

## Scientific Instrument Commission Bibliography 16

Sixteenth bibliography of books, pamphlets, catalogues, articles and CD-ROMs on or connected with historical scientific instruments

This bibliography covers the year 1999, but also contains some earlier publications which only came to the compiler's notice after publication of the Fifteenth Bibliography in May 1999. The compiler is grateful to those who sent him titles for inclusion in this bibliography. Publications, or notices of publication (please with ISBN) for the forthcoming bibliography, covering the year 2000, may be sent to the SIC Secretary.

ACKERMANN, Silke, and John CHERRY, 'Richard II, John Holland and Three Medieval Quadrants', *Annals of Science* 56 (1999), 3-23. Discusses three late 14th-century quadrants, two in the British Museum, one in the Dorset County Museum.

ACKERMANN, Silke, 'Sun, Moon and Stars - Telling the Time with Astronomical Instruments from the British Museum', *Antiquarian Horology* 25 (1999), 31-46. With many colour photographs, this is the printed version of a talk given to the Antiquarian Horological Society in July 1999.

ACKERMANN, Silke and Paul Buck, *TIME* (London: British Museum Press, 1999). 32 pages, ISBN 0 7141 05953, £ 8,99. This educational booklet comes with several cardboard instruments (a sundial and a nocturnal, both for the northern and southern hemispheres, and a perpetual calendar) to press out and make yourself. They are all based on instruments in the BM collections.

ALBERTI, Luigi de, ROVIDA Edoardo, *Patrimonio Storico del Dipartimento di Meccanica / Historical Heritage of Mechanics Department* (Milano: Politecnico di Milano, 1999), 95 pages, no ISBN. Well-illustrated bilingual (Italian-English) catalogue of the collection of tools, machine tools, testing apparatus, measurement instruments, didactic models and mechanical elements of the collection (late 19th century-c.1950) of the Polytechnical school of Milan.

ALDERDICE, D.S. and CRAVEN, B.R., 'The museum of the history of science at UNSW', *Chemistry in Australia* September 1999, 4 pp. Also appeared, with different photographs, in *The Physicist* Vol. 36, nr. 4 (July/August 1999), 155-157. Set up in 1986, this museum in the School of Chemistry of the University of New South Wales, Australia, has some 700 objects post-1814. Cf. [www.chem.unsw.edu.au/mhs/](http://www.chem.unsw.edu.au/mhs/)

AMELIN, Olov, *Medaljens baksida: Instrumentmakaren Daniel Ekström och hans efterföljare i 1700-talets Sverige* (The Reverse of the Medal: The Mathematical Instrument-Maker Daniel Ekström and his Followers in 18th century Sweden. With a summary in English.) Institutionen för idé- och lärdomshistoria, Uppsala universitet, Skrifter nr 20, Bidrag till Kungl. Vetenskapsakademiens historia nr 28. 293 pp. Uppsala. ISBN 91-506-1340-5. Thesis.

ARIAIL, Robert B., 'The artistry of telescope restoration: dent removal', *Journal of the Antique Telescope Society* 16 (Winter 1999), 14-15.

AUGSBURG: *Augsburger Stadtlexicon. Zweite völlig neu bearbeitete und erheblich erweiterte Auflage.* (Ed. Günther Grünstedel, Günther Hägele und Rudolf Frankenberger, Augsburg 1998). 997 pages. ISBN 3-922769-28-4. Includes short biographies of Augsburg instrument makers and clockmakers, such as Brander, Cuno, Depiere, Klieber, Roll, Schißler, Treffler and Wiesel.

BALPE, Claudette, 'Constitution d'un enseignement expérimental: la physique et chimie dans les écoles centrales', *Revue d'Histoire des Sciences* 52 (1999), 241-283. Contains a brief discussion of how during the Revolutionary period French schools were stocked with cabinets of instruments, - some confiscated, some newly acquired.

BARBER, Peter, 'Beyond Geography: Globes on Medals, 1440-1998', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 53-80. German version 'Jenseits der Geographie: Globen auf Medaillen, 1440-1998', 81-88.

BECKMANN, Olof, 'Remarkable observations on a Graham magnetic needle in London and Uppsala in the eighteenth century', *Bulletin of the Scientific Instrument Society* 61 (June 1999), 15-17.

BEDINI, Silvio A., *The Jefferson Stone. Demarcation of the First Meridian of the United States* (1999). 200 pages. Published by Professional Surveyors Publishing Company, 1713-J Rosemont Avenue, Frederick MD 21702, USA, tel. 301/682-6101. \$30 plus postage. Relates Thomas Jefferson's effort to establish a national prime meridian in Washington, D.C. Also discusses instruments.

BEDINI, Silvio A., *Patrons, Artisans and Instruments of Science, 1600-1750* (Aldershot: Variorum, 1999). ISBN 0-86078-781-8. XVI + 336 pages. Photographic reprint of thirteen essays, originally published between 1961 and 1995. With preface, list of addenda and corrigenda, and an index.

BEEKS, Dale R., 'Trade labels: a rich resource for information', *Rittenhouse* 13 (1999), 12-15

BENNETT, J.A., 'La Fabricación de instrumentos científicos en la era industrial', in A. Elena, J. Ordóñez and M.Colubi (eds), *Despuéd de Newton: ciencia y sociedad durante le Primera Revolución Industrial* (Rubí, Barcelona, 1998), 102-18

BENNETT, J.A. 'Instruments in the History of Astronomy', *Endeavour*, 23 (1999), 98-9. A report on the instruments session of the biennial workshop on the history of astronomy held at the University of Notre Dame.

BENNETT, J.A., 'O Estatuto dos Instrumentos Cientificos' in F.Gil, ed., *A ciencia tal qual se faz* (Lisbon, 1999), 203-13

BENNETT, J.A., 'The Museum of the History of Science, Oxford', *Arbor*, 164 (1999), 435-44. A review of the Oxford collection in a special issue of *Arbor* devoted to science museums.

B[ENNETT], J.A., 'New acquisition: 'La planchette', *Sphaera* 9 (Spring 1999), 3. A planchette, signed 'ChapototAParis' and dated c. 1700, acquired for the Museum of the History of Science, Oxford.

B[ENNETT], J.A., 'Henry Sutton thinking: a reading of a new acquisition', *Sphaera* 10 (Autumn 1999), 6. An ink impression on paper from a copperplate engraved in London in 1653 by Henry Sutton, acquired by the Museum of the History of Science, Oxford. It is an unused and uncut compass card intended for the centre of a circumferentor or surveying compass.

