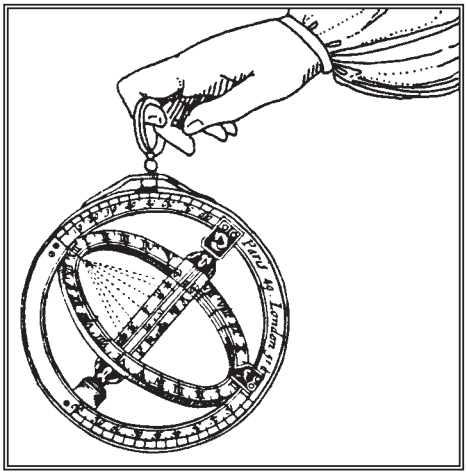

TESSERACT

Early Scientific Instruments

Special Issue: OPTICAL PLEASURES

Catalogue One Hundred Seven

Summer, 2018 $10

CATALOGUE ONE HUNDRED SEVEN

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— Yola Coffeen, Ph.D.

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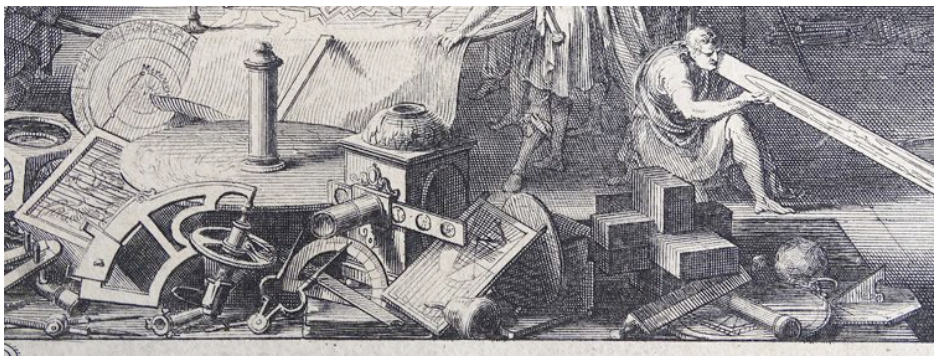
OPTICAL PLEASURES

"The science of optics is one which seems, by universal consent, to be devoted to our amusement, and optical instruments present to us such wonderful and unexpected appearances, that they are generally sought for, and examined with the greatest interest." (*The Magazine of Science, and School of Arts,* No. II, Saturday, April 13, 1839)

-- original watercolor by Capucine Mazille

The scientific study of optics has led to remarkable devices forming images and patterns that entertain, educate, mystify, amuse, and leave us in awe. Light beams reflected from surfaces and/or refracted through materials, give us endless optical pleasures. Here we present a wide diversity of devices for viewing, projecting, synthesizing, deconstructing, and distorting, as well as images enlarged, diminished or metamorphosed. They range from individual viewers to lecture hall apparatus, from microscopic photographic images to the moon in stereo to the hand-painted "Microcosm" of nature. We touch on persistence of vision, vibratory forms, standing waves, and the beginnings of animation. All give us pleasure.

We have organized them as follows, although there can be considerable overlap: *Viewers, Kaleidoscopes, Projections, Miniatures, Patterns, Animations, Eyeball.*



1. ART AND SCIENCE -- THE SPECTACULAR ETCHING OF SEBASTIEN LE CLERC, French, 1698, the 9-1/2" x 14-3/4" (24 x 37 cm) print closely trimmed but without losses, entitled "L'Académie des Sciences et des Beaux Arts, Dédiée au Roy, Par son très humble très obéissant et très fidèle serviteur et sujet Seb. le Clerc," and with the Royal standard of King Louis XIV. Condition is fine noting light soiling.

The Sun King was a leading patron of the arts and sciences. Here the famous engraver Le Clerc has grouped their many tools and uses into one grand scene. Among optical pleasures we find linear and cylindrical anamorphoses, magic lantern, perspective machine, optical refraction, etc.

A fine image rich with late 17th century devices.

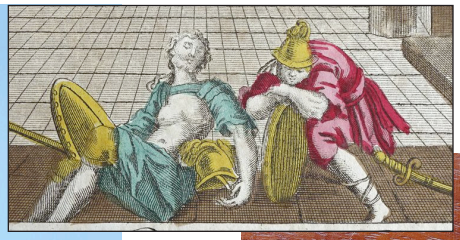
$1300.

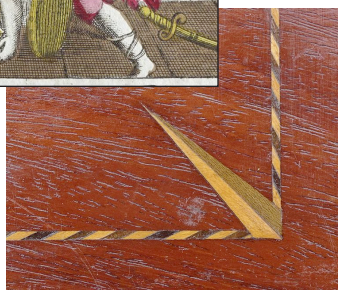
* * * * * VIEWERS * * * * *

2. THE POLYORAMA PANOPTIQUE, French, c. mid-19th century. With a collapsed size of 6" x 6-3/8" x 5" (15 x 16 x 13 cm), this fine little viewing box is bound in decorative paper and has folding strut, expanding paper bellows, hinged black background, and hinged reflective lid. The dark chamber has a slot for prepared views, and allows variable illumination by reflected and transmitted light. Condition is good noting some chips to the paper and loss of a wire strut. Included are eight (three excellent, others rough) original color lithographed views of France and England, with backing papers pierced and/or printed with nighttime transformations. From the exterior of St. Paul's is revealed the magnificent interior; Rubens' Belgian home changes season into a snowy night.

This device was apparently introduced as a humble souvenir for visitors to Daguerre's Diorama theater with its 300-foot-circumference painted panorama, day and night shutters, and rotating viewing platform. $1800.

3. EARLY PERSPECTIVE PEEP-SHOW, Italian, c. late 18th c., made up of a stage front followed by six scenes printed, cut out, and carefully hand colored on heavy card, reinforced with iron rods, each measuring 3-1/2" x 5-1/2" (9 x 14 cm). The panels would be set up one behind the other to form a perspective view, in this case depicting activity before a walled city, crowd emerging, Christ in a garden, various people about, palm trees, cloud formations, etc. It is the story of Jesus in the garden of Gethsemane. The set is in fine condition, in an early wrapper bearing "Scanbiali, Orazione nell'ortoz." $850.

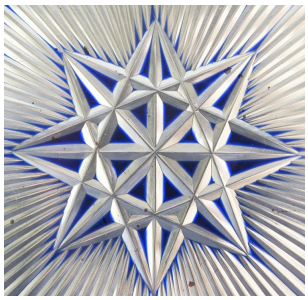




4. RARE DOUBLE-VIEWING ZOGRASCOPE, European, c. 1800. A fine large 8" x 14" (20 x 36 cm) mahogany panel is set with twin 4" (10 cm) diameter biconvex single lenses, 6-3/4" on centers, and inlaid. This is suspended before a tiltable and clampable rectangular mirror, for tabletop viewing. Supported by twin pillars and crossbar, it is all held by single extendable pillar to a turned circular base. Maximum overall height is 32" (81 cm). Construction is of fine mahogany throughout, the borders with decorative inlay. Condition is very fine noting one clamp screw replaced.

The parlor zograscope gave wonderful three dimensional illusion to the "vue d'optique" prints, which typically presented perspective views receding deeply in the distance. It was thus an elegant advance on the simple perspective cutouts mounted in series (*see item 3*). The view here, 14" x 21" (36 x 53 cm), is French, late 18th century, printed and hand colored, available at J. Chereau in Paris, and shows St. Peter's prison in Rome. Perhaps realistically, the guards all appear to be asleep at their posts!

The present zograscope is a rare example of the communal double, permitting two to view and discuss simultaneously. $3200.



5. VICTORIAN "OP-ART," probably English, 19th century. Set in a 7-3/8" (19 cm) square gilt wood frame is a splendid cut glass panel, blue and silvered. A central eight-pointed star is crossed by four center lines, thus subdividing the star into 32 triangles of different shapes and sizes. This is surrounded by a sunburst of 96 cut rays. The result is a remarkable reflector, presenting moving lights as one walks past. Condition is very fine noting slight wear. $595.

6. THE "OPTICAL PARADOX" -- AN OPTICAL ILLUSION, probably Austrian, c. late 19th century. Lacquered brass sighting tubes, with plain glass "lenses", are mounted through rectangular wood pillars, on a steel column and cast iron base. An air gap is present between the two ends of the "telescope." An observer sees very clearly through the instrument, even when an opaque obstacle is placed in the air gap! A sliding wood panel reveals the secret -- a sequence of four plane mirrors which direct the light down, across, and back up to the viewer. Overall dimensions are 12-1/2" x 15-1/4" x 2-1/2" (32 x 39 x 6 cm), and condition is fine.

George Adams terms this "The Optical Paradox, or Double Perspective." A similar device is illustrated by G. L'E. Turner in *Nineteenth Century Scientific Instruments* (1983), along with an engraving by Tissandier showing such a telescope in use, the observer looking directly through a massive stone! A simple device, but quite uncommon, this the first example we have seen on the market. $3200.

7. EXTRAORDINARY FLOOR-STANDING ZOGRASCOPE, probably English, c. 1800. The 4-7/8" (12 cm) diameter biconvex singlet lens is mounted in a square mahogany panel with decorative inlay, suspended on double hinge linkage before a 7-1/2" x 9-3/4" (19 x 25 cm) plane mirror. The whole mounts atop a fine turned mahogany pillar with (later) lead weight to the base, the total height 56" (142 cm). Condition is fine.

This unusual viewer can be placed alongside desk or table for studying "vue d'optique" perspective views. The included late-18th century hand-colored view (in fair condition) was available at Lachaussée, Daument, then Basset, all in Paris, and shows the deep perspective viewed from the entrance to the Temple of the Sun in Palmyra. $1950.

