving rear of the camera is indexed both vertically and horizontally so that multiple exposures may be made on 5" x 7" plates. The ground glass viewing screen is present even though there are no plate holders. There is also a set of 4 masks, each for a different size image. Fine overall condition although there are signs of extensive use.

(16 lbs, UP, PS)

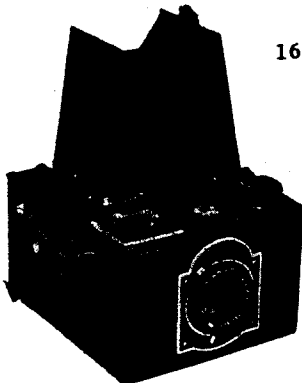
\$ 270



169. THE "KW REFLEX BOX" SINGLE LENS REFLEX - German, c. 1930, marked as in the quotes, serial no. 7828, and made by Kamera Werkstaten. Black leather covered box 3 3/8" w, 5" d, 3 3/4" h (hood closed) and 6 3/4" h with the hood open. The lens is a Steinhill Actinar f 4.5 of 10.5 cm FL in a focussing mount. The reflex mirror is part of the shutter mechanism giving speeds of 1/25th, 1/50th and 1/100th of a second. Picture size is either 4.5 x 6 cm or 6 x 9 cm on appropriate roll film. Fine to very fine overall condition (minor rubbing) and in working order (but no guarantee of shutter accuracy). The same camera is illustrated in Fig. 306 of the Auer Collection catalog.

(7 lbs, UP, PS)

\$ 175





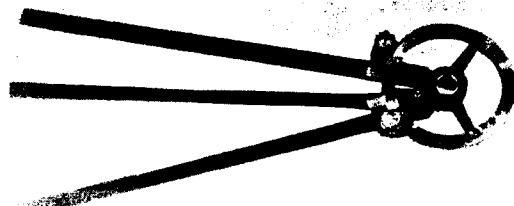
191. MARKING PROTRACTOR - English, early 20th c, signed "STANLEY, LONDON". Bright brass with original lacquer finish, nickel plated center bearing, inlet silver scales and opposing 1 arcmin verniers, 6" overall dia of full circle protractor, and the pivoted marking arms are 3 7/8" long each. A clamping tangent screw provides fine motion control. The instrument is in excellent, like new condition. The original mahogany case, 7 1/8" x 7 3/8" x 1 3/4" h, is in very fine condition although missing the hand magnifier.

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. Surveyors found them valuable for similar reasons and examples were made from the late 18th well into the 20th centuries.

(5 lbs UP) \$ 295

192. MINIATURE STATION POINTER - English, mid 19th c, signed "H. Hughes & Son 59 Fenchurch St. London No 543". Brass construction; 2 5/8"

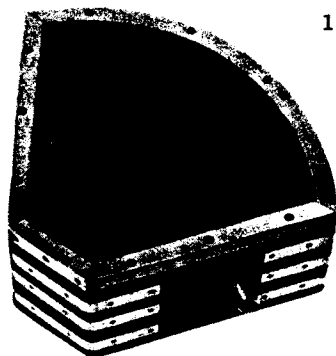
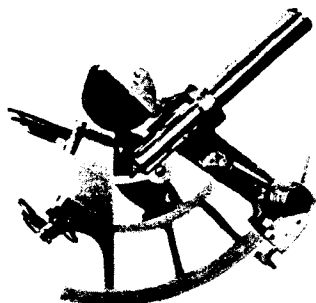
d readout circle, thumb screws and other screws in original bright lacquer finish (some dark spots), the rest in black oxidized finish. The 3 adjustable arms extend 9" from the center. The original mahogany case 11 3/4" w x 5" deep x 1 1/2" h has the Henry Hughes & Son Marine Opticians trade label in its cover. Case is in almost fine and instrument in very fine condition. Hand magnifier is missing.



