

Scientific Instrument Commission Bibliography 20

Twentieth bibliography of books, pamphlets, catalogues and articles on or connected with historical scientific instruments - Spring 2003.

This bibliography contains work published in 2002 and 2003, which came to the compiler's notice before April 2003. It also contains earlier publications which came to his notice after completing the nineteenth bibliography in Autumn 2002. Publications, or notices of publication (please with ISBN) for forthcoming bibliographies may be sent to the compiler:

Dr. P.R. de Clercq
13 Camden Square
London NW1 9UY
United Kingdom
E-mail: peter@declercq.homechoice.co.uk

Members of the scientific instrument community are invited to send recent titles, especially of publications that may easily escape the compiler's notice, such as descriptive catalogues, exhibition catalogues and papers published in less widely known journals. To avoid duplication, please note that the compiler peruses some forty journals for relevant titles. These range from journals that focus entirely on historic instrumentation, such as the *Bulletin of the Scientific Instrument Society*, *Rittenhouse*, *Journal of the Antique Telescope Society* and *Equilibrium*, to more general journals on the history of science, technology and culture. A list of these journals is found in previous bibliographies.

ASHWORTH, William J., "'Between the Trade and the Public". *British Alcohol Standards and the Proof of Good Governance*, *Technology & Culture* 41, nr. 1 (January 2001), 27-50. [On Clarke's and Sikes's hydrometers].

ASTROLABES: *Astrolabes in the Whipple Museum collection* (no date of publication). 20 pages. [Simple booklet for visitors, explaining the astrolabe, and summarily describing 21 astrolabes, which are illustrated in small b/w images].

ASTRONOMY: *La Lettre de l'OCIM* nr. 84 (Nov-Dec 2002) is a special issue 'Le patrimoine de l'Astronomie', guest edited by Françoise Le Guet Tully and Jean Davoigneau. 78 pages, ISSN 0994-1908. [Well-illustrated series of articles on historic French observatories and their instruments, with some comparative material (light-houses, Italian observatories and museology). Order via www.ocim.fr]

BARTLAM, J.N., 'A Ramsden barometer', *Clocks. The International Magazine for Horological Collectors & Restorers* Sept 2002, 26-29. [Illustrated restoration report].

BECKMANN, Olof, 'Samuel Klingenstierna and the Achromatic Lens. Part II: Correction of spherical and chromatic aberration', *Journal of the Antique Telescope Society* 23 (2002), 3-8.

BELL, Trudy E., 'The Roles of Lesser-Known American Telescope Makers in 19th-Century American Observatories', *Journal of the Antique Telescope Society* 23 (2002), 9-18 [Includes list of 258 American astronomical observatories, some permanent, some non-permanent, founded between 1823 and 1900, with details of main instruments and their makers].

BELLODI, Giuliano, BEVILACQUA, Fabio, BONERA, Gianni, FALOMO, Lidia (editors), *Gli strumenti di Alessandro Volta. Il Gabinetto di fisica dell'Università di Pavia* (Università degli Studi di Pavia, Editore Ulrico Hoepli Milano, 2002). 348 pages. ISBN 88-203-2908-5. [The history of the physics cabinet and of the instruments of Alessandro Volta preserved at the Museum for the History of the University of Pavia. The contributions of Bellodi, Brenni, Falomo, Ferraresi, Fregonese, Giudice and others reconstruct the evolution of Volta's cabinet of Pavia and also represent a very detailed catalogue of his collection]

BENNETT, Jim, 'Geometry in context in the sixteenth century: the view from the museum', *Early Science and Medicine* VII (2002), 214-230. ["Examines the discrepancy between the attitudes of many historians of mathematics to 16th-century geometry and those of museum curators and others interested in practical mathematics and in instruments".]

BERETTA, Marco, 'The Material Realm of Chemistry: Immutability versus history', *Nuncius. Annali di Storia della Scienza* XVII (2002), 337-347. [Essay review of HOLMES and LEVERE, *Instruments and Experimentation in the History of Chemistry* (2000)]

BERKEL, Klaas van, ' "Seecker instrument om verre te sien": rondom de geboorteaktevan de telescoop', *Spiegel Historiae* 37 (2002), vol. 5, 184-191. [On the earliest history of the telescope, by Dutch historian. Adapted from the author's contribution in a volume *Nederland in de wereld*, ed. S.C. Derks].