BERNING, Bill and Jan, *Scales, a collector's guide* (Atglen, Pennsylvania (?): Schiffer, 1999). 160 pages. NB: source: review in *Equilibrium* 1999, p. 2392.

BLUNCK, Jürgen, 'Deutsche Pionierarbeiten der Monddarstellung mit erhabenem Relief', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 293-302. English summary 'German Pioneering Efforts in Lunar Representation Using a Raised Relief', 303.

BOLTON, H.C. and PATTERSON, J.R., 'The spintharoscope. The instrument of William Crookes that made alpha particles visible', *Bulletin of the Scientific Instrument Society* 63 (December 1999), 31-33.

BOLTON, H.C. and WILLIAMS, N.H., 'Scientific Instrument Makers and Dealers in Victoria, 1840-1914', in *Historical Records of Australian Science* 3, Vol. 12, Number 1 (1998), 15-82. Alphabetical listing, highly detailed.

BOLTON, H.C. and WILLIAMS, N.H., 'A pharmacist's prescription box scales by Felton Grimwade of Melbourne, Australia', *Bulletin of the Scientific Instrument Society* 60 (March 1999), 33-35.

BONOLI, Fabrizio and Maria ZUCCOLI, 'On two sixteenth-century instruments by Giovanni Antonio Magini (1555-1617)', *Nuncius. Annali di Storia della Scienza* XIV (1999), fasc. 1, 201-212. Discusses two quadrants (radius 345 mm), made in 1592 and 1595 by this Bologna astronomer. They could only be studied from pictures, as their present whereabouts is unknown Cf. Meliconi in *Sphaera* 9 (Spring 1999).

BRACEGIRDLE, Brian, 'George Jackson's microscopic portraits', *The Quekett Journal of Microscopy* 38, 2 (Spring 1998), 85-89. George Jackson made microscopic portraits of worthies of the Microscopical Society of London in the 1850s. Eighteen are reproduced here, with brief biographical notes; they include the instrument makers Andrew Ross (1798-1850) and Cornelius Varley (1781-1873).

BRACEGIRDLE, Brian, *Microscopical mounts and mounters* (London: The Quekett Microscopical Club, 1998). vi + 225 pages, incl. 60 full-page colour photographs. ISBN 0-

9514441-3-1. Additional material by Bracegirdle appeared in *The Quekett Journal of Microscopy* 38, 3 (Autumn 1998), 219-244 ('Victorian Slide Mounters') and *ibidem* 38, 5 (Winter 1999), 311-315 and 369-371 ('Microscopical mounts and mounters Addenda 1 and 2').

BRENEVA, I. V., *Istoriia Instrumental'noi palaty (1724-1766) Peterburgskoi Akademii nauk* (St Petersburg: Nauk, 1999) 168 pp., 9 plates. History of the instrument-making workshop of the St Petersburg Academy of Sciences in the mid-18th century. Includes an annotated biographical dictionary of the craftsmen who worked in the workshop.

BRENNI, P., 'La funzione degli strumenti scientifici nella didattica fra Settecento e Ottocento', *Studi Settecenteschi* 18, 1998, 421-431. Discusses the role of didactic apparatus in the 18th and 19th centuries.

BRENNI, P., 'La panoplie du laboratoire moderne', *Les Cahiers de Science et Vie* 51, 1999, 16-24 On the transformation of laboratory instruments in the 19th and 20th centuries.

BRENNI, Paolo, 'The Van der Graaf generator. An electrostatic machine for the 20th century', *Bulletin of the Scientific Instrument Society* 63 (December 1999), 6-13. Brenni's thoughtful response to the Editor's invitation to name the 'top ten' instruments of the twentieth century.

BRISTOW, Ron, CLIFTON, Gloria and MIDDLETON, Arthur, 'Reproduction scientific instruments - or 'buyer beware'', *Bulletin of the Scientific Instrument Society* 61 (June 1999), 27-28.

BRISTOW, H.R., 'Navigational instruments on the 1927 Argos flight', *Bulletin of the Scientific Instrument Society* 62 (September 1999), 17-18.

BROOKS, Randall C., 'Collection profile: new metrology collection acquired by NMST', *Rittenhouse* 13 (1999), 20-24. Substantial acquisition by the National Museum of Science and Technology in Ottawa.

BRYANT, Terence J. [†], 'Bristol directory of scientific instrument makers. A note on Henry Edgeworth, mathematical, philosophical and optical instrument maker', *Bulletin of the Scientific Instrument Society* 61 (June 1999), 18-19.

BRYDEN, D.J., 'From 16th century London to 19th century Philadelphia. A peregrination through three centuries of instrument advertising and ephemera', *Bulletin of the Scientific Instrument Society* 61 (June 1999), 4-10. The SIC Annual Invitation Lecture, delivered December 1998.

BUD, Robert, 'The instruments of applied science', *Bulletin of the Scientific Instrument Society* 63 (December 1999), 3-5. Historians should give more attention to the tools used in the practice of applied science. Paper delivered at the Scientific Instrument Symposium in Sorø.

BURCZYK-MARONA, Danuta, 'Problema datowania dawnych instrumentów naukowych. Uwagi na marginesie artykuła A. Bunsch o astrolabium arabskim w zbiorach Muzeum UJ',

*Zeszyty Naukowe Uniwersytetu Jagiellońskiego MXXI: Opuscula Musealia* [Kraków] 5, 1991, 95-116. On the dating of an arabic astrolabe (?Cordoba, 11th century) in the Museum of the Jagellonian University, Kraków, rebutting an earlier article in the same journal 848, *Opuscula Musealia* 2, 1887. Long English summary.

BURNS, J.E., 'Radiographic exposure slide rules', *The British Journal of Radiology* 72 (1999), 48-54. Illustrates and discusses five slide rules, dating between about 1910 and 1950, used for calculations in diagnostic X-ray practice.

CAMP, K. van, M. DORIKENS and L. DORIKENS-VANPRAET, *Schatten op zolder. Catalogus bij de tentoonstelling van wetenschappelijke instrumenten gebruikt in onderzoek en onderwijs in Antwerpen tussen 1750 en 1950* (Gent: Museum voor de Geschiedenis van de Wetenschappen, 1999). 30 pages. Simply produced, non-illustrated, catalogue of exhibition of instruments preserved at Antwerp University, including the Van Heurck collection, held from 18 oktober 1999 to 31 juli 2000 in the Gent History of Science Museum.