A station pointer is used for locating one's position on a map or chart by setting in 2 landmark-landmark relative bearing angles between 3 landmarks and moving the instrument on the chart until the 3 landmarks used all lie along the edges of the 3 arms. The 2 angles can be measured with a peloris, sextant, azimuth compass, or theodolite. See Item 213 of Catalog 121 for a standard size version of this instrument. Henry Hughes, son of the instrument maker and dealer, Joseph Hughes, moved into 120 Fenchurch St about 1840, later to no. 59. We have not been able to determine when his son, Alexander, joined the firm, nor when it became a limited company. These dates would enable one to place more exact limits on the origin of this instrument.

(6 lbs UP)

\$ 475



193. HIGH QUALITY SEXTANT IN BRASS BOUND CASE - English, early 19th c, signed "Thomas Jones 62 Charing Cross London". Bright brass with restored lacquer finish, the sextant frame is formed from flat plate 1/4" thk, and the index arm is flat without a reinforcing bar. The inlet silver scale of 5 1/8" readout radius is graduated from -2 deg to 154 deg, the vernier reads to 10 arcsecs. There are sets of 3 horizon glass and 4 index mirror filters, tangent screw fine motion on the index arm, screw-on handle, swing-away scale magnifier, 3 screw-on sunfilters and an ivory eyecup for the telescope, and the 3 original telescopes, the longest with low and high power eyepieces. The only missing item is the hand magnifier. the

original brass bound mahogany case 8 1/4" d, 10 3/8" w, and 3 7/8" h is in fine condition. The sextant is extremely fine.

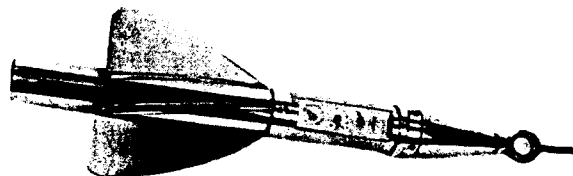
Thomas Jones (1775-1852) worked for Jesse Ramsden until the latter's death in 1800. Then, like Benj. Stancliffe, he set up his own firm which, according to Goodison, remained in business until 1850 (at 62 Charing Cross Rd from 1816-50). There is a partial trade label within the case where Jones designates himself "Pupil of Ramsden". Indeed, the quality of his workmanship matches that associated with Ramsden and Jones was so recognized for this during his own lifetime. He was elected a Fellow of the Royal Society in 1835. We suspect that he did not build up a large staff since only a relatively small number of his instruments are known. He does not seem to have had a few standard production models but rather made individual designs to specific order.

(12 lbs UP)

\$ 1,450

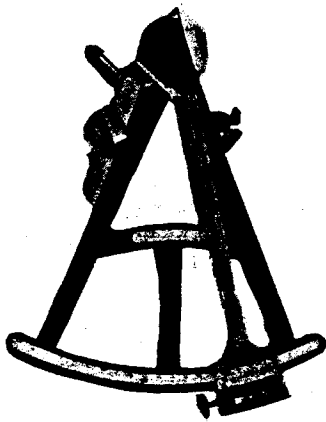
194. "T. WALKER'S/PATENT/HARPOON/SHIP LOG/A. 2./LONDON" - English, c. 1875, and so signed. Bright lacquered brass 19 3/4" long, 4-blade propeller, white enamel triple readout dial plate 1" w x 3 1/2" long. A cylindrical cover can be rotated over the dial. Generally fine to very fine condition with restored finishes and showing deep saltwater etching in places.

Thomas Walker (1805-73) started making logs and sounders under the Massey patents about 1850 (Edward Massey was his uncle). In 1861 a son, Thomas Ferdinand joined the father as Thomas Walker & Son and in the same year patented the original "Harpoon" log. In 1863, a new model, the "A 1" was produced to be followed by the "A 2" in 1866.