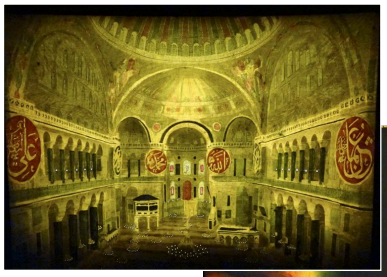
Transforms day into night, black and white into color, sunlight into lamplight and moonlight

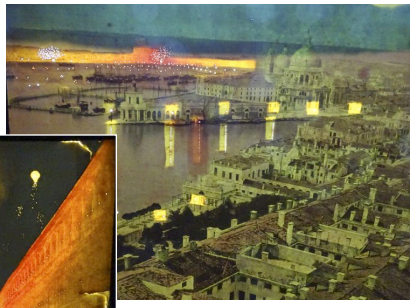
BETTER THAN TELEVISION

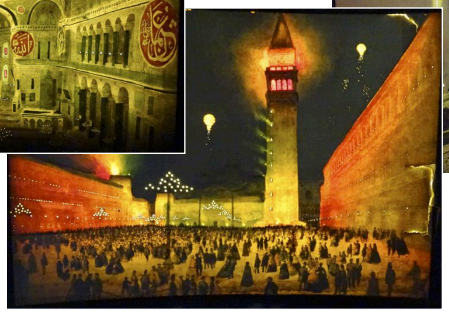
8. VENETIAN HOME ENTERTAINMENT CENTER --THE MEGALETHOSCOPE OF CARLO PONTI, Italian, c. 1860's. Sitting atop its 23" x 16-1/2" x 10" (58 x 42 x 25 cm) highly-carved, partially-ebonized wood stand is a 35" (89 cm) long viewing system, again carved throughout with foliate designs, the winged lion of St. Marc (and thus of Venice), and four remarkable views perhaps as allegories of the arts and sciences, one representing navigation (incorporating anchor and octant), one with magic lantern or camera(?) The apparatus rests horizontally on its large circular wooden disk and on a serpent shaped metal support ring, and can be rotated 90° about the optical axis for viewing both "portrait" and "landscape" images. At the far end (*to the right in the photo above*), there is a large hinged ground glass with hinged cover, and a slot for photographic views in curved wood mounts. Two doors, with internal mirrors, can be opened and latched from 0° up to 90° to further vary the illumination. There is a removable internal rectangular carrier. At the "eye" end another mirrored door gives access to a large rectangular viewing lens with focussing by twin handles. Extra slots could accommodate various accessories, filters, etc., not present here. Condition is very fine.

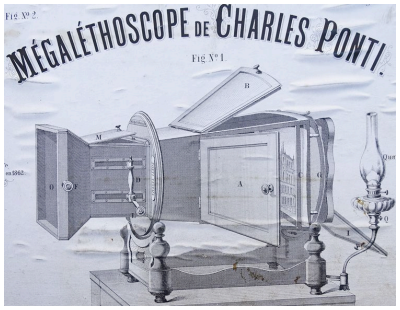
Carlo Ponti, Swiss-born, worked in Venice and was appointed Optician to Victor Emanuel II, King of united Italy from 1861 to 1878. Ponti developed his magnificent viewer for prints and photographs, first as the alethoscope then megalethoscope. It featured multiple adjustments for illumination, day becoming night, etc. The present outfit includes 25 original views, each constructed with a 12" x 16" (30 x 41 cm) open wooden frame mounted with a sepia-toned photograph backed by paper color-hand-painted to the reverse, backed in turn by a muslin sheet and mounted with a printed label (in French and English). Included are numerous photographs of Venice, plus landmarks in Rome, Pisa, Sorrento, Milan, Florence, Naples, Grenada, Paris, Dresden, Constantinople, etc. And when illuminated from behind, the scenes change, colors appear, lights show in the windows, people appear in the town squares. These marvelous interactive views range in condition from fine to good to fair.

The megalethoscope was available in a wide variety of embellishments and with a choice of accessories, mounts and stands. The simplest were totally functional, with essentially no wood carving. Ours has fine carvings on all sides and on the mounting platform. As to price, we note a similar one, but sitting atop Ponti's elaborate chest containing numerous views, sold a few years ago for $201,000. And a fine ebonized and ivory outfit made a similar price at French auction. Thus we have a bargain. $18,500.

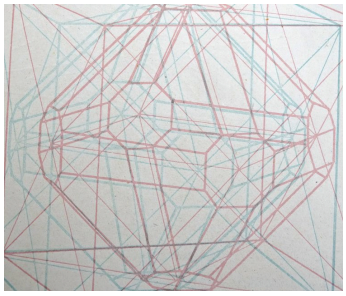




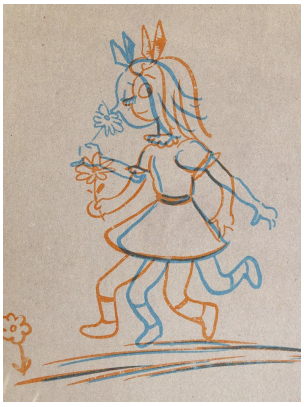



MÉGALÉTHOSCOPE DE CHARLES PONTI.

COLOR CODING IN SCIENCE AND ENTERTAINMENT. By overprinting images in two colors, and using colored glasses to differentiate them, 2D printing yields 3D views, or gives simulated motion. Here we present one book of serious geometry, another of children's tales using Uncle Ben Jay's "Magic Lenses."



9. LES ANAGLYPHES GEOMETRIQUES, H. Vuibert, 1912, 6-3/4" x 10" (17 x 25 cm), 32pp., with many stereo images of descriptive geometry, crystallography, and physics. In fine condition, complete with the *Lorgnon Stéréoscopique* of red and green filters. These anaglyphic prints present to the two eyes, via color coding and filtering, true stereo pairs. Louis Ducos du Hauron is credited with its invention in 1891 (*see item 52*) $195.

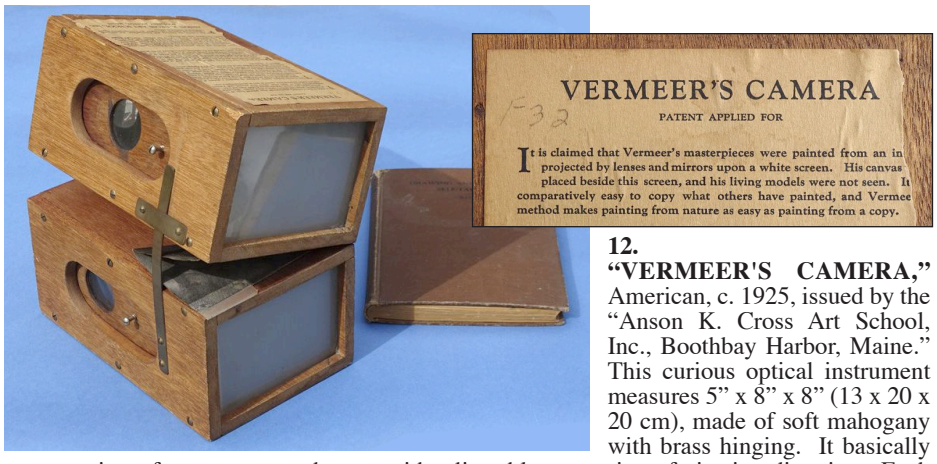


10. TONY SARG'S MAGIC MOVIE BOOK, New York, 1943, the 8-3/4" x 11-1/4" (22 x 29 cm) book bound in heavy card and color printed with 17 pages of updated children's tales including five large double-faced volvelles. There are many scenes, printed in red and blue. Two pairs of magic lenses are provided, allowing one or two viewers simultaneously. Alternating between the colored views gives the sense of motion. Good condition throughought. $180.

DISCRETION AT THE OPERA

11. HAND-HELD POLEMOSCOPE FOR SIDEWAYS VIEWING, English, c. late 18th century, the turned lignum vitae instrument 2-1/4" (5.7 cm) long, bound with a brass ring and fitted with viewing glasses at each end, plus twin oval mirrors with respective viewing ports to right and left. Condition is fine except for a central break in one mirror. It is complete with the original papered card case inscribed "Wm. Utting's, Mundham near Lod'don Norfolk."

Also termed a "jealousy glass," this surreptitious viewing device was perhaps first described by Hevelius in 1647 in his *Selenographia*. We find Mundham (population c. 175) near Loddon (population c. 2650) in Norfolk, and find records of the Utting family throughout that area for hundreds of years. $1450.



12. "VERMEER'S CAMERA," American, c. 1925, issued by the "Anson K. Cross Art School, Inc., Boothbay Harbor, Maine." This curious optical instrument measures 5" x 8" x 8" (13 x 20 x 20 cm), made of soft mahogany with brass hinging. It basically consists of two cameras obscura with adjustable separation of viewing direction. Each is a right angle viewer; but by using a clever sideways focusing mechanism, the ground glasses remain always in the same plane, and the lenses do not move in-and-out. Condition is fine and all original throughout, with minor wear.

The objective of Cross's device (as explained on the remnants of the instruction sheet atop the instrument) is to present an image of the unfinished painting on one ground glass, and an image of the object or subject itself on the other, for instantaneous comparison. This method, according to Cross, resembles that attributed to Vermeer. Included is a (somewhat used) copy of Cross' 1922 *Drawing and Painting Self-Taught*, wherein he describes drawing on a transparent sheet of glass (with removable white background), to likewise permit instantaneous comparison with the subject. A good example of "Vermeer's Camera," quite rare. $1950.

13. KALEIDOSCOPIC ELEGANCE, French, c. early 19th century, signed "Lemiere, Palais Royal galerie de bois No. 229 à Paris." This large instrument, 11" (28 cm) long by 3" (7.6 cm) in diameter, has a metal main tube patterned in reds resembling iridescent crystal deposition, and end pieces (eye surround and rotating specimen box) of silvered copper. The specimens include faceted colored glass "jewels," coiled wires, etc., giving the look of ladies' fine necklaces, bracelets, etc. Condition is fine noting some rather pleasant wear to the silvering, and the usual reduced reflectivity of the mirrors (internal dust probably). Images are fine, composed of ten equi-angular elements.