CARTWRIGHT, David Edgar, *Tides. A Scientific History* (Cambridge: CUP, 1999). 229 pages, ISBN 0 521 62145 3. Includes discussion of instrumentation up to the very recent period.

CERIANA-MAYNERI, Michele, QUARATI, Pietro, SPALLONE, Roberta, 'I Jest "costruttori d'istromenti" nella Torino dell'Ottocento', *Physis*, XXXVI (1999), 165-175. The history of the Jest , a family of 19th-century Italian instrument makers.

CHEMISTRY: [Anon.], 'Archaeological finds: vessels from the first university chemical laboratory', *Sphaera* 10 (Autumn 1999), 4-5. During current building works on the Museum of the History of Science, Oxford, a hoard of some thirty earthenware chemical vessels has been discovered, - the most significant archeological find of chemical apparatus yet made in England.

CHEN, Xiang, 'Instrumental unification: optical apparatus in the unification of dispersion and selective absorption', *Studies in the History and Philosophy of Modern Physics* Vol. 30, nr. 4 (1999), 519-542.

CLERCQ, Peter de, 'The instruments of science. The market and the makers ', pp. 311-331 in Klaas van Berkel, Albert van Helden, Lodewijk Palm (eds), *A History of Science in The Netherlands. Survey, Themes and Reference* (Leiden: Brill Academic Publishers, 1999), 659 pages. ISBN 90 04 10006 7.

CLERCQ, Peter de and MOOIJ, Charles de, 'Een bijzonder familiestuk. De verrekijker van de Bossche president-schepen mr. H.B. Martini (1693-1776)', *Brabants Heem* 51, nr. 2 (1999),

37-45. On a Musschenbroek refracting telescope acquired from private ownership by the Museum Boerhaave, Leiden. An English version, with a stronger emphasis on instrumental information, will appear in *Bulletin of the Scientific Instrument Society* 65 (June 2000).

CLERCQ, Peter de, 'A pseudo-Tompion sundial', *Bulletin of the Scientific Instrument Society* 62 (September 1999), 5-6. Signed 'Tompion Londini Anno Dom 1703', but made by Pearson Page, Birmingham in the 1930s, as shown by Denys Vaughan in *ibidem* 64 (March 2000), 33.

CLOCKS: *Tijd voor klokken. Verhalen rond een verzameling* (Zutphen: Stichting Boom-Time c/o Uitgeversmaatschappij Walburg Pers, 1999). 120 pages, ISBN 90 5730 886 9. In 1992 a foundation Boom-Time was established for a collection of timepieces and timekeepers, the property of ir. Jan Boomstra. This volume describes 35 items from that collection, with colour photographs.

COLLINS, Philip R., *Aneroid barometers and their restoration* (Trowbridge, Wiltshire: Baros Books, 1999). ix + 212 pages. ISBN 0 948382 11 2. In 1995, Collins opened the Barometer World Museum in his home village Merton, Devon, where he restores, makes and deals in all types of barometers.

COWHAM, Michael, wrote a series of three articles on calendar systems and perpetual calendars in the *Bulletin of the Scientific Instrument Society*. Part 1: 'Calendar Systems' appeared in Vol. 61 (June 1999), 20-23. Part 2: 'Finding Easter' (on epact, dominical letter, golden number and indiction) in Vol. 62 (September 1999), 11-16, Part 3 : 'Descriptions of Calendars' in Vol. 64 (March 2000), 7-12.

DAVIDSON, Brian, 'Rulings and writings', *The Quekett Journal of Microscopy* 38, 3 (Autumn 1998), 199-205. Concentrates on the development of measuring techniques utilizing diamond rulings, such as Nobert's plates.

DAMERI, Debora, LODOVISI, Achille, LUPPI, Giulia, *La Bona Opinione. Cultura scienza e misure negli stati estensi, 1598-1860* (Modena: Editore Museo della Bilancia / Centro di Documentazione, 1997). 292 pages. ISBN 88-86143-08-7. Catalogue of exhibition, held in Modena 26.10.1997-1.3.1998, on science and measurement in the region around Modena. Mainly weights and measures and balances. Many colour illustrations.

DAVOIGNEAU, Jean and LE GUET TULLY, Françoise, *Observatoires Astronomiques: Provence-Alpes-Côte d'Azur* (Paris, etc, 1999). ISBN 2-909727-18-1. Also published in English as: Jean Davoigneau and Françoise Le Guet Tully, *Astronomical Observatories in Provence, the Southern Alps and the Côte d'Azur*, trans. Christine Sitchet and Françoise Le Guet Tully (Paris, etc, 1999). 32 pages, ISBN 2-909727-19-X.

DEKKER, Elly, 'The Globes in Holbein's Painting The Ambassadors', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 19-37. German version 'Die Globen auf Holbeins Gemälde 'Die Gesandten'', 38-52

DEKKER, Elly, *Globes at Greenwich. A catalogue of the globes and armillary spheres in the National Maritime Museum* (Oxford: OUP/National Maritime Museum, 1999). 592 pages, ISBN 0-19-856559-3. Lavishly produced catalogue of the finest collection of globes and armillary spheres in the world, comprising over 300 items. Includes contributions by other specialists, viz. Maria Blyzinski, 'The history of the collection'; Ann Leane, 'The construction and conservation

of globes'; Gloria Clifton, 'Globe making in the British Isles'; Jonathan Betts, 'Clockwork globes'; Kristen Lippincott, 'Globes in art: problems of interpretation and representation'; Silke Ackermann, 'Islamic globes'.

D'HOLLANDER, Raymond, *L'Astrolabe. Histoire, théorie et pratique* (Paris: Institut Océanographique, 1999). 390 pages, ISBN 2-903581-19-3. Highly detailed and technical study. No English summary.

DINGLEY, M., 'An unusual microscope by the name *Otropic*', *The Quekett Journal of Microscopy* 38, 1 (Spring 1997), 21-27. Manufactured between 1947 and c. 1953 by Hermann Wetzler of Pfronten, Bavaria. The objectives are mounted in a row on an arc-shaped metal bar instead of a rotating disc.

DOBSON, R.D. and R.J.C., 'The first steps of the pendulum as a timekeeper', *Antiquarian Horology* 24, 5 (Spring 1999), 432-442. Discusses Galileo's pendulum clock design of 1641. Cf. next issue, 594-597, for critical reactions.