(8 lbs UP)

\$ 295



199. CHANNEL ISLES QUADRANT - British, early 19th c, signed "J. B. LE ROY * JERSEY". Ebony frame with bright lacquered brass reinforced index arm (tangent screw slow motion), sight vane with pivoted filter holder (sun filter now missing), and set of 3 index mirror filters. The ivory scale of 9 3/4" radius reads out by vernier to 1 arcmin. Possible glare surfaces are finished in flat black. "E. Franklin/Boston/1886" has been scratched into the ivory note plate on the back of the frame. Very fine restored (surface finishes) condition, with 1 screw of modern origin, one prong of the horizon glass washer on the back broken off and missing, the ivory pencil top missing, and the locking thumb screw a very old replacement. The original mahogany keystone case, 11 3/4" w x 13" deep x 3 3/4" h is in fair condition with age cracks and some old and new repairs. The trade label of F. W. Lincoln, Jr. & Co. is pasted inside the cover.

The French instrument maker Jean-Baptiste Le Roy, son of the chronometer maker Julien Le Roy, member of the French academy of Sciences since 1751 and a maker of electrical machines, microscopes and telescopes, died in 1800. It may be that the maker (seller?) of this navigation quadrant was one of his relatives (often a name is repeated in a family from generation to generation).

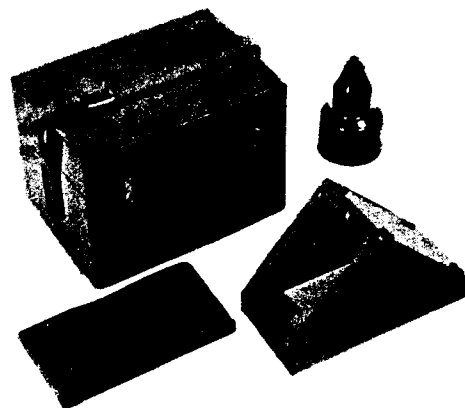
Although the Isle of Jersey off the French coast has been an English island since King John, its population is still French derived as may be established by just scanning a list of the names of old families.

(10 lbs UP)

\$ 795

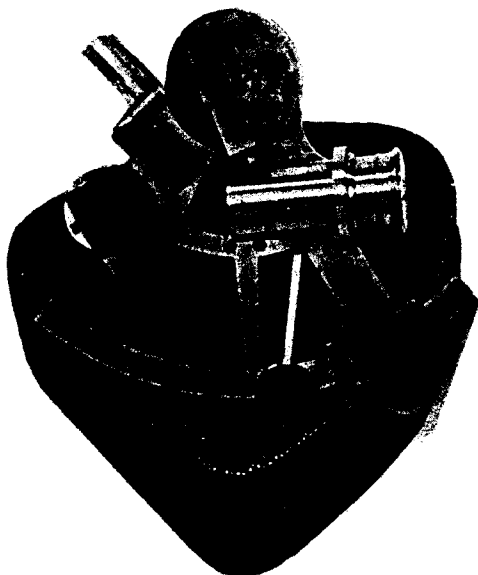
200. MERCURY POOL ARTIFICIAL HORIZON - American, c. WWI, signed "KEUFFEL & ESSER CO. N.Y.". Cast iron tray in green enamel finish 3 1/2" w x 6 5/8" long. Cast iron mercury storage bottle (with mercury) 2 3/4" d x 4 1/2" h, also in green enamel. Black oxidized brass roof-shaped wind screen cover, 3 3/4" w x 7 3/8" long x 4 1/2" h, with a pair of 2 3/4" x 4 3/16" optical windows mounted at right angles (also marked with serial no. 162). Original mahogany stowage box, with leather strap, 6" x 8 3/8" x 6 1/8" h. Case and horizon in very fine overall condition.

The demands of WWI brought several of the major American surveying instrument companies into the nautical instrument business. They made sextants, and such accessories as sextant stands and artificial horizons for using the sextants when on land. The artificial horizon is used for measuring the angle between a direct sighted star (or sun) and its reflection in the mercury surface. The measured angle is then twice the actual elevation of the body.



