Scientific Instrument Commission Bibliography 15

This bibliography covers the year 1998, but it also contains titles published in 1997 which only came to the compiler's notice after publication of the Fourteenth Bibliography in June 1998.

In the Fourteenth Bibliography, which covered the years 1996 and 1997, no articles were included from the *Bulletin of the Scientific Instrument Society* and from *Rittenhouse: Journal of the American Scientific Instrument Enterprise*. As these journals are devoted exclusively to instruments, no reference to their contents was deemed necessary. Members of the scientific instrument community have expressed their regret over this, and in the present bibliography articles from both journals published in 1996, 1997 and 1998 have been included.

The compiler is grateful to friends and colleagues who kindly sent titles for inclusion in this bibliography. Publications, or notices of publication (please with ISBN), for inclusion in the forthcoming bibliography may be sent to the SIC Secretary.

ACKERMANN, Silke (ed.), *Humphrey Cole: Mint, Measurement and Maps in Elizabethan England* (London: British Museum Occasional Paper Number 126, 1998). 106 pp. ISBN 0-86159-126-9. Exhibition catalogue on the first English instrument maker. Essays by Gerard Turner, Peter Barber, James McDermott and B.J. Cook and a catalogue of 26 instruments.

ALLAN, A.L, et al, *Papers from the Ad Hoc Commission on History of Surveying, XXI International Congress of the International Federation of Surveyors* (International Federation of Surveyors, 1998) [no place of publication given] ISBN 0-85406-896-1. vi plus 90 pp. Pre-prints of papers given at this congress in Brighton, U.K. To coincide with the conference, an exhibition The *Art & History of Surveying* was held in the University of Brighton Gallery, Grand Parade, 20-24 July 1998, to which an exhibition catalogue appeared.

ANONYMOUS: 'A Compound Microscope, with Micrometers Attributed to John Coventry', *Sphaera. The Newsletter of the Museum of the History of Science, Oxford* 8 (Autumn 1998), 6-7. A recent acquisition attributed to John Coventry (1735-1812) by Prof. Gerard Turner.

ATTALI, Jacques, *Memoire de sabliers. Collections, Mode d'emploi*. (Paris: Les Editions de l'Amateur, 25, rue Ginoux, 75015 Paris). ISBN 2-85917-240-8. Richly illustrated book on sandglasses, written by a collector.

AUGARDE, Jean-Dominique & RONFORT, Jean Nérée, *Antide Janvier: Mécanicien-astronome Horloger ordinaire du Roi* (Paris: Centre de Recherches Historiques sur les Maîtres Ébénistes, 1998). 119 pages, no ISBN. Janvier (1751-1835) was a maker and designer of exquisitely engineered astronomical clocks, planetaria and clockwork armillary spheres.

BECKMAN, Olof, 'Celsius, Linné and the Celsius Temperature Scale', *Bulletin of the Scientific Instrument Society* 56 (March 1998), 17-23. Also idem, 'The Celsius Temperature Scale: An Additional Note', *ibid*. 57 (June 1998), 20.

BEDINI, Silvio A., ‘The telescopic level in early America’, *Rittenhouse* 11 (1997), 109-123.

BEEZ, Helga, *Optisches Museum der Ernst-Abbe-Stiftung Jena* (Jena: by the museum and Kunstverlag Josef Fink, Lindenberg, 1998). 48 pages. Booklet on the museum and the development of optical instruments, with colour photographs of objects from the museum, housed since 1924 at Carl-Zeiss-Platz 12, D-07743 Jena.

BENDALL, Sarah, *Dictionary of Land Surveyors and Local Map-Makers of Great Britain and Ireland 1530-1850* (London: The British Library, 1997). 2 vols. 312 + 578 pages, ISBN 0 7123 4509 4. This is a second edition; the first, published in 1979, was compiled by many authors, including Sarah Bendall, and edited by Peter Eden.

BENNETT, Jim, 'Practical Geometry and Operative Knowledge', *Configurations* 1998:6, 195-222.

BENNETT, Jim [J.A.B.], ‘Epact Unpacked: The Sundials of Miniato Pitti’, *Sphaera. The Newsletter of the Museum of the History of Science, Oxford* 8 (Autumn 1998), 2-3. Discusses two instruments, one in the MHS, the other in Florence, by a hitherto hardly known 16th-century Florentine maker.

BENNETT, Jim [J.A.B.], ‘Peter Dollond Answers Jesse Ramsden’, *Sphaera. The Newsletter of the Museum of the History of Science, Oxford* 8 (Autumn 1998), 4-5. On a recently acquired manuscript relating to the famous controversy over the invention of the achromatic telescope. Compare the paper on Ramsden by Talbot (1996).

BENNETT, Jim, 'Projection and the Ubiquitous Virtue of Geometry in the Renaissance', in C. Smith and J. Agar, *Making Space for Science: Territorial Themes in the Shaping of Knowledge* (London, 1998), 27-38.

BENNETT, Jim. 'Les techniques du grand large', *Les Cahiers de Sciences & Vie*, no. 44 (April 1998), 20-25. On navigational instruments of the Renaissance.

BERTUCCI, Paula, 'Coulomb's torsion balance and the replication of historical experiments, *La lettre de la Maison Française d'Oxford*, no.9 (1998), 114-6.

BLONDEL, Christine, 'Les instruments électriques en France au 19ème siècle: entre constructeurs et usagers', *La lettre de la Maison Française d'Oxford*, no.9 (1998), 79-107.

BRAIN, Robert, 'Un étalon pour la force humaine', *Les Cahiers de Sciences & Vie*, no. 48 (December 1998), 72-79. On nineteenth-century physiological measuring instruments.

BRENNI, Paolo, completed his series of biographies of 19th-century French scientific instrument makers in *Bulletin of the Scientific Instrument Society*, begun in1993, with ‘X; The Richard Family’ (48, March 1996, 10-14), ‘XI: The Brunners and Paul Gautier’ (49, June 1996, 3-8), ‘XII: Louis Clement François Breguet and Antione Louis Breguet’ (50, September 1996, 19-24) and ‘XIII: Soleil, Duboscq, and Their Successors’ (51, December 1996, 7-16).

BRENNI, Paolo, 'Les constructeurs d'appareils radiologiques (1895-1915)', in Monique Bordry and Soraya Boudia (eds), *Les rayons de la vie* (Paris: Institut Curie, 1998), 88-100 (no ISBN). Published with a temporary exhibition on the history of X-rays and radiotherapy at the Museum d'Histoire Naturelle in Paris.