We have seen one other, simpler kaleidoscope by Lemiere. He is recorded by Marcelin as a specialist in optics, especially lorgnettes and opera glasses, working at the beginning of the 19th century in the Palais Royal, with its stylish shops and cafes in the galeries of this former Royal Palace in the center of Paris. William Kitchener, in 1824, describes one of Lemiere's inventions. Here we have his impressive and most elegant kaleidoscope. $7500.

14. SIMPLE KALEIDOSCOPE OF QUALITY, probably German, c. late 19th century, possibly Max Kohl. Finely made of bright lacquered brass with chemically darkened eye surround, it measures 5" (13 cm) long. Equipped with three mirrors, it presents six images in equilateral triangles. It is designed for viewing one's surroundings, but has a sort of "live box" for inserting simple specimens. Of high quality, and in excellent condition. $595.

15. FENBY'S PANTEIDOSCOPE, English, c. 1885, bearing the remains of a label "Fenby's Patent Panteidoscope, Patented January 6, 1882" followed by a severe warning against any patent infringement! The 3-3/8" x 3-1/8" x 2-7/8" (9 x 8 x 7 cm) device is simply constructed of wood, printed tin plate, twin mirrors set at 75° angle, and slot. Included is an original (broken) strip of 14 lithographed color patterns and images, to be fed through the slot. Condition is only fair, but this multiple-reflection device is notable as the only "panteidoscope" we have seen.

An 1882 advertisement by the London firm Perry & Co. explains that the strip should be drawn backwards and forwards "and the most beautiful variations of colour and design will be seen in the mirrors." Alternatively one can mount "all kinds...&c" onto a strip of paper at home. $650.

THEIR MAJESTIES THE EMPEROR AND EMPRESS

16. A ROYAL KALEIDOSCOPE OF HIGHEST QUALITY, POLYANGULAR AND SPRING-DRIVEN, French, c. 1865, signed "Kaleidoscope...Mécanique à Rayons Multiples" and "Maison Oudin A. Charpentier -- Aug. Jacquin B'tes, 52 Palais Royal" and scratch numbered 56734 inside. The cylindrical instrument is 11" (28 cm) long and 3" (7.6 cm) in diameter, with brass main tube covered with very fine wavy guilloché engraving. "Superimposed" on this background, superbly hand-engraved, are many bees in flight, plus a capital"N" intertwined with twin mirrored "E's" formed as sumptuous foliage, and an ornate crown ringed with winged eagles and topped with orb and cross. The designs stand out with partial gilding. Adjustable bands bear the signatures. The interior is set with two long thin glass mirrors in sheet steel, hinged for polyangular adjustment and with blackened metal arc on the "third" side, and cleverly designed for cleaning if necessary. The angle between mirrors, and thus the number of segments in the image, is set by turning one of the bands. At one end is a plane glass viewing port. The other end has a specimen cell with ground glass window and filled with colored glass fragments, some faceted and some beaded. An internal spring drive rotates the cell uniformly via multi-step gear train with fan governor. The winding shaft is concealed "magically" underneath one of the bands, and the cell rotates continuously as long as an external button is depressed. It is the ultimate in luxury -- the dynamic optical action takes place "without lifting a finger." Condition is very fine to excellent.

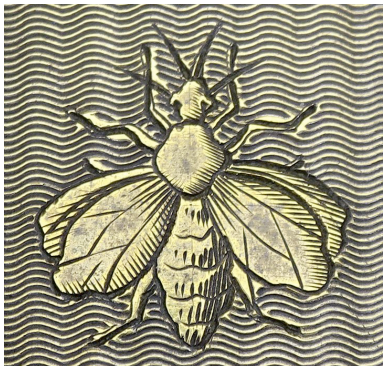
The inventor, clockmaker Auguste Jacquin, received French patent 66935, on 7 April 1865, for "Kaléidoscope mécanique à dessins changeant seuls." He claimed the instument could run by itself for several hours on a single winding.

The maker was the renowned watch-and-clock making firm of Charles Oudin, established at the present address c. 1809, run by various members of the family closely connected with Breguet, and formally associated, in the 1850's, with Amédée Charpentier. They rose further, being appointed clockmakers to various Royalty, and exhibiting at the great International Exhibitions (e.g., London 1862 and Paris 1867).

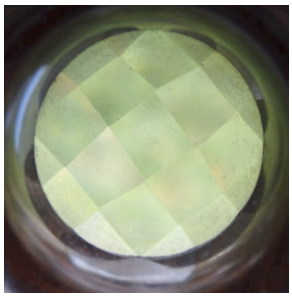
This leads us to the rich imagery. The interlaced "N" and "E's" form the dual monogram of Napoleon III, "Emperor of the French," and his Empress Eugénie. His eagle crown is tied to symbols of imperial Rome and military victory. And the ubiquitous images of bees, symbols of immortality and resurrection, were used in both First and Second Empires.

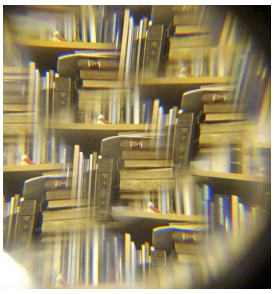
Louis Napoleon (1808-1873) became Emperor in 1852, reigning with popularity for years. And despite eventual political and military difficulties, it was a period of brilliant domestic successes and excesses. His 1853 marriage to Eugénie, Countess de Téba, at Notre Dame, was perhaps the most magificent, most splendid, apex of the era. For example, quoting from Walford's 1873 biography "The *pièce de marriage*, as it is called, was of massive gold, set round the edge with diamonds, having on one side the cipher of Napolean III, and that of Marie Eugénie de Guzman, and on the other, written in diamonds, the date of the marriage." Now we can offer another extraordinary Royal object, a relic of the richly appointed lives of Eugénie and Napoleon III. $85,000.

NAPOLEON III AND EUGENIE



17. BEAUTIFUL KALEIDOSCOPIC "DESIGNOSCOPE," European, second half 19th century. This fine tabletop instrument measures 15" (38 cm) long overall and stands 16" (41 cm) tall. The main tube is tole, enameled green with bright lacquered brass fittings. It has eyelens and two mirrors, and is mounted with brackets and ring supporting an adjustable specimen disk. The latter can be rotated and varied in distance by small knob, and bears various period fragments (cloth flowers, seeds, etc.). The twin mirrors are set to give a rosace of twelve images. The whole is mounted at a good viewing angle atop its spiral-twist claw-footed gold cast iron stand. Condition is very fine with general light wear. $9800.

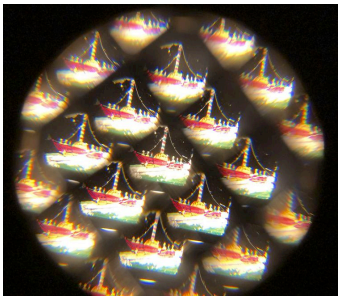




18. EXQUISITE LITTLE PRISMATIC VIEWER, English, 19th century. A faceted polyangular glass is set in an elegant turned lignum vitae mount having a tapered shape suitable for holding to the eye and rotating, or even fixing in the eye like a jeweler's loupe and surveying one's environment. There are 21 facets, giving up to 20 identical images around the central one, depending on how close the viewer is held to the eye. It is in excellent condition throughout. The polyprism viewer was a popular form of entertainment in Victorian times. $595.

19. THE POLYPRISM VIEWING BOX, English, c. 1840's, labeled "New Optical Amusements." The rectangular mahogany box is 9" x 3" x 2-7/8" (23 x 8 x 7 cm), mounted with a fixed ground glass at one end, and polyprism at the other. The prism has 21 facets in view, and is set in a rotating mount of lignum vitae. A sliding lid gives access to a removable box containing various transparent (or translucent) views, all hand painted in color. Four are on glass, including a steamship named "Star," and a galleon of many sails bearing (apparently) a red flag. Eight are painted on card, and include a mermaid and a very happy sea serpent. Condition is generally fine, the label and the glass views rough.

In use a given view is placed in a slot at the far end, the lid slid shut for maximum effect, the box held to light and upwards of 20 identical images are seen rotating about the central one. This good early viewing box is extremely rare. We have found one example, that in the Bill Douglas Cinema Museum, bearing the maker's or retailer's label of Farley's "repository for English and foreign toys" at 31 Fleet St., London. Henry Farley had received his freedom in 1841, and was in business until his death in 1854.

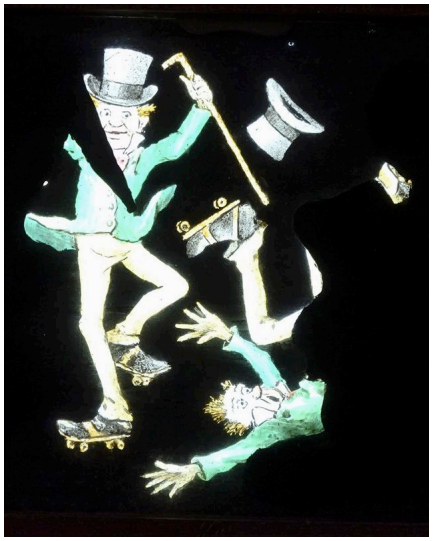


This viewer presents one more stage in the fascinating evolution of pre-cinema towards true animation. $6000.