(20 lbs UP)

\$ 235



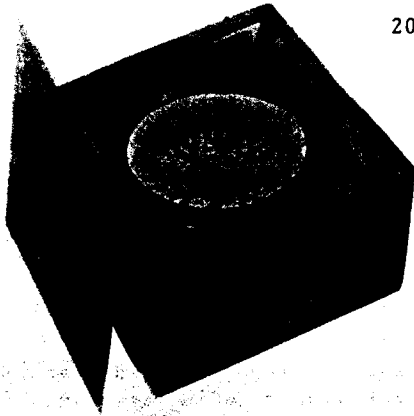
201. A MINIATURE SEXTANT - English, probably last decade 18th c, signed "Dollond London". Bright brass, original lacquer finish, max overall length 3 3/4", silver scale of 2 1/2" read-out radius and vernier reading out to 1/2 arcmin. Slow motion is by index arm pinion acting on curved rack cut along the limb. There are swing-away scale magnifier, folding handle, set of 3 index mirror filters and a 1 3/8" long telescope. The original shaped fishskin covered case is 4" x 3 3/4" x 1 1/2" h and in very fine condition except for some shrinkage, age warping, and missing a closure hook. The sextant is in original, mint condition.

These small sextants have never really been studied. Another one, almost identical except that it has a simple sight vane rather than a telescope, is shown as Fig 198 of Wynter & Turner, "Scientific Instruments". There they say, "The pocket sextant was a useful tool for the nineteenth-century surveyor, which he used for a quick meridian bearing. A handy size for the pocket, they were not intended to have the accuracy of a navigation instrument. Comparatively rare, the miniature instrument by Dollond in fig. 198 in its red morocco case must have been a good servant." They also date the instrument c. 1790. Although the box sextant was as much a surveying as a nautical instrument, these miniatures are another class alto-

gether. The accuracy of the one here was quite compatible with navigation requirements, its 1/2 arcminute readout corresponding to 3000 feet on the Earth's surface. Indeed, it is nothing short of a "tour de force" of the instrument maker's art, and clearly was not intended for field use. Its present condition is proof of this. Another point of interest is that at the time these instruments were made, Peter Dollond did not have the equipment necessary for such work. Do you think that his brother-in-law Jesse Ramsden (who died in 1800), who had such equipment and was noted for his accurate sextants was the actual maker? We do!

(\$ 10 registered mail)

\$ 4,500



202. LARGE DRY CARD BOAT COMPASS - American, mid 19th c, signed "S. THAXTER & SON. Boston". Stained pine case 10" sq x 6" h (the sliding lid a modern restoration) containing 6 3/4" d spun brass bowl suspended in 8 1/2" d brass gimbal ring. The 6 1/4" d drycard has an 1892 repair date with the initials "JSL" on its back. Generally fine to very fine overall condition noting that all the brass parts still have their original lacquer finish although it is somewhat darkened and rubbed or worn in places.

The firm started by Samuel Thaxter in 1792 became "& Son" in 1822. Even though the son, Joseph died in 1835, 7 years before his father, the firm continued under the same name until 1916. This compass is typical of that made during the middle half of the 19th century.

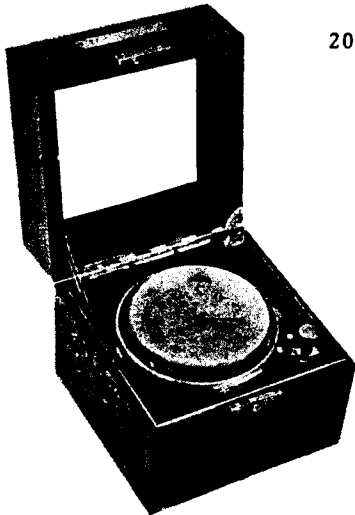
(15 lbs, UP, PS)

\$ 175

203. FISH SKIN CASED COMPREHENSIVE SET OF DRAWING INSTRUMENTS - English, c. 1800, unsigned. Pocket case 3" w x 1 3/8" thk x 6 3/4" long, complete with 11 separate items including 6" ivory rule and sector, 6" ebony parallel rule, brass protractor, and brass large dividers, large pen, large compass, pencil and pen arms which interchange with its divider leg, small ink compass, and pencil holder. Very fine overall condition. Such a set would have been owned by a ship's captain and used by him for his navigational work. This set contains as large a number of components as any we have yet had.