BRENNI, Paolo and GIATTI, Anna, 'Lo stereocartografo Santoni Modello IV: cronaca di un salvataggio', *Nuncius. Annali di Storia della Scienza* Anno XIII (1998), fasc.1, 187-191. On a large instrument for producing topographical maps from stereoscopic aerial or terrestrial photographs designed in 1943 by Ermenegildo Santoni (1896-1970), now in the Fondazione Scienza e Technica in Florence.

BRISTOW, H.R., 'The Crows of Kent', *Bulletin of the Scientific Instrument Society* 58 (September 1998), 22-25. On a family of instrument-makers, based in Kent. Made sundials, compasses and a patent octant.

BROELMANN, Jobst, 'The Development of the Gyrocompass - Inventors and Navigator', *The Journal of Navigation* 51, 2 (1998), 267-273.

BROOKS, Nathan M., 'Mendeleev and Metrology', *Ambix. The Journal of the Society for the History of Alchemy and Chemistry* Vol. 45, Part 2 (July 1998), 116-128. After 1892, D.I. Mendeleev, of periodic table-fame, was put in charge of the Depot and Bureau of Weights and Measures in St. Petersburg, where he worked on issues of metrology.

BROOKS, Randall C. and BAJDIK, Heather, 'Precise levels in surveys of North America', *Rittenhouse* 10 (1996), 48-57.

BROOKS, Randall C., 'The Brightly circular dividing engine', *Rittenhouse* 11 (1997), 75-80. Engine built by Charles Henry Brightly in Philadelphia in 1890, now in the National Museum of Science and Technology in Ottawa.

BRUNDTLAND, Terje, 'The Birkeland Terrella', *Sphaera. The Newsletter of the Museum of the History of Science, Oxford* 7 (Spring 1998), 3. Electromagnetic experiments by Norwegian physicist Kristian Birkeland between 1896 and 1913 to reproduce the effects of Aurora Borealis.

BRYDEN, D.J., 'The instrument-maker and the printer: paper instruments made in seventeenth century London', *Bulletin of the Scientific Instrument Society* 55 (December 1997), 3-15. With a detailed preliminary list of paper instruments known to have been marketed in London, 1600-1700, arranged by type of instrument.

BRYDEN, D.J., 'Capital in the London Publishing Trade: James Moxon's Stock Disposal of 1698, a 'Mathematical Lottery' ', *The Library* Sixth Series, Volume XIX, No. 4, December 1997, 293-350.

BRYDEN, David, 'A Fortification Sector to the 1673 Design of Sir Jonas Moore', *The Antiquaries Journal*, 78 (1998), 323-343.

BRYDEN, D.J., "Mr Clerk the graver'; A Biographical Study in the Cultural Infra-Structure of Early Modern Scotland', *Review of Scottish Culture* 11 (1998-9), 13-31. The London-trained copper plate engraver James Clark resided in Edinburgh from ca. 1690 until his death in 1718. Oughtred-type horizontal dials signed by him are in the National Museums of Scotland and the National Museums and Galleries of Merseyside.

BUD, Robert and WARNER, Deborah Jean, *Instruments of Science: An Historical Encyclopedia* (New York & London: The Science Museum. London and the National Museum of American History, Smithsonian Institution, in association with Garland Publishing, Inc., 1998). 709 pp. ISBN 0-8153-1561-9. Written by over 200 specialists, who wrote 327 articles covering the entire history of instruments from early history to the present day. Illustrated in black and white throughout, this compact encyclopaedia, to quote the publishers, "is distinctive in its treatment of twentieth century instruments and those used in modern applied science as well as traditional 'brass and glass' ".

CANADA: 'The XVth Scientific Instrument Symposium in Canada; a Report', *Bulletin of the Scientific Instrument Society* 51 (December 1996), 17-21. Various participants describe the symposium and the visits to museums and collections in Ottawa, Montreal and Quebec.

CAUDET, Amparo Sebastian, and MIGUEL MORO, Tomas P. de, *Museo Hispano de Ciencia y Technologia* [1998]. CD-ROM on scientific instruments and technological artefacts in 18 Spanish museums and institutions, produced by the Museo Nacional de Ciencia y Technologia in Madrid in cooperation with the Departamento de Ingenieria de Sistemas Telematicos.

CHAPMAN, Allan, 'Gresham College: Scientific Instruments and the Advancement of Useful Knowledge in Seventeenth-Century England', *Bulletin of the Scientific Instrument Society* 56 (March 1998), 6-13. Text of the 1997 SIS Annual Invitation Lecture.

CHAPMAN, Allan, *The Victorian Amateur Astronomer: Independent Astronomical Research in Britain 1820-1920* (London (?): Praxis-Wiley, 1998).

CHENG, Xiang, 'Dispersion, Experimental Apparatus, and the Acceptance of the Wave Theory of Light', *Annals of Science* 55 (1998), 401-420.Theodolites used in prismatic experiments in the 1830s. Conflicting interpretations of experimental data caused by differences in instruments.

CLASS OF '98: 'Lines of Faith: Instruments and Religious Practice in Islam', *Sphaera. The Newsletter of the Museum of the History of Science, Oxford* 7 (Spring 1998), 4-5. Report on an exhibition, staged in the MHS by the Museum M.Sc. students.

CLEEMPOEL, Koenraad van, 'A Simple Theodolite and Sundial Attributable to Gualterus Arsenius', *Sphaera. The Newsletter of the Museum of the History of Science, Oxford* 7 (Spring 1998), 6. Newly identified instrument in the MHS.

CLERCQ, Peter de, 'J.H. Onderwijngaart Canzius, Instrument Manufacturer and Museum Director', *Bulletin of the Scientific Instrument Society* 49 (June 1996), 22-24. This Delft

manufacturer was also the short-lived director of a museum of scientific apparatus established in Brussels in the 1820s, of which only sixteen items can now be traced.

CLOTFELDER, Beryl, 'The Bohnenberger Electroscope', *Rittenhouse* 10 (1996), 65-70. Inspired by such an electroscope in the Physics Museum at Grinnell College, USA.

CRAWFORD, T. Hugh, 'Visual Knowledge in Medicine and Popular Film', *Literature and Medicine* 17, no. 1 (Spring 1998) ('moving pictures' issue), 24-44. Refers to related apparatus such as the camera obscura.

CUOMO, Serafina, 'Niccolò Tartaglia, Mathematics, Ballistics and the Power of Possession of Knowledge', *Endeavour* 22, no. 1 (March 1998), 31-35. Illustrates an instrument from the Museum of the History of Science, Oxford.

DAWES, H.A.L., 'John Frederick Newman 1784-1860. 'The ingenius instrument maker, Mr. Newman of Lisle Str.'', *Bulletin of the Scientific Instrument Society* 50 (September 1996), 11-14. See also the paper on Newman by Gee (1996).