20. RARE KALEIDOSCOPIC PROJECTOR, English, c. late 19th c. This fine "magic" lantern projector is constructed of mahogany, bright lacquered brass, and japanned black sheet steel. The mahogany base is 8" x 16" (20 x 41 cm) and the lantern's overall height 12-5/8" (32 cm). A hinged rear door gives access to the light chamber, lined with steel and equipped with a slide-out tray carrying adjustable electric lamp fixture and an adjustable concave rear condenser of thick glass, front silvered. There is a fine door for lamp access, with blue glass viewing port with brass cover. Moving forward, a large 3-3/4" (9.5 cm) diameter pair of condensing lenses leads to the slide holder with very fine crankwork chromatrope slide (*see photo below*), then to the large projecting tube with drawtube and choice of (1) screw-in multi-element objective lens assembly (with racked focus, swivel shutter, and filter slot), or (2) fine kaleidoscope assembly with drawtube focus and front element drawtube. Accessories include carrier for square "cinema" slides, case for kaleidoscope assembly, and two (recent) bulbs. Condition is very fine with slight spotting.

This is a rare example of the projecting kaleidoscope already described in considerable detail in 1819, by its inventor Sir David Brewster (*A Treatise on the Kaleidoscope,* pp. 103ff). Lewis Wright (*Optical Projection, a Treatise on the use of the Lantern in Exhibition and Scientific Demonstration,* 1891) recommends projecting a rackwork slide containing various loose objects, or else a revolving chromatrope (as here). And in "*The Magic Lantern: How to Buy and How to Use it, Also How to Raise a Ghost,*" 1866, the author "A Mere Phantom," discusses the proper eccentric and longitudinal adjustment of the lamp, focus by the very front tube of the kaleidoscope, and the correct rotational position of its mirrors. A remarkable outfit. $6800.

21. SET OF FIVE INGENIOUS "SLIPPING SLIDES," English, mid-19th century. Each slide is constructed with a 4" x 7" (10 x 18 cm) mahogany body containing a fixed glass hand-painted in color "double" scene, and a sliding glass painted with opaque areas to isolate portions of the scene selectively. Thus a dancing jester falls, a wizard brings a monster to life, wind inverts an umbrella, etc. Condition is very fine with no paint losses.
$1200./the set

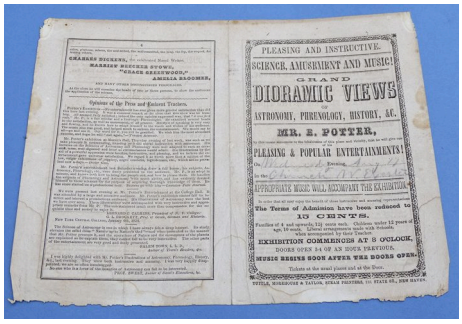


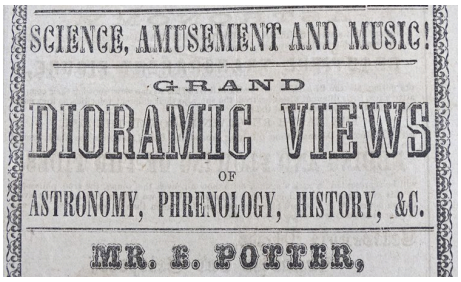
22. THE "MICROCOSM:" NATURAL HISTORY MAGIC LANTERN SLIDES, c.1856, by Carpenter and Westley, Opticians, 24 Regent St., London, consisting of a boxed set of "Copper Plate Sliders" all hand colored and framed in stained pine, most identified with English and/or Latin names on paper labels. The 208 views are in 56 slides 3-11/16" x 14" (9.4 x 35.6 cm). The slides are contained on two levels in their original dovetailed pine case 8-1/2" x 16" x 14" (22 x 41 x 36 cm). The case is stamped with the maker's name and address, and contains a list of slides for sale, "A list of the Copper Plate Sliders &c., for the Improved Phantasmagoria Lantern." This full set of Natural History slides is made of "24 Mammalia, 7 Birds, 4 Reptiles, 5 Fish, 8 Insects, and 8 Vermes (comprising Worms, Mollusca, Shells, Corals, and Animalcules)," for a total of 56 with "from four to six subjects in each." The maker's stamp is on all the slides, most giving "Carpenter and Westley," and few "Carpenter & Co," all with 24 Regent St., London. Several slides have handwritten painter's or owner's initials "K.T.(?)" and the year 1856. It was in the early 1820's that Philip Carpenter introduced the process of making slides by printing the outlines on glass from engraved copper plates, followed by hand coloring (hence the trade name "Copper Plate Sliders"). The slides are generally in very fine condition, with bright colors and detailed, fascinating paintings, lively and whimsical. Some paint flaking has occurred (typically the result of heating in the slide chamber of a magic lantern), and one view on one slide is missing. The case is in fair to good condition. On the whole, this is a superb set of exquisite views, early, complete, and rarely found in this condition. $7500.

23. GRIMACES GALORE, FOR LANTERN PROJECTION, English, mid-19th century, the 4" x 7" (10 x 18 cm) mahogany frame stamped for the retailer "J. & W.E. Archbutt, Electricians, 8 Bridge St., Westminster, London." Two windows, in the form of bucket-shaped heads, are painted onto a 3" (7.6 cm) diameter fixed glass disk. Mounted over this, and driven by hand crank to a fine brass ring gear, is a similar disk painted in pink with a sequence of ten startling faces showing surprise, shock, terror, pleasure etc. They appear through the windows in pairs, and thus permit twenty combinations. Condition is very fine and all original, with a slight bend to the handle bracket.

The retailer is recorded as a scientific instrument making firm founded in 1796, advertising also as electric bell manufacturers in 1883. We have had a universal computing rule by them (**Tesseract** Catalogue 71 item 33), and even an electrum marking protractor with gold scales (Catalogue 6 item 43).

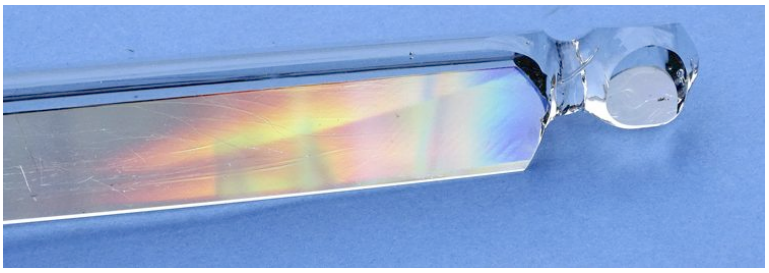
Presenting a variety of expressions, this extremely rare mechanical lantern slide can be seen as a stepping-stone to the truly animated, and automated Grimatoscope (item 52). $1450.


PLEASING AND INSTRUCTIVE.
SCIENCE, AMUSEMENT AND MUSIC!
GRAND
DIORAMIC VIEWS
ASTRONOMY, PHRENOLOGY, HISTORY, &C.
MR. E. POTTER,
PLEASING & POPULAR ENTERTAINMENTS!
APPROPRIATE MUSIC WILL ACCOMPANY THE EXHIBITION.
The Terms of Admission have been reduced to
10 CENTS.
EXHIBITION COMMENCES AT 8 O'CLOCK.
DOORS OPEN 1/4 OF AN HOUR PREVIOUS.
MUSIC BEGINS SOON AFTER THE DOORS OPEN.

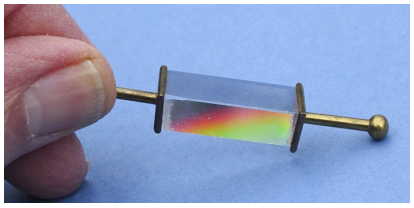


24. BROCHURE FOR POTTER'S LANTERN SHOW, American, c. third quarter 19th century, the four-page brochure 6" x 9-1/2" (15 x 24 cm), printed in New Haven, describing Mr. E. Potter's "Science, Amusement and Music!" shows. Promised are a set of "Splendid Revolving Diagrams" of the "sublime science of Astronomy," and closer to home, fifteen scenes "representing one of the most cold blooded murders that ever transpired in Maine" (in 1856). History and religion are covered, as well as revolving chromatropes and phrenological heads of thieves, gluttons, misers, the brag, the fop, the coquet, etc. Condition is good with normal wear. $225.

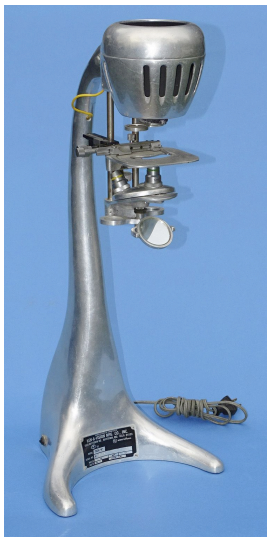
OPTICAL DISPERSION -- THE RAINBOW MAGIC OF THE PRISM

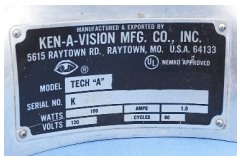


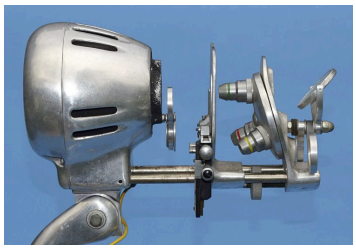
25. HANDMADE GLASS PRISM, c. early 19th century, the large 11-3/4" (30 cm) long glass prism with integral knob handles shaped by hand. Condition is very good noting small rough areas around the handles. This old transparent glass shows a few included bubbles as well as surface striations. The prism demonstrates the spectrum as well as effects of internal reflection, etc. $1150.



26. EXCEPTIONAL MINIATURE PRISM, probably English, c. mid-18th century. The three-sided glass is itself only 1" (2.5 cm) long, mounted between gilt(?) brass end pieces with handles. It is contained in the wonderful original fitted wood case bound in black fishskin, lined in red velvet, and mounted with finely shaped brass closures. Condition is excellent throughout except for some tiny edge chips to the glass. This is the smallest early demonstration prism we have seen, and is a splendid example. $1200.