(3 lbs UP)

\$ 435



204. WWII MODEL 21 MARINE CHRONOMETER - American, signed and dated "HAMILTON/LANCASTER PA., U.S.A./No 8503/1941". 2 day movement in brass case 4 7/8" d suspended in 5 5/8" d brass gimbal ring mounted within its original 7 5/8" sq x 6 3/4" h (top lid missing) brass-bound mahogany box. The 4" d silvered dial has blued steel hands and subsidiary up-down and seconds dials. The 14 jewel movement has nickel plated plates, an Invar helical balance spring, spring detent escapement and chain fusee drive. There is a balance wheel locking mechanism for use when transporting. The chronometer is in exceptionally fine and its box in fine condition.

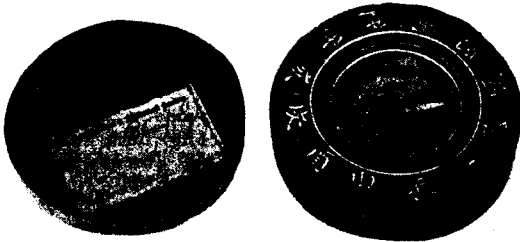
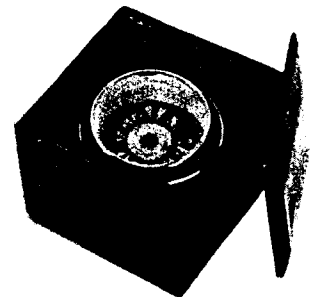
Over a one month test period it had a rock steady rate of -0.45 sec/day which was not affected by temperature. It has been our experience that those chronometers used on the larger warships are all missing their top lids. We understand that the practice was to place 3 of them in a glass topped case so that fail-safe reliability could be achieved through triple redundancy. This way they could be observed by any of the ship's navigators but only the one assigned to their daily winding would actually touch them.

(20 lbs UP) \$ 1,100

205. FINE LITTLE SMALL BOAT COMPASS - English, 2nd half 19th c, unsigned. Bright lacquered spun brass compass bowl 2 1/2" d, with 2 1/4" compass card, suspended in 3" d brass gimbal ring to 4" sq x 3" h hand dovetailed dark oak box. The bottom of the box seems to be a later replacement and the compass card shows some salt water burning; otherwise overall condition is very fine.

(4 lbs, UP, PS)

\$ 95

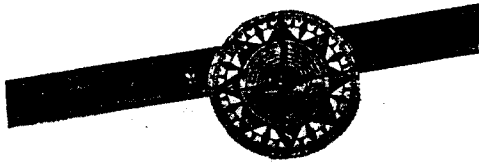


206. JAPANESE MARINER'S COMPASS - 19th c, probably signed. Wood case with push-on cover, 4 5/8" d x 2 1/8" h. The compass well is 2 3/8" d with a 2 1/4" south pointing needle. The 12 points of the compass are engraved into the black painted face. The compass glass and retaining ring are a modern restoration. A label in the cover notes that this compass was presented to the American Geographical Society (in New York) on March 10, 1869 by George W. Blunt, retired

dealer in nautical instruments, charts, books, and former publisher of Bowditch's "Navigator" and the "American Coast Pilot". Very fine overall condition.

(4 lbs, UP, PS)

\$ 395



207. COURSE FINDER AND CONVERTER - American (?), signed "C. A. POTTER", serial no. "B0918", with the following patent dates: U.S.A. - Aug. 25, 1914; Canada - Dec. 15, 1914; Gt. Brit. - July 28, 1914. Nickel plated brass rule, 30" long x 1 1/2" w (only part illustrated) upon which slides a 4 1/2" d compass rose disc. This disc has 3 sets of concentric rotating pointers. Extremely fine overall condition.

The British patent abbreviations describes this as "A course finder and converter for finding and shaping a sailing course from one point to another and for converting the geographical or true course to the magnetic or to the compass course, or vice versa, . . ." The illustrative example shows a boat sailing out of Port Huron, Michigan, on Lake Huron heading for the Sault Ste Marie locks. Thus we believe that this invention is of American origin although we have no biographical data on Mr. Potter.