BERTINI, Marta, 'Il Trattato di Diversi Istrumenti Matematici di Antonio Santucci', *Nuncius. Annali di Storia della Scienza* XVII (2002), 247-262. [A manuscript, dated 1593, in the Biblioteca Marucelliana in Florence, by Santucci, cosmographer to Ferdinando I dei Medici, contains a description and drawings (not reproduced here) of the most important mathematical instruments of the sixteenth century. The author correlates this to the objects in the Museo di Storia della Scienza in Florence].

BLAKE, Erin C., 'Topographical Prints through the Zogroscope', *Imago Mundi* 54 (2002), 120-124. [Viewing device to give the image an illusion of life and three dimensionality].

BOURGET, Marie-Noëlle, LICOPPE, Christian, and SIBUM, H. Otto, *Instruments, travel and science. Itineraries of precision from the seventeenth to the twentieth century* (Routledge Studies in the History of Science, Technology and Medicine, vol. 16) (London and New York, 2002). 320 pages. ISBN 0-415-27295-5. Of instrumental interest are: Simon SCHAFFER, 'Golden means: assay instruments and the geography of precision in the Guinea trade' (20-50); Christian LICOPPE, 'The project for a map of Languedoc in eighteenth-century France at the contested intersection between astronomy and geography: the problem of co-ordination between philosophers, instruments and observations as a keystone of modernity (51-74; **winner of the SIC prize for the longest title!**); Jim BENNETT, 'The travels and trials of Mr. Harrison's

timekeeper' (75-95); Marie-No • le BOURGET, 'Landscape with numbers: natural history, travel and instruments in the late eighteenth and early nineteenth centuries' (96-125); Giuliano PANCALDI, 'Appropriating invention: the reception of the voltaic battery in Europe' (126-155); Kapil RAJ, 'When human travellers become instruments: the Indo-British exploration of Central Asia in the nineteenth century' (156-188); H. Otto SIBUM, 'Exploring the margins of precision' (216-242; American Henry A. Rowland's European travel diary, 1875-76); Richard STALEY, 'Travelling light' (243-272; Albert Michelson's engagement with instruments).

BRACEGIRDLE, Brian, 'Seventeenth Century Microscopy', *Quekett Journal of Microscopy* 39 (2002), 343-64. ["Based on the Club lecture delivered 2 July 2002". Illustrated with specimens from the Science Museum collection].

BRENNI, Paolo (with an introduction by G.L'E. Turner), *Strumenti scientifici: dal museo al laboratorio interattivo. Il caso di Como "Città della Scienza"* (Como: Centro di Cultura Scientifica "A.Volta", 2002). 127 pages, colour and b/w photos. [Retraces the history of the most important scientific instrument collections in Como (Tempio Voltiano, Liceo Volta, Istituto Carducci, etc.)]

BRISTOW, Ron and CLERCQ, Peter de, 'SIS Visit to Bristol, 5th October 2002', *Bulletin of the Scientific Instrument Society* 75 (2002), 25-26. [Brunel instruments in the University Library, a large Camera Obscura and the Industrial Museum].

BRYDEN, D.J., 'Scientific Relics: John Napier's Bones', *Bulletin of the Scientific Instrument Society* 76 (March 2003), 6-9 [The vicissitudes of some early specimens of the calculating rods].

CAMBRIDGE: *An University Within Ourselves. Sciences in Cambridge in the Eighteenth Century* (Whipple Museum of the History of Science, Cambridge, 1998). 48 pages. ISBN 0 906271 14 2. [Booklet published to accompany exhibition held in the Whipple Museum from Dec 1997, includes description and illustration of instruments].

CATALOGUE: *Science in the Provinces. A Descriptive Catalogue of the 'Deventer' Collection* (Leiden, 2003; Museum Boerhaave Communication no. 296). 214 pages. ISBN 90 62 92 139 6. [Catalogue of 19th and 20th century physical instruments used for demonstration and education at a learned society and a secondary school in Deventer, the Netherlands. The 478 objects are illustrated in black and white].

CAVICCHI, Elizabeth, 'Experiences with the magnetism of conducting loops: Historical instruments, experimental replications, and productive confusions', *American Journal of Physics*, 71(2), 2003, 156-167.

CLERCQ, Peter de, 'The Special Loan Collection of Scientific Apparatus, South Kensington, 1876. Part 4: Photographs and Copies', *Bulletin of the Scientific Instrument Society* 76 (March 2003), 10-15 [Fourth and final part in series lists old photographs in the Science Museum and electrotype copies in various British museums].