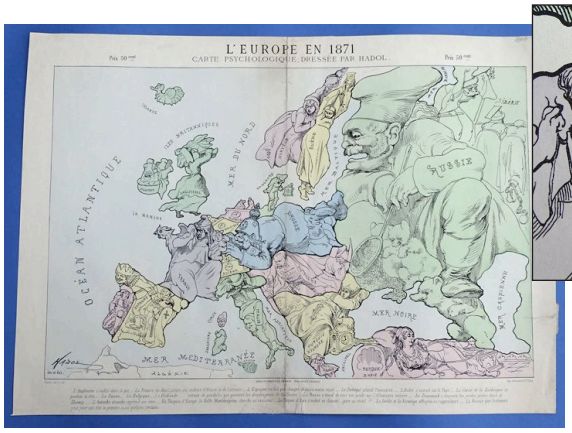




27. THE MICROPROJECTOR, American, second half 20th century, by the "Ken-A-Vision Mfg. Co., Inc." of Raytown, Missouri, serial #7814. This impressive instrument is constructed of polished aluminum, with an extraordinary sculptural, very stable stand, swiveling microscope head with internal light source, mechanical x,y stage with calibrated vernier readout, choice of three objectives on turret, long-screw focus, gimbaled mirror, and swiveling holders. It stands 26-1/4" (67 cm) overall (when vertical) and can be used to project the image of a specimen vertically onto the tabletop (for viewing individually or in small groups), or horizontally onto a screen or wall. Condition is good and functional, noting light wear.

This fairly modern viewer is a fine contrast with, for example, the Megalethoscope viewer (*see item 8*). Devoid of figural and floral decoration, as a sculpture it resembles a mid-20th century soda fountain's malted milk shake blender, or perhaps one of the Martians' mobility machines in H.G. Wells *The War of the Worlds*. $450.

*** * * * * DISTORTIONS * * * * ***



28. THE MEANING OF SHAPES -- A PSYCHOLOGICAL MAP OF EUROPE, French, 1871, by Paul Hadol, labeled "L'Europe en 1871, Carte Psychologique, Dressé par Hadol, Prix 50 cent." The 15-1/2" x 21-3/4" (39 x 55 cm) print is lithographed in color, the countries of Europe full of iconography relating to the turmoil surrounding the Franco-Prussian War. There are brief explanatory notes in French (France, in mourning, crying for her children Alsace and Lorraine; Portugal awaits annexation; Russia spies the moment to cast her net...) It is a splendid political satire and optical illusion. Condition is good with light soiling, the centerfold reinforced to the reverse. $1150.

"You have, no doubt, in the course of your peregrinations been confronted more than once by those funny mirrors, convex or concave, which represent long, thin giants in the form of short, squat dwarfs, and dwarfs in the form of slender lamp-posts; mirrors which take your breath away as you catch sight of your reflection, and which, if you happen to smile, cause such a distortion of your features that you laugh again at sight of yourself." (A MAGIC MIRROR by Norman Paton, PEARSON'S MAGAZINE, Vol. VI July to December 1898)

29. EARLY TRANSFORMATION MIRROR, probably European, c. second half 18th century. The substantial mahogany frame, 14-5/8" x 18" (37 x 46 cm), is designed for wall mounting. Rotating in front of this is a fine domed mahogany frame holding the domed glass mirror. Condition is very fine noting very minor ageing and a couple of scratches.

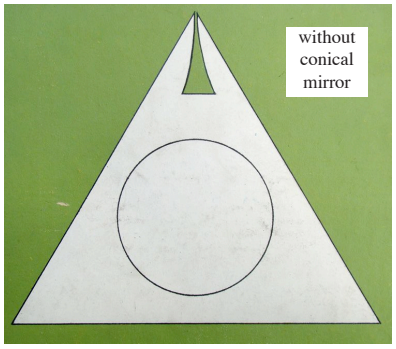
With the mirror axis horizontal, the observer sees himself short and wide; with it vertical, tall and thin. Positions in between give interesting diagonal distortions. And the degree of distortion varies dramatically with distance to the mirror.

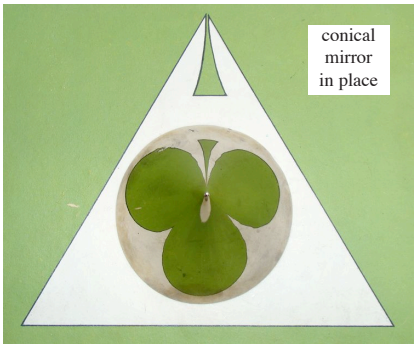
Related to both carnival mirrors and to instruments of optical demonstration, this is a truly exceptional example of an early transformation mirror. It features the unusual rotation ability, allowing the single mirror to substitute for the more common mirror pairs. $5500.

30. METAMORPHIC IMAGES ON A SEDITIOUS DUTCH TOBACCO BOX, c. second half 18th century. The 5-1/4" (13cm) long oval brass box is well made, hand engraved with various images top and bottom, and foliate decor around the sides. Two Dutch inscriptions are included, one loosely translated as "He who seeks peace, must reconcile himself with this," the other a list of the seven provinces of the Dutch Republic, followed by a panel showing all their coats of arms. Of particular "optical" interest are two metamorphic heads transforming into two others when inverted. These well-done images are symbols of anti-Catholic Protestant propaganda depicting the Pope and a Cardinal turning into a horned demon and a jester with cap and bells (see Spaans, 2011). A central siege scene inverts as well. Condition is fine noting light wear and slight denting. $2200.

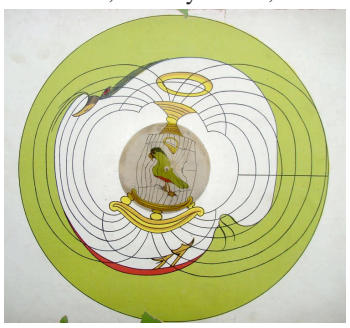
31. CONICAL LENS, possibly German, c. late 18th century. The glass cone is 1-7/8" (5 cm) in diameter and 1" (2.5 cm) thick. It is flat on one side, and has an apex angle of approximately 90°. It is mounted in a copper ring similar to those on 18th century Bavarian magnifiers and spectacles, the ring wired tight at the base, the ends held firmly in the turned wood handle. Condition is fine noting various defects, mostly bubbles, in the glass.

The conical lens is an interesting demonstration of refraction and internal reflection. Held close to a document, e.g., it produces highly-distorted wide-angle in-focus images (*see photo above*). $950.

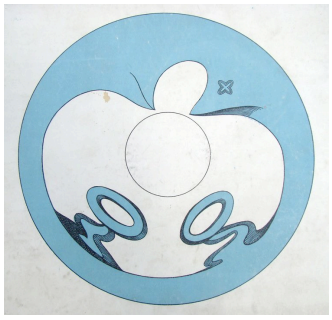




32. RARE CONICAL ANAMORPHIC OUTFIT, French, c. 1870, comprising a full set of six anamorphic images and their conical viewer. Each print is in full color on heavy card 11-1/2" x 9" (29 x 23 cm). The 2-1/2" diameter cone is 2-5/16" tall, made of cast then turned speculum metal. Set atop each card in turn, and viewed from directly above, we discover that the rather mysterious images are projections which morph into a dog doing tricks, a lovely flower, an ace of clubs, a stink bug, a pair of shears, and quite remarkably, a parrot in a cage. Condition is fine noting light soiling to the cards.



This is a good example of the conical set published, apparently, by Emile Deyrolle in Paris, lithographed by Walter Frères. Conical projections are much rarer than the cylindrical forms, this the first example we have offered. And it is doubly rare for having its speculum metal viewing cone.



$7500.

33. ENTERTAINING CYLINDRICAL DOUBLE MIRROR, German, second half 19th century. A double-sided (convex and concave) part-cylinder glass mirror is mounted in a simple steel frame. Measuring 2-78" x 3-7/8" (7 x 10 cm) overall, it presents amusing and educational optical demonstrations. For example, when held vertically at arm's length, one's head appears upright and vertically elongated. When turned sideways, the head is horizontally elongated. These two statements are true regardless which mirror you use. But in the convex one, the horizontal head is right side up, while it is *upside down* in the concave one! Condition is fine, complete with the original card case printed with figures broad and narrow, labeled "Taschen Lachkabinet" (pocket laughing cabinet), and stamped with a maker's name, the case very good. $650.

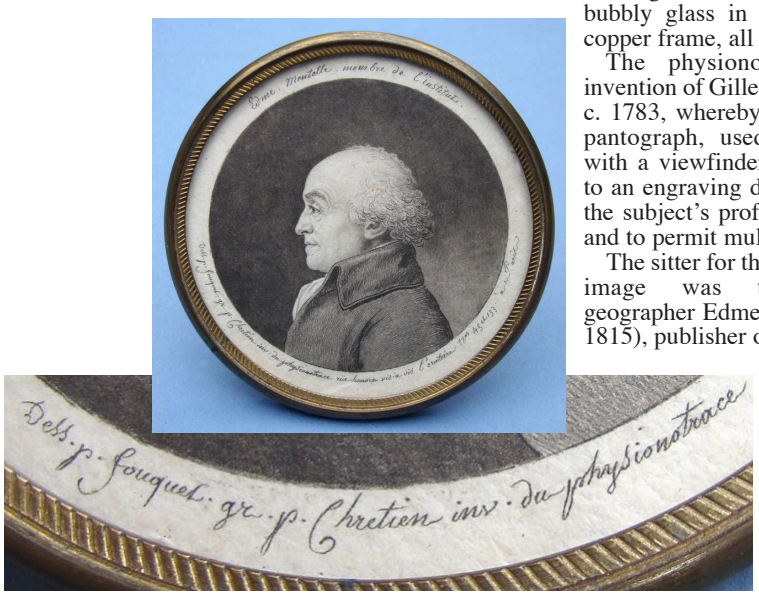
34. LARGE CLAUDE LORRAIN GLASS, probably French, c. early 19th century. This uncommon perspective device consists of a handblown convex dark glass plate 5" x 6", (13 x 15 cm) mounted in a velvet lined carrying case covered in dark red Morocco leather. The effect of the dark mirror gives subtle coloration to a reflected scene, and with binocular vision one perceives a fascinating exaggerated three-dimensional effect.