(7 lbs, UP, PS) \$ 145

208. NAVIGATOR'S GUNTER RULE - English, c. 1800, unsigned. Darkened boxwood 1 3/4" w x 24" long with 16 computational scales, a 10" diagonal scale, and a 24" tenths-inch rule; brass insets at zeroes and points of great usage. Generally fine condition with a nick in the bottom edge and a slight curve to the entire rule due to age shrinkage. The use of this form of computational device (consisting of the standard set of linear and logarithmic number and functional scales for navigation) is 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) \$ 170

209. AMERICAN GUNTER RULE - c. 1830, signed "BELCHER BROTHERS MAKERS/NEW YORK". Boxwood rule 24" long, 1 3/4" w, 3/16" thk, with small brass insets at the zeroes of various scales for setting the mark-off dividers. The use of this, the earliest form of numerical analog computational device (consisting of linear and logarithmic number scales and functional scales), is described in Mackay, Bowditch, and other navigational texts of the 18th and 19th centuries. 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). Very fine plus condition. The Belcher Brothers were makers of precision rules. According to Brewington the firm was first listed in 1825 and became Belcher Bros in 1828. Item 376 of Brewington (see plate LI) is identical (including signature) to the example here, but not in nearly as nice condition. Later the firm became BELCHER BROS & CO.

(5 lbs, UP, PS) \$ 255

210. EXTREMELY RARE NAVIGATOR'S PLOTTING & GUNTER RULE - American, 1837-45, signed "FRYE & SHAW New York". Dark boxwood rule 24" long, 2" w, 3/16" thk, with small brass inserts at the zeroes of the the Gunter scales. The reverse of the rule has the conventional set of Gunter scales: sine rumb, tangent rumb, numbers, sines, versines, tangents, meridians, and equal parts. It is the face that is unusual. It is engraved with compass directions, some designated "For Meridians" and others "For Parallel Of Latitude". Further, there is the following text, "THE LETTERS AFFIXED TO THE COMPASS POINTS POINT OUT THE DIRECTION OF THE RULE ITSELF WHEN THOSE LINES ARE APPLIED TO THE MERIDIAN OR PARALLEL OF LATITUDE". The partnership of Addington D. Frye (? - ?) and Robert Ludlow Shaw (1813-1876) is listed from 1837-45 as mathematical instrument makers at 222 Water St., New York City. Shaw was in business by himself for one year before the partnership, and until his death in 1876, after the partnership. Generally fine condition with 3" of one edge repaired.

(5 lbs, UP, PS) \$ 295

211. DOUBLE SLIDE ULLAGE & PROOF SLIDE RULE - English, mid 19th-c (?), signed "J. LONG 43 EASTCHEAP LONDON". Boxwood with brass end plates, 2 3/8" w x 24 1/2" long (the 2 slides are 25" long), with a total of 12 scales on both sides and 3 more along one edge. Very fine overall condition. This is an example of a calculator to be used to determine how much tax could be squeezed out of alcoholic beverages. Dating is a bit difficult because of a clear contradiction between Taylor 2 and Goodison. Taylor places Joseph Long first at 20 Little Tower St and then, by 1829, at 43 Eastcheap, while Goodison has him on Eastcheap first and then on Little Tower St from 1820 through, at least, 1860.

(5 lbs, UP, PS) \$ 155



212. UNUSUAL FORM OF THE WEBB ADDER - American, patent dates of Nov. 5th 12th 1889, and brass name plate "J. L. HERRING'S COMPUTING MACHINE/J. L. HERRING/DERRY, PA. (WESTMORELAND CO.) NO. 12100". Nickel plated cast iron plate 7 1/4" w x 4 5/8" h with the double wheel arrangement of C. H. Webb's patented Adder (see Item 238 of Catalog 122). The large wheel is for digits and tens, the small wheel for hundreds, advancing 1 position for each full turn of the large wheel. Total capacity is 4999. Complete with stylus and in fine working order. Original leather case also included.

(4 lbs, UP, PS) \$ 110

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