CLERCQ, Peter de, 'A Note on 18th-century Instruments from Schloss F • stenstein in Silesia', *Bulletin of the Scientific Instrument Society* 76 (March 2003), 16-19. [The castle is in present-day Poland. The instruments in this collection have vanished in or after World War II].

[CRAWFORTH-HITCHINS, D.F.], 'Beginner's Guide Part 5: Unequal Arms, Bismars and Moving Load Scales', *Equilibrium* 2002, nr. 3, 2711-18

DELFT, Dirk van, 'De Blauwe Jongens: de opleiding tot instrumentmaker in het Natuurkundig Laboratorium van Heike Kamerlingh Onnes', *Gewina* 25 (2002), 137-153. [Discusses the school for instrument makers in Leiden University Physics Laboratory, established in 1901].

DELSAUTE, Jean-Luc, 'The Camera Obscura and Painting in the Sixteenth and Seventeenth Centuries', pp. 111-123 in Ivan GASKELL and Michiel JONKER, ed., *Vermeer Studies*. Studies in the History of Art 55. Center for Advanced Study in the Visual Arts. Symposium Papers XXXIII. (National Gallery of Art, Washington / Yale University Press, 1998). ISBN 0-300-07512-9. [Symposiums held in 1995-96].

DYOS, Chris E., 'Wimshurst Machines', *Bulletin of the Scientific Instrument Society* 75 (2002), 32-33. ['Hands-on' approach, on reconstructing and using these generators]

ETTRE, Leslie S., *Milestones in the Evolution of Chromatography* (Franklin: Chrom Source Inc., 2002). 220 pages. ISBN 0-99717144-0-1. [Includes two chapters on the evolution of chromatographic instrumentation since the 1950s, including the essential flame ionization detector. Ordering details see www.chromsource.com]

EVANS, Rand E., 'Morse's Register and the American Method', *Rittenhouse* 56 (202), 65-83 [Concerns determination of terrestrial longitude]

FRAITURE, Eddy, *Uurwerkmakers en uurwerknijverheid in Vlaanderen* (Leuven: Uitgeverij Peeters, 2002), 296 pages. ISBN 90-429-1204-9. [On the horological industry in Flandres from the late Middle Ages to c. 1850. Includes a chapter on scientific instruments (Louvain and Antwerp schools) and appendix with biographical data on over 2100 clock-makers. My spokesman notes that the biographical info on instrument makers is disappointing, the author appears not to have used the relevant works by Zinner, Rasquin and Meskens.]

FRÉMONTIER-MURPHY, Camille, *Musée du Louvre, Département des Objets d'Art. Les Instruments de Mathématiques XVIe-XVIIIe Siècle. Cadran solaires, astrolabes, globes, nécessaires de mathématiques, instruments d'arpentage, microscopes...* (Paris: Edition de la Réunion des Musées Nationaux, 2002). 367 pages. ISBN 2-7118-4457-9. [Catalogue of instruments in the Louvre, with b/w and colour photos.]

GLOBES: *Globusfreund* 49/50 (Vienna 2002), separate English edition *Globe Studies* (Vienna 2002), contains seven papers delivered at the Stewart Museum Globe Symposium, held in Montreal, 19-22 October 2000, edited by Edward H. Dahl, Jean-François Gauvin and Eileen Meillon. The papers are (only English version given here): JACOB, Christian, 'Looking at the Earth from Outer Space: Ancient Views on the Power of Globes' (9-23); DEKKER, Elly, 'The

Doctrine of the Sphere: A Forgotten Chapter in the History of Globes' (25-44); KROGT, Peter van der, 'Globe Production in the Low Countries and Its Impact in Europe, 1525-1650' (45-60); DEKKER, Elly, 'Innovations in the Making of Celestial Globes' (61-79); HOFMANN, Catherine, 'The Globe as Symbol in Emblem Books in the West, Sixteenth and Seventeenth Centuries' (81-120); LIPPINCOTT, Kristen, 'Power and Politics: The Use of the Globe in Renaissance Portraiture' (121-138); MOKRE, Jan, 'More than Just Spheres: A Curator's Vision for a New Globe Museum in Vienna' (139-148). [For abstracts visit <http://www.coronelli.org>]