DELFT INSTRUMENTS: *Delft Instruments Geschiedenis.* June 1998. CD-ROM giving a survey of the history of Delft Instruments, created in 1990 as a merger of Oldelft and Enraf-Nonius. Published by Delft Instruments Bedrijfsmuseum i.o. (newly developed company museum). Details: PB 103, 2600 AC Delft, The Netherlands, or http://www.delftinstruments.com.

DEVORKIN, David, 'Where did X-ray astronomy come from?', *Rittenhouse* 10 (1996), 33-42.

DOLAN, Brian P. 'Blowpipes and Batteries: Humphry Davy, Edward Daniel Clark, and Experimental Chemistry in Early Nineteenth-Century Britain', *Ambix. The Journal of the Society for the History of Alchemy and Chemistry* Vol. 45, Part 3 (November 1998), 137-162.

DRETSKE, Diana, 'William Buffham's telescope and microscope', *Rittenhouse* 12 (1998), 94-96. London-born William Buffham (1801-1871) migrated to Millburn, Illinois in 1850, where he set up business as optical instrument-maker.

L'Ecole polytechnique. Un patrimoine inattendu (Paris: Ecole Polytechnique, Palaiseau and Mona Bismarck Foundation, 1998). 309pp., ISBN 2-7302-0416-7. Catalogue of an exhibition of the possessions of this French institution. Cf. SIC Bibliography 14 s.v. *Les objets scientifiques: un siècle d'enseignement et de recherche à l'Ecole polytechnique: Promotions 1794 à 1900*.

EKLUND, Jon, 'The Beckman DU spectrophotometer', *Rittenhouse* 12 (1998), 30-32Versatile and inexpensive quartz photoelectric spectrophotometer, introduced in 1942.

ENOCH, Jay M., 'The enigma of early lens use', *Technology & Culture* 39 (1998), 273-291. The author, a professor of physiological optics in San Francisco, discusses antique artefacts which he argues were intended to serve as lenses, resulting in an enlarged upright virtual image. His arguments support the contention by earlier writers that lenses were available and in use in the ancient Mediterranean world.

FERRAGLIO, Paul L., ‘Notes on American microscopes and their makers’, *Rittenhouse* 11 (1997), 52-62.

FERRARESE, Giorgio and PALLADINO, Franco, ‘Sulle collezioni di modelli matematici dei Dipartimenti di Matematica dell’Università e del Politecnico di Torino’, *Nuncius. Annali di Storia della Scienza* Anno XIII (1998), fasc.1, 169-185. On a collection in Turin of German mathematical models published and distributed from 1880 onwards by Ludwig Brill, Darmstadt, and his successor Martin Schilling, Halle am Saale, later Leipzig.

FORMAN, Paul, ‘Molecular Beam Measurements of Nuclear Moments before Magnetic Resonance. Part 1: I.I. Rabbi and Deflecting Magnets to 1938’, *Annals of Science* 55 (1998), 111-160. Investigation of the origin and function of three molecular beam-deflecting magnets from Isidor Isaac Rabbi’s laboratory at Columbia University, donated to the National Museum of American History, Smithsonian Institution, Washington.

FRIESS, Peter and WITZGALL, Susanne (eds.), *Meisterwerke aus dem Deutschen Museum* (Bonn, 1997). 60 pp., ISBN 3-932306-17-1. On 12 objects from the Deutsches Museum in Munich, which were shown in the Deutsches Museum in Bonn. Include Guericke’s Magdeburg hemispheres, a Reichenbach precision theodolite and Otto Hahn’s experiment table.

GAUVIN, Jean-François, ‘An Eighteenth-Century Entrepreneur. Abbé Nollet’s Instrument-Making Trade Seen Through his Correspondence with Etienne-François Dutour and Jean Jallabert’, *Bulletin of the Scientific Instrument Society* 57 (June 1998), 21-25.

GEE, Brian, ‘John Newman: A Second Look’, *Bulletin of the Scientific Instrument Society* 51 (December 1996), 22-25. To complement Dawes’ paper on the same maker (1996).

GEE, Brian, ‘The Spectacle of Science and Engineering in the Metropolis’, *Bulletin of the Scientific Instrument Society* 58 (September 1998), 11-18 and 59 (December 1998), 6-13. On 19th-century venues for public exhibitions in London and the entrepreneurial role of the magnetician and instrument-maker E.M. Clarke. Venues discussed are the National Repository, the Royal Adelaide Gallery, the Royal Polytechnic Institution, the Royal Panopticon of Science and Art and the embryonic Science Museum, South Kensington.

GREENSLADE, Thomas B. jr., ‘Apparatus for natural philosophy IV: Ebenezer Strong Snell and his wave machines’, *Rittenhouse* 11 (1996), 23-29. Fourth in a series of articles by an American professor of physics, who uses 19th-century apparatus in his classes.

GREENSLADE, Thomas B. jr., ‘Apparatus for natural philosophy V: the water-wave machines of C.S. Lyman and C.S. Forbes’, *Rittenhouse* 11 (1997), 81-85.

GREENSLADE, Thomas B. jr., ‘Thomas Alva Edison’s gift to Milan High School’, *Rittenhouse* 12 (1998), 22-24. In 1906, Edison donated $ 500 to his former school in Milan, Ohio, to purchase physical and chemical apparatus. Some of this is on display in the local historical museum.

GRIFFIN: *Scientific Handicraft: An illustrated and descriptive catalogue of scientific apparatus manufactured and sold by John J. Griffin and Sons Ltd., XIVth Edition (1910).* In 1997, the Gemmary Inc., Fallbrook, issued a facsimile hardbound reprint of this 1020 pp. trade catalogue (300 copies).

GRIMWOOD, Peter, 'A 'Tycho Brahe' Orrery', *Bulletin of the Scientific Instrument Society* 59 (December 1998), 27-28. Maker of facsimiles (pgrimwood@emta.org.uk) describes his latest: A Brahe planetarium, with the planets moving round the Sun while the Sun moves round the Earth. With technical drawings.

HAGEN, M.J., *Zon & tijd: Bijdragen tot de geschiedenis en theorie van zonnewijzers* (no place: De Zonnewijzerkring, 1998). Studies on the history and theory of sundials, published by the Dutch Sundial Society.

HAMMOND, Christopher, 'The Joint Royal Microscopical Society – Museum of the History of Science Collection of 20th Century Microscopes', *Proceedings of the Royal Microscopical Society* vol. 23, no. 4 (December 1997), 243-246.

HECKENBERG, Norman, 'Crookes' Radiometer and Otheoscope', *Bulletin of the Scientific Instrument Society* 50 (September 1996), 40-42.

HEILBRON, John L., 'Churches as Scientific Instruments', *Bulletin of the Scientific Instrument Society* 48 (March 1996), 4-9. Text of the 1995 SIS Annual Invitation Lecture.