Named for the 17th century French landscape painter, Claude of Lorraine, this device is in fine condition, the lid somewhat warped. $850.

35. ORIGINAL ANAMORPHIC PAINTING, possibly English, c. late 18th century. The watercolor on card measures 10-1/2" x 16" (27 x 41 cm), and depicts a rather monstrous bird hovering over a garden scene. Executed primarily in green and browns, it is apparently designed for use with a rather large (2-1/2" diameter) cylindrical mirror to rectify the distorted image. In fine condition except for considerable roughness to the edges, a rarely found original anamorphic painting. $1800.

*** * * * * MINIATURES * * * * ***

36. THE PHYSIONOTRACE, French, c. 1800, the 2-3/4" (7 cm) diameter etching signed for the sitter "Edme Mentelle membre de l'institut," for the designer "Fouquet," and for the inventor of the process "Chrétien inv. du physionotrace rüe honore vis-à-vis l'oratoire Nos. 45 & 133 à Paris." In excellent condition, this striking likeness is mounted under bubbly glass in a gilt brass and copper frame, all original.

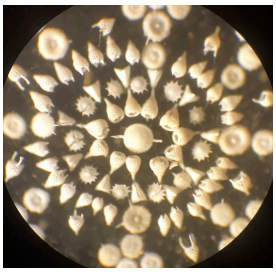


The physionotrace was the invention of Gilles-Louis Chrétien, c. 1783, whereby a variant of the pantograph, used vertically and with a viewfinder, was connected to an engraving device to produce the subject's profile in fine detail, and to permit multiple copies.

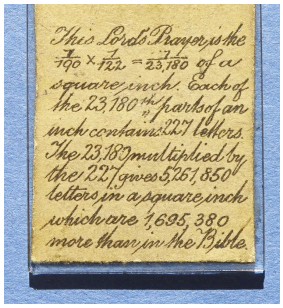
The sitter for this highly detailed image was the prominent geographer Edme Mentelle (1730-1815), publisher of atlases, teacher to the Royal household, designer of a globe (1786) still held at Versailles, elected member of the Institut de France in 1795. $950.

MINIATURE IMAGES, English, 19th century, each mounted on a 1" x 3" (2.5 x 7.6 cm) glass microscope slide, all in very fine condition.

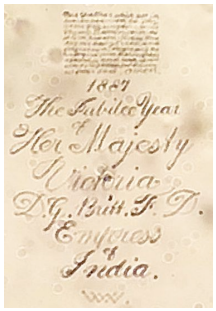
37. GARDEN SCENE FORMED OF 426 BUTTERFLY SCALES, identified in ink on the printed trade label of "J.N." (perhaps John Norman, prolific prize-winning London mounter active throughout the second half 19th century). $850.



38. FINE ROSACE OF RADIOLARIA DIATOMS, identified in ink "Grouped Polycistinae Barbadoes," etc. $275.



39. MICROSCOPIC DIAMOND WRITING ON GLASS, with printed labels on both sides identifying it as "The Queen's Jubilee and the Lord's Prayer Engraved with a Diamond," and "...engraved so small as to be at the rate of twenty Bibles to a square inch" where "1 Bible consists of 3,566,480 letters." The 50th anniversary of Queen Victoria's accession to the throne, 20 June 1887, was celebrated with great festivities, including a banquet with 50 Kings and Princes present. A rare slide. $950.



40. THE TESSERACT COLLECTION OF MICROSCOPIC PHOTOGRAPHS, English, German, French, and American, c. second half 19th century. With the advent of photography c. 1839, that remarkably innovative and proficient scientific instrument maker, John Benjamin Dancer (of Liverpool then Manchester) began producing microscopic photographs on daguerreotype plates. With the 1851 discovery of the much more finely grained imagery possible using a sensitized collodian emulsion on glass, Dancer moved rapidly into commercial production. Twenty years later his catalogue listed 277 subjects, all presented as tiny (typically 0.05" across) black and white images printed on glass, mounted on standard 1" x 3" (2.5 x 7.6 cm) microscope slides. One could tour the world, history, politics, paintings, etc. all from the comfort of the living room, all through the entertaining microscope. Dancer's daughters carried on the business for a few years after his death in 1887, and the resources passed to the London preparer, Richard Suter, in 1896. The 1900 catalogue listed a full 512 subjects for sale.

For almost 50 years, the microphotograph was enormously popular. Many agents were authorized to sell Dancer's productions, and his labeling was not always consistent. Competitors were active, especially during the last quarter 19th century. For further details, we recommend Bracegirdle and McCormick, *The Microscopic Photographs of J.B. Dancer,* 1993 (*see item 55 in this catalogue*).

Over the past 35 years we have formed the present collection, comprising a total of 203 microphotographic slides. They are categorized by label, as follows, and are generally in fine condition, although a handful are quite poor but included for their rarity. A very few are duplicates, included for the label or image variations.

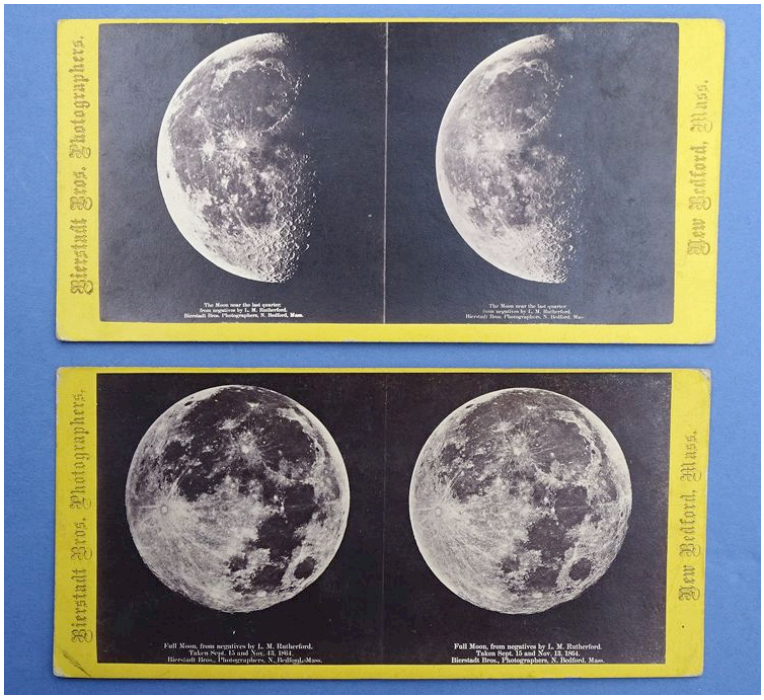
Subjects range from a £1000 bank note, to the Warrant to Execute King Charles the 1st, to a collage of portraits of 105 eminent women, to Napoleon III, to all 1243 letters of the Ten Commandments, to famous paintings by Winterhalter and by Landseer, to Niagra Falls, to pinhole portraits of the Prince and Princess of Wales, to Sherman's march to the sea, to the sun with sunspots, etc., etc. It is particularly enjoyable to study the satellites of Jupiter and the rings of Saturn, by viewing their telescopic photographs through a microscope!

The collection comprises:

64	Dancer labeled and numbered and identified “J.B.D.” in standard yellow or light green labels
20	Dancer labeled and numbered but no “J.B.D.”
7	Dancer labeled and “J.B.D.” but no numbers
20	J.S. (probably Joseph Sidebottom) labeled and identified in label
20	A.R. (probably A. Reeve) several with J.H.Steward label, one with Newton & Co.
2	J.L.C. labeled, numbered and identified in label
2	W.O.G. labeled, identified in label
7	I.D. Möller labeled, identified in label
10	J.C.S. “A Photographic Curiosity for the Microscope,” labeled, identified in label
1	E.M. “A Photographic Curiosity for the Microscope,” labeled, identified in label
1	S.B.&B. labeled, identified in label
3	W. M. labeled and initialed in diamond writing directly on the glass
1	J.M. Bryson labeled, numbered, identified in label
2	HW. labeled, numbered, identified in label
1	J.B. labeled, numbered, identified in label
1	Henry E. Ebbage labeled, identified in label
1	D. labeled, numbered, identified in label
1	J.N. (probably John Norman) dated, identified in label
2	Sereno N. Ayres, Jamestown, N.Y., one labeled, signed “Micro-photographs made to order from any good picture.”
3	G. labeled, identified
35	labeled variously
9	not labeled

The many slides are arranged in nine drawers of a large pine slide chest, which is included.

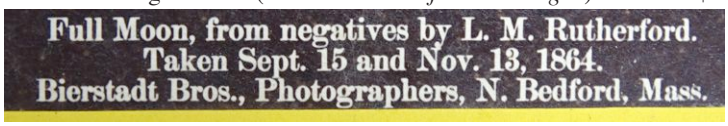
A rare opportunity. $24,000.



41. THE MOON BALL IN MINIATURE, in early stereo views, American, c. 1865, signed "Bierstadt Bros. Photographers, New Bedford, Mass." Mounted to 6-3/4" x 3-1/4" (17 x 8 cm) yellow cards are the two pairs of photographic prints, labeled in part "The Moon...from negatives by L.M. Rutherford...." The full moon images were taken 15 September and 13 November, 1864, respectively. Condition is fine.

The Bierstadt brothers were early American photographers producing numerous splendid stereo views (not to mention the accomplishments in painting by brother Albert). They published the first stereos of the moon based on Rutherfurd's 1864 photos, making the present cards important seminal examples. Later cards were based on 1865 photos by John William Draper (taken in Hastings-on-Hudson!), their publication continued by the Underwoods until c. 1912.