GREENSLADE, Thomas B., 'Collection Profile. Visits to Apparatus Collections IV: Vanderbilt College', *Rittenhouse* 56 (2002), 109-120 [Vanderbilt opened in 1876. Draws heavily on LAGEMANN, Robert T., *The Garland Collection of Classical Physics Apparatus at Vanderbilt University* (Nashville, Tenn., 1984)]

GUIJARRO MORA, Victor, *Los Instrumentos de la Ciencia Ilustrada. Física Experimental en los Reales Estudios de San Isidro de Madrid (1770-1835)* (Madrid, UNED, 2002). 215 pages. ISBN 84-362-4575-X. [On the apparatus acquired for experimental physics by a Spanish institution. Some surviving apparatus, now in the Museo Nacional de Ciencia y Tecnología in Madrid, is shown in colour photos].

HAMMOND, Christopher, 'The evolution of the eyepiece', *Quekett Journal of Microscopy* 39 (2002), 365-78.

HOSKIN, Michael, 'Herschel's 40ft Reflector: Funding and Functions', *Journal for the History of Astronomy* 34 (Februari 2003), 1-32. [A new look at the famous telescope, built in the later 1780s at Slough, near Windsor].

HUGHES, J.T., 'Henry Power (1626-1668) of New Hall, Elland, and experiments on barometric pressure', *Transactions of the Halifax Antiquarian Society* nr 10 (2002), 14-26 [Amateur construction of barometers for the purpose of experiments].

IANNIELLO, Maria Grazia (with contributions by Luca Carbonari, Daniele Rebuzzi and Silvia Trapanese), *La storia dell'Istituto di Fisica della Sapienza attraverso le sue collezioni di strumenti. Catalogo ragionato del museo di fisica di Roma* (Roma 2002). 242 pages. [This fully illustrated volume retraces the history of the Physics Institute of the University of Rome and is the catalogue of its very rich scientific instrument collection. In the museum of physics there are many important 19th-century apparatus as well as the instruments used by Enrico Fermi and his collaborators].

JULLIEN, Vincent, ed., *Le calcul des longitudes. Un enjeu pour les mathématiques, l'astronomie, la mesure du temps et de la navigation* (Rennes: Presses Universitaires de Rennes, 2002). 303 pages. ISBN 2-86847-613-9. [Sixteen contributions on finding longitude. Explicitly instrument-centered are Danielle FAUQUE, 'Le mégamètre de Charles-François de Charnières (1766-1774)' (pp. 61-82) and Fabien CHAREIX, 'Vaincre la houle: les horloges maritimes de Christiaan Huygens' (pp. 169-202)]

KENN, Maurice J., 'John Harrison's Unusual and Unique Magnetic Compass', *British Sundial Society Bulletin* 14, ii (June 2002), 81-82 [Author owns a compass, with needle pointing South, made and signed by Harrison in 1718. Signature and dial have been authenticated by Harrison-expert Andrew King].

KILBURN, Kevin J., 'The Godlee Observatory in Manchester. The History of the Grubb "Twin Equatorial"', *Journal of the Antique Telescope Society* 23 (2002), 19-24.

KUGEL, J., *Spheres. The Art of the Celestial Mechanic* (Paris, 2002). 254 pages [Hard-back catalogue of selling exhibition of fifty Renaissance globes and armillary spheres, organized by the Kugel brothers in Paris. Contributions by Koenraad van CLEEMPOEL, Jean-Claude SABRIER and Phillipe PRUTNER. A glowing review is MIDDLETON, Arthur, 'The Art of the Celestial Mechanic'. An Exhibition in Paris, Autumn 2002', *Bulletin of the Scientific Instrument Society* 75 (2002), 22-24] Available from specialist horological book dealers or by using the contact links on the dealer's website: http://www.antiques-trade.net/dealers/kugel/expo_en.htm or check out their web site at http://www.galerie-kugel.com/expo_en.htm

LUALDI, Alberto, 'Venetian Makers of Optical Instruments of the 18th-19th Centuries. Part 1 Biagio Burlini', *Bulletin of the Scientific Instrument Society* 76 (2003), 35-37.

MARTÍNEZ, José M. Vaquero, 'Dos aparatos del antiguo gabinete de física del seminario de San Atón de Badajoz (España)', *LULL Revista de la Sociedad Española de las Ciencias y las Técnicas*, Vol. 24, N.50, 2001, pp. 473-482

MESCHIARI, Alberto, 'Corrispondenza di Giovanni Battista Amici con Franz Xaver von Zach', *Nuncius. Annali di Storia della Scienza* XVII (2002), 165-245. [Transcription of 31 letters exchanged in the period 1822-1825 between the Italian optical instrument maker Amici (writing in Italian) and the Gotha astronomer Baron von Zach (writing in French).]