HELDEN, Anne C. van, and STEENHORST, Paul, 'Les modèles fonctionnels du musée Boerhaave', *La Revue. Musée des arts et métiers* 25 (December 1998), 49-53. Discusses the hands-on models in the Museum Boerhaave, Leiden.

HENTSCHEL, Klaus, 'A Breakdown of Intersubjective Measurement: The Case of Solar-Rotation Measurements in the Early 20th Century', *Studies in History and Philosophy of Science* Vol. 29, no. 4 (1998), 473-507. To establish the rate of solar rotation spectroscopical measurements were made and read with microscopes with plate carriages that could be moved laterally by means of micrometers.

HENTSCHEL, Klaus, *Zum Zusammenspiel von Instrument, Experiment und Theorie: Rotverschiebung im Sonnenspektrum und verwandte spektrale Verschiebungseffekte von 1880 bis 1960* (Hamburg: Verlag Dr. Kovacs). Published version of 'habilitations' thesis 1995.

HILLS, Richard L., 'How James Watt Invented the Separate Condenser', *Bulletin of the Scientific Instrument Society* 57 (June 1998), 26-29 and 58 (September 1998), 6-10.

HOORN, Marijn van, 'The Physics Laboratory of the Teyler Foundation (Haarlem) under Professor H.A. Lorentz, 1909-1928', *Bulletin of the Scientific Instrument Society* 59 (December 1998), 14-21. With list of the main research apparatus, some of which survives and is also described in G.L'E. Turner's 1996 catalogue of the teaching and research apparatus in the Teyler Museum.

HUDSON, Giles [G.M.H.], ‘A Planispheric Astrolabe by Regnerus Arsenius?’, *Sphaera. The Newsletter of the Museum of the History of Science, Oxford* 7 (Spring 1998), 7. This paper, nr. 7 in a continuing series of articles on spheres, discusses an astrolabe in the MHS signed by a somewhat enigmatic member of the Arsenius family.

HUYGENS: *L’Astronomie*, the monthly journal of the Société Astronomiqe de France, Vol. 112 (April-May 1998) is devoted to Christiaan Huygens. With papers by Audouin Dollfus and others on Huygens’s tubeless telescope, which was reconstructed and used for observations.

ILFLAND, Peter, *Taking the Stars. Celestial Navigation from Argonauts to Astronauts* (The Mariners’ Museum, Newport News, Virginia / Krieger Publishing Company, Malabar, Florida, 1998). 222 pp. ISBN 1-57524-095-5, With many detailed colour photographs of instruments from the author’s collection, donated to the Mariners’ Museum.

INSLEY, Jane, ‘Trickery in the trade. The apprehension of forged thermometers in Saõ Paulo, November 1928’, *Bulletin of the Scientific Instrument Society* 55 (December 1997), 23-25. ‘Detective story’ about clinical thermometers based on a manuscript in the files of the firm of Casella, London, which conducted a high proportion of its business with Latin America.

JOHNSON, Kevin, 'The Sun Spotteries: The South Kensington Solar Physics Observatory', *Journal of the Antique Telescope Society* No. 15 (1998), 22-24. Sir Norman Lockyers' founding of a solar physics observatory in London in 1879.

JOHNSTON, Stephen, ‘Making the arithmometer count’, *Bulletin of the Scientific Instrument Society* 52 (March 1997), 12-21. Detailed study on the calculating machines of Charles Xavier Thomas de Colmar (1785-1870). A similar paper, now with splendid colour photographs, is his ‘Le spectacle du calcul’ (with English summary) in *La Revue. Musée des arts et métiers* 23 (June 1998), 23-32.

KIDWELL, Peggy A., ‘American parallel rules: invention on the fringes of industry’, *Rittenhouse* 10 (1996), 90-96.

KING, Hilary, ‘Surviving Marine Timekeepers by Louis Berthoud’, *Antiquarian Horology* Vol. 24, nr. 2 (Summer 1998), 119-122. Berthoud made some 160 chronometers, of which 42, dating between 1785 and 1820, are listed.

KUMMER, Werner, ‘Liste alter und aussergewöhnlicher Globen im Bundesland Baden-Würtemberg der Bundesrepublik Deutschland’, *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 45/46 (February 1998 for 1997 and 1998), 207-226. Lists 109 historical globes in public collections in this part of Germany, arranged by place and maker.

KÜNZL, Ernst, ‘Der Globus im Römisch-Germanisches Zentralmuseum Mainz: der bisher einzige komplette Himmelsglobus aus dem Griechisch-Römischen Altertum’, *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 45/46 (February 1998 for 1997 and 1998), 7-80. English version ‘The globe in the Römisch-Germanische Zentralmuseum Mainz: the only complete celestial globe found to-date from classical Greco-Roman antiquity’,

ibidem pp. 81-153. Detailed discussion of this ancient Roman brass globe, diameter 110 mm., on permanent display in the museum in Mainz in a time-measurement showcase in the Roman gallery.

LaRUE, Budd J., 'Robert B. Tolles and the cone-fronted objective', *Rittenhouse* 12 (1998), 55-64.

LAUNAY-PELLETAN, Marie-Christine, 'Nançay et la radioastronomie', *La Revue. Musée des arts et métiers* 25 (December 1998), 24-32. On the radio astronomical station created in Nançay, France, in 1956. Instruments discussed are an interferometer with two 7,5-meter mirrors (1959) and the large decimetric radio telescope. With its surface area of some 7.000 m², at the time it went into service in 1965 this was the biggest instrument in the world to operate on wavelengths as short as 6 cm.

LAURIDSEN, Emil Kring & ABRAHAMSEN, Niels, 'The history of astatic magnet systems and suspensions', *Centaurus* 40 (1998), 135-169.

LEISEROWITZ, Anthony, 'The Michigan Museum of Surveying', *Rittenhouse* 11 (1996), 30-32. The museum is located at 220 S. Museum Drive, Lansing, MI 48933 and was opened to the public in 1989.

LEOPOLD, J.H., 'Mechanical Globes circa 1500-1650', *Bulletin of the Scientific Instrument Society* 53 (June 1997), 5-8. Text of the 1996 SIS Annual Invitation Lecture.

LEVERE, Trevor, 'Pneumatic Apparatus and the Spread of the Chemical Revolution: The Dutch Connection', *Bulletin of the Scientific Instrument Society* 49 (June 1996), 14-16.

McCONNELL, Anita, *King of the Clinicals: the Life and Times of J.J. Hicks (1837-1916)* (York: William Sessions Ltd., The Ebor Press, York YO3 9HS, 1998). 160 pp., ISBN 1-85072-204-8. Business history on an instrument manufacturer who operated worldwide, and by 1914 had made over thirteen million clinical thermometers. Includes twelve photographs of the interior of his workshops.