DÖRFLINGER, Johannes, 'Anselm Desing (1699-1772) und seine Globen', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 229-241. English summary 'Anselm Desing (1699-1772) and his Globes', 242.

DUNN, Richard and WALLIS, Helen, *British Globes up to 1850: A Provisional Inventory* (London, 1999). No ISBN. Lists 671 globes, arranged by maker and by date. Circulated free to SIS Members with the *Bulletin of the Scientific Instrument Society* 60 (1999). Simple off-set list, intended to be expanded into a proper 'Catalogue of British Globes'. The project was funded from a bequest by Helen Wallis, who died in 1995.

EVANS, James, 'The material culture of Greek astronomy', *Journal for the History of Astronomy* vol. 30 (1999), 237-307. Overview article on ancient and medieval periods. Discusses cosmological models, display pieces related to time-keeping, astronomical calculating tools (including the Antikythera mechanism), instruments of observation, and 'signs and symbols'. Some artefacts, many line drawings.

FELDENKIRCHEN, Wilfried, *Siemens 1918-1945* (Columbus USA: Ohio State UP, 1999). 716 pages. ISBN 0-8142-0723-5. Entrepreneurial history, includes information on instrument engineering by parent company Siemens & Halske AG. Originally published in German in 1995.

FREIBURGER, Dana, 'The John Thompson Collection', *Sphaera* 9 (Spring 1999), 5. Collection of twenty-three surveying and other instruments, originally belonging to Englishman John Thompson (1720-83), since 1932 in the Museum of the History of Science, Oxford.

FRIED, Bart and BRIGGS, John W., 'Standing in uncle John's footsteps. James Walter Fecker and his legacy of large telescopes', *Journal of the Antique Telescope Society* 16 (Winter 1999), 22-24. On the American telescope builder J.W. Fecker (1891-1945).

FRIESS, Peter, 'Rediscovering Josef Weidenheimer (1758-1795) and clockmaking in the German-speaking countries', *Antiquarian Horology* 24, 6 (Summer 1999), 523-538. Only seven of Weidenheimer's clocks are known to have survived. Originally presented as the Ninth Dingwall Beloe lecture.

GIRODET, Pierre, 'Famous mounters: Tempère - Father and Son', *The Quekett Journal of Microscopy* 38, 5 (Winter 1999), 357-363. Discusses Jean-Claudius Tempère (1847-1926) and his son Gaston (1900-1985) and their microscopical mounts.

GREAVES, Philip M., 'The Baker/Vickers Patholux Microscope', *The Quekett Journal of Microscopy* 38, 4 (Summer 1999), 267-273. Instrument with novel focus mechanism, sold by Vickers Instruments in the 1960s and early 1970s.

GREENHOUSE, Lisa, 'Hassler's instruments at NIST', *Rittenhouse* 12 (1999), 120-124. Swiss-born F.R. Hassler was involved in mapping the US Atlantic coast. Most of his instruments were bought in Europe in the years 1812-1815 and are now at the National Institute of Standards and Technology, Maryland.

GREENSLADE, Thomas B., Jr., 'Apparatus manufacturers in Chicago, ca. 1900', *Rittenhouse* 13 (1999), 16-19.

GREENSLADE, Thomas B., Jr., 'The Rosse Telescope', *The Physics Teacher* 36 (1998), 493-5.

GREENSLADE, Thomas B., Jr., 'Examination Questions Based On Historical Apparatus', *The Physics Teacher* 37 (1999), 172-173.

GUIJARRO, Victor, 'The procurement & manufacture of scientific instruments in Spain during the 18th and 19th centuries', *Bulletin of the Scientific Instrument Society* 62 (September 1999), 7-10.

HELDEN, Albert van, *Catalogue of telescopes* (Florence: Istituto e Museo di Storia della Scienza, 1999), 111 pages. ISBN 88-09-21680-6. Illustrated catalogue describing the collection of early telescopes of the Museum of History of Science in Florence. The latest volume in an ongoing series.

HELDEN, Anne C. van and Rob H. van GENT, 'The lens production by Christiaan and Constantijn Huygens', *Annals of Science* 56 (1999), 69-79. Discusses 17th-century telescope objectives in the Museum Boerhaave and elsewhere, using optical measurements as well as analysis of the handwriting on the lenses and on paper covers.

HENTSCHEL, Klaus, 'Photographic mapping of the solar spectrum, 1864-1900', *Journal for the History of Astronomy* vol. 30 (1999), 93-119 and 201-224.

HILLS, Richard L., 'James Watt's Barometers', *Bulletin of the Scientific Instrument Society* 60 (March 1999), 5-10.



HOLLAND, Julian, 'Useful, Ornamental and Scientific: An Irish Contribution to Australian Retail History', *Australian Antique Collector*, 51st edition (April-October 1996), 184-187. Discusses two firms of opticians and jewellers in Sydney in the 19th century that retailed scientific instruments.

HOLLAND, Julian, 'T.F. Wiesener', in Chris Pratten, ed., *Summer Hill* (Ashfield & District Historical Society, 1999), 83-89. Theodore Frederick Wiesener (1845-1897) moved from Germany to Sydney in 1871, where he set up as an instrument maker. His firm was continued after his death.

HOLLAND, Julian, 'Metrology in retrospect. Facts not Opinions', *The Australian Metrologist* No 17 June 1999, 9-12. Prompted by tested specimens surviving in Sydney, the author discusses the Testing and Experimenting Works set up in the 1860s by David Kirkaldy at 99 Southwark Street, London SE1, which can now be visited as a museum.

HOLLAND, Julian, 'Australian exploration and the introduction of the aneroid barometer', *Bulletin of the Scientific Instrument Society* 61 (June 1999), 24-26.

HOLLAND, Julian, 'Historic Scientific Instruments and the Teaching of Science: A guide to resources', in Michael R. Matthews (ed.), *History, Philosophy & New South Wales Science Teaching - Second Annual Conference* (Sydney, 1999), 121-129. Intended to provide a guide to the variety of sources, including book titles and websites, for teachers who wish to examine the role of instruments in their syllabus.

HOLLAND, Julian, 'Henry Kater and the Social Context of Science in the Early Nineteenth Century', in Michael R. Matthews (ed.), *History, Philosophy & New South Wales Science Teaching - Second Annual Conference* (Sydney, 1999), 131-138. Includes brief discussion of Kater's association with instruments and instrument makers.