The moon, in its orbit around the earth, is totally locked with the same side always facing the earth. But the orbit is not exactly circular, and the moon's axis of rotation is not exactly perpendicular to its orbital plane, and the terrestrial observer's position varies each day as the earth rotates. Consequently at some times we see a bit more to one side or other of the moon. It is like a slow oscillation, so that, e.g., two full moons may differ just as if we were at two quite different observing positions in space. Thus we have true enhanced stereo views of the moon. A stereo viewer can be used to see the true orb of the moon in these photos, or it can be seen just by relaxing the eyes while staring at the card held at reading distance (*see back cover of this catalogue*). $375./the pair.

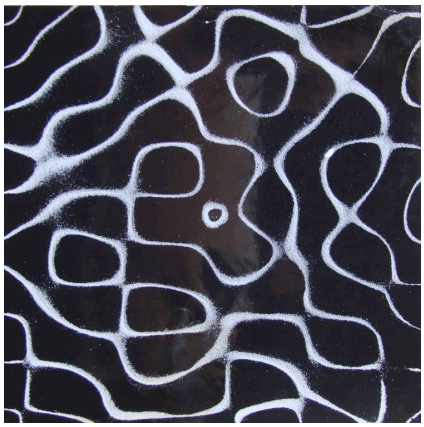


* * * * * PATTERNS * * * * *

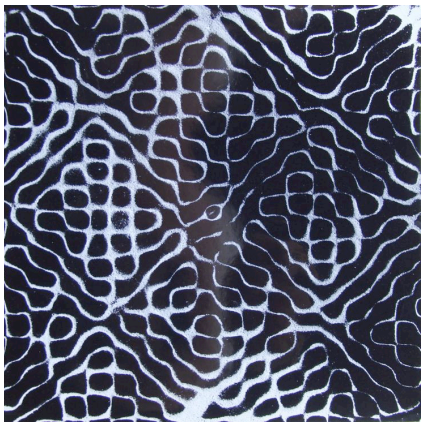
BY THE RECOGNIZED MASTER OF SOUND PHOTOGRAPHY

ORIGINAL CYMATIC PHOTOGRAPHIC PRINTS, Swiss, c. 1965, by Stuten with Jenny, one stamped "Foto of J.C. Stuten, Rüttiweg 8, 4143 Dornach, Switzerland." The black-and-white prints each measure 7-1/4" x 7-3/8" (18.4 x 18.7 cm) and show the patterns formed by fine sand grains on vibrating plates at different frequencies. Condition is fine. Such images are rare, these with direct provenance.

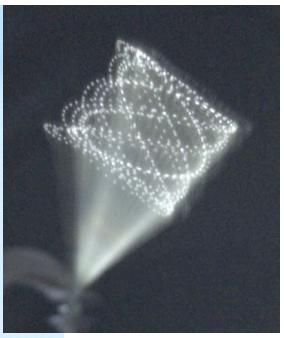
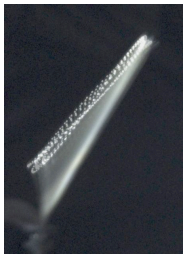
These are "cymatic" studies by Dr. Hans Jenny (1904-1972), who was assisted in his research by Christiaan Stuten. Much of their work utilized sound vibrations to expose movements and patterns and rhythms, beauty and philosophy of nature. In the luxurious volume *Cymatics* (a compilation of Jenny's 1967 and 1974 books on wave phenomena) he writes "Geometrical arrangements can also be seen in vibrating heaps of particles and viscous masses...the oscillation exerts a conglobing force and this bestows a certain unity upon the system. Vibrations therefore give rise to regular patterns with a tendency towards symmetry," and "The more one studies these things, the more one realizes that sound is the creative principle. It must be regarded as primordial." He found deep universal meaning in these various optical pleasures.

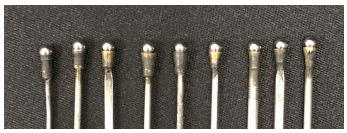


42. LOWER FREQUENCY, particles in motion, print stamped on reverse. $950.



43. HIGHER FREQUENCY, elaborate interference arrangement. $900.



44. WHEATSTONE'S KALEIDOPHONE OUTFIT -- THE "PHONIC KALEIDOSCOPE, English, second quarter 19th century. The outfit is contained in a splendid 16" (41 cm) tall case, six-sided and tapered, of lovely satiny rosewood. Included is the massive cast iron base, 7" across, a full set of nine interchangeable steel rods of various circular and rectangular cross sections, and the original tightening wrench. Condition is fine noting chipping to the black enamel finish on the base.

Wheatstone writes of the desirable combination of philosophy with amusement, and that "In the property of 'creating beautiful forms,' the kaleidophone resembles the celebrated invention of Dr. Brewster, from which its name is modified...." And for the best beads which one would mount atop the rods "The only beads well adapted for this purpose are made of extremely thin glass silvered on the interior surface, and about one sixth of an inch in diameter; they are to be obtained at the shops under the name of steel beads." Here we have mounted little steel balls of the right diameter, atop the rods. Each rod, when mounted to the base and struck, vibrates with compound standing waves, made visible by the Lissajous patterns traced out by reflection of a point source of light (candle, sun, etc.) in the little ball. Due to persistence of vision one sees a pattern of lines and not just a moving point of light. Invented by Wheatstone c. 1826, the kaleidophone was an outgrowth of his studies on Chaldni plates and musical acoustics. In 1827 he published, in the Proceedings of the Royal Institution, "Description of the Kaleidophone or Phonic Kaleidoscope: a new Philosophical Toy, for the Illustration of Several Interesting and Amusing Acoustical and Optical Phenomena" (see *Sir Charles Wheatstone* by B. Bowers, 1975, for more details).

An early example of this unusual device. $4500.

45. GORHAM'S COLOR TOP, DEMONSTRATING PERSISTENCE OF VISION, English, c. 1860, the case bearing the wonderful trade label of John B. Dancer. The device consists of a wooden (maple?) disk 5-1/2" (14 cm) in diameter and 1/2" thick, with insertable central axle and wooden spinning / launching handle. Eight colored paper disks are provided, along with twelve smaller overlay shapes (colored hearts plain and serrated), and twelve thin paper kaleidoscopic silhouette overlay disks in black with complex six-fold pierced designs, with drag strings attached. Condition is very fine, complete with the original mahogany case (the lid with an age crack).

Patented by John Gorham in 1858, his "Kaleidoscopic Colour-Top" is explained simply in, for example, S. Piesse's 1865 *Chymical, Natural, and Physical Magic. Intended for the Instruction and Entertainment of Juveniles during the Holiday Vacation*. Several colored disks are placed on the top simultaneously, positioned so that different colors occupy differing sectors of the circle. When spinning, these colors combine proportionately, due to persistence of vision of the eye / brain. More complex shapes (heart, etc.) can be added to change the area occupied by each color. But then if a perforated kaleidoscopic disk is placed on top, and spins more slowly than the colored disks (thanks to its drag string), one sees all the original colors again and stationary, in a sort of stroboscopic effect.

A splendid outfit, quite uncommon. $2950.

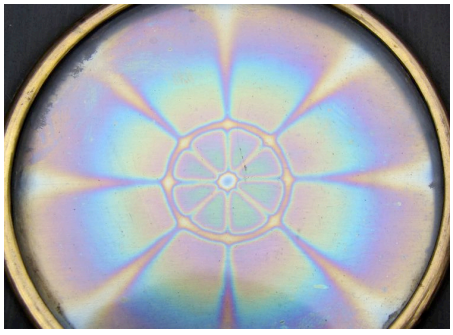
46. PERCEPTION TRAINING -- IDENTIFICATION OF SHAPES AND COLORS, English, c. 1880, signed "H. & G. Edwards, Educational and School Apparatus Manufacturers, Camden Town, London." This full set of "Exercises in Form and Colour" is contained in a fitted wood box 10-1/2" x 8" x 3-1/2" (27 x 20 x 9 cm), and includes large folded sheets, sets of cards with Capitals, Small Letters, Figures (both Arabic and Roman), and Colours, plus many shaped wooden Forms, plus an instruction card. Condition is good, little if anything missing from this large, rarely-found set.

To use it is recommended to "Throw the Forms on the Floor, or an a low table...take the Lesson Sheet...on a stand; then let the child pick up any form pointed out on the sheet...This exercise should not be continued very long, and should never be made a play."[!!!] In a sense, it is all an optical puzzle of perceived shapes.

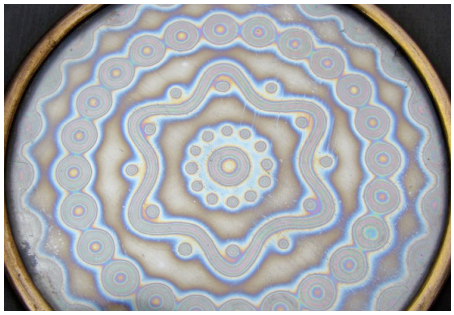
We find H. & G. Edwards advertising, particularly in the 1880's, and noting they had been established 60 years earlier. $1900.

THE METALLOCHROMES OF LEOPOLDO NOBILI, Italian, c. 1830, unsigned. Each of these two splendid optical images is formed as a deposit on a metal plate (one 2-5/8" in diameter, the other 2-3/4" square), mounted under glass with gilt metal border and set in a 4-3/4" (12 cm) square stained wood frame. Condition is excellent.

Nobili (1784 - 1835) was a Tuscan physicist, pioneer in electro-magnetism and electro-chemistry. He developed the important astatic galvanometer, with its freedom from local magnetic fields, as well as the thermomultiplier. It 1826 he found that multi-colored rings could be deposited on a charged metal plate, in certain salt solutions, when the cathode was a fine wire vertical above the plate. The prismatic interference colors result from varied thicknesses of the deposited thin films of, typically, lead peroxide. These went on to be known as "Nobili's rings" or Metallo-chromes, and surviving examples are extremely rare. They are beautiful as well as significant in the history of electrochemistry.