MESCHIARI, Alberto, 'Schede tecniche e istruzioni per l'uso di 160 microscopi di Giovanni Battista Amici, Parte quinta 1857-1862', *Atti della Fondazione Ronchi* Anno LVII, nr. 5 (2002), 795-884. [The fifth part of the description and instruction of Amici's microscopes written by himself].

MESCHIARI, Alberto, 'Microscopi Amici ritrovati. I microscopi di Bettino Ricasoli, Antonio Targioni Tozzetti, Filippo Pacini e corrispondenza', *Atti della Fondazione Giorgio Ronchi*, Anno LVII, nr. 6 (2002), 1009-1055. [Continuation of investigations about Amici's microscopes].

MILLS, Allan A., 'A Universal Harmonograph', *Bulletin of the Scientific Instrument Society* 75 (2002), 9-10 [Device with swinging pendulums creating intricate drawings]

MÖRZER BRUYNS, W.F.J., *Konst der stuurlieden. Stuurmanskunst en maritieme cartografie in acht portretten, 1540-2000* [Amsterdam: Nederlands Scheepvaartmuseum, 2001] 112 pages. ISBN 90-6011-624-0. [Sketches of the art of navigation, copiously illustrated with among others instruments from the Amsterdam Maritime Museum. Reviewed in *Bulletin of the Scientific Instrument Society* 75 (2002), 38].

MORRIS, Peter J.T., *From Classical to Modern Chemistry. The Instrumental Revolution* (London: Royal Society of Chemistry, Science Museum, Chemical Heritage Foundation, 2002). 347 pages. ISBN 0-85404-479-5. [Dedicated to the development and impact of instruments in chemical, biomedical and environmental research and practices, mostly during the 20th century.]

NANKIVELL, G.R., 'The Cooke Photovisual Objective and the 22.9 cm Refractor at the Carter Observatory, New Zealand', *Journal of the Antique Telescope Society* 24 (2002), 4-8 [see also Orchiston's paper]

NASTI, A., 'Recovery and conservation of navigational instruments from the Spanish troopship *Salvador* which sank in 1812 in Maldonado Bay, Punta del Este, Uruguay', *The International Journal of Nautical Archaeology* 30 (2001), 279-281. [Unsigned sextant and two octants, signed 'Spencer Browning & Rust, London' and 'James & Wilson (B&R)']

NUTTAL, R.H., 'Fifty Years Ago - The Zeiss Opton Model W Microscope', *Bulletin of the Scientific Instrument Society* 75 (2002), 29-31

OR, Dani, 'Who invented the tensiometer?', *Soil Science Soc. America Journal* 65: 1-3, 2001.

ORCHISTON, Wayne, 'From Crossley to Carter: The Life and Times of an Historic Cooke Refractor', *Journal of the Antique Telescope Society* 24 (2002), 9-24 [22.9 cm = 9.33 inch refractor, manufactured 1866-67 for wealthy British industrialist, Edward Crossley. Transferred to New Zealand in 1906 and became founding instrument of the Carter Observatory at Wellington in the 1940s].

PANTALONY, David, 'Conference 'Do Collections Matter to Instrument Studies' at the Museum of the History of Science, Oxford, Saturday 29th - Sunday 30th June 2002', *Bulletin of the Scientific Instrument Society* 76 (March 2003), 19-20 [Report by participant].

PANTALONY, David, 'Americans in Europe: The Purchasing Trip of Ira and Charles Young in 1853', *Bulletin of the Scientific Instrument Society* 76 (March 2003), 23-27 [Bought instruments for Dartmouth College in London, Berlin and Paris].

POIRIER, Jean-Paul, and TURNER, Anthony, *Antoine d'Abbadie* (Académie des Sciences; Mémoire de la Science 2) (Paris, 2002). 127 pages, illustrated. [Explorer of Africa and astronomer influenced the scientific world of 19th-century France. In his neo-gothic château, he created an observatory in which all the instruments were decimally divided, as described in the chapter by Anthony TURNER, 'Antoine d'Abbadie et son observatoire décimal à Hendaye'].