HOPP, Peter M., *Slide rules. Their history, models and makers* (Mendham, New Jersey USA: Astragal Press, 1999). 310 pages, ISBN 1-879335-86-7. With glossary, biographies, index. Includes chronological list of slide rule makers, 1600-1900. Publisher's address: 5 Cold Hill Road, Suite 12, PO Box 239, Mendham NJ 07945-0239.

JANIN, Joseph, 'Le Musée Ampère et de l'Électricité', *La Revue du Musée des Arts et Métiers* 26 (March 1999), 47-54. The house in Poleymieux-au-Mont-d'Or near Lyon, where the physicist André-Marie Ampère (1775-1836) lived, was opened as a museum in 1931. With thirteen colour photos of exhibits, some on loan from the Musée des Arts et Métiers, Paris.

JARRELL, R.A., 'J.S. Plaskett and the modern large reflecting telescope', *Journal for the History of Astronomy* vol. 30 (1999), 359-390. Discusses "how the world's first conventional large reflector, the 72-inch telescope of the Dominion Astrophysical Observatory in Victoria, British Columbia, was designed, and how it became the model for an entire generation of telescopes from its completion in 1918 to the 1960s."

JOHNSON, Kevin, 'Lovell radio telescope at Jodrell Bank', *Bulletin of the Scientific Instrument Society* 63 (December 1999), 34-35. Erected in Cheshire in the 1950s, still active at the cutting edge of radio astronomy.

JOHNSON, Kevin, 'Sensible telescopes? The life and work of Andrew Ainslie Common', *Journal of the Antique Telescope Society* 17 (Summer 1999), 22-24. A.A. Common (1841-1903), British pioneer of astrophotography, built some of the largest reflecting telescopes of the time.

J[OHNSTON], S.A., 'Epact unpacked: the secret of V.C.', *Sphaera* 10 (Autumn 1999), 2. Fresh information on a sixteenth-century English astronomical compendium, signed 'V.C.' (possibly Humphrey Cole), in the Museum of the History of Science, Oxford.

JONES, D. and J. REID, 'Photomicrography through a mid-18th century German compass microscope', *The Quekett Journal of Microscopy* 38, 2 (Spring 1998), 77-84. Cf. critical reaction by G.L'E. Turner in next issue, p. 247.

KEIL, Inge, 'Die Fernrohre von Herzog Ernst I., dem Frommen, von Sachsen-Gotha', in W.E. Dick und J. Hamel, eds., *Beiträge zur Astronomiegeschichte. Band 2. Acta Historica Astronomiae Vol. 5* (1999), 70-79. Duke Ernst I at the court of Gotha held one of the largest collections of telescopes of his times, with instruments made by a.o. Wiesel and Spinoza. With a list of the optical apparatus listed in the 1717 inventory of the ducal Kunstkammer.

KEITHLEY, Joseph F., *The story of electrical and magnetic measurements. From 500 BC to the 1940s.* (New York, IEEE, 1999). ISBN 0-7803-1193-0. 240 pp., illustrated. Much information on electrical instruments.

KING, David A., *World-Maps for Finding the Direction and Distance to Mecca. Innovation and Tradition* (London: Al-Furqan Islamic Heritage Foundation / Leiden-Boston-Köln: Brill, 1999). Vol. XXXVI in H. Daiber and D. Pingree, eds., *Islamic Philosophy Theology and Science. Text and Studies.* 638 pages. ISBN 90-04-11367-3. Includes a discussion of astronomical instrumentation, and describes and illustrates many instruments.

KLAMT, Johann-Christian, *Sternwarte und Museum im Zeitalter der Aufklärung. Der Mathematische Turm zu Kremsmünster (1749-1758)* (Mainz: Verlag Philipp von Zabern, 1999). X + 494 pages, ISBN 3-8053-2403-0. The astronomical observatory tower of the Benedictine monastery of Kremsmünster in Austria was erected around 1750 and houses collections of astronomical, mathematical and physical instruments. This book concentrates on the design of the observatory, comparing it to other European designs of the period.

KUILE, Sybrich ter, and MÖRZER BRUYNS, W.F.J. , *Amsterdamse kompasmakers ca 1580-ca 1850. Bijdrage tot de kennis van de instrumentmakerij in Nederland* (Amsterdam: NEHA/Stichting Nederlands Scheepvaartmuseum, 1999). 136 pages. ISBN 90.5742.023.6 Detailed study of Amsterdam makers of nautical compasses, giving biographical and entrepreneurial data on 301 makers. With introductory chapters on the development of the nautical compass and the social history of the makers, many of whom were guild members.

LANTINK-FERGUSON, Annie Th., 'Drie tandwielsystemen voor een maankalender', *Gewina* 22 (1999), 195-220. A 15th-century Flemish manuscript in Salamanca contains sketches and descriptions for the construction of three geared systems for the generation of lunar motion. The descriptions are in the vernacular, which indicates they were drawn up by craftsmen. These mechanisms were possibly meant as an extra dial in monumental astronomical clock-works.

LEVERE, Trevor H., 'The Hauch Cabinet. Chemical apparatus and the chemical revolution', *Bulletin of the Scientific Instrument Society* 60 (March 1999), 11-15

LIPPINCOTT, Kristen, ed., *The Story of Time* (London: Merrell Holberton, 1999). Catalogue accompanying exhibition opened 1 december 1999 in the National Maritime Museum. Contains articles by Silke Ackermann, 'The Principles and uses of Calendars - Political and Social Implications' (48-51), Jonathan Betts and others.

LUALDI, Alberto, 'Bagio Burlini, un ottico del '700 Veneziano', *Nuncius. Annali di Storia della Scienza* XIV (1999), fasc. 1, 213-220. Discusses the work of the Venetian optical instrument maker Bagio Burlini (1709-1771), with a survey of his signed microscopes (5) and telescopes (4).

MADDISON, Francis and Anthony TURNER, 'The names and faces of the hours', in Lodi Nauta and Arjo VanderJagt, eds., *Between Demonstration and Imagination. Essays in the history of science and philosophy presented to John D. North* (Leiden, Boston, Köln: Brill, 1999), 125-155. Based mainly on written sources, but discusses two sundials, one in France, the other in the Musée d'Histoire des Sciences, Geneva.