MACDONALD, Sharon (ed.), *The Politics of Display: Museums, Science, Culture* Heritage: Care – Preservation – Management (London & New York: Routledge, 1998). Several chapters reprinted from *Science as Culture,* 1995.

McDERMOTT, James, The Navigation of the Frobisher Voyages (London: the Hakluyt Society, 1998). The Society's annual talk of 1997.

MADDISON, Francis & Emilie SAVAGE-SMITH, *Science, Tools & Magic*. The Nasser D. Khalili Collection of Islamic Art, vol. XII, parts 1 & 2. (London: The Nour Foundation in association with Azimuth Editions & Oxford University Press, 1997). 2 vols., in slipcase, 439 pp., ISBN 0197276105. Extensive and lavishly illustrated catalogue of scientific instruments, tools and magical objects in a private collection of Islamic art and artefacts.

MADDISON, Dr. Ron, 'The Hale Telescope on Palomar Mountain: A Giant Leap in Design', *Journal of the Antique Telescope Society* No. 13 (1997), 4-14. A description of some of the new features in the design of the drive, the tube, and the optical features of the telescope.

MARSHALL, Tom, 'The instrument records of C.L. Berger', *Rittenhouse* 11 (1997), 63-64. The purchase orders from 1871 to 1963 from Berger Instruments (formerly Buff & Berger), an American manufacturer of geodetic equipment, have been microfilmed and placed on CD-ROMs; the latter can be ordered from the author (fax 905-836-1104).

MAURER, Andreas, 'A Compendium of All Known William Herschel Telescopes', *Journal of the Antique Telescope Society* No. 14 (1998), 4-15.

MERTENS, Joost, 'From the Lecture Room to the Workshop: John Frederic Daniell, the Constant Battery, and Electrometallurgy around 1840', *Annals of Science* 55 (1998), 241-261. How the constant battery became a tool for electrogilding and electroforming, with information on the firms of Elkington (Birmingham/London) and Christofle (Paris).

MESKENS, Ad, *Familia Universalis: Coignet. Een familie tussen wetenschap en kunst* (Antwerp, 1998). 224 pp., no ISBN. The Coignet family included painters and instrument-makers. This book accompanied an exhibition held in the Koninklijk Museum voor Schone Kunsten, Antwerpen, 2 October-13 December 1998. An English translation of the text, entitled *Familia Universalis: Coignet*, also appeared (85 pages, no ISBN).

MEURER, Peter H., 'Ein Mercator-Brief an Philipp Melanchton über seine Globuslieferung an Kaiser Karl V. im Jahre 1554', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 45/46 (February 1998 for 1997 and 1998), 187-196. From a rediscovered letter by Mercator we learn that he delivered a fist-sized terrestrial globe and an astronomical clock to Emperor Charles V in Brussels. The clock, whose layout can be inferred from the letter, was constructed by Giovanni Gianelli of Milan, who joined Mercator in the presentation to the Emperor.

MILLBURN, John R., 'Protractors with Diagonal Arc-Minute Scales', *Bulletin of the Scientific Instrument Society* 50 (September 1996), 25-26.

MILLER, Robert C., 'Benjamin Stancliffe and his successors: a century of mathematical instrument makers in Philadelphia', *Rittenhouse* 11 (1996), 1-13.

MILLER, Robert C., 'Circular dividing engines in the United States before 1900', *Rittenhouse* 12 (1998), 12-21. A chart lists thirty-eight engines known to have been used for instrument construction in the United States before 1900, with names of owners and makers (often identical).

MILLS, Allan A., 'The 'Eye Error' of the Cross Staff. With a Method for Calculating the Original Dimensions of Modified or Missing Parts', *Bulletin of the Scientific Instrument Society*48 (March 1996), 15-18.

MILLS, Allan A., wrote a series of six papers on single-lens magnifiers in the *Bulletin of the Scientific Instrument Society*, covering the reading glass (54, September 1997, 29-30), magnifying glasses (55, December 1997, 30-32), loupes and stanhoscopes (56, March 1998, 29-31), spherical lenses and simple microscopes (57, June 1998, 30-31), burning glasses (58, September 1998, 28-32) and early lenses (59, December 1998, 22-26).

MILLS, Allan A., 'Vermeer and the Camera Obscura: Some Practical Considerations', *Leonardo* 31 no. 3 (1998), 213-218.

MÖRZER BRUYNS, Willem F.J., 'Names of British Instrument Makers Found in the Collection of the Mariners' Museum', *Bulletin of the Scientific Instrument Society* 48 (March 1996), 19-22. Lists some 150 names, with the object found. The collection of the Mariners' Museum in Newport News, Virginia, USA, was mainly formed in the 1930s and 1940s.

MÖRZER BRUYNS, Willem F.J., 'The introduction of the elongating glass on sextants', *Rittenhouse* 10 (1996), 71-80. Patented in 1865, this glass facilitated more accurate observations, especially of stars. Based on earlier design to correct astigmatism.

MOLLAN, Charles, 'Leviathan Reborn', *Bulletin of the Scientific Instrument Society* 53 (June 1997), 31-36. On the construction of what for seventy years was the world's largest telescope. It was built in the 1840's in Birr, County Offaly, Ireland, by William Parsons, the Third Earl of Rosse, and has recently been restored.

MONACO, Giuseppe, 'Alcune considerazioni sul "Maximus Tubus" di Hevelius', *Nuncius. Annali di Storia della Scienza* Anno XIII (1998), fasc.2, 533-550. The 'greatest telescope' of Hevelius, a wooden axis on which tubular sections of paper or cloth were placed, was made by Tito Livio Burattini, an Italian living in Poland, after plans by Candido Del Buono.

MOORE, Carl E. and JASELSKIS, Bruno, 'The pH meter, a product of technological crossovers', *Bulletin for the History of Chemistry* 21 (1998), 32-37. Aside from the chemical balance, the pH meter, developed in the 1930s by A.O Beckman, is probably the most widely used piece of chemical instrumentation.

MORRISON-LOW, A.D., ''Spirit of the Place': some geographical implications of the English provincial instrument trade, 1760-1850', *Bulletin of the Scientific Instrument Society* 53 (June 1997), 19-24.

MORUS, Iwam Rhys, 'Galvanic Cultures: Electricity and Life in the Early Nineteenth Century', *Endeavour* 22, no. 1 (March 1998), 7-11.