POULLE, Emmanuel, 'L'Horloge planétaire d'Henri Arnault de Zwolle', *Scientiarum Historia* 28 (2002), 1, 31-46. [Discusses an unpublished treatise on astronomical clocks by this 15th-century pupil of Jean Fusoris].

RECAMI, Erasmo, PIZZIGALLI, Sergio, PARIGI, Ettore, DE VINCENTIS, Francesco and BORLOTTI, Virgilio, *Gli strumenti scientifici di interesse storico del "Lussana", del "Vittorio Emanuele", e del "Quarenghi" di Bergamo* (Bergamo: Università degli Studi, 2002). 79 pages.

No ISBN. [Describes and illustrates the most important instruments (19th and early 20th century) preserved in three schools in Bergamo]

RUIVO, Maria, 'Instruments and Scientific Culture during the Century of the Enlightenment', *Icon* 7 (2001), 62-74.

SANCHEZ, José Ramón Bertomeu, and BELMAR, Antonio García, eds., *Abriendo las Cajas Negras (Opening the black boxes). Colección de instrumentos científicos de la Universitat de València* (València: Universitat de València, Fundació General de la Universitat de València, 2002). 461 pages. ISBN 84-370-5488-5 [Published to accompany an exhibition of the scientific heritage of Valencia University, held Nov 2002-Jan 2003. With over thirty articles on the history of the Valencia collections, the history of instruments, the precision industry, scientific education, etc. All articles written by non-Spanish authors are also published in their original languages (English and French) in an appendix. A very important and beautifully illustrated work].

SCHECHNER, Sara, 'The time of day: marking the sun's passing', pp. 119-139 in Stuart McCready, ed., *The discovery of time* (London: MQ Publications, 2001) [On sundials]

SCHECHNER, Sara, 'Ancient Cosmologies', pp. 12-29 in David DeVorkin, ed., *Beyond Earth: Mapping the Universe* (Washington, DC: National Geographic in association with the Smithsonian National Air and Space Museum, 2002). [Astronomical instruments from Antiquity to the Renaissance]

SCHILLINGER, Klaus, *Rechengeräte aus der Sammlung des Mathematisch-Physikalischen Salons. Bestandskatalog* (Dresden: Staatliche Kunstsammlungen, Mathematisch-Physikalischer Salon, 1999). 124 pages. ISBN 3-932264-15-0. [Descriptive catalogue of calculating devices in the collection of this Dresden museum, which includes an original Pascaline. Analog calculators, such as sectors and slide rules, are also included].

SIC: 'Meeting in Athens: the 21st Scientific Instrument Symposium, 9th-14th September 2002', *Bulletin of the Scientific Instrument Society* 75 (2002), 18-21. [Report by participants]

STAFFORD, Barbara Maria, and TERPAK, Frances, with an object list by Isotta POGGI, *Devices of Wonder. From the World in a Box to Images on a Screen* (Los Angeles: Getty Research Institute, 2002). 406 pages. ISBN 0-89236-590-0. [Exhibition catalogue includes many optical instruments and devices].

TALBOT, Stuart, 'The Astroscope by James Mann of London. The First Commercial Achromatic Refracting Telescope c. 1735', *Bulletin of the Scientific Instrument Society* 75 (2002), 6-8. [Claim concerns the telescope on Caleb Smith's sea quadrant, discussed by the author in SIS Bulletin 73]

TSCHIRNHAUS: *Ehrenfried Walther von Tschirnhaus (1651-1708). Experimente mit dem Sonnenfeuer* (Dresden: Staatliche Kunstsammlungen, 2001). 178 pages. ISBN 3-932264-23-1. [Well-illustrated catalogue of exhibition, held in the Mathematisch-Physikalischer Salon in

Dresden, on the German virtuoso, concentrating on his experiments with burning mirrors. The introductory chapters include one on burning mirrors in Baroque art and iconography].

TUPLIN, C.J. and RIHLL, T.E., eds., *Science and Mathematics in Ancient Greek Culture* (Oxford: OUP, 2002). 379 pages. ISBN 0-19-815248-5. Based on papers read in 1996. Of instrumental relevance are L. TAUB, 'Instruments of Alexandrian Astronomy: The Uses of the Equinoctial Rings' (133-149) and J.J. COULTON, 'The Dioptra of Hero of Alexandria' (150-164; the author points out that his paper was 'overtaken' by Lewis's *Surveying Instruments of Greece and Rome* (Cambridge, 2001), listed in SIC Bibliography 18).