MADDISON, Ron, 'Isaac's catadioptrical tubes', *Journal of the Antique Telescope Society* 16 (Winter 1999), 16-21. On Newton's reflecting telescopes.

MADDISON, Ron, 'A typical John Browning 6½-inch reflector of about 1875', *Journal of the Antique Telescope Society* 17 (Summer 1999), 10-15.

MANNONI, Laurent, *Etienne-Jules Marey: la mémoire de l'oeil*. (Cinématèque française. Milan: Mazzotta, 1999). 418 pages. ISBN 88-202-1358-3. Complete history of life and work of Marey, pioneer of the moving images technology. Much on his instruments and apparatus.

MEINEL, Chr. (ed.), *Instrument-Experiment: Historische Studien* (Stuttgart: Bassum Verlag, 1999). Papers dealing with instruments, experiments, replication of apparatus, etc., presented in Regensburg for the 80th anniversary of the Deutsche Gesellschaft für Geschichte der Medizin, Naturwissenschaft und Technik.

MEINEL, Chr. (ed.), *Das Maß aller Dinge. Das Meter, die Revolution und die Wissenschaft* (Regensburg, 1999). 26 pp. Brochure in German, available upon request from [christoph.meinel@psk.uni-regensburg.de](mailto:christoph.meinel@psk.uni-regensburg.de). It accompanied a small exhibition at the Kepler Museum in Regensburg to commemorate the definitive legal fixation of the length of the meter in December 1799. Chief exhibit (not illustrated) was a Borda-type Cercle Répétiteur, built and signed by Nicolas Fortin in Paris, and bought for Regensburg's observatory in 1808.

MELICONI, Ilaria, 'Epect unpacked: the quadrants of Giovanni Antonio Magini', *Sphaera* 9 (Spring 1999), 2-3. Discusses a Magini quadrant in the Museum of the History of Science, Oxford, and compares it with two specimens whose present whereabouts is now unknown, about which see also Bonoli and Zuccoli in *Nuncius* (1999).

MESKENS, A, and others, 'Winegauging at Damme: the evidence of a late medieval manuscript', *Histoire et Mesure* 14 (1999), 51-77. Possibly the earliest manuscript on constructing a wine gauge, in this case a quadratic rod, with a special geometrical technique.

MESCHIARI, Alberto, 'Corrispondenza di Giovanni Battista Amici con Carlo Matteucci e Angelo Secchi', *Nuncius. Annali di Storia della Scienza* XIV (1999), fasc. 1, 233-261. Annotated edition of 28 letters exchanged between Amici and two Italian patron scientists on instrumental matters.

MILANESI, Marica, 'Coronelli's Large Celestial Printed Globes: A Complicated History', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 143-160. German version 'Coronellis grosse gedruckte Himmelsgloben: Eine komplizierte Geschichte', 161-169.

MOKRE, Jan, 'Globen unter freiem Himmel: Beispiele aus Wien', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 125-140. English summary 'Globes in the Open Air: Examples from Vienna', 141.

MORRISON-LOW, A.D., R.H. NUTTALL and A.D.C. SIMPSON, 'Ten important twentieth-century items from the History of Science collections of the National Museums of Scotland', *Bulletin of the Scientific Instrument Society* 63 (December 1999), 23-28. Edinburgh's response to the Editor's invitation to name 'top ten' instruments of the century.

MORTON, Alan Q., 'The electron discovered, 1897 - J.J. Thompson's apparatus', *Bulletin of the Scientific Instrument Society* 63 (December 1999), 29-30.

MORUS, Iwan Rhys, *Frankenstein's children: electricity, exhibition and experiment in early nineteenth-century London* (Princeton, 1998), xvi + 324 pages. The book's primary interest lies in electrical experiments conducted by popular lecturers and mechanics.

NICOLINI, Nicoletta, TERENNA, Gigliola, *La collezione di vetreria scientifica, Patrimonio Storico-scientifico dell'Università degli Studi di Siena* (Siena, Nuova Immagine Ed., 1999). 192 pages. ISBN 88-7145-160-0. Illustrated catalogue, with historical introduction, of the collection of chemical glassware (19th and early 20th century) of the laboratories of the University of Siena.

OESTMANN, Günther, 'Der Mondglobus Tobias Mayers (1723-1762)', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 221-22. English summary 'The Lunar Globe of Tobias Mayer (1723-1762)', 227-8.

OESTMANN, Günther, *Uhren und wissenschaftliche Instrumente der Familie Hager*. Braunschweiger Werkstücke, vol. 101 (Braunschweig, 1999). 264 pages, ISBN 3-927288-29-2. . Catalogue raisonnée of the works of the Hager family.

OESTMANN, Günther, 'The Strasbourg Cathedral Clock', *Antiquarian Horology* 25 (1999), 50-63. The Tenth Dingwall Beloe Lecture, delivered at the British Museum on 25 November 1998.

OLDROYD, David, 'Non-written sources in the study of the history of geology: pros and cons, in the light of the views of Collingwood and Foucault', *Annals of Science* 56 (1999), 395-415. Includes brief discussion of instruments, and mentions that Dr. Sally Newcomb, Maryland, is currently working on a history of instruments used in geological research, and on the history of experimentation in the earth sciences.

OSTERBROCK, Ronald E. and BRIGGS, J.W., 'The first Alvan Clark & Sons. Largest refracting telescope in the world', *Journal of the Antique Telescope Society* 16 (Winter 1999), 11-13.

PASELK, Richard A., 'The evolution of the Abbé refractometer', *Bulletin of the Scientific Instrument Society* 62 (September 1999), 19-22. Ernst Abbé (more often known as Ernst Abbe) constructed the first refractometer in 1869.

PETZOLD, Hartmut, 'Wer macht die Zeit? Der Sonnenuhengarten im Deutschen Museum', *Kultur & Technik* 1999, vol. 3, 38-43. On a 'sundial garden' on a roof terrace of the Deutsches Museum in Munich, which was opened in June 1998. Most dials were made for the purpose by sundial specialist Yves Opizzo and sculptor Christian Tobin.

PLOMP, Reinier, 'A longitude timekeeper by Isaac Thuret and the balance spring invented by Christiaan Huygens', *Annals of Science* 56 (1999), 379-394. A recently discovered clock, signed 'Thuret A Paris', dated 1675-1680, reveals that this clockmaker was much more closely involved in the development of a clock for finding longitude than has generally been assumed.