OFFEREINS, Marianne I.C., 'Caroline Emilie Bleeker (1897-1985): een vrouw in een fysisch bedrijf', *Gewina* 20 (1997), 297-308. Dutch female physicist in 1930 established her own instrument-factory 'Nederlandsche Optiek- en Instrumentenfabriek Dr. C.E. Bleeker (NEDOPTIFA)' in Utrecht, which after 1948 until its closure in 1978 was located in Zeist. Made phase contrast microscopes as invented by Nobel Prize winner Frits Zernike.

OTT: *Eine Reise durch Technik und Zeit: 125 Jahre OTT* (Kempten: Ott, 1998). 208 pages, no ISBN. A history of the Bavarian instrument making company founded by Albert Ott (1847-1895), by various authors.

PAS, J.B. te, wrote a series of articles on German and Austrian manufacturers of geodetic instruments in the *Bulletin of the Scientific Instrument Society.* Firms dealt with are Neuhöfer & Sohn of Vienna (52, March 1997, 31-34), F.W. Breithaupt & Sohn GmbH & Co. KG, Kassel, Germany (54, September 1997, 26-27), Otto Fennel of Kassel, Germany, 1851-1971 (55, December 1997, 18-19), T. Ertel & Sohn G.m.b.H. Mathematical Mechanical Institute for Geodetic Military Scientific Instruments in Munich, Germany, 1802-1984 (56, March 1998, 27-28), Max Hildebrand, later August Lingke & Co. G.m.b.H., Freiberg, Saxony , founded 1791 (58, December 1998, 19-21).

PASQUALE, Giovanni di,, 'La stadera: un problema di filologia, storia ed archeologia, *Nuncius. Annali di Storia della Scienza* Anno XIII (1998), fasc.2, 657- 666. On the Roman *statera*, the unequal-armed balance, the steelyard, also known as *unster*.

PIPPA, Luigi, *Orologi della collezione Ruscitti* (Firenze: Istituto e Museo di Storia della Scienza, 1998) ISBN 88-09-21351-3.

PLICHT, Christof, 'Joseph von Fraunhofer 1787-1826', *Journal of the Antique Telescope Society* No. 15 (1998), 20-21. A brief biography of Fraunhofer.

POULS, H.C., *De Landmeter. Van de Romeinse tijd tot de Franse tijd* (Alphen aan den Rijn: Canaletto/Repro-Holland, 1997) 368 pp. ISBN 90 6469 7256. On the development of land surveying and its tools, by the former curator of the collection of surveying instruments at the Technical University of Delft, The Netherlands. Emphasis on the Low Countries.

RAMUNNI, Girolamo, 'Machines électriques', *La Revue. Musée des arts et métiers* 23 (June 1998), 12-22. On electrical and electromagnetical motors, dynamos, generators and transformers of the 19th century, with colour photographs of prominent pieces from the Paris museum.

REID, William, ''The admirable Barr & Stroud 7 x 50': Admiralty pattern 1900A binoculars', *Bulletin of the Scientific Instrument Society* 54 (September 1997), 15-20.

RESTORATION: The journal *MUSEOLOGIA SCIENTIFICA* vol. 14, nr. 2 (1998) contains three articles on the restoration of scientific instruments: Paolo Brenni, 'Note relative ai problemi concernenti il restauro di strumenti scientifici (pp. 365-371); Giancarlo Lanterna, 'Il restauro degli strumenti scientifici: un punto di vista dall'interno del mondo della conservazione' (373-377); Nicolangelo Scianna, 'Il restauro degli strumenti come momento di conoscenza: due esempi' (379-389).

REYRAUD, L'essor des machines à compter, *Les Cahiers de Sciences & Vie*, no.48 (December 1998), 86-94. On nineteenth-century calculating machines.

RICHARDS, E.G., *Mapping Time: The Calendar and its History* (Oxford, New York and Tokyo: Oxford University Press, 1998). 438 pages, ISBN 0198504136.

RINDOS, Noah, ‘A constant deviation wavelength spectrometer made by Adam Hilger, Ltd.’. *Rittenhouse* 12 (1998), 25-29. Acquisition of the National Museum of American History.

RØSSAAK, Tor E., ‘Eighteenth-century Paintings in Norway with British and Scientific Connections’, *Bulletin of the Scientific Instrument Society* 49 (June 1996), 31-32. Telescopes depicted on (crudely) painted panels, made for a British patron active in Kristiansund.

ROSSI, Arcangelo and RUGGIERO, Livio, *Il gabinetto di fisica del collegio "Aregento"* (Lecce: Edizioni del Grifo 1998). ISBN 88-7261-142-3. Catalogue of a school collection in South Italy.

RUDD, M. Eugene and JAECKS, Duane H., ‘The Rapid Development of the Achromatic Microscope: An Early Example by Andrew Ross’, *Bulletin of the Scientific Instrument Society* 49 (June 1996), 17-21. Compares five known examples of Ross ball-and-socket microscopes.

RUDD, M. Eugene, 'The Dollond Family: Five Generations of Opticians', *Journal of the Antique Telescope Society* No. 15 (1998), 4-10. Includes a family tree of this famous family of optical instrument makers.

SABRIER, Jean-Claude, ‘Pierre Le Roy’s Watches "For the Use of Astronomers and Seamen" ’, *Antiquarian Horology* Vol. 24, Nr. 4 (Winter 1998), 315-325.

SANDERS, John, ‘The Clarendon Laboratory Archive in Oxford, *Bulletin of the Scientific Instrument Society* 54 (September 1997), 11-14. Built in Oxford in 1872, this was the first purpose-built physics laboratory in Britain. The ‘archive’ is in fact a collection of instruments dating ca. 1870-1950 kept in a special room and in some display cabinets in corridors in the laboratory.

SCHECHNER GENUTH, Sara, ‘Tools for teaching and research: John Prince, the Deerfield Academy, and educational reform in the early Republic’, *Rittenhouse* 10 (1996), 97-120. A cabinet of instruments purchased from W. and S. Jones of London shortly after 1800.

SCIANNA, Nicolangelo, ‘Indagine sui grandi globi a stampa di Vincenzo Coronelli’, *Nuncius. Annali di Storia della Scienza* Anno XIII (1998), fasc.1, 151-168. Comparison of 39 Coronelli terrestrial globes has led to the discovery of a new edition, which leads to a redefinition of the four editions by Coronelli, thus eliminating the so-called "special edition".

SCOTT, Dunbar C. & others, *The Evolution of Mine-Surveying Instruments.* The Gemmary, Inc., 1998) 439 pages, ill. Hardbound facsimile reprint of the original book (1902) plus six supplementary articles appearing in the Transactions of the American Institute of Mining Engineers 1902-1908. Also includes J.D. Davis, 'History of Solar Surveying Instruments'. For information: rcb@gemmary.com.

SHACKELFORD, Brandon, 'That magnetic moment: the birth of nuclear magnetic resonance absorption', *Rittenhouse* 10 (1996), 43-47.