TURNER, A.J., 'The Observatory and the Quadrant in the Eighteenth Century', *Journal for the History of Astronomy* 33 (2002), 373-85. [Includes a table of 67 known portable quadrants -- date, maker, characteristics, location --, 19 of which survive].

TURNER, A.J., 'Artefacts of Time', *Bulletin of the Scientific Instrument Society* 75 (2002), 2-5. [Lecture given at Sotheby's Olympia on 28th October 2002 on the occasion of the dispersal of 39 instruments from the Time Museum (Rockford and Chicago)]

TURNER, Gerard L'E, 'The Annual Invitation Lecture. Scientific Instruments: Why?', *Bulletin of the Scientific Instrument Society* 76 (March 2003), 2-4 [Condensed version of tenth SIS Invitation Lecture, held in London on 25th November 2002]

UNWIN, Donald J., '*The Scientific*'. *The story of the Cambridge Instrument Company. Manufacturers of scientific instruments with a worldwide reputation for precision* (Cambridge: Published by the Cambridge Industrial Archaeology Society, 2001). 72 pages. ISBN 0 904355 07 1.

WALTERS, Alice, 'Importing Science in the Early Republic: Union College's "First Purchase" of Instruments and Books', *Rittenhouse* 56 (2002), 85-107 [Union College is in Schenectady, NY. Includes large number of instruments imported from the London firm W&S Jones, 1796 and 1797]

WARNER, Deborah Jean, 'Who Designed the Kew Dip Circle?', *Bulletin of the Scientific Instrument Society* 75 (2002), 27-28 [Karl Friedrich Gauss and Humphrey Lloyd]

WARNER, Deborah, SHERMAN, Roger and HENTSCHEL, Klaus, 'The Several Faces of Earth Induction', *Bulletin of the Scientific Instrument Society* 76 (2003), 30-34 [On various designs of magnetometers].

WŁODARCZYK, J., 'Instrumenty Obserwatorium Astronomicznego Uniwersytetu Wrocławskiego: XVIII-XIX Wiek', *Kwartalnik Historii Nauki I Techniki* (*Quarterly Journal of the History of Science and Technology*), Vol. 47, N. 3, Warszawa 2002, pp. 75-92. [With English summary. Describes and illustrates the astronomical instruments of Breslau University]

WRIGHT, M.T., 'A Planetarium Display for the Antikythera Mechanism', *Horological Journal* Vol. 144, nr 5 (May 2002), 169-174. [The world's oldest geared mechanism, found in May 1902]

off the Greek island of Antikythera, is in the National Museum, Athens. The author argues that Derek de Solla Price's interpretation is unsatisfactory, and shows that a new reconstruction, with epicyclic gearing for the planets, may fit the evidence].

WRIGHT, M.T., 'Epicyclic Gearing and the Antikythera Mechanism. Part I', *Antiquarian Horology* 27, nr. 3 (March 2003), 270-279.

ZAUN, Jörg, *Instrumente f • die Wissenschaft. Innovationen in der Berliner Feinmechanik und Optik 1871-1914* (Berlin: Verlag Wissenschafts- und Regionalgeschichte Engel, 2002). 409 pages. ISBN 3-929134-39-X. [Published version of doctoral thesis on (optical) instrument making in Berlin in the period 1871-1914].

ZAUN, Jörg, 'Innovationen im optischen und feinmechanischen Instrumentenbau. Der Einfluss der Wissenschaft auf die Instrumentenentwicklung im 19. Jahrhundert', *Technikgeschichte* 69 (2002), 207-222 [Examines influence of science on instrument construction in the 19th century, focusing on the development of the photographic lens and of the mineralogical microscope, and on two leading manufacturers, C.P. Goerz and the workshop of R. Fuess in Berlin]

ZOLLER, Paul, 'Instruments and Methods for the Evaluation of Indicator Diagrams', *Bulletin of the Scientific Instrument Society* 75 (2002), 11-17 [On planimeters].

ZOLLER, Paul, 'On Double Windmills', *Bulletin of the Scientific Instrument Society* 76 (March 2003), 21-23 [Devices to demonstrate air resistance in physics experiments]

ZUIDERVAART, Huib J., 'Het kistje van Bourjé (1826), succesvol getuigenis van een liefhebber die professional werd', *Gewina* 25 (2002), 154-9.[Discusses a case with brass gauges to verify metric volume measures in the Museum Boerhaave in Leiden, designed by J.P. Bourjé].