RABY, Julian, General Editor, *The Nasser D Khalili Collection of Islamic Art. Volume XIII. Science, Tools & Magic. Part One. Body and Spirit, Mapping the Universe*. By Francis MADDISON and Emilie SAVAGE-SMITH. *Part Two. Mundane Worlds*. By Emilie SAVAGE-SMITH with contributions from Francis MADDISON, Ralph PINDER-WILSON and Tim STANLEY. (London: The Nour Foundation in association with Azimuth Editions and Oxford University Press, 1997). 440 pages. ISBN 0-19-727610-5. Of the intended thirty volumes of catalogues of the important private collection of Islamic material assembled by Dr. Nasser D. Khalili, this double volume deals with a wide range of objects more or less scientific in nature: astrological and astronomical globes, astrolabes, quadrants, qiblahs (instruments for determining the direction of Mecca), and alchemical or chemical equipment and mortars and pestles.

RASMUSSEN, Nicolas, *Picture control: the electron microscope and the transformation of biology in America, 1950-1960* (Stanford, California, 1997). xvi + 338 pages. Argues that the intellectual and historical significance of scientific instruments can only be adequately appreciated by a combined philosophical, historical and sociological approach.

RASMUSSEN, Nicolas, 'What moves when technologies migrate? "Software" and hardware in the transfer of biological electron microscopy to postwar Australia', *Technology & Culture* 40, 1 (January 1999), 47-73. In 1944 the "Universal" electron microscope (EMU) model from the Radio Corporation of America -- then arguably the world's most sophisticated commercially manufactured scientific instrument -- was brought to Melbourne. This paper retraces the replication and adaptation of biological microscopy in isolated conditions in the later 1940s.

RUDD, M. Eugene, 'De Witt Bristol Brace: professor, instrument maker, innovator', *Rittenhouse* 13 (1999), 3-11. Based at the University of Nebraska, he devised several highly innovative instruments between 1887 and 1905.

SARMA, Sreeramula Rajeswara, 'Yantraraja: the astrolabe in Sanskrit', *Indian Journal of History of Science* 34 (2) 1999, 146-158. Overview of manuals on the construction and use of the astrolabe composed in Sanskrit, and of astrolabes in which legends were engraved in Sanskrit language and in Devanagari script. A list of errata can be requested from the author at his new address: 23 Safina Apartments, Medical College Road, Aligarh 202 002, India, fax 0571-500 162.

SCHMIDT, Rudolf, 'Franz Ludwig GÜSEFELD - Wolf Paulus Jenig und das Industrie-Comptoir Weimar', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 277-284. English version 'Franz Ludwig GÜSEFELD - Wolf Paulus Jenig and the Industrie-Comptoir Weimar', 285-291.

SCIANNA, Nicolangelo, 'The Repair of a Fracture with a Bag of Lead Shot in a J. Senex Globe', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 347-353. German version 'Die Restaurierung eines Bruchrisses mit einem Säckchen Bleischrot an einem J. Senex-Globus', 354-360.

SEBASTIÀN, Amparo, JIMÉNEZ, Maria J., 'Learned Institutions: sources for unknown scientific instruments', *Nuncius. Annali di Storia della Scienza* XIV (1999), fasc. 2, 491-504.

SIHORSCH, P. Daniel, 'Die Globensammlung der Sternwarte Kremsmünster und der monumentale Manuskript-Erdglobus von P. Alan Hubinger von 1824', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 243-265. English version 'The Globe-Collection of the Sternwarte Kremsmünster and the Monumental Manuscript-Terrestrial Globe by Fr. Alan Hubinger (1824)', 266-275.

SIMCOCK, A.V., 'William Ball of Bister', *Equilibrium* 1999, 2388-2390. On an 18th-century steelyard, purchased by the Museum of the History of Science, Oxford.

S[IMCOCK], A.V., 'Recent acquisitions: Jules Richard Verascope and Taxiphote', *Sphaera* 9 (Spring 1999), 4-5. Two stereoscopic instruments, acquired by the Museum of the History of Science, Oxford.

SIS VISIT TO LISBON, PORTUGAL 3-8 MAY 1999, *Bulletin of the Scientific Instrument Society* 62 (September 1999), 23-28. With information on instruments in museums and collections in Lisbon and Coimbra.

SMITH, N.A.F., 'Edward Wright and his Perspective Glass: a surveying puzzle of the early 17th century', *Transactions of the Newcomen Society* Vol. 70, nr. 1 (1998-99), 109-122. Did Edward Wright, when levelling the New River in 1609-1611, use a telescopically-sighted surveying instrument? No firm conclusion can be drawn.

SMITHSONIAN: 'Ten 20th century instruments at the Smithsonian in Washington, D.C.', *Bulletin of the Scientific Instrument Society* 63 (December 1999), 14-22. Deborah Warner, Paul Forman, David Allison, David DeVorkin, Roger E. Sherman, Steven Turner, Patricia Gossel and Ramunas Kondratas pick up the Editor's gauntlet to name their 'top ten' instruments of the century.

SORRENSON, Richard, 'George Graham, visible technician', *British Journal for the History of Science* 32 (1999), 203-222. "[Illuminates] the ways in which prominent [instrument] makers in the eighteenth century cemented their reputation at the Royal Society with major contributions to natural philosophy, mixed mathematics and rational instrumental design."

STAUBERMANN, Klaus, *Controlling vision - the photometry of Karl Friedrich Zoellner*. PhD dissertation of 1998 on the reconstruction of a Zoellner astro-photometer from 1861, undertaken in order to understand the observers' scientific practice and the success of the instrument. Internet publication at <http://dibinst.mit.edu/fellows/webdiss.pdf>

STAUTZ, Burkhard, *Untersuchungen von mathematisch-astronomischen Darstellungen auf mittelalterlichen Astrolabien islamischer und europäischer Herkunft* (Bassum: Verlag für Geschichte der Naturwissenschaften und Technik, 1999). 287 pages. ISBN 3-928186-29-9. Study of medieval astrolabes.

SULLY: [anon.], 'Horloge pour mesurer le temps en mer inventée par M. Sully', *Antiquarian Horology* 25, 1 (September 1999), 12-17. Detailed discussion, inserted as 'Advertisement Feature', of Henry Sully's pendulum-à-levier, auctioned in Geneva on 23 October 1999. Claimed to be 'one of the 12 most important timekeepers related to the discovery of longitude at sea'.