SIHORSCH, Daniel, *Die Globen der Sternwarte Kremsmünster* (Kremsmünster: Anselm-Desing Verein der Sternwarte Kremsmünster, 1997=Berichte des Anselm Desing-Vereins, 36 [April 1997]). 83 pp. Lists 48 globes and 3 armillary spheres, dating between the 16th century and 1941, in this Benedictine monastery in Austria near Linz, whose outstanding collections of instruments and natural objects are displayed in its mid-18th century astronomical and meteorological observatory.

SIMCOCK, A.V., 'The Lady and the Astrolabe', *Bulletin of the Scientific Instrument Society* 51 (December 1996), 2-3. Discusses a woodcut of a woman surveyor using an astrolabe, in Danti's treatise of the astrolabe (1569), which seems to be the earliest picture of a mortal female using a scientific instrument.

SIMCOCK, A.V., *A Supplement to the Classified Bibliography on the History of Scientific Instruments* (Oxford: Published by the Scientific Instrument Commission of the International Union of the History and Philosophy of Science, 1998). Distributed by the Museum of the History of Science. [40 pages]. Adds some 330 titles published between 1980 and 1995 to TURNER, G. L'E. & D. J. BRYDEN, *A Classified Bibliography on the History of Scientific Instruments* (Oxford: Published by the Scientific Instrument Commission and distributed by the Museum of the History of Science, 1997).

SKERRIT, William, 'W. & L.E. Gurley's engraving machine', *Rittenhouse* 11 (1997), 97-100. In 1875, William Gurley visited some mathematical instrument makers in Europe to find out about their method of manufacture. From Cook & Sons of York, England, he ordered an engraving machine or pantograph to engrave words and numbers on instruments. This issue contains two further papers by Skerritt, who is affiliated with Gurley Historical Services in Troy, New York, viz. on Gurley's architect's level and on Kellner eyepieces in American instruments, as well as a review of his catalogue of the Charles E. Smart Collection of antique scientific instruments (available from the author at 12 Locust Ave., Troy, N.Y., 12180).

SLEIGH, Charlotte, 'Life, Death and Galvanism', *Studies in History and Philosophy of Biological and Biomedical Sciences* Vol. 29, no. 2 (1998), 219-248. On the use of electrostatic generators in law (experiments on corpses) and in medicine.

SOBEL, Barry J. & SOLLIDAY, James D., on antique microscope accessories, *Journal of the Microscopical Society of Southern California* April 1998, Vol. 3, nr. 4, 65-79 (NB: source: *SIS Bulletin* 57, p. 1).

SPAIN: 'La fabricación de instrumentos cientificos en la era industrial', in A. Elena, J. Ordoñez, M. Colubi (eds.), *Despuéd de Newton: ciencia y sociedad durante la Primera Revolución Industrial* (Rubí, Barcelona, 1998), 102-118.

STADLER, Leopold, 'Eine zweite Armillarsphäre von Christian Carl Schindler', *Der Globusfreund. Wissenschaftliche Zeitschrift für Globen- und Instrumentenkunde* 45/46 (February

1998 for 1997 and 1998), 197-206 (with four photographs). On a recently discovered armillary sphere (Ø 24,2 cm) constructed in 1710 by the Viennese 'Mechanicus et Mathematicus' Christian Carl Schindler (active 1680-1716). The statement of a declination of 10,0° W. indicates that it was made in Western Europe.

STAUBERMANN, Klaus, 'Reworking Zöllner's photometry', *Bulletin of the Scientific Instrument Society* 58 (September 1998), 33-35. On making a replica (now in the Whipple Museum, Cambridge) of a photometer, originally constructed by Johann Karl Friedrich Zöllner, the most important instrument in 19th-century German astrophysics.

STEPHENSON, Bruce, 'American instruments at the Adler', *Rittenhouse* 10 (1996), 81-89. Telescopes, sundials and surveying and navigational instruments and clocks. The sundials include pseudo-antiques with fake signatures, made by D.B. Sheanan around 1900.

STOLTE, Andreas (red.), *Museumsführer* (Paderborn: Heinz Nixdorf MuseumsForum, 1997) 176 pages, ISBN 3980575705. Guide book to a museum of computers in a German town Paderborn.

TALBOT, Stuart, 'Jesse Ramsden F.R.S.: his Optical Testament', *Bulletin of the Scientific Instrument Society* 50 (September 1996), 27-29. Transcribes and discusses a manuscript 'Some Observations on the Invention of the Achromatic Telescopes by J. Ramsden F.R.S.' in the archives of the Royal Society. Compare the paper on Dollond by Bennett (1998).

TALBOT, Stuart, 'Sir Christopher Wren PRS: his mathematical wing-dividers dated 1697', *Bulletin of the Scientific Instrument Society* 55 (December 1997), 16-17. Wren's own pair of dividers in the possession of the Royal Society, and an identical pair in the Museum of the History of Science in Oxford, are both attributed to Elias Allen.

TAPDRUP, Jan, 'Museum Report from Denmark: the Steno Museum at Aarhus', *Bulletin of the Scientific Instrument Society* 49 (June 1996), 25-27.

TARTU UNIVERSITY: *Museum of Tartu University History, Annual 1996* (Tartu, 1997) contains 'Laboratory Glassware and Ceramics at the Museum of Tartu University History' (Tullio Ilomets, 17-20), 'Scientific Instruments by Karl Zeiss, Jena at the Museum of Tartu University History' (Leili Kriis, 29-34), 'Origins of Old Physical Instruments at Tartu University' (Erna Kõiv, 42-50) and 'Prof. Johan Vilip's Contribution to Scientific Instrument Engineering' (Enn Hendre, 50-59).

TAUB, Liba, 'On the role of museums in history of science, technology and medicine', *Endeavour* Vol. 22 (2) (1998), 41-43.

TERENNA, Gigliola and VANNOZZI, Francesca, *La Collezione degli Strumenti di Psicologia* (Siena, 1998). ISBN 88-7145-146-5. Illustrated catalogue of instruments of psychology at the University of Siena, Italy.

THAGGARD, Paul, ‘Ulcers and Bacteria II: Instruments, Experiments, and Social Interactions’, *Studies in History and Philosophy of Biological and Biomedical Sciences* Vol. 29, no. 2 (1998), 317-342. Discusses the role of instruments (microscopes, endoscopes) and experiments in the discovery, development and acceptance of the bacterial theory of ulcers.

TOUPIN, Sylvie, ‘Science collections at the Museé de la Civilization. The memory of a culture’, *Rittenhouse* 11 (1997), 65-74. For a computer-print of the instruments in this Québec museum, see the 14th bibliography, s.v. Canada.