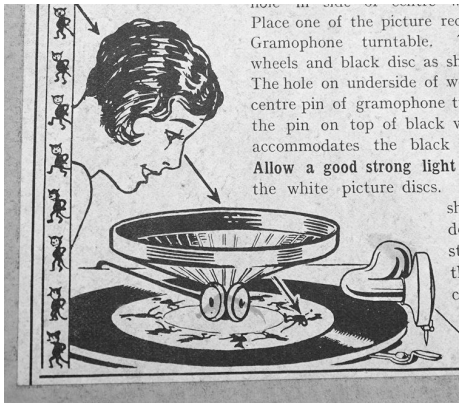


47. PRESENTS AN EIGHT-FOLD ROSE in greens and purples. $2700.



48. AN EXQUISITE PRESENTATION with multiple detailed bands of six, twelve, and thirty-four points, predominantly in alternating greens and reds. $5500.

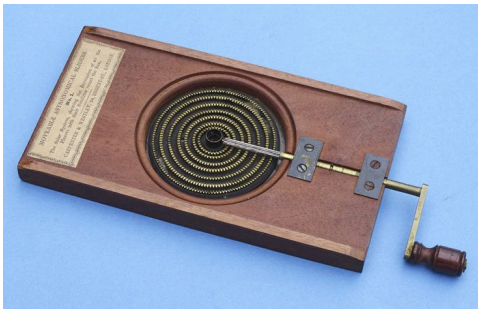
49. THE KINEPHONE, A PHENAKISTOSCOPE FOR THE GRAMOPHONE, English, c.1930, contained in the original 7" (18 cm) square card box, with the vendor's label "Reid & Co., Piano & Music Saloons, Secunderabad (Deccan)." Any one of the five black-on-white printed card disks (including Krazy Kat and Charlie Chaplin) can be placed on a record turntable. A three wheeled carriage with lock arm is set in place, followed by the 14-slot black disk. Given good illumination, one sees an animated moving image. Complete and in good condition, noting light stains and some rust to the steel, a rare phenakistoscopic device.

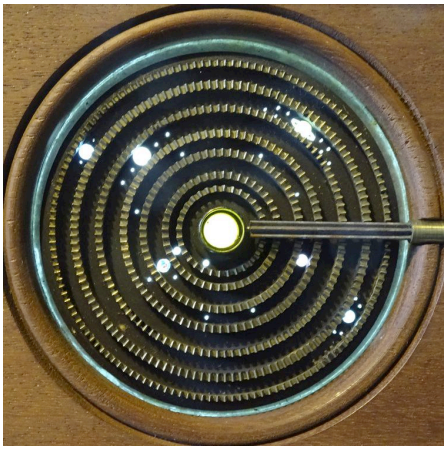


Fascinating early "cinema." $1200.

50. ANIMATED DOUBLED IMAGES -- SET OF EIGHT, possibly German for export, c. 1900. Each black-and-white celluloid(?) image is bound in heavy card 2-5/16" x 3-1/8" (6 x 8 cm). A couple are stamped "Foreign" to the reverse. Condition is generally fine.

Each view incorporates a closely spaced array of vertical black lines, which apparently overlie two nested images shifted sideways by one line width. As one tilts the image slightly right or left, or moves the head past it, the line grid exposes first one of the images, then the other. There is an impression of actual movement. The subjects are mostly faces changing expressions, drinking, kissing, etc. $950./the set





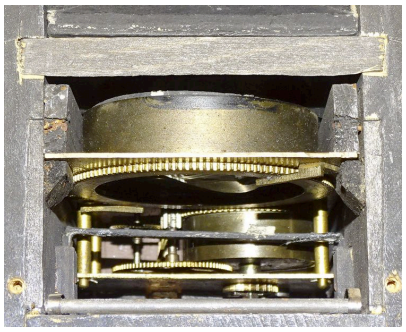
51. MECHANICAL ORRERY FOR LANTERN PROJECTION, English, mid-19th century, signed on the label "Moveable Astronomical Sliders No. 1, The Solar System... Carpenter & Westley, 24 Regent St., London." The mahogany panel measures 6-7/8" x 3-11/16" x 9/16" (17 x 9 x 1.4 cm) with a central 2-1/2" hole mounted with seven brass ring gears carrying representations of all the planets and their moons (out through Neptune), these moving planets painted in color on glass. The gears are driven by a brass and steel crank with a turned wood handle. The result is a planar view of the solar system, with the planets circling the sun at variable rates. Condition is very fine and functional throughout. Notably Mars' orbit includes seven asteroids; Jupiter has cloud bands; Saturn has bands and rings and eight satellites; Uranus has four satellites, and Neptune is depicted with two satellites. For simplicity the same ring gear drives both slow-moving Uranus and Neptune, so they remain forever on opposite sides of the sun! $950.

ONE OF THREE KNOWN EXAMPLES

52. GRIMATISCOPE -- THE HUMAN FACE ANIMATED, French, c. 1860, signed "J.D., Breveté, S.G.D.G." This lovely shaped wood viewing box measures 6-1/4" x 5-1/2" x 5-3/8" (16 x 14 x 14 cm) overall. There are twin viewing lenses to the upper front, ground glass window to the lower back, release knob and spring winding screw. Light entering the window falls on a photograph of a bearded man. Above this is a distorting lens mounted in a rotating cell driven by spring drive, followed by a 45° mirror and the eye lenses. The singlet glass lens is shaped as orthogonal waves, and as it rotates the portrait undergoes humorous and grotesque distortions. Condition is excellent.

This is an extremely rare example of a pre-cinematic animator. The patentee and maker was apparently Jules Duboscq (1817 - 1886), associated with Soleil and eventually Pellin in Paris. Paolo Brenni (*SIS Bulletin* **51**, *7-16)* writes of Duboscq's representing the "golden era of the French precision industry," and how "not only did he own and direct the firm, supervise the production, as well as invent new instruments and improve old ones, he was also a very skilled experimenter and an incomparable demonstrator." His inventions and manufactures covered all areas of precision optics, from the popular lenticular stereoscopes, saccharimeters and colorimeters, to the elusive cyanopolarimeter, the polyconograph, and the stereofantascope.

The grimatiscope anticipated the photographic transformations of Louis Ducos du Hauron (1837-1920) who used optics of crossed slits (and who was an inventive genius developing color photography, motion pictures, the stereo anaglyph, etc.). $27,500.



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53. A SKELETON DECONSTRUCTING BEFORE YOUR EYES, probably English, 19th century. Mounted within a 4" x 7" (10 x 18 cm) mahogany frame is a fixed glass pane with a hand-painted white-on-black skeleton with a few colored highlights (grey shading, red eyes, bright teeth). This pane includes a second, disassembled skeleton. A clear glass sliding pane is painted with two very simple areas of masking, so the two skeletons can be presented sequentially. Designed for projection before an audience, using a magic lantern, it is a fine example of optical legerdemain. $240.

54. EXQUISITELY CRAFTED ANATOMICAL MODEL OF THE HUMAN EYE, Continental, probably German, c. mid-18th century. Standing 4" (10 cm) overall, the presentation case is made of beautifully grained wood, the lid, body, and base turned and mounted with ivory pillar and knob. The eye itself is made of the most finely crafted ivory, horn, wood, and glass. Some parts are so delicate one hesitates to touch them, yet they are all complete and undamaged, even the paper thin retina, with blood vessels shown appropriately in red. There are eleven elements to the eye, plus the wood cup which supports them in the stand. The eye seems complete (as we understand it) with cornea, iris, lens, scleral coat, choroid coat, retina, and optic nerve. A true "cabinet de curiosités" piece, in superb condition, it is a spectacular example of a very rare object.

We have seen one other of this design in the marketplace in the past 35 years, that a less complete example which we sold in 1984 in our Catalogue F. We note a related form illustrated in Bennion's book (p.289), and two in the former Museum of the History of Medicine in Zurich. The craftsmanship is comparable to that of the small ivory anatomical models of the human body, also attributable to the tradition of Stephan Zick of Nuremberg. $18,500.

REFERENCE BOOKS

55. Bracegirdle, B., and J.B. McCormick, THE MICROSCOPIC PHOTOGRAPHS OF J.B. DANCER, 1993, 288pp. with 844 illus., hardbound in slipcase. A magnificent descriptive atlas of Dancer's microphotography, with superb illustrations. $98.

56. Morrison-Low, A.D., and J.R.R. Christie (eds.), 'MARTYR OF SCIENCE': SIR DAVID BREWSTER 1781-1868, 1984, 138pp., illus., paper, includes much on instruments, kaleidoscopes, etc. $30.

RITTENHOUSE JOURNALS AND TESSERACT CATALOGUES

57. RITTENHOUSE, JOURNAL OF THE AMERICAN SCIENTIFIC INSTRUMENT ENTERPRISE, 1987-2009, the complete 23-year run of volumes 1 through 23 (70 issues total). A FEW FULL SETS STILL AVAILABLE. $900.

58. SCIENCE AND EARLY JAMESTOWN, 2007, a RITTENHOUSE 80-page special with in-depth studies of scientific instruments and activities in this first English settlement in the New World (published on Jamestown's 400th anniversary). $30.

59. SICU2 CONFERENCE PAPERS, 2008, a RITTENHOUSE special volume consisting of two 112-page issues, edited by S. Turner, with authors Nasser, Raposo, Mills, Cocquyt, Atzema, Buskes, Andersson, Kwan, Winkler, Granato, Kremer, and Brenni. Subjects cover a wide range, dealing with both research and teaching using university historic scientific instrument collections. $60.

60. TESSERACT CATALOGUES, back issues still available: -,-,C,D,E,F,-,H,9,10,11,12,13, 14,15,16,17,18,19,20,21,22,23,24,25,-,-,-,29,30,31,32,33,-,35,36,37,38,-,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70, 71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97, 98,99,100,101,102,103,104,105,106. $6.ea.

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