SUMIRA, Sylvia, 'Conservation of the First Printed English Globe', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 335-340. German version 'Die Konservierung des ersten gedruckten englischen Globus', 341-346.

TALBOT, Stuart, 'Market place. The Von Rothschild sale: London 8 July 1999', *Bulletin of the Scientific Instrument Society* 62 (September 1999), 29-32. Detailed discussion of prestigious auction sale at Christie's of 32 instruments from the collection of the Barons Nathaniel and Albert Von Rothschild.

TANNER, Amoret, 'Market Place. Ephemera', *Bulletin of the Scientific Instrument Society* 60 (March 1999), 28-32. Instrument-related ephemera such as trade cards and manuals, and where these may be found.

TÖRÖK, Zsolt, 'Practical Globe Making: The Experience of the New Edition of the Large Printed Coronelli Terrestrial Globe', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 171-180. German version 'Globusherstellung in der Praxis: Die Erfahrungen bei einer Neuauflage des großen gedruckten Coronelli-Erdglobus', 181-189.

TURNER, A.J., 'A biblical miracle in a Renaissance sundial', *Bulletin of the Scientific Instrument Society* 61 (June 1999), 11-14. A scaphe dial by Georg Hartmann used the refraction of light in water to reproduce Isaiah's miracle. Three surviving examples are known: one in Harvard, one in Toledo, one recently sold at Sotheby's.

TURNER, G.L'E., 'Le Châtelier's metallurgical microscope of c. 1912', *The Quekett Journal of Microscopy* 38, 4 (Summer 1999), 285-287. Discusses rare example, acquired by the Museum of the History of Science in Oxford, of Le Châtelier's microscope for the examination of opaque objects, made in Paris and retailed in Düsseldorf before 1914.

VALENT, Ch.J., 'Collecting European Coin Scales', *Equilibrium* 1999, 2395-2399. Translated from the Dutch version, which appeared in *Meten & Wegen* nr. 93 (March 1996).

VANDEN BERGHEN, Fons, *Classics of Communication. A celebration of the pioneering technologies that started the communications revolution. With a special emphasis on telegraphy* (Brussels: Crédit Communal, 1999). ISBN 2-87193-264-6. 107 pp. Can be ordered from the author at [fovabe@telindus.be](mailto:fovabe@telindus.be). English edition of *Telegrafie. Een verhaal in rechte lijn* (Brussels: Gemeentekrediet Groep DEXIA, 1998), listed in the previous bibliography. Lavishly illustrated catalogue to an exhibition held in Brussels on the history of telegraphy showing 600 items, many from the author's collection.

VANIN, G., *Orologi solari nella terra del Palladio* (Vicenza: Accademia Olimpica di Vicenza, 1998). 119 pages. Mural sundials in the Italian region of Veneto.

VANPAEMEL, Geert, 'De eerste microscoop aan de Leuvense universiteit', *Scientiarum Historia* 25 (1999), 1, 13-25. Around 1700, Louvain professor of mathematics Martinus van Velden had an aquatic microscope (not preserved) from Antoni van Leeuwenhoek or from the Musschenbroek workshop.

WAWRIK, Franz, 'Der Globus in den grossen Enzyklopädien der Aufklärung: Darstellungen bis zum Jahr 1765', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 47/48 (November 1999 for 1999/2000), 191-218. English summary 'Globes in the Great Encyclopaedias of the Age of Enlightenment: Descriptions until the Year 1765', 219-220.

WHITAKER, Ewen A., *Mapping and naming the Moon. A history of lunar cartography and nomenclature* (Cambridge, 1999). xix + 242 pages. ISBN 0 521 62248 4 (hardback). Includes some information on lunar globes, especially Russell's 'Selenographia'.



WHITESELL, Patricia S., *A Creation of His Own: Tappan's Detroit Observatory* (University of Michigan Press, 1999). Contains chapters on telescope makers Henry Fitz, Jr. of New York and Pistor & Martins of Berlin. The University of Michigan Detroit Observatory retains its two original telescopes by these makers, in the original mounts. The 1997-98 restoration of the Observatory is also chronicled, with photographs and descriptions of the work, including the restoration of the telescopes.

WIKA, Ewa, 'Pyrometr - nowy nabytek w zbiorach Muzeum UJ', *Zeszyty Naukowe Uniwersytetu Jagiellońskiego MXXI: Opuscula Musealia* [Kraków] 9, 1998, 83-92. French 18th-century pyrometer acquired by the Museum of the Jagellonian University, Kraków. Long English summary.

WILLS, Karl-Hein, 'The case of the stolen lens?', *Bulletin of the Scientific Instrument Society* 60 (March 1999), 24-27. Animadversions on a lens-like glass, probably intended as a mere ornament, part of a Viking find but probably made much earlier, viz. around 550 BC.

WRIGHT, B.R., 'Howard & Davis', *Equilibrium* 1999, 2367-2375. Makers of scales, but also of clocks and watches in 19th-century Boston.

WÜNSCH, J, 'The accuracy of Hevelius's astrometric measurements', *Journal for the History of Astronomy* vol. 30 (1999), 391-406. Analysis of measurements made by Hevelius, his assistants and his wife Elisabeth, with the great brass sextant and the great brass octant, illustrated in his *Machina Coelestis*.

ZANDVLIET, Kees, 'Adriaen de Lelie's portret van de VOC-examinator Hendrik de Hartog, 1790', *Bulletin van het Rijksmuseum* 47 (1999), nr.1, 44-52 (with English summary on page 78). On a portrait (oil on panel), acquired by the Rijksmuseum in Amsterdam, of Hendrik den Hartog (1751-1838), who for over 40 years was reader in mathematics, astronomy and navigation at the Atheneum Illustre in Amsterdam. He is portrayed with a telescope and a sextant.

ZIK, Yaakov, 'Galileo and the telescope. The status of theoretical and practical knowledge and techniques of measurement and experimentation in the development of the instrument', *Nuncius. Annali di Storia della Scienza* XIV (1999), fasc. 1, 31-67. Discusses the empirical working methods and the extent of Galileo's knowledge of the optical principles involved in the construction of the telescope. With measurements on the lenses in Galileo's telescopes in the Museo di Storia della Scienza in Florence.

ZOLLER, Paul, 'Early uses of the Arithmometer of Thomas de Colmar for thermodynamic calculations', *Bulletin of the Scientific Instrument Society* 60 (March 1999), 16-23.