TUBRIDY, Michael, 'The Re-construction of the 6-Foot Rosse Telescope of Ireland', *Journal of the Antique Telescope Society* No. 14 (1998), 18-24. The story of the recent restoration of the 'Leviathan of Parsonstown' by the engineer in charge of the project.

TURNER, Anthony, ‘Horoloy, Precision Technology and the Scientific Revolution’, *Bulletin of the Scientific Instrument Society* 50 (September 1996), 15-18.

TURNER, Anthony, 'Mathematical instrument-making in early modern Paris’, pp. 63-96 in *Luxury Trades and Consumerism in Anicen Régime Paris: Studies in the History of the Skilled Workforce*, ed. Robert Fox and Anthony Turner (Aldershot: Ashgate Publishing Ltd., 1998). 344 pages. ISBN 0 86078 664 1.

TURNER, Anthony, 'Le cadran solaire de Benjamin Scott', *La Revue. Musée des arts et métiers* 24 (September 1998), 55-57. On a large horizontal sundial in this Parisian museum, made around 1715 by a London instrument-maker.

TURNER, Anthony, 'Instrument', pp. 572-579 in Michael Blay, Robert Halleux, *La Science Classique XVI^{e}-XVIII^{e} siècle. Dictionaire critique* (Paris: Flammarion, 1998). 900 pages.

TURNER, Gerard L’E., *Scientific Instruments 1500-1900: An Introduction* (London: Philip Wilson, Berkeley, Los Angeles, London: University of California Press, 1998). 144 pp. ISBN 0-85667-491-5. New edition of his well-known *Antique Scientific Instruments* of 1980, with more and better quality photographs.

TURNER, G.L’E. and MORRISON-LOW, A.D., ‘Zinner’s Ghosts and a Curious Date: 1576’, *Bulletin of the Scientific Instrument Society* 50 (September 1996), 6-10. An Erasmus Habermel compendium, dated 1596, has consistently been given the wrong date 1576, causing a distorted perception of the place and time-span of Habermel’s career.

TURNER, Steven, ‘Demonstrating harmony: some of the many devices used to produce Lissajous curves before the oscilloscope’, *Rittenhouse* 11 (1997), 33-51.

VANDENBERGHEN, Fons, *Telegrafie. Een verhaal in rechte lijn* (Brussels: Gemeentekrediet Groep DEXIA, 1998). 107 pp., ISBN 90-5066-182-3. Lavishly illustrated catalogue accompanying exhibition held in Brussels on the history of telegraphy showing 600 items, many from the author’s collection.

VLAHAKIS, George N., 'Dionyssios Pyrros: an unknown instrument-maker in nineteenth-century Greece', *Bulletin of the Scientific Instrument Society* 59 (December 1998), 3-5.

VLAHAKIS, George N., KARAS, Giannes, KRETIKOS, Theodoros, & NIKOLAÏDES, Euthumios, *Ta Epistemonika Organa, 19os Aionas: Oi Ellenikes Sulloges*. Aithrio Ethnikou Idrumatos Ereunon 19-23 Iouniou 1997. Ereunos [or Athens]: Aithrio Ethnikou Idrumatos, 1997). Exhibition catalogue of physics and other instruments. (Note: in Greek).

WARNER, Deborah Jean, ' Keith's American heliostat', *Rittenhouse* 10 (1996). 58-64. Designed by mathematician Reuel Keith in the early 1870s, and manufactured and marketed by German-born mechanician Edward Kübel, Washington D.C.

WARNER, Deborah Jean, 'William Wales: an Anglo-American microscope optician', *Rittenhouse* 10 (1996), 121-126 . Wales worked in New York from ca. 1860.

WARNER, Deborah Jean, 'Nautical compasses in colonial and antebellum America', *Rittenhouse* 11 (1996), 14-22.

WARNER, Deborah Jean, 'Immersion objectives for microscopy: the early history', *Rittenhouse* 11 (1997), 86-92.

WARNER, Deborah Jean, 'Lightning rods and thunder houses', *Rittenhouse* 11 (1997), 86-92

WARNER, Deborah Jean, 'John Bird and the origin of the sextant', *Rittenhouse* 12 (1998), 1-11. Inspired by a Bird sextant in the McCord Museum of Canadian History, Montreal.

WARNER, Deborah Jean, 'Telescopes for land and sea', *Rittenhouse 12* (1998), 33-54. Astronomical telescopes have received more historical attention than those used for more mundane purposes, though they were outnumbered by them. This essay aims to redress the balance.

WARNER, Deborah Jean, 'Edward Nairne: scientist and instrument maker', *Rittenhouse* 12 (1998), 65-93.

WEBSTER, Roderick and Marjorie, *Western Astrolabes. Historic Scientific Instruments of the Adler Planetarium & Astronomy Museum* (Chicago, 1998). 179 pp. ISBN 1-891220-01-2. General Editor Bruce Chandler, Editor Sara Schechner Genuth. The first of a multi-volume catalogue of the Adler's collection, this volume describes 47 astrolabes, astrolabe quadrants and mariner's astrolabes.

WETTON, Jenny, curator of science at the Museum of Science and Industry, Manchester, discusses scientific instrument making in Manchester 1870-1940 in the *Bulletin of the Scientific Instrument Society*. After 'Setting the Scene (51, November 1996, 26-30), she discusses Thomas Armstrong & Brother, and G. Cussons & Company (52, March 1997, 5-8), Flatters and Garnett Limited, and Fowler & Company (53, May 1997, 15-18) and Joseph Halden & Company and A.G. Thornton Limited (54, September 1997, 6-9).

WILLEMSEN, Mathieu, ‘Shagreen on eighteenth century scientific instruments’, *Bulletin of the Scientific Instrument Society* 52 (March 1997), 9-11.

WILLIAMS, Thomas R., 'John Edward Mellish and the Origins of the Amateur Telescope Making Movement in North America', *Journal of the Antique Telescope Society* No. 13 (1997), 15-19. Mellish was an amateur and part-time professional astronomer in the first quarter of this century.

YOUNG, Edward J., 'Foerster and Archenhold: A Legacy of Popular Astronomy in Berlin', *Journal of the Antique Telescope Society* No. 14 (1998), 16-17. A description of visits to two late 19th century Berlin observatories.

ZEISS, Carl (firm), *Innovation: The Magazine from Carl Zeiss* no. 3 (October 1997) contains ‘100 Years of Astronomical Technology’ and ‘The Planetarium’s 75th Birthday’ (by Volkmar Schorcht).

ZOLLER, Paul, ‘The Soho Slide Rule: Genesis and Archaeology’, *Bulletin of the Scientific Instrument Society* 57 (June 1998), 5-13. With results of the analysis of accuracy of the divisions of logarithmic lines on